

**UNIVERSITY OF SAN FRANCISCO**  
**College of Arts and Sciences**

**MS in Internet Engineering—Program Assessment Plan**

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**Program Goals**

Students who complete the Masters of Science in Computer Science will be able to demonstrate:

1. An understanding of advanced topics in computer science, including software engineering, distributed computing, artificial intelligence, networking, interface design and Internet systems.
2. The ability to design, implement and debug large-scale applications
3. The ability to evaluate and understand advanced research from the Internet computing literature
4. Effective communication and team participation skills with respect to software development.

**Learning Outcomes**

\*\*Note: at this point, the learning outcomes are restricted to the following required classes:

- CS601 Object-Oriented Software Development
- CS662 Artificial Intelligence Programming
- CS680 Internet Systems and Algorithms
- CS682 Distributed Software Development
- CS689 Residency in Internet Engineering
- CS690 Master's Project

1. Be able to describe and effectively apply modern software engineering principles on actual projects.
2. Be able to design, prototype, implement and debug large-scale software projects, including developing and maintaining project timelines and meeting deadlines.
3. Be able to implement and apply modern AI techniques
4. Be able to describe and implement algorithms used in modern distributed and web-based systems
5. Be able to explain developed solutions in both written and oral form.
6. Be able to work effectively as a team and exhibit satisfactory group participation skills.

## **Assessment Methods**

### **Curriculum Mapping**

- Outcome 1: CS601, CS689, CS690
- Outcome 2: CS601, CS689, CS690
- Outcome 3: CS662, CS680
- Outcome 4: CS680, CS682
- Outcome 5: CS689, CS690
- Outcome 6: CS689, CS690

### **Rubric**

- Outcome 1: Students in both CS601 and CS690 are asked to implement a large-scale project as a large portion of their grade. We will use the portion of the grade specifically linked to the satisfaction of this course objective as a metric. CS689 is a residency course in which students work with an outside sponsor on a significant project; we will ask the sponsor to specifically evaluate the students' ability to effectively apply software engineering principles.
- Outcome 2: As with outcome 1, this is a large portion of the students' grades in CS601 and CS690, so we will use the portion of the students' grades relevant to this objective. In both cases, the instructor will be asked to specifically and separately evaluate the portions of the project relevant to the outcome. For CS689, we will ask the students' sponsors to evaluate the students' ability to achieve this outcome.
- Outcome 3: In CS662 and CS680, students are asked to implement modern AI techniques as a portion of their grade. We will use the grades from these assignments as a metric.
- Outcome 4: In CS680 and CS682, students are asked to implement these techniques, as well as to describe them on exams. We will use assignment grades and scores from those specific exam questions as a metric.
- Outcome 5: Students in CS690 are required to provide a written report documenting their project and give an oral presentation. Grades from these tasks will be used as a metric. Students in CS689 are expected to provide a written summary report; the grades from this will be used as a metric.
- Outcome 6: Students in CS690 are specifically required to work in groups, and will be evaluated on their group interaction both by the instructor and by each other. For CS689, we will ask the students' sponsors to provide an evaluation of their ability to work effectively as a team.

### **Time Frame**

- May, 2009 - Assessment for CS601 and CS662 in place. Department will have an initial meeting to determine if the rubrics are appropriate and if outcomes are being met.
- May, 2010. Initial assessment for CS680, CS689 and CS690 in place. CS601 and CS662 assessment continues. At this point we will have three semesters of data for CS601 and two for CS662, which will allow us to make better determinations about how learning outcomes are being met in these courses.
- May, 2011. Initial assessment for CS682 implemented. Assessment for other courses continues. At this point, we will have two years of longitudinal data on students, which will allow us to make some conclusions about the overall effectiveness of the program at satisfying learning outcomes.

**Who Will Do The Assessment?**

Assessment will happen at the end of each semester and will be managed by the instructors of the relevant courses.

**Data Usage**

We plan to use this data to help reshape our curriculum, including determining whether to make additional classes required, in deciding how to effectively monitor and place students entering the program with deficiencies, and how to best track student progress. This data will also help us determine the correct boundary and level of interaction between the MSCS and MSIE degrees.