Doctor of Philosophy in Computer Science

Revised May 2025

Overview of Degree

The Doctor of Philosophy (Ph.D.) in Computer Science at The University of Georgia is an advanced, intensive program offered by the **School of Computing** and designed to take students to the frontiers of knowledge in one of a number of key areas of Computer Science. The Ph.D. in Computer Science combines theory and practice in complementary, yet flexible, ways. The program has been designed to prepare students for careers in research (at universities, or government or industrial research laboratories), teaching (at colleges or universities), or advanced development (at hardware and software companies).

The School of Computing presently has many active research groups that cover most areas of Computer Science; see https://www.cs.uga.edu/research for details.

Prospective students are advised to consult The University of Georgia Graduate Bulletin for institutional information and requirements.

Admission Requirements

In addition to the general University of Georgia policies set forth in the Graduate Bulletin, the following school policies apply to all applicants:

1. A Bachelor's Degree or Master's Degree is required, preferably with a major in Computer Science or an allied discipline. Students with insufficient background in Computer Science must take undergraduate Computer Science courses to remedy any deficiencies (in addition to their graduate program). A sufficient background in Computer Science must include at least the following courses (or their equivalent):

MATH 2250	Calculus I (Differential Calculus)
MATH 2260	Calculus II (Integral Calculus)
CSCI 1301	Introduction to Computing and Programming
CSCI 1302	Software Development
CSCI 1730	Systems Programming
CSCI/MATH 2610	Discrete Mathematics for Computer Science
CSCI 2670	Introduction to Theory of Computing
CSCI 2720	Data Structures

2. Admission to this program is highly selective; students with a record of academic excellence have a better chance of acceptance. Students with exceptionally strong undergraduate records may apply for admission to the graduate program prior to fulfilling all of the above requirements.

3. Graduate Record Examination (GRE) test scores are optional for graduate CSCI programs. International applicants need TOEFL or IELTS official test scores. Duolingo scores are no longer accepted for admission.

4. Three (3) letters of recommendation are required, preferably written by university professors familiar with the student's academic work and potential. If the student has work experi-ence, one letter may be from his/her supervisor. Letters should be sent directly from the letter writer.

5. A one or two-page personal statement outlining the student's background, achievements, and future goals is required.

6. A recent copy of resume.

Graduate School Requirements

Additional requirements are specified by the Graduate School (application fee, general application forms, all transcripts, etc.). Please see the University of Georgia Bulletin for further information. Detailed admissions information may be found at Graduate School Admissions. Printed information may be obtained by contacting the

University of Georgia Graduate School
Brooks Hall
310 Herty Drive
Athens, GA 30602

Phone: 706-542-1739
Fax: 706-542-6330
http://grad.uga.edu
e-mail: gradadm@uga.edu

Applications are processed on a year-round basis. Students can be admitted for either semester (Fall or Spring). Please visit the Graduate School for application submission deadlines.

Curriculum

There are a number of requirements for the Ph.D. Computer Science degree at School of Computing. Two of the requirements, the prelimi-nary focus and the primary focus, are coursework related. Other requirements deal with core competency, advisory committee formation, procedural, and Graduate School requirements.

Preliminary Focus

The preliminary focus consists of at least 12 **credit hours** of resident graduate coursework. This includes:

1. at least **12 credit hours** of Core CSCI graduate coursework at the 6000-level (see Core Curriculum below);

Students who have already earned an M.S. degree in Computer Science may petition the Graduate Coordinator to substitute equivalent graduate-level courses from their M.S. program for one to three Core CSCI graduate courses. Students with no previous graduate coursework or with graduate coursework that only partially covers the requirement will need to fulfill the rest of the preliminary focus requirement. Examples of situations in which a student would need to fulfill the preliminary focus requirement include: (a) students with graduate work in another discipline, (b) students with graduate coursework that does not cover all areas of the core listed below, and (c) students without previous graduate coursework. Regardless of the method used to satisfy the preliminary focus requirement, students are still responsible for Core Competency Certification.

The students must provide relevant information on their **Doctoral Core Competency Certification Form**.

The preliminary focus requirement is designed to provide a common baseline for all students seeking to earn their Ph.D. degree at UGA. It is recommended that this requirement be met prior to moving into the primary focus area but it is possible for students to work concurrently on these two requirements. In any case, the preliminary focus requirement is in addition to the primary focus requirement. In particular, coursework taken to satisfy the preliminary focus requirement may not be used to satisfy any portion of the primary focus requirement, and vice versa.

Upon core competency certification, doctoral student must submit **Annual Progress Reports** to their Major professor for approval, and to the Graduate Coordinator, each spring semester.

