**MASTER OF SCIENCE IN COMPUTER SCIENCE**

**Program Description**

All students share breadth requirements in the areas of computing foundations, computer systems, and software development. Students focusing on different areas then differ in the choice of courses that provide depth in the chosen area and in the work done for the culminating experience. Students are expected to decide on a focus area prior to enrollment in the second semester. Integrated into the curriculum are significant team and project experiences. There are two options for the mandatory culminating experience, the master’s thesis or the applied research project.

The grading method CR/NC is allowed only for CSC 895 or CSC 898. All other courses listed on the Advancement to Candidacy (ATC) form must be a letter grade.

**Program Learning Outcomes**

1. Students will be able to design, develop, document, and test software using current techniques.
2. Students will understand the fundamentals of computer architecture and computing theory.
3. Students will be able to solve problems working in group settings.
4. Students will demonstrate the ability to give presentations and write technical reports.
5. Students will demonstrate an understanding of the importance of social and ethical issues related to the profession.
6. Students will demonstrate a breadth of knowledge in computer science, as exemplified in the areas of systems, theory and software development.
7. Students will demonstrate the ability to conduct a research or applied Computer Science project, requiring writing and presentation skills which exemplify scholarly style in computer science.

**Elective Requirements**

All students are required to include elective credits in their program. Electives include:

- All upper division or graduate courses offered by the Computer Science Department, including breadth requirement courses and CSC 897 and CSC 899. CSC 893 may not count as an elective course.
- Courses from other programs such as biology, engineering, business, or mathematics may be accepted with the approval of the graduate advisor and culminating experience supervisor.

**Admission to Program**

Admission to the graduate program in computer science is a two-step process that should be completed simultaneously:

1. **Apply to San Francisco State University:** Complete the on-line CSU Mentor application. Follow all other requirements for admission to the University by accessing www.sfsu.edu/~gradstdy/ (http://www.sfsu.edu/~gradstdy).
2. **Apply to the Department of Computer Science graduate program:** Full details can be found at http://cs.sfsu.edu/grad/GradApply.html.

We encourage students with four-year degrees other than Computer Science to apply to our program as conditional applicants. Please check the link in Step 2 above for details.

**Financial Assistance**

Graduate assistantships are occasionally available for qualified master’s students. These opportunities include participating in funded research projects, assisting with management of departmental and university computer laboratories as well as lecturer positions for beginning undergraduate computer science courses. Frequently, there are internship opportunities available for work at local companies. International students should address all questions related to their visa status and eligibility for practical training (off-campus work) to the Office of International Programs (bulletin.sfsu.edu/resources/international-programs).

**Written English Proficiency Requirement**

**Level One**

Computer science students admitted to the M.S. program are required to satisfy English Level One prior to the end of their first year of study at SF State. Level One is satisfied by obtaining either a score of 4 or better on the GRE Analytical Writing Exam or a passing grade in SCI 614. SCI 614 is strongly recommended for all students who wish to develop their skills in professional writing.

**Level Two**

The second level of proficiency in written English must be demonstrated before graduation. At this time, the student must demonstrate writing
skills which exemplify scholarly style in computer science. This is demonstrated by the master’s thesis or the research project report.

**Policy on Enrollment While Conducting Directed Research**

Pursuant to Policy F89-165 adopted by the Academic Senate in 1989, the Computer Science Department has adopted the policy that all graduate students who are working with a research advisor (above and beyond general advising during office hours) and/or having his/her thesis or project reviewed, must enroll in at least one unit of CSC 895, CSC 897, CSC 898, or CSC 899. Registered students will have priority for departmental computing resources.

**Computer Science (M.S.) — 30-33 units**

**Core Requirements (9 units)**

**Computing Foundations (3 units)**

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>CSC 810</td>
<td>Analysis of Algorithms II</td>
<td>3</td>
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<tr>
<td>CSC 825</td>
<td>Advanced Automata Theory</td>
<td>3</td>
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**Computer Systems (3 units)**

Select one:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>CSC 720</td>
<td>Advanced Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CSC 745</td>
<td>Computer Networks</td>
<td>3</td>
</tr>
<tr>
<td>CSC 746</td>
<td>High-Performance Computing</td>
<td>3</td>
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**Software Development (3 units)**

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<th>Units</th>
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<tr>
<td>CSC 848</td>
<td>Software Engineering</td>
<td>3</td>
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<tr>
<td>or CSC 868</td>
<td>Advanced Object Oriented Software Design and Development</td>
<td>3</td>
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**Program — 21-24 units**

**General Requirement (9 units)**

Three 3 unit courses drawn from 700-800 level Computer Science courses. 700-800 courses paired with 600 courses require advisor’s approval. CSC 899 may not count towards this requirement.

**Electives (6 units)**

Two upper-division/graduate 3 unit electives selected on advisement.

**Practicum Option (3 units)**

Up to 3 units of CSC 893 (on advisement)

**Culminating Experience (6 units)**

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>CSC 897</td>
<td>Research</td>
<td>3</td>
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<tr>
<td>or CSC 899</td>
<td>Independent Study</td>
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<tr>
<td>CSC 895</td>
<td>Applied Research Project</td>
<td>3</td>
</tr>
<tr>
<td>or CSC 898</td>
<td>Master’s Thesis</td>
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