

Computational Science & Engineering Secondary Field Oral Exam

Overview

Upon completion of required coursework, each candidate for the Secondary Field in Computational Science & Engineering (CSE) will be required to give an oral presentation on a computational research project. Students will be expected to display achievement of the CSE program's learning outcomes, including the ability to compare and evaluate competing approaches and communicate their work in an interdisciplinary context.

Timing

Students are eligible to take the oral exam after successfully completing the four courses on the Secondary Field Plan of Study. The Institute for Applied Computational Science (IACS) will host a Secondary Field presentation event at the end of each semester

Audience

The audience for the presentation will be other students from the CSE program and Faculty and staff affiliated with IACS.

Requirements

1. Topic

The computational work chosen for the oral defense should be a small part of the student's doctoral thesis work or a computationally side project worked on in their lab. If a student doesn't have something suitable from their laboratory work, an independent study project can be used.

2. Oral defense

Students have should focus on two things in preparing their presentations:

- (1) The presentation needs to explain to an interdisciplinary, non-expert audience the problem they worked on, how it fits into current research in their domain and why it is interesting and important.
- (2) Beyond explaining the problem, the presentation should focus on the computational aspects of their work. They should:
 - a. explain the algorithm or method used to solve the problem;
 - b. compare that algorithm to others that could have been used and explain why the chosen one was the best fit for their project;
 - c. address any technical challenges they encountered in implementing the algorithm and how those challenges were overcome.

The defense will consist of a 20-minute oral presentation and a 10-minute question period.

Committee

The committee for the oral defense will include at least two or three members chosen from among the IACS lecturers and the CSE faculty committee.

Evaluation

Students will be evaluated on:

1. Their ability to succinctly explain to an interdisciplinary audience the nature of the problem their project addresses.
2. Their explanation of the algorithms and methods considered to address the problem and their defense of why the chosen method was selected.
3. Their explanation of the details of the implementation of their chosen algorithm.
4. Their success in addressing the problem.

Outcomes

The committee will meet after the exam and decide among the following three options:

1. Pass The student is deemed to have successfully completed the oral exam and will receive the documentation of having completed the Secondary Field in Computational Science and Engineering along with their diploma.
2. Fail The student is deemed to have failed the oral exam and therefore to have not completed the Secondary Field in Computational Science and Engineering.
3. Fail with an opportunity to try again The student has not successfully passed the oral exam, but will be given the opportunity to try again the following semester. Repeat exams will be graded as Pass or Fail only.