Core Curriculum (Preliminary Focus Item 1)

At least one course from each of the following three groups must be taken:

Group 1: Theory
- CSCI 6470 Algorithms
- CSCI 6480 Approximation Algorithms
- CSCI 6610 Automata and Formal Languages

Group 2: Software Design
- CSCI 6050 Software Engineering
- CSCI 6370 Database Management
- CSCI 6570 Compilers

Group 3: System Design
- CSCI 6720 Computer Systems Architecture
- CSCI 6730 Operating Systems
- CSCI 6760 Computer Networks: Technology and Application
- CSCI 6780 Distributed Computing Systems

The core curriculum consists of a total of **12 credit hours**.

Core Competency

Foundational computer science knowledge (core competency) in the core areas (Groups 1, 2, and 3, above) must be exhibited by each student and certified by the student's advisory committee. This takes the form of achievement in core curriculum. Students entering the Ph.D. program with a previous graduate degree sufficient to cover this basic knowledge will need to work with their advisory committee to certify their core competency. Students entering the Ph.D. program without sufficient graduate background to certify core competency must fulfill the preliminary focus requirement, and then pursue certification with their advisory committee. A grade average of at least 3.56 (e.g., A-, A-, B+) must be achieved for the three core courses. Students below this average may take an additional core course and achieve a grade average of at least 3.32 (e.g., A-, B+, B+, B).

Core competency is certified by the unanimous approval of the student's Advisory Committee as well as the approval by the Graduate Coordinator. The student's advisory committee manages the core competency in cooperation with the student. Students are required to meet the core competency requirement within their first two enrolled academic semesters (excluding summer semester). **Core Competency Certification must be completed before approval of the Final Program of Study.**

Primary Focus

The primary focus consists of at least **31 credit hours** of resident graduate coursework. This includes the following requirements:

1. at least **8 credit hours** of Advanced CSCI graduate coursework at the 6000/8000-level (see Advanced Coursework below); the above must include 4 credit hours of coursework open only to graduate students, exclusive of 8990, as per Graduate School Policy.

2. at least **16 credit hours** of CSCI 8000-level coursework (see Advanced Coursework below);

3. at least **1 credit hour** of CSCI 8990 Research Seminar (see Research Seminar below); and

4. at least **6 credit hours** of CSCI 9300 Doctoral Dissertation (see Doctoral Dissertation below) at least over two semesters.

CSCI 8990 may not count towards requirements 1 and 2 above. Also, no course may be used to satisfy multiple requirements.

Typically, full-time students will take 9 to 15 hours per semester. See the CSCI section of the University of Georgia Bulletin for course descriptions. A program of study should be a coherent and logical whole; it requires the approval of the student's major professor, the student's advisory committee, and the school's graduate coordinator.

Note: **no course with a grade of C+ or lower may be included on the student's Program of Study** (see the Graduate Bulletin for other GPA constraints). All CSCI graduate courses must be B- or better.

Advanced Coursework (Primary Focus Items 1 & 2)

To fulfill the primary focus, students must take at least **24 credit hours** of CSCI advanced graduate coursework at the 6000/8000-level with at least **16 credit hours** at the 8000-level and **20 credit hours** of coursework open only to graduate students, as per Graduate School Policy.

Note: In no case shall a 6000-level course used to fulfill part of the advanced coursework requirement count toward the advanced coursework requirement AND the core curriculum requirement. In addition, neither CSCI 6950 nor CSCI 8990 may be used to fulfill this requirement.

At most one of the 8000-level courses may be repeated once. That course must be listed in the catalog as repeatable and syllabi from both offerings of the course must be submitted to the Graduate Coordinator with the Program of Study, showing that the two offerings differ in content.

Research Seminar (Primary Focus Item 3)

All students must take **1 credit hour** of **CSCI 8990** Research Seminar, in which they must attend weekly meetings of a research seminar and give presentations. Contact School of Computing for course access.

Doctoral Dissertation (Primary Focus Item 4)

The student's dissertation must represent originality in research, independent thinking, scholarly ability, and technical mastery of a field of study. The dissertation must also demonstrate competent style and organization (see Guidelines for Theses and Dissertations). While working on his/her dissertation, the student must enroll for a minimum of **6 credit hours** of **CSCI 9300** Doctoral Dissertation spread over at least 2 semesters. Students may not register for this course until they have been admitted to candidacy. Once the student's major professor has approved the final version of the dissertation, it will be distributed to the other members of the advisory committee, and a dissertation defense scheduled no sooner than **three weeks** after the distribution. Given a committee of size n, a student's dissertation and defense are considered approved by the school if approval has been received from at least n-1 committee members.

Research Skills

The School of Computing has no formal research skills requirement, at this time.

