

Doctor of Philosophy Degree in Computer and Information Sciences Program Requirements

In addition to satisfying the general requirements of the University, candidates for the Doctor of Philosophy degree must satisfy several departmental requirements. One objective of these requirements is to provide flexibility in designing an appropriate plan of study. The PhD is an individualistic degree. As soon as possible in the program, each candidate should find a faculty member to act as adviser and be in charge of the candidate's research.

The candidate and advisor design a plan of study that satisfies the University and Department requirements. The Department requirements as listed below specify a minimum amount of necessary work. It is expected that additional course work will normally be required by the adviser. A minimum set of requirements provides a large degree of flexibility for each individual candidate.

Departmental General Requirements

The Departmental requires the following:

1. **Course Work.** Each candidate must complete all requirements of a University of Delaware MS degree in Computer and Information Sciences. Candidates with a similar degree from another institution of higher education may be exempted from part or all of this requirement with the written approval of the Graduate Committee.

A candidate with a master's degree in a related field (e.g., EE, Math) must put together a program that meets the CIS Graduate Committee's approval. Using courses taken for the related graduate degree plus courses taken at Delaware, the candidate must satisfy the Computer Science course requirements for the MS degree, and show the equivalent of the 30 credit MS degree offered by the CIS Department.

Each candidate is required to complete a minimum of 6 additional credits beyond the master's degree. The 6 additional credits do not include the following courses: [CISC 666](#), [CISC 866](#), [CISC 868](#), [CISC 969](#). Normally, in meeting the University's requirement for a major area, a candidate will be required by the adviser to complete more than 6 credits. (Note that the University requires a candidate to complete 9 credits of [CISC969](#) after admission to candidacy.)

2. **Research Ability.** PhD candidates are strongly encouraged to get involved in research as early as possible in their program. As part of the process of finding an adviser, and as early as possible, candidates must demonstrate the potential to perform research, as formalized in the Preliminary Requirements.
3. **Preliminary Examination Requirements.** These requirements ensure that each Ph.D. candidate (1) has significant breadth of knowledge in core areas of computer science, and (2) has demonstrated the ability to perform research in a specific computer science area. The Preliminary Examination requirements have two components: a course component for demonstrating breadth, and a research component for demonstrating research ability. The breadth requirement course component is met satisfied by taking 5 breadth courses, which may include the 4 breadth courses from the breadth requirement of the MS degree, and obtaining a minimum 3.5 GPA with at least a B- grade for each of on the 5 breadth

courses on these courses. The research requirement is met by working component requires the student to work with a committee of at least 2 CIS faculty members on a research project, culminating in a written report and presentation/oral exam.

Candidates must fulfill the Preliminary Requirements Exam requirements and have a PhD advisor within 2 years, counted from the date the student enters the graduate program. Candidates may request an extension in exceptional circumstances (such as serious illness or injury) subject to approval by the Faculty. Candidates who anticipate not meeting or failing the research component of the exam due to serious illness, injury, or other extenuating circumstances may request either an extension in time or a second opportunity to take the research component. Such candidates should submit a letter to the department's Graduate Program Committee, before the end of the two-year period, detailing the issue and clearly stating the requested accommodation.

A pass or fail decision for the research requirement will be made by the committee. Preliminary Examination is made by the CIS Faculty upon recommendation of the student's research committee, taking into account the student's performance on both the course and research components. If the Preliminary Exam requirements are not satisfied within the allowed time period, a recommendation to dismiss the student will be made to the Office of Graduate Studies. If failed, the candidate is allowed to retake the exam one more time. Candidates may request an extension in exceptional circumstances (such as serious illness or injury) subject to approval by the Faculty. The student will be dismissed from the Ph.D. program if the Preliminary Requirements are not satisfied within the allowed time period. Full details on the process for fulfilling the Preliminary Requirements Exam requirements may be found on the CIS departmental web site.

4. **Advisory Committee.** Each candidate, with the advice of the PhD advisor, needs to establish an advisory committee (usually following the successful completion of the preliminary requirements). In accordance with the University requirements, the committee consists of 4-6 members of the faculty nominated and approved by the CIS Department faculty. The committee chair is the faculty member candidate's PhD advisor in charge of the candidate's research and dissertation and must be a member of the CIS faculty. The candidate may have a co-advisor who must be a UD faculty, possibly from another department. A co-advisor is a member of the advisory committee. At least two members represent the area of proposed research. The committee must also include at least one member of the CIS faculty working outside the main area of the proposed research. At least one member must be from outside the CIS Department. The proposed advisory committee must be submitted to the Graduate Committee for approval. It must then be approved by the CIS faculty. In the above, CIS faculty means tenure-track faculty whose primary appointment is in the CIS Department or who have a joint appointment in CIS, but not including continuing track faculty, research faculty, affiliated faculty, visiting faculty, secondary faculty, or adjunct faculty.
5. **Qualifying Examination.** Each candidate must pass a qualifying exam. The advisory committee prepares an examination (oral and/or written) testing a candidate's knowledge in the area of proposed research. Part of the examination includes an oral presentation of a candidate's proposed dissertation research. A student passes the qualifying exam as long as there is no more than one negative vote.

Prior to taking the qualifying exam, candidates must submit a dissertation proposal and a written plan describing their background and research interests. The proposal and plan are submitted to the advisory committee and are considered as input to the qualifying examination. Copies of "Discussion on PhD Thesis Proposals in Computing Science" are available in the CIS Department Office.

The qualifying exam is normally taken one year after fulfilling the preliminary

requirements. During this year a student should actively investigate research possibilities and select a dissertation topic.

6. ***Dissertation.*** Each candidate must complete a dissertation demonstrating results of original and significant research written in a scholarly and competent manner worthy of publication. Upon completion of the dissertation, a final oral public examination must be passed, consisting of a defense of the dissertation and a test of the mastery of a candidate's research area. The final oral examination is directed and evaluated by the student's advisory committee.
7. ***Facility of Expression in English.*** As part of satisfying the University's requirement that PhD graduates demonstrate an ability to orally express themselves clearly and forcefully, each candidate must present his or her research results in a departmental colloquium, or one of the Department's special research interest groups within six months of the defense.
8. ***Foreign Language.*** There is no foreign language requirement.