

Computer Science PhD

Expanded Statement of Institutional Purpose

Institutional Mission Reference

The Computer Science PhD Program contributes to the mission of the University by (a) extending the boundaries of knowledge through research and scholarship, (b) making significant contributions to science, engineering and technology in fields of importance to the region, (c) offering the graduate degree program that meets the needs of society in areas where the University has unusual strength due to faculty expertise or special geographic advantage and (d) offering a program that meets national standards of excellence.

Institutional Goal(s) Supported

The Computer Science PhD Program supports the University goals of (a) quality graduate academic programs, (b) quality teaching, (c) development of new technology and (d) discovery of new knowledge.

Intended Educational (Student) Outcomes, Methods for Assessment, Criteria for Success, Assessment Results, and Use of Results

Intended Outcome 1

Students will acquire state-of-the-art knowledge in the area of their specialization.

Method for Assessing Outcome 1 and Criterion for Success: Students are required to pass the diagnostic exam at the PhD level. The outcome of this exam is determined by the entire Computer Science faculty.

Summary of Assessment Data Collected for Outcome 1: During the 2000-2001 academic year, 47 graduate students took the departmental diagnostic exam. Eight (17 percent) passed this exam at the PhD level. Since this exam tests state-of-the-art knowledge in the core areas of computer science, these results indicate that PhD students have achieved a high level of competence in the core areas of computer science.

Alternate Method for Assessing Outcome 1 and Criterion for Success: Students are required to pass the candidacy exam which tests their knowledge of general computer science and related areas as well as the area of their specialization.

Summary of Assessment Data Collected, Alternate Method for Outcome 1: Five PhD students passed their candidacy exams during the 2000-20001 academic year. As part of this exam process, each student prepared a written proposal surveying the literature in his/her research area, defining the problem he/she intends to solve. and justifying the importance of the problem. Each proposal was reviewed and approved by the student's research committee. In addition, each student presented his/her proposal to the faculty

and students of the department in an open meeting. This exam has three key components: 1) the student must demonstrate oral presentation skills by presenting his/her proposal; the second component of this exam is a two-part oral exam covering 1) the student's general computer science knowledge and 2) the details of his/her proposed research.

Alternate Method for Assessing Outcome 1 and Criterion for Success: , Students are required to publish an article in a conference proceedings or a journal.

Summary of Assessment Data Collected, Alternate Method for Outcome 1: For the 2000-2001 academic year, students who have passed the candidacy exam had an average of 4.9 publications, with a minimum of 1 and a maximum of 13.

Intended Outcome 2

Students will demonstrate an ability to apply their expertise in making a new and significant contribution to their area of specialization.

Method for Assessing Outcome 2 and Criterion for Success: Students are required to pass their candidacy examination which, among other things, tests their ability to apply existing knowledge.

Summary of Assessment Data Collected for Outcome 2: For the 2000-2001 academic year, 5 students passed their candidacy exams.

Alternate Method for Assessing Outcome 2 and Criterion for Success: Students are required to complete a dissertation research and defend it to a committee of faculty members of computer science and expert(s) outside the department.

Summary of Assessment Data Collected, Alternate Method for Outcome 2: During the 2000-2001 academic year, 4 students successfully defended their dissertations. Students present the key results of their research to their research committees in a public meeting to which all faculty and students are invited. Each graduate committee includes a faculty member from outside the computer science department. In most cases, the outside member is an expert in the student's research area from another university or research organization.

Alternate Method for Assessing Outcome 2 and Criterion for Success: Students must publish an article in a conference proceedings or a journal based on their dissertation research.

Summary of Assessment Data Collected, Alternate Method for Outcome 2: All

students who graduated from the PhD program last year had at least one publication in their area of research; most had several.

Intended Outcome 3

Students must develop the ability to solve problems arising in practice and design of new systems.

Method for Assessing Outcome 3 and Criterion for Success: Students are required to pass the candidacy examination which, among other things, tests their ability to solve problems.

Summary of Assessment Data Collected for Outcome 3: Each student's proposal includes a section on how their research is to be evaluated. In each case, evaluation required the design, development and implementation of some significant software component that demonstrates that their solutions can be applied to significant real-world problems.

Alternate Method for Assessing Outcome 3 and Criterion for Success: Students are required to complete a dissertation and defend it to a committee of faculty members of computer science and expert(s) outside the department.

Summary of Assessment Data Collected, Alternate Method for Outcome 3: Four students successfully defended their dissertations during the 2000-2001 academic year.

Alternate Method for Assessing Outcome 3 and Criterion for Success: Students must publish an article in a conference proceedings or a journal based on their dissertation research.

Summary of Assessment Data Collected, Alternate Method for Outcome 3: All students who graduated from the PhD program last year had at least one publication in their area of research; most had several.

Intended Outcome 4

Students will communicate effectively orally and in writing.

Method for Assessing Outcome 4 and Criterion for Success: In addition to publishing a research paper, students are required to teach at least one course. In order to teach, they must go through a teaching assistant training program provided by the University. Students are also required to orally present their progress every year.

Summary of Assessment Data Collected for Outcome 4: Last year, all PhD students made an oral presentation, describing their progress during the past year; newly enrolled students give information on their backgrounds. These presentations, with the feedback provided by faculty, help develop individual student presentation skills.

Alternate Method for Assessing Outcome 4 and Criterion for Success: Students must pass the candidacy exam in which they present their research proposal orally and also in written form, and in which they are orally questioned on their background knowledge and dissertation proposal.

Summary of Assessment Data Collected, Alternate Method for Outcome 4: Five PhD students passed their candidacy exams during the 2000-20001 academic year. As part of this exam process, each student prepared a written proposal surveying the literature in his/her research area, defining the problem he/she intends to solve. and justifying the importance of the problem. Each proposal was reviewed and approved by the student's research committee. In addition, each student presented his/her proposal to the faculty and students of the department in an open meeting. This exam has three key components: 1) the student must demonstrate oral presentation skills by presenting his/her proposal; the second component of this exam is a two-part oral exam covering 1) the student's general computer science knowledge and 2) the details of his/her proposed research.

Alternate Method for Assessing Outcome 4 and Criterion for Success: Students are required to complete a dissertation research and defend it to a committee of faculty members of Computer Science and expert(s) outside the Department.

Summary of Assessment Data Collected, Alternate Method for Outcome 4: Four students successfully defended their dissertations during the 2000-2001 academic year.