Advisory Committee

A doctoral student's advisory committee shall consist of **at least three members** of the **graduate program faculty**, including the student's major professor who will chair the committee, and a minor professor from the student's doctoral minor (if the minor option is selected). A member of the graduate program faculty may be appointed as co-major professor in which case the mini-mum size of the advisory committee shall be four. A majority of the committee must be regular (non-courtesy and non-adjunct) faculty members of the School of Computing. The **major pro-fessor** must be a tenured/ tenure-track faculty member of the School. A doctoral student may in-clude a regular/courtesy/adjunct member of the school as a **co-major professor**. The co-major professor must be a graduate program faculty member. A committee may not have more than two non-UGA affiliated members, at most one of whom may be a voting member. Any such non-UGA affiliated members must hold the terminal degree in their respective fields of study and cer-tify their credentials with a letter and vita. The maximum size of a PhD advisory committee is six, a majority of whom must be members of the graduate program faculty. The Graduate Advisory is selected by the student through the Enrolled Student Progress Portal (https://gradapply.uga.edu/portal/my_progress/ This submission is reviewed by the Graduate Coordinator and Graduate School.

Comprehensive Examination

Before taking the Comprehensive Examination, students must have at least **one research paper** submitted to a research conference or journal. The student must have an submitted and approved **Program of Study** to Gradaute School before scheduling this exam.

The student must pass the Ph.D. Comprehensive Examination that covers the student's advanced coursework. The examination consists of two parts: a **written part** and an **oral part**. Students have at most two attempts to pass the written part. The oral part may not be attempted unless the written part has been passed. The written part may not be attempted unless the student's core competency has been certified. The exams are administered by the student's advisory committee. For more information, see Ph.D. Exams: Form and Timing.

Admission to Candidacy

The student is responsible for initiating an application for admission to candidacy in gradstatus.uga.edu once all re-quirements, except the dissertation prospectus and the dissertation, have been completed.

The time limit for admission to candidacy is **six years**, however, it is expected by year four. Graduation is required within **five years** of becoming a Ph.D. candidate.

Dissertation Planning and Prospectus

The major professor and advisory committee shall guide the student in planning the dissertation. The student will prepare a dissertation prospectus in the form of a detailed written dissertation proposal. It should clearly define the problem to be addressed, critique the current state-of-the-art, and explain the contributions to research expected by the dissertation work. **CSCI 9000 Doctoral Research** is taken for the exploratory research leading to the prospectus. When the major professor certifies that the dissertation prospectus is satisfactory, it must be formally considered by the advisory committee in a meeting with the student. This formal consideration may not take the place of the comprehensive oral examination.

Approval of the **dissertation prospectus** signifies that members of the advisory committee believe that it proposes a satisfactory research study. Approval of the prospectus requires the agreement of the advisory committee with no more than one dissenting vote. The prospectus announcement is communicated on the CS grads email listserv. The Major professor is to communicate the results of the prospectus to the Graduate Coordinator's office, at cs-grad-coordinator@uga.edu.

Before presentation of the prospectus, students must have at least **one research paper** accepted for publication in the proceedings of a research conference or in a journal.

Graduate School Requirements

GRSC 7001 GradFIRST Seminar is required for all graduate students at University of Georgia. This course must be taken in semester 1 or semester 2. This course may be offered by School of Computing faculty in fall/spring. The course is not repeatable. Additional requirements are set forth by the Graduate School (see the Graduate Bulletin). They concern residence, time limits, programs of study, acceptance of transfer credits, minimum GPAs, dissertation, and examinations.

Graduation Requirements

A student admitted to the Ph.D. Computer Science degree program will be advised by the Graduate Coordinator until a Major professor is chosen.

Before the end of the second semester in residence, a student must begin submitting to the Graduate School, the following forms: (i) a Preliminary Program of Study Form (to School of Computing) and (ii) an Graduate Advisory Committee Form (to Graduate School). The Preliminary Program of Study Form indicates how and when degree requirements will be met and must be formulated in consultation with the student's major professor. An Application for Graduation Form must also be submitted in Athena, in the students final term.

Forms and Timing must be submitted as follows:

1. Graduate Advisory Committee Form (Enrolled Student portal)- end of second semester
2. Core Competency Form (School Website) - beginning of third semester
3. Preliminary Doctoral Program of Study Form (submit to School of Computing only) - third semester
4. Final Program of Study Form (G138) - before Comprehensive Examination
5. Application for Admission to Candidacy (G162) - after Comprehensive Examination
6. Application for Graduation Form (in Athena) - beginning of last semester
7. Approval Form for Doctoral Dissertation (G164) - last semester
8. ETD Submission Approval Form (G129) - last semester

See Important Dates and Deadlines on the Graduate School's website.
https://grad.uga.edu/index.php/current-students/important-dates-deadlines/

NOTE: See Graduate Coordinators office about announcing Oral Comprehensive Examination and announcing Doctoral Dissertation Examination, to the Graduate School, at least two weeks in advance of the exam dates.