Computer Science Doctorate

Department Information

- **Department Web Site:**
  ndsu.edu/cs/ (http://ndsu.edu/cs/)
- **Application Deadline:**
  Fall semester- February 1; Spring semester-September 1
- **Credential Offered:**
  Ph.D.
- **Test Requirement:**
  GRE recommended for students seeking an assistantship.
- **English Proficiency Requirements:**
  TOEFL ibt 79; IELTS 6.5; Duolingo 105
- **Program Overview:**
  ndsu.edu/programs/graduate/computer-science (http://ndsu.edu/programs/graduate/computer-science/)

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Code	Title	Credits
Bachelor's to Doctor of Philosophy in Computer Science degree requirements		**90**
Core Courses: (or their equivalent in transfer or examination credits)		15
CSCI 713	Software Development Processes	
CSCI 724	Survey of Artificial Intelligence	
CSCI 741	Algorithm Analysis	
CSCI 765	Introduction to Database Systems	
CSCI 790	Graduate Seminar	
8-13 additional courses selected in consultation with your adviser.		24-39
CSCI 899	Doctoral Dissertation	36-51

Code	Title	Credits
Master's to Doctor of Philosophy in Computer Science degree requirements		**60**
Core Courses: (or their equivalent in transfer or examination credits)		15
CSCI 713	Software Development Processes	
CSCI 724	Survey of Artificial Intelligence	
CSCI 741	Algorithm Analysis	
CSCI 765	Introduction to Database Systems	
CSCI 790	Graduate Seminar	
3-5 additional courses selected in consultation with your adviser.		9-15
CSCI 899	Doctoral Dissertation	30-36

Code	Title	Credits
Doctor of Philosophy + Master of Science in Computer Science degree requirements		**90**
Core Courses: (or their equivalent in transfer or examination credits)		15
CSCI 713	Software Development Processes	
CSCI 724	Survey of Artificial Intelligence	
CSCI 741	Algorithm Analysis	
CSCI 765	Introduction to Database Systems	
CSCI 790	Graduate Seminar	

8-13 additional courses selected in consultation with your adviser.		24-39
CSCI 899	Doctoral Dissertation	36-51

Additional requirements for the Bachelor's to Doctor of Philosophy and Master's to Doctor of Philosophy options:

- Research advisor should be selected by the second semester at NDSU.
- A minimum of 15 didactic credits numbered 700 -789 or 800-898,
  - at least 9 are not included in the Computer Science core courses listed above
  - none of these can be individual study course credits.
- A maximum of two courses (6 credits) at the 600 level; Field Experience/Practicum credits do not count.
- Students who took core courses as part of their M.S. studies at NDSU should discuss replacement courses with the advisor and the Graduate program coordinator.
- Courses on topics that are typically considered to be part of computer science, such as AI, machine learning, software engineering, etc. should be taken in the Computer Science Department. Outside courses (courses without a CSCI prefix) need prior approval by the graduate coordinator and the research advisor and should only be approved if a course with similar content is not already offered by our department. A syllabus might need to be submitted by the student wanting to take a particular course from another department to ensure adequate coverage of computer science content.
- All course work must be approved by the student's advisor, supervisory committee, and graduate coordinator through the plan of study.
- A Plan of Study listing coursework and supervisory committee members should be completed by the end of the second semester at NDSU.
- 30-51 credit hours of research – The Ph.D. requires a research contribution to be made under the supervision of one of the Computer Science department's graduate faculty members.
- Students who applied the listed core courses towards a M.S. degree obtained from NDSU can take up to 42 research credits.
- Satisfactory completion of the comprehensive examination at the Ph.D. level (written exam based on the core courses).
- Research proposal presentation and preliminary oral examination (Qualifying Exam) should be completed by the fourth semester at NDSU after passing the comprehensive exam.
- Successful completion of the final defense of the dissertation.

Some additional information regarding the course work:

- A student holding a Master of Science degree from an educational institution of recognized standing may use:
  - 30 credits previously completed toward the 90 total credits required for the doctoral degree if the M.S. degree is in Computer Science **OR**
  - Up to 9 credits previously earned graduate level courses with a grade of B or better may be used toward the 90 total credits for the doctoral degree if the M.S. degree is not in Computer Science.
- The 90 credits (including any credits transferred) must be computing-related with at least 39 credits involving significant graduate level computer science material, which are offered by a computer science department.
- The 90 credits may include a maximum of 6 credits of non-didactic courses (independent studies or seminars). Seminars are limited to 3 of those credits.

Additional requirements for the Doctor of Philosophy + Master of Science option (Effective starting Fall 2024):

- Ph.D. students in this option will earn a Master of Science degree after they pass the preliminary oral examination (Qualifying Exam).
- Students will need to submit a Ph.D. Plan of Study indicating "Ph.D. + Master's" as the degree.
- Before a student can apply to take the preliminary oral examination (Qualifying Exam), they must have
- passed the comprehensive exam.
- completed 30 credits, of which 21 credits need to be didactic credits at the graduate level at NDSU.
- submitted a paper as first author to a high-quality journal or conference on a topic related to their Ph.D. dissertation.
- After students have passed the preliminary examination, they must complete the Graduate School Graduation Application (https://powerforms.docusign.net/71b00c0e-af21-4473-bb23-cdbd85983676/?env=na3&acct=1ceb9a57-b6a3-4df7-b655-d64cf8f1c2d7&accountId=1ceb9a57-b6a3-4df7-b655-d64cf8f1c2d7) in order for their M.S. degree to be posted to their academic record.
- Students will be eligible to participate in commencement of their M.S. degree the term they pass the preliminary oral examination (Qualifying Exam).
- Research advisor should be selected by the second semester at NDSU.
- A minimum of 15 didactic credits numbered 700 -789 or 800-898,
  - at least 9 are not included in the Computer Science core courses listed above
  - none of these can be individual study course credits.
- A maximum of two courses (6 credits) at the 600 level; Field Experience/Practicum credits do not count.
- All course work must be approved by the student's advisor, supervisory committee, and graduate coordinator through the plan of study.
- A Plan of Study listing coursework and supervisory committee members should be completed by the end of the second semester at NDSU.

- 30-51 credit hours of research – The Ph.D. requires a research contribution to be made under the supervision of one of the Computer Science department's graduate faculty members.
- Satisfactory completion of the comprehensive examination at the Ph.D. level (written exam based on the core courses).
- Successful completion of the final defense of the dissertation.

Admission and Application Requirements

- Graduate School admission and application requirements are found on the Admission Information (http://catalog.ndsu.edu/graduate/admission-information/) page.
- In addition, this program requires applicants to have a previous degree in computer science.
  - In some cases, students with a degree in a closely related area may be considered, provided the course work includes exposure to the following skills: ability to program in one or more modern, commonly used high-level languages (such as Java or C++); and experience in using data structures such as linked lists and binary trees.
  - Students with only a bachelor's degree should have substantial computer science experience, whether acquired through course work or professional experience.
  - Applicants with a bachelor's degree only should meet a minimum GPA of 3.25 in previous coursework.
- GRE score is not required for admission. However, a GRE score above the median (50th percentile) for the quantitative reasoning portion is strongly recommended for gaining priority in assistantships.\
- This program requires applicants to submit evidence of their potential for scholarship and independent research at the Ph.D. level.