Computer Science

cs.ndsu.edu/

Department Head: Dr. Brian Slator
Graduate Coordinator: Dr. Anne Denton
Graduate Committee Email: gradinfo@cs.ndsu.edu
Department Location: 258 QBB (formerly IACC)
Telephone Number: (701) 231-8562
Degrees Offered: Ph.D., M.S., M.S.E., Graduate Certificates
Application Deadline: March 1 for Fall; October 1 for Spring; No Summer Applications
Test Requirements: GRE
English Proficiency TOEFL ibT 79
Requirements: IELTS 6.5

Program Description

The Department of Computer Science and Operations Research offers the M.S. and Ph.D. in Computer Science. Graduate course work in Operations Research is offered and may be used to provide an operations research concentration to either program. For additional information, please contact the department chair (701) 231-6124 .

Admissions Requirements

The following minimum qualifications are required of all students seeking an advanced degree:

Master of Science

- The applicant must have a baccalaureate degree from an educational institution of recognized standing.
- The applicant must show, by a combination of educational background, academic performance, and work experience, the potential to succeed in advanced study and research in computer science. Minimum preparation usually includes the ability to program in one or more modern, commonly used high-level languages; at least one semester of calculus; and experience in using data structures such as linked lists and binary trees. Minimum preparation for unconditional admission to the master's program would normally include courses in computer science principles and theory equivalent to the NDSU courses

CSCI 160	Computer Science I	4
CSCI 161	Computer Science II	4
CSCI 122	Visual BASIC	3
CSCI 336	Theoretical Computer Science II	3
CSCI 372	Comparative Programming Languages	3
CSCI 373	Assembly Programming	3

- The applicant for the M.S. must have a cumulative grade point average (GPA) in all previous courses of at least 3.0 (out of 4.0) or equivalent to attain full standing.
- International students are welcome. They must submit a TOEFL score of at least 550 (paper-based), 213 (computer-based) or 79 (internet-based) to be considered for admission. Eligibility for a teaching or tutoring assistantship requires passing the test of spoken English (TSE) and achieving a TOEFL score of at least 600 (paper-based), 250 (computer-based) or 100 (internet-based).

Doctor of Philosophy

The applicant must have a four year or longer bachelor's degree, or a master's degree in computer science. In some cases, students with a degree in a closely related area may be considered provided the coursework includes exposure to the skills listed under M.S. above. Students with only a bachelor's degree should have substantial computer science background whether acquired through coursework or professional experience.

Admission to the program is competitive, and requirements for admission to this program are more rigorous than for admission to the M.S. program. In order to be considered seriously, an applicant must normally have the equivalent of at least a 3.25 GPA (on a 4-point scale). The admissions committee will look at the applicant's overall academic record, as well as any relevant employment and professional experience. Of particular importance is evidence of the applicant's potential for scholarship and independent research at the Ph.D. level. International students are welcome. TOEFL exam requirements are the same as for the MS degree.

Financial Assistance

Teaching assistantships are available to selected graduate students. Teaching one section of a lower division service course requires 10 hours of work per week and qualifies the student for a waiver of graduate tuition. Other assistantships that provide a stipend and tuition waiver include research assistantships, which involve assisting faculty with their research, and graduate service assistantships, which involve tutoring, grading or computer-related work with faculty members or organizations on campus. Related previous experience increases the likelihood of a teaching or tutoring assistantship being awarded. For all assistantships, a student's chances are greater after he/she has been at NDSU one or two semesters.

The department offers a tuition waiver only to students who are awarded an assistantship. There is a scholarship program, that includes a tuition waiver, administered by the Dean of the Graduate School. Students should contact the Graduate School office for application forms.

An application for assistantship requires completing an online application sent to the department. Applications for fall semester received by April 15 will be given full consideration.

Master of Science

Semester core courses (required of all students):		
CSCI 713	Software Development Processes	3
CSCI 724	Survey of Artificial Intelligence	3
CSCI 741	Algorithm Analysis	3
CSCI 765	Introduction To Database Systems	3
CSCI 790	Graduate Seminar	2
Thesis Option (32 total credits)		
Additional graduate coursework		8-12
CSCI 798	Master's Thesis	6-10
Comprehensive Study Option (32 total credits)		
Additional Graduate Coursework		14-16
CSCI 797	Master's Paper	2-4

- Research adviser should be selected by the fourth semester of attendance at NDSU

- Comprehensive Examination (on the core courses) completed by the end of the fourth semester
- Final defense
- A maximum of 9 semester credits may be transferred into the program. There may be a maximum of 6 credits of independent study.
- All course work must be approved by the student's adviser, Supervisory Committee, department chair, and graduate dean through the plan of study.

Doctor of Philosophy

- 90 credits with up to 30 included from the M.S. degree
- 30 credits of research credit
- Research adviser should be selected by the fourth semester at NDSU
- Qualifying examination (written based on the M.S. core courses)
- Research proposal presentation and defense
- Dissertation
- Final defense

There are some additional requirements on the course work:

- The 90 credits must include three sequences of two courses each at the graduate level in computer science.
- A student holding a M.S. degree may use 30 credits previously completed toward the 90 total credits required for the doctoral degree. **OR**
- Up to 9 credits previously earned with a grade of B or better may be used toward the 90 total credits for the doctoral degree.
- The 90 credits (including any credits transferred) must be computing-related with at least 45 credits involving significant graduate level computer science material. Generally, these credits would be offered by a computer science department.
- The 90 credits may include a maximum of 15 credits of non-didactic courses (independent studies or seminars). Seminars are limited to four of those credits.
- The student's advisory committee, the department chair, and the graduate dean all must approve the course work on the plan of study.

Anne Denton, Ph.D.
University of Mainz, 1996
Research Interests: Data Mining, Bioinformatics, Scientific Informatics, Databases, Geospatial Data, Cloud Computing

Hyunsook Do, Ph.D.
University of Nebraska, 2007
Research Interests: Software Engineering, Software Testing, Maintenance, and Empirical Methodologies.

Wei Jin, Ph.D.
State University of New York at Buffalo, 2008
Research Interests: Data Mining and Knowledge Discovery (particularly text and web mining), Information Retrieval and Extraction, Machine Learning, and Bioinformatics

Dean Knudson, Ph.D.
Northwestern University, 1972
Research Interests: Software Engineering, International Capstone Programs, University/Industry Relationships

Jun Kong, Ph.D.
University of Texas, Dallas, 2005
Research Interests: Human Computer Interaction, Mobile Computing, Software Engineering

Juan (Jen) Li, Ph.D.
University of British Columbia, 2008
Research Interests: Large-scale Distributed System (including P2P and Cloud Computing, Distributed Search, Routing Algorithms); Semantic Web Technologies; Social Networks; Information Retrieval and Knowledge Discovery

Simone Ludwig, Ph.D.
Brunel University, 2004
Research Interests: Swarm Intelligence, Evolutionary Computation, Fuzzy Reasoning, Service-oriented Computing, and Cloud Computing

Kenneth Magel, Ph.D.
Brown University, 1977
Research Interests: Software Engineering, Human-Computer Interfaces, Software Complexity, and Software Design

Kendall Nygard, Ph.D.
Virginia Polytechnic Institute and State University, 1978
Research Interests: Data Science, Optimization Modeling, Smart Grid, Sensor Networks, Agents, Artificial Intelligence

William Perrizo, Ph.D.
University of Minnesota, 1972
Research Interests: Data Mining, Distributed Database Systems, Centralized Database Systems, Data Security, Bioinformatics

Saeed Salem, Ph.D.
Rensselaer Polytechnic Institute, 2009
Research Interests: Bio-Informatics and Data Mining

Brian Slator, Ph.D.
New Mexico State University, 1988
Research Interests: Artificial Intelligence, Educational Media

Vasant Ubhaya, Ph.D.
University of California-Berkeley, 1971
Research Interests: Algorithm Analysis, Approximation and Optimization

Gursimran Walia, Ph.D.
Mississippi State University, 2009
Research Interests: Empirical Software Engineering, Software Errors; Software Inspections and Software Quality Improvement, Requirements Engineering, Human Cognition in Software Engineering, Managing and Estimating Software Quality, Information Assurance, Software Engineering for Computer Security.

Changhui Yan, Ph.D.
Iowa State University, 2005
Research Interests: Bioinformatics, Computational Biology, Machine Learning and Data Mining

Emeritus

Robert Gammill, Ph.D.
Massachusetts Institute of Technology