COMPUTER SCIENCE

The foundation of information technology, IS&T's Computer Science department has been a member of UNO for more than three decades. This ever-changing field not only educates computer scientists, but prepares them for the challenges of tomorrow and evolves rapidly with today's technology advances.

COMPUTER SCIENCE AT IS&T

As the first Nebraska university to receive computer science accreditation from the Computing Accreditation Commission of ABET, our faculty are continuously learning to ensure their lessons are on top of this ever-changing industry. Our graduate students receive the most up-to-date instruction in the Peter Kiewit Institute, a state-of-the-art facility in the heart of Omaha.

Your degree experience will boast top-notch computer science faculty and an international culture that is unparalleled.

JOB OUTLOOK

Our world runs on advancing technologies that computer scientists develop. According to the Bureau of Labor Statistics, CS positions are some of the most coveted and rising positions in the market today.

Example Job Titles

- Lead Programmer
- Software Developer
- Information Scientist
- Web Developer/Webmaster
- Chief Information Officer
- Video Game Programmer
- Software Engineer

WHY A GRADUATE DEGREE AT IS&T

Master's education is the fastest-growing and largest segment of graduate education. Many students and professionals recognize that in order to be competitive in the marketplace, additional skills and education are necessary. They are right.

According to the U.S. Bureau of Labor Statistics, employment in occupations that typically require a master's degree will increase by 18 percent between 2008 and 2018, and the potential income gain from achieving a master's degree is substantial. On average, employers will pay 15 percent more to those who hold a master's degree than those with a bachelor's degree. Master's degrees are key to future employment and career advancement.

Benefits

- Advance your career
- Gain credentials
- Hone professional skills
- Earn a higher salary (15 percent more than someone with a bachelor's degree)
- Change careers
- Increase leadership abilities

Programs Offered

- MS Computer Science
- Graduate Certificates
- Integrated Undergraduate/Graduate

CURRICULUM

The Master's in Computer Science requires completion of a minimum **30 to 33 credit hours** which include the following:

Foundation Courses
(required if not taken as an undergraduate)

- CIST 1400 - Intro to Computer Science I
- CSCI 1620 - Intro to Computer Science II
- CSCI 3320 - Data Structures OR
  CSCI 8010 - Foundations
  of Computer Science
- CSCI 3710 - Intro to Digital Design
- CSCI 4350 - Computer Architecture
- CSCI 4500 - Operating Systems
- CSCI 4220 - Programming Languages
- CSCI 4830 - Intro to Software Engineering

Core Courses (9 hours with concentration, thesis or project; 15 hours with no concentration)
- CSCI 8000 - Advanced Concepts in Programming Languages
- CSCI 8080 - Design and Analysis of Algorithms
- CSCI 8150 - Advanced Computer Architecture
- CSCI 8530 - Advanced Operating Systems
- CSCI 8700 - Software Specification and Design

Artificial Intelligence Concentration (12 hours)
Required Courses (3 hours):
- CSCI 8456 - Introduction to Artificial Intelligence
  Elective Courses (9 hours; choose three):
- CSCI 8110 - Advanced Topics in Artificial Intelligence
- CSCI 8300 - Image Processing and Computer Vision
- CSCI 8450 - Adv. Topics in Natural Language Understanding
- CSCI 8476 - Pattern Recognition
- CSCI/MATH 8480 - Multi-agent Systems and Game Theory
- CSCI 8486 - Algorithms for Robotics

Database and Knowledge Engineering (12 hours)
Required Courses (9 hours):
- CSCI 8340 - Database Management Systems II
- CSCI 8360 - Information Storage and Retrieval
- CSCI 8856 - Database Management Systems
  Elective Courses (3 hours, choose one):
- CSCI 8040 - Large Scale Network Analysis Algorithms
- CSCI 8350 - Data Warehousing and Data Mining
- CSCI 8390 - Advanced Topics in Database Management Systems
- CSCI 8876 - Database Search and Pattern Discovery in Bioinformatