COMPUTER SCIENCE, MASTER OF SCIENCE

The Master's Program in Computer Science is a two-year program in which a student must complete a required core of courses and additional concentration and general computer science elective courses. The curriculum for the Master of Science in Computer Science requires 36 semester credit units, and offers both a thesis option (30 semester credit units of coursework and 6 semester units of a thesis) and a non-thesis option (33 semester credit units of coursework and 3 semester credit units of a project). Students may choose to obtain the degree in Computer Science with specialization in Software Engineering or Distributed Systems and Networking.

The academic program is expected to culminate in a master's thesis or project. During the first semester of the program, the student should choose a major advisor who will assist him or her in the choice of elective courses. The major advisor will chair the student's advisory committee for the thesis. Two additional members of the students graduate advisory committee will need to be selected.

The graduate program can provide a strong background for future study in a doctoral program. It also provides graduate training as preparation for professional applications. Students with a master's degree in computer science are also prepared for a career in teaching and/or research.

A majority of graduate classes are scheduled to accommodate late afternoon and evening students.

Admission Requirements

Students holding a Bachelor's degree in Computer Science are accepted as graduate students, provided they meet the general requirements stated below.

Applicants **not** holding a degree in Computer Science are also accepted as graduate students, provided they meet the general requirements and successfully complete the leveling courses described below.

General requirements for graduate study in Computer Science are as follows:

- An undergraduate degree from an accredited higher education institution.
- A minimum GPA of 2.75 on a 4.0 scale.
- A minimum TOEFL score of 90 or ITLES score of 6.5 (for applicants whose native language is not English).
- A minimum Graduate Examination (GRE) General Test score of 293 (combined verbal and quantitative); for more information refer to: www.gre.org (https://www.ets.org/gre/)

A student with a Bachelor of Science in Computer Science, with a GPA greater than 2.44 but less than 2.75 and/or a GRE score below 191 may first receive conditionally classified admission to the MS degree program. A conditionally classified student has one year to receive a minimum GRE score of 900 and a minimum GPA of 3.0 to change status to classified graduate student.

A student with a Bachelor's degree in a discipline other than Computer Science must possess a computer science background equivalent to the following CSUDH courses:

Code	Title	Hours
CSC 321	Programming Languages	3
CSC 331	Computer Organization	3
CSC 311	Data Structures	3
MAT 281	Discrete Mathematics	3
CSC 341	Operating Systems	3
MAT 361	Finite Automata	3
Proficiency in a programming language [1]		

[1] or CSC 123 Introduction to Computer Science and Programming II.

A student without this background must enroll in these leveling courses before being accepted as a regular student in the graduate Computer Science program. Successful completion in these courses means a grade of C or better in each leveling course.

Students entering the master's program must maintain a grade of no less than B in any course for their continuation in this program. Final decision on admission to the graduate program is made by the Computer Science Graduate Committee.

Admission Procedures

Prospective graduate students must:

1. Submit an application to the University for admission (or readmission) with graduate standing, and official transcripts of all previous college work following the procedures outlined in the Admissions section of the University Catalog.
2. Submit to the Computer Science Graduate Program Coordinator:
3. a second set of official transcripts;
4. a letter to the department describing interests, goals and expectations in pursuing the master's degree in computer science;
5. three letters of recommendation sent directly from individuals who can evaluate potential for graduate study;
6. verification of a minimum GRE General Test score of 900 (combined verbal and quantitative) before the student has completed 9 semester units.

Graduate Standing: Conditionally Classified

To qualify for admission with a graduate degree objective, students must meet the admission requirements for post-baccalaureate standing as well as any additional requirements of the particular program. Students who apply to a graduate degree program but who do not satisfy all program requirements may be admitted to conditionally classified status. Program coordinators will outline all conditions for attainment of classified status.

Graduate Standing: Classified

Students applying for master's degree programs will be admitted in classified status if they meet all program admission requirements.

Classified standing as a graduate student is granted by the academic unit to which the student is applying. Classified standing is normally granted when all prerequisites have been satisfactorily completed for admission

to a master's degree program. Students must have classified standing to qualify for Advancement to Candidacy.

Graduation Writing Assessment Requirement

All graduate students entering the University in the Fall of 1983 or thereafter are required to satisfy the Graduation Writing Assessment Requirement (GWAR) in accordance with the established policies of the university. Students must satisfy the requirements before being advanced to Candidacy. (See "Graduation Writing Assessment Requirement (https://catalog.csudh.edu/general-information/graduate-writing-examination/)" section of the University Catalog.

