Computer Science, PhD

ESCOMSCPHD

Take the next step in your journey to become an effective leader, innovator, entrepreneur or educator in your community and the world.

Program description

Degree awarded: PHD Computer Science

The PhD program in computer science prepares students to undertake fundamental and applied research in computer science. The program is available for those of high ability who seek to develop and implement their own research studies.

Students pursuing the doctorate in computer science learn to analyze, understand and apply key theories and algorithms used in the field and to generate and evaluate new theories, algorithms and software modules that can advance the field of computer science.

The program provides students with research opportunities in a wide variety of areas, including:

- artificial intelligence, machine learning and statistical modeling
- big data and data mining
- computational biology
- computer design and architecture, including nonvolatile memory computing
- computer system security, cybersecurity and cryptography
- cyber-physical systems and Internet of Things (commonly abbreviated as IoT), and robotics
- distributed computing and consensus protocols
- networking and computer systems
- novel computing paradigms (e.g., biocomputing, quantum computation)
- social computing
- theory, algorithms and optimization
- visualization and graphics

STEM-OPT for international students on F-1 visas

This program may be eligible for an Optional Practical Training extension for up to 24 months. This OPT work authorization period may help international students gain skills and experience in the U.S. Those interested in an OPT extension should review ASU degrees that qualify for the STEM-OPT extension at ASU's International Students and Scholars Center website.

The OPT extension only applies to students on an F-1 visa and does not apply to students completing a degree through ASU Online.

At a glance

- **College/school:** Ira A. Fulton Schools of Engineering
- **Location:** Tempe

- **STEM-OPT extension eligible:** Yes

Degree requirements

84 credit hours, a written comprehensive exam, an oral comprehensive exam, a prospectus and a dissertation

Required Core Areas (9 credit hours)
applications (3)
foundations (3)
systems (3)

Depth (3 credit hours)
three additional credit hours in one core area (3)

Research (18 credit hours)
CSE 792 Research (18)

Electives and Additional Research (42 credit hours)

Culminating Experience (12 credit hours)
CSE 799 Dissertation (12)

Additional Curriculum Information
Courses that are used to satisfy the core area requirement cannot be used to satisfy electives or other requirements. A grade of "B" or better is required for core courses.

Eighteen credit hours of CSE 792 Research are required, and up to 54 credit hours are allowed on the plan of study. Students with research credit hours in excess of 18 add these credit hours to their electives and additional research.

Electives include:

- additional CSE 792 Research credit hours (up to 36 credit hours allowed beyond the required 18)
- computer science courses, of which up to 18 credit hours of CSE 590 and CSE 790: Reading and Conference are allowed
- up to six credit hours of interdisciplinary electives in other academic units that are subject to program chair approval

When approved by the academic unit and the Graduate College, this program allows 30 credit hours from a previously awarded master's degree to be used for this degree.

A maximum of three credit hours of 400-level coursework may be applied to the plan of study.

Admission requirements

Applicants must fulfill the requirements of both the Graduate College and the Ira A. Fulton Schools of Engineering.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in computer science, computer engineering or a closely related area. Most applicants should have earned a master's degree, but exceptional undergraduate applicants may be admitted directly into the doctoral program.

Applicants must have a minimum cumulative GPA of 3.50 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program, or they must have a minimum cumulative GPA of 3.50 (scale is 4.00 = "A") in an applicable master's degree program.

All applicants must submit:

1. graduate admission application and application fee
2. official transcripts from every university attended
3. three letters of recommendation
4. a statement of purpose
5. curriculum vitae or resume
6. proof of English proficiency

Additional Application Information
An applicant whose native language is not English must provide proof of English proficiency regardless of their current residency.

Submission of GRE scores is optional.

Students assigned any deficiency coursework upon admission must complete those classes with a grade of "C" or higher (scale is 4.00 = "A") within two semesters of admission to the program. Deficiency courses commonly taken include:

CSE 230 Computer Organization and Assembly Language Programming
CSE 310 Data Structures and Algorithms
CSE 330 Operating Systems
CSE 340 Principles of Programming Languages or CSE 355 Introduction to Theoretical Computer Science

The applicant's undergraduate GPA and depth of preparation in computer science and engineering are the primary factors affecting admission.

Tuition information

When it comes to paying for higher education, everyone’s situation is different. Students can learn about ASU tuition and financial aid options to find out which will work best for them.

Application deadlines

Fall expand

Spring expand

Career opportunities

Graduates are prepared to pursue careers in research and education, including academia, government and industry.

Career examples include:

- computer science professor or researcher
- data scientist or engineer
- machine learning, AI or computer vision scientist or engineer

Contact information

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