Doctorate DEGREE PROGRAM IN

Computer Science & Engineering PhD Handbook

College of Engineering, Design and Computing University of Colorado Denver

These degree requirements are in effect starting from 2022-2023 Admission.

The Department of Computer Science and Engineering (CSE) offers two Doctor of Philosophy degrees as part of the Computer Science and Engineering Graduate Program:

- Computer Science and Information Systems (CSIS)
- Engineering and Applied Science (EAS); an umbrella degree within the College of Engineering, Design and Computing with four possible home departments (Computer Science and Engineering, Electrical Engineering, Mechanical Engineering, and Civil Engineering)

The CSE department also offers a master's degree in CS, several graduate certificates, and undergraduate degrees. For a complete list of degrees, please visit the CSE website at cse.ucdenver.edu.

Research & Faculty Expertise: For the list of our current faculty and their research areas visit the department faculty website. Some areas of emphasis include computer graphics & virtual reality, cyber-physical systems, cybersecurity & secure computing, data science, big data management and mining, high-performance distributed computing, human-centric computing, machine learning, parallel and distributed systems, theory and algorithms.

Computer Science and Engineering Department PhD Degree Requirements

For students interested in earning a PhD from the CSE Department, please see the College of Engineering, Design and Computing Graduate Admissions website for admission requirements and deadlines.

Both PhD programs require a total of minimum of 30-credits of graduate level coursework and 30 hours of PhD dissertation.

Required Course Work

Students are required to complete a total of 30 credit hours of graduate level coursework satisfying the following minimum requirements.

CSIS PhD Course Work:

- Up to 6 credit hours of 7000-level independent study under supervision of a CSE faculty research advisor is allowed/recommended

EAS PhD Course Work:

- Three graduate courses from a secondary area
- Two semesters of Engineering Seminar (o.5 credits/semester will not be counted towards the 30 hours required coursework)
- One (3 credits) of 7000-level Independent Study under supervision of a CSE faculty research advisor is allowed/recommended

Your program plan must be made in consultation and approval of your research advisor.

Students are responsible for completing all requirements towards graduation. Students are expected to work closely with their CSE research advisor to verify satisfactory progress towards their doctoral degree. Your major CSE research advisor must be a full-time graduate faculty member of the CSE department. eligible All degree requirements must be met within eight (8) years of matriculation.

Preliminary Exams

Students are required to select three out of four core knowledge areas listed below and pass a written exam.

- Algorithms
- Computer Architecture
- Operating Systems
- Theory

The preliminary exam is held once per year in January the last week before the start of spring semester classes. Architecture and Operating Systems will be held on Thursday at 10:00 and 12:00 respectively and Algorithms and Theory will be held on Friday at 10:00 and 12:00 respectively. Students must sign up for the exam by December 5th of the previous year. Students may take one, two, or all three exams within the first year of their admission and must successfully complete all three areas before or during the second year of program. Students may repeat an exam area once. A guide for the exam is available on the CSE department website.

Comprehensive Exam

The PhD Comprehensive Exam is intended to test student's capability to complete, with guidance, key research in computer science. Performance on the exam should reflect the students' knowledge of relevant literature, current research within the scope of his/her area of research focus, and a plan to

conduct research toward the goal of defining, implementing, and completing a PhD research dissertation in computer science. The Comprehensive Exam must be taken upon completion of student's coursework and Preliminary Exam, and completed within three years of admission to the PhD program (at most 10 credits of dissertation hours may be completed).

The request for examination and Application for Candidacy is due a minimum of **2 weeks** prior to the date of the exam. A minimum committee of three CSE Full time Graduate faculty (chair of the committee may not be advisor) is required.

For the full Comprehensive Exam Guide, please visit the CSE website; cse.ucdenver.edu.

Proposal Defense

The PhD Proposal Defense is intended to test student's ability to perform, present and discuss his/her research. This exam has both a written and an oral component. Students are expected to describe their research including literature review, problem definition, and methodologies/models being used to study an original investigation of a significant and novel problem in computer science toward fulfilling the doctoral dissertation.

The Proposal Defense must be completed no later than the semester before graduation. Students must obtain their advisor's recommendation with a minimum of 75% of their dissertation completed. A committee of five members (the same as the final defense committee) is required: a minimum of 3 CSE Full time Graduate faculty (chair of the committee may not be advisor) and a minimum of one external faculty.

The request for examination is due a minimum of **2 weeks** prior to the date of the exam.

PhD Defense

At the completion of graduate studies, students must prepare, defend and submit a written thesis describing the results of an original investigation contributing to the state-of-the-art in the field.

A minimum committee of five is required: a minimum of 3 CSE Full time Graduate faculty (chair of the committee may not be advisor) and a minimum of one external faculty. For CSIS PhD, one member must be from IS (can be the external member).

The request for examination is due a minimum of **2 weeks** prior to the date of the exam and must adhere to Graduate School deadlines.

Transfer Credits

Transfer credits will be considered after successful completion of preliminary exam. With certain limitations, up to 21 relevant graduate coursework may be transferred with the recommendation of advisor and approval of the program director.

Concurrent MS Degree

PhD students in the Department of Computer Science and Engineering may apply to receive their master of science degree while pursuing their PhD. Students pursuing this option are required to complete all master of science course-only requirements (plan III) and then satisfy the final master of science program assessment requirement by either 1.) passing their computer science PhD preliminary exam, 2.) produce a publication during their PhD studies, 3.) complete a written report at the completion of a PhD-level Independent Study, or 4.) complete the final MS assessment if none of the above applies.

Contact Information:

Please contact the CSE Department for information, appointments, and inquiries:

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