# COMPUTER SCIENCE, PH.D.

The doctor of philosophy degree is regarded as a research degree and is granted on the basis of scholarly proficiency, distinctive achievement in a special field, and the capacity for independent, original investigation.

## Admissions

In addition to meeting the admission requirements established by the Graduate School, students applying for graduate study in the department must also meet the following general requirements:

- A 3.5 GPA (on a 4.0 scale) or equivalent
- Demonstrated competence in programming
- Completion of the equivalent of the department's undergraduate core computer science curriculum
- It is strongly recommended that students who wish to be considered for funding opportunities submit a GRE score.

See the Admission Criteria section of this catalog for more information.

## Curricular Requirements

| Core Course Requirements | Hours |
|---|---|
| Core CS Courses: | 9 |
| Software Courses | |
| CS 503    Programming Languages | |
| Systems Courses | |
| CS 538    Computer Comm & Networks | |
| Theory Courses | |
| CS 570    Computer Algorithms | |
| Focus Area Courses | 6 |
| Elective Graduate CS Courses: | 15 |
| Students may not count CS 592, CS 598, CS 599, CS 692 or CS 699 courses towards this total. | |
| At least 9 hours total of the Core CS Courses, Focus Area Courses, and the Elective Graduate CS Courses must be taken at the 600 level. | |
| Other coursework: | 6 |
| CS 592 or    Independent Study | |
| CS 692    Independent Study | |
| Additional graduate CS courses | |
| Courses taken outside of CS are subject to the approval of the Graduate Program Director and the student's advisor (where applicable). Students should contact the Graduate Program Director and their Advisor (where applicable) prior to registering for courses outside of CS. | |
| Dissertation Credit Hours: | 18 |
| CS 699    Dissertation Research | |
| **Total Hours** | **54** |

### Mentored Instructional Experience

- In their careers, PhD engineers are expected to be thought leaders, mentors, trainers of other developing professionals, and communicators with a variety of audiences. Therefore, in addition to technical training in their discipline, all UA College of Engineering PhD students will have a Mentored Instructional Experience (MIE) that will enhance their abilities in these critical areas of communication, giving and receiving formal feedback, mentoring, and training, as well as deepen their discipline-specific knowledge through educational support experiences (typically office hours, laboratory instruction, conducting recitations, preparing instructional materials, and guiding in-course design teams of undergraduate students).

- All PhD students will receive pedagogical training in these instructional support areas through a pedagogy practicum course(s). Computer Science students will be required to complete the three-hour course, ENGR 501 Graduate Assistant Pedagogy, during their first semester as graduate students at UA.  In addition, each student shall complete a set of instructional experiences during designated semesters (2 semesters at 10 hours/week, 4 semesters at 5 hours/week, or the equivalent) under the guidance of a faculty mentor. Students are required to register for either one-credit hour or two-credit hours of the course CS 697 (PhD Mentored Instructional Experience) during each semester in which they are completing their instructional experiences, and students must complete a total of four-credit hours in CS 697.

This additional instructional practice is a graduation requirement.

## Transfer Credit

Graduate coursework can be transferred from other institutions with department approval.

- Graduate School information on Transfer Credit.

The department supports the block transfer option of an MS degree in Computer Science that meets Graduate School requirements and is approved by the student's research advisor and the Graduate Committee. An MS block transfer will count for 18 hours of the coursework requirements. The remaining 18 hours will be comprised of:

- 9 hours of 600-level courses

- 3 hours of Additional Graduate Courses (Students may not count CS 592, CS 598, CS 599, CS 692 or CS 699 courses towards this total.)

- 6 hours of Other Coursework, including

o  Additional Graduate CS Courses

o  CS 592 or CS 692

o  Courses taken outside of CS are subject to the approval of the Graduate Program Director and the student's advisor (where applicable). Students should contact the Associate Head for Graduate Studies and their Advisor (where applicable) prior to registering for courses outside of CS.

## Doctoral Plan of Study Requirement

- Graduate School information for the Doctoral Plan of Study.

## Qualifying Exams

- The student must pass the Ph.D. Qualifying Exam.

- The student must select an advisor for their Ph.D. Qualifying Exam.

- The Ph.D. Qualifying Exam is composed of a Qualifying Exam Written Document and an Oral Presentation.  The student must pass both portions.

- The Written Document either describes original research (Track 1) or is a review paper on an assigned research topic (Track 2).
- Written Document Track 2:  The document must pass an initial editorial review, after which the written document is rated by the Ph.D. Qualifying Exam committee as either Pass or Fail.
- Oral Presentation: the student must deliver a conference-style presentation of the research contained in the paper. The faculty members present will then question the student regarding the contents of the written document and the presentation. The members of the faculty who are present will rate the Oral Presentation as either a Pass or a Fail.
- Deadlines for taking the Ph.D. Qualifying Exam
  - The first attempt at the qualifying exam must occur at the beginning of the third semester in the PhD program.
  - Students are allowed two attempts to successfully complete the Ph.D. Qualifying Exam. Students who do not pass their first attempt must retake the exam at the next offering of the Ph.D. Qualifying Exam.

## Admission to Candidacy Requirements

- A student is admitted to candidacy after the successful completion of both portions of the dissertation proposal.

## Continuous Enrollment Policy

- Graduate School Policy on Continuous Enrollment.

## Dissertation Requirements

- The student must select a dissertation advisor and a dissertation committee. At least four members, including the dissertation advisor, must be from the faculty of the Department of Computer Science, and at least one member must be from outside the department.
- The student must develop a dissertation proposal composed of both a written document and an oral presentation.
  - The written document should contain an introduction to the research area, a review of relevant literature in the area, a description of problems to be investigated, an identification of basic goals and objectives of the research, a methodology and timetable for approaching the research, and an extensive bibliography.
  - The student must deliver an oral presentation of the dissertation proposal, which is followed by a question-and-answer session that is open to all faculty and which covers topics related directly or indirectly to the research area. The student's committee will then examine the proposal privately with the student.
- The student must develop a written dissertation that demonstrates that the student has performed original research that makes a definite contribution to current knowledge. Its format and content must be acceptable to both the student's committee and the Graduate School.
- The student must defend the written dissertation. The defense includes an oral presentation of the dissertation research, followed by a question-and-answer session. The student's committee will determine whether the defense is acceptable.
- Graduate School information on Dissertation Requirements.

## Time Limits for Degree Completion Requirements

- Graduate School information on Time Limits.

## Student Progress Requirement

- Students must complete the Qualifying Exam by the specified deadlines
- Graduate School information on Student Progress.

## Academic Misconduct Information

- Graduate School information on Academic Misconduct.

## Withdrawals and Leave of Absence Information

- Graduate School information on Withdrawals and Leave of Absence.

## Academic Grievances Information

- Graduate School information on Academic Grievances.

## Grades and Academic Standing

- Graduate School information on Grades and Academic Standing.

## Graduate School Deadlines Information

- Information on Graduate School Deadlines.

## Application for Graduation Information

- Information on the Application for Graduation.