Advancement to Candidacy

Advancement to candidacy recognizes that the student has demonstrated the ability to sustain a level of scholarly competency commensurate with successful completion of degree requirements. Upon advancement to candidacy, the student is cleared for the final stages of the graduate program which, in addition to any remaining course work, will include the thesis or project.

Following are the requirements for Advancement to Candidacy:

1. A minimum of 15 resident units;
2. Classified standing;
3. An approved Program of Study;
4. Successful completion of GWAR;
5. A cumulative GPA of 3.0 in all courses taken as a graduate student;
6. No grade lower than a "B" in the degree program.

Advancement to Candidacy must be certified on the appropriate form to the Graduate Dean by the department prior to the final semester, prior to enrolling in the thesis or project.

Requirements

Thesis Option

Code	Title	Hours
Graduate Coursework		
CSC 500	Research Methods	3
CSC 501	Design and Analysis of Algorithms	3
CSC 521	Fundamentals and Concepts of Programming Languages	3
CSC 581	Advanced Software Engineering	3
CSC 584	Software Project	3
Elective graduate courses		15
Master's Thesis		
CSC 599	Master's Thesis	6
Total Hours		**36**

Non-Thesis Option

Code	Title	Hours
Graduate Coursework		
CSC 500	Research Methods	3
CSC 501	Design and Analysis of Algorithms	3
CSC 521	Fundamentals and Concepts of Programming Languages	3
CSC 581	Advanced Software Engineering	3
CSC 584	Software Project	3
Elective graduate courses		18
Master's Project		
CSC 590	Master's Project	3
Total Hours		**36**

Tracks

Students may choose to obtain the degree specializing in either Software Engineering (SE) or in Distributed Systems and Networking (DSN) tracks.

Software Engineering (SE) Track

Code	Title	Hours
CSC 541	Advanced Operating Systems	3
CSC 546	Human Computer Interaction and Interface Design	3
CSC 582	Object-Oriented Analysis and Design	3
CSC 583	Software Engineering Processes	3
CSC 585	Advanced Software Quality Assurance	3
Total Hours		**15**

Distributed Systems Networking (DSN) Track

Code	Title	Hours
CSC 531	Advanced Computer Architecture	3
CSC 541	Advanced Operating Systems	3
CSC 551	Data Communications and Computer Networks	3
CSC 552	Distributed Computing and Parallel Processing	3
CSC 555	Information Assurance and Network Security	3
Total Hours		**15**

Elective Graduate Courses

Code	Title	Hours
CSC 511	Artificial Intelligence and Expert Systems	3
CSC 531	Advanced Computer Architecture	3
CSC 541	Advanced Operating Systems	3
CSC 546	Human Computer Interaction and Interface Design	3
CSC 553	Advanced Database Management Systems	3
CSC 551	Data Communications and Computer Networks	3
CSC 552	Distributed Computing and Parallel Processing	3
CSC 555	Information Assurance and Network Security	3
CSC 561	Advanced Computer Graphics	3
CSC 564	Numerical Analysis	3
CSC 565	Theory of Computation	3
CSC 582	Object-Oriented Analysis and Design	3
CSC 583	Software Engineering Processes	3
CSC 585	Advanced Software Quality Assurance	3
CSC 594	Independent Study	3
CSC 595	Special Topics in Computer Science	3

Notes:

1. General Computer Science:
   a. Thesis Option: select 5 courses (15 units) from the list of elective courses;
   b. Non-Thesis Option: select 6 courses (18 units) from the list of elective courses.

2. Software Engineering or Distributed Systems Networking tracks:
    a. No double counting of electives;
    b. Thesis Option: select 1 course (3 units) from the list of elective courses;
    c. Non-Thesis Option: select 2 courses (6 units) from the list of elective courses

Program Learning Outcomes

1. Apply theory of computation and advanced level concepts of programming languages to industrial and other large scale projects.
2. Use Computer Science research methods including design of efficient algorithms approaches to create and evaluate projects and generate reports.
3. Use the software engineering process to develop software that matches the operating system to customer requirements.
4. Successfully manage a software project from planning through
5. Implementation to evaluation phases and improvement hardware interface management between and among parallel and distributed systems, specifically as it pertains to connectivity and security.
6. Design and analysis techniques used to structure and implement industry level applications
7. Use of testing and measurement models to examine end product quality.