COMPUTER SCIENCE PH.D.

All students must meet the Requirements for the Doctor of Philosophy Degree

OVERVIEW

The interdisciplinary Ph.D. program in computer science offers study in both traditional and cross-disciplinary areas in computing. Please see the departmental website for current research interests of the department's faculty.

SPECIFIC REQUIREMENTS

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

A Bachelor’s degree and satisfactory scores on the Graduate Record Examination (GRE) general section are required of all applicants. Applicants will be evaluated based on their potential for excellence in research, as judged from their academic background, test scores, relevant experience and letters of recommendation. We admit students who we believe are most likely to succeed and thrive in the program.

Applicants who have strong academic records in a discipline other than computer science and lack an acceptable computer science background, including courses in Data Structures (e.g. CS 124), Computer Organization (e.g., CS 121), and Theory of Computation (e.g., CS 125) may be accepted provisionally. Provisionally accepted students will be required to complete an approved program of remedial work within their first year of study.

Applicants whose native language is not English or whose formal education has been conducted in a language other than English must have a Test of English as a Second Language (TOEFL) score of 90 (Internet-based test) or above or an International English Language Testing System (IELTS) score of 6.5 or above. To be considered for financial assistantship from the university, applicants must have an iBT TOEFL score of 100 or an IELTS score of 7.0 or above.

Minimum Requirements for the Degree of Doctor of Philosophy

A minimum of seventy-five credits of graduate study must be approved by the graduate studies committee and successfully completed. All students must take a minimum of thirty credits of research and thirty credits of course work, of which at least fifteen must be graded and may not count towards a master’s degree (only courses with grades of B- or above are counted towards this minimum requirement and students with two grades below B are eligible for dismissal).

A student’s doctoral program consists of:

- gaining a sound breadth of knowledge in computer science, primarily through course work
- gaining appropriate depth in a specific research area and posing an appropriate original research problem
- completing the research and documenting that research in a dissertation

Three hurdles mark the completion of these stages:

- the comprehensive exam demonstrates breadth of knowledge in computer science
- the dissertation proposal describes the current state-of-the-art in a particular research area and the particular research problem the student proposes to tackle
- the written dissertation and oral defense document the original research

Beyond research and course work, the student must gain appropriate experience, to the satisfaction of their graduate studies committee, in teaching, programming, and communicating technical ideas, both orally and in writing. The student must have at least two peer-reviewed publications prior to defending their dissertation.

**Comprehensive Examination**

All students enrolled in the UVM CS Ph.D. program must pass the Ph.D. comprehensive exams, regardless of whether they received their M.S. degree at UVM. The Ph.D. comprehensive exams comprises a written component and an oral component. The written exam is given in the area of Algorithms. In the case that the student’s performance is not satisfactory in this written exam, an optional follow-up oral exam may be called for by examiners. The examiners are Computer Science graduate faculty members appointed by the Graduate Committee. The oral exam is a single-session exam, and aims to examine a student’s breadth of knowledge in selected topical areas. The topical areas and examiners on this oral exam committee will be determined by each student’s Studies Committee, with approval by the Graduate Committee after a commenting period of one week from the CS graduate faculty. The specific policy on the oral examination procedure is administered by the Graduate Committee.

On the first try, the examination committee will award students one of the following three outcomes to the exam:

1. Pass at the Ph.D. level
2. Pass at the M.S. level with opportunity for at most one retake (to try for a Ph.D. level pass)
3. Fail with opportunity for at most one retake

If a student retakes the comprehensive exam, the examination committee will award students one of the following three outcomes to the retake:

1. Pass at the Ph.D. level
2. Pass at the M.S. level without further opportunity to retake at the Ph.D. level
3. Fail without opportunity for retake at the Ph.D. level
Ph.D. students who pass their Ph.D. comprehensive exams at the M.S. level but not at the Ph.D. level may, if desired, complete any remaining requirements to complete an M.S. degree (including the M.S. comprehensive exam, defined above), but are not allowed to advance to candidacy for the Ph.D.

Written comprehensive exams are given by the Graduate Committee twice a year, in May and January. Each student’s Studies Committee will approve an appropriate timeframe of oral exams for a given student based on their individual circumstances. It is then up to the student to schedule their exams within the agreed-upon timeframe. While individual circumstances may vary, normal expectations are as follows:

- Ph.D. students are normally expected to take oral exams by the end of their second year of full-time Ph.D. graduate study (part-time students may take longer).
- A student who needs to retake their oral exams is expected to do so within 6 months of their first attempt.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Before advancing to candidacy, the student must:

- Demonstrate satisfactory performance in a schedule of courses of at least fifteen credits of graduate course work at UVM, as approved by the student’s graduate studies committee
- Pass a comprehensive exam in areas approved by the student’s graduate studies committee, including a written component
- Successfully propose a dissertation topic in a public presentation
- Pass an oral exam before the student’s graduate studies committee in a closed session following the dissertation proposal