COMPUTER SCIENCES, PH.D.

The Department of Computer Sciences offers the master of science and doctor of philosophy degrees in computer sciences. Research specialty areas include artificial intelligence, computational biology, computer architecture, computer graphics, computer networks, computer security, database systems, human–computer interaction, numerical analysis, optimization, performance analysis, programming languages and compilers, systems research, and theoretical computer sciences. The department's Graduate Advising Committee (GAC) advises all computer sciences graduate students except those who have acquired an official major professor for Ph.D. work and are not candidates for a master's degree. The role of GAC continues even after the student has a dissertation advisor, until the student reaches dissertator status. See the department website (https://www.cs.wisc.edu) for faculty interests, research activities, courses, facilities, and degree requirements.

FUNDING

Prospective students should see the program website for funding information.

REQUIREMENTS

MINIMUM DEGREE REQUIREMENTS AND SATISFACTORY PROGRESS

To make progress toward a graduate degree, students must meet the Graduate School Minimum Degree Requirements and Satisfactory Progress (http://guide.wisc.edu/graduate/#policiesandrequirementstext) in addition to the requirements of the program.

DOCTORAL DEGREES

Ph.D.

MINIMUM GRADUATE DEGREE CREDIT REQUIREMENT

51 credits

MINIMUM GRADUATE RESIDENCE CREDIT REQUIREMENT

32 credits

MINIMUM GRADUATE COURSEWORK (50%) REQUIREMENT

Half of degree coursework (26 out of 51 total credits) must be completed in graduate-level coursework numbered 700 or higher; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide (http://my.wisc.edu/CourseGuideRedirect/BrowseByTitle).

PRIOR COURSEWORK REQUIREMENTS: GRADUATE WORK FROM OTHER INSTITUTIONS

No credits of graduate coursework from other institutions are allowed to satisfy requirements.

PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNDERGRADUATE

No credits from a UW–Madison undergraduate degree are allowed to satisfy requirements.

PRIOR COURSEWORK REQUIREMENT: UW–MADISON UNIVERSITY SPECIAL

With program approval, students are allowed to count no more than 15 credits of coursework numbered 300 or above taken as a UW–Madison University Special student. Coursework earned ten or more years prior to admission to a doctoral degree is not allowed to satisfy requirements.

CREDITS PER TERM ALLOWED

15 credits

PROGRAM-SPECIFIC COURSES REQUIRED

Students must take at least one "breadth course" in each of three broad topic bands; contact program for list of specific topic bands and courses. Courses used to satisfy this requirement must consist either of

1. three courses numbered 700 or above, or
2. four courses with two numbered 700 or above and two numbered 500 or above.

DOCTORAL MINOR/BREADTH REQUIREMENTS

All doctoral students are required to complete a minor.

OVERALL GRADUATE GPA REQUIREMENT

3.00 GPA required.

OTHER GRADE REQUIREMENTS

Each "breadth course" (see above) must have received a grade of AB or above.

PROBATION POLICY

At the end of any regular (nonsummer) semester, a student is considered to be making satisfactory academic progress (SAP) if the following conditions are all satisfied:

Before achieving dissertator status: the student has completed at least 6 (if full load) or 3 (if part load) credits of approved courses during the semester.

After achieving dissertator status: the student has satisfactorily completed at least three credits of courses approved by the student’s major professor.

The student has removed all Incomplete grades from any previous regular semester or summer session.

The student has passed any required exams and procedures within designated time limits.

Any graduate student who fails to make SAP during two consecutive regular semesters (fall and spring, or spring and fall) will be dismissed from the department at the end of the subsequent summer session. Any graduate student who fails to make SAP due to missed deadlines (criterion 3 above) will be dismissed from the department at the end of the subsequent summer session.
ADVISOR / COMMITTEE
A member of the graduate advising committee must formally approve all graduate schedules each semester until a student is in dissertator status.

ASSSESSMENTS AND EXAMINATIONS
Doctoral students must complete a qualifying process, a preliminary examination, and a dissertation requirement. The qualifying process includes both completion of "breadth courses" (see above) as well as satisfactory completion of a comprehensive written depth examination in a selected focus area. The preliminary examination is an oral examination demonstrating depth of knowledge in the area of specialization in which research for the dissertation will be conducted. The dissertation requirement consists of conducting a substantial piece of original research in computer science, reporting it in a dissertation that meets the highest standards of scholarship, and explaining and defending the contents of the dissertation in a final oral examination and defense.

TIME CONSTRAINTS
Students must pass the qualifying process by the end of the sixth semester.

The preliminary exam must be taken within two years after the deadline for the qualifying exam.

A candidate for a doctoral degree who fails to take the final oral examination and deposit the dissertation within five years after passing the preliminary examination may by required to take another preliminary examination and to be admitted to candidacy a second time.

Doctoral degree students who have been absent for ten or more consecutive years lose all credits that they have earned before their absence.

LANGUAGE REQUIREMENTS
No language requirements.

ADMISSIONS
Students with a strong background in computer sciences or a related field are encouraged to apply for admission. At a minimum, the applicant should have had some programming experience, including courses in data structures and machine organization, and should have had a year of college-level mathematics at the calculus level or above. Applicants are evaluated based on their previous academic record, GRE scores, letters of recommendation, and a personal statement. All applications must be submitted online. Admission is very competitive. Aid is offered to about half of the students to whom admission is offered. Aid is usually in the form of fellowships, teaching assistantships, or research assistantships. For more information on admissions, visit the department website (http://www.cs.wisc.edu).

LEARNING OUTCOMES

KNOWLEDGE AND SKILLS
• Articulates research problems, potentials, and limits with respect to theory, knowledge, or practice within the field of study.
• Formulates ideas, concepts, designs, and/or techniques beyond the current boundaries of knowledge within the field of study.

• Creates research, scholarship, or performance that makes a substantive contribution.
• Demonstrates breadth within their learning experiences.
• Advances contributions of the field of study to society.
• Communicates complex ideas in a clear and understandable manner.

PROFESSIONAL CONDUCT
• Fosters ethical and professional conduct.

PEOPLE

Faculty: Professors Hill (chair), A. Arpaci-Dusseau, R. Arpaci-Dusseau, Bach, Banerjee, Barford, Cai, Doan, Dyer, Ferris, Gleicher, Hill, Jha, Livny, van Melkebeek, Miller, Naughton, Patel, Reps, Ron, Shavlik, Sohi, Wood, Wright; Associate Professors Akella, Chawla, Joseph, Liblit, Mutlu, Sankaralingam, Swift, Zhu; Assistant Professors Albarghouti, D’Antoni, Gupta, Koutris, Sifakis, Snyder. See also Faculty (https://www.cs.wisc.edu/people/faculty) on the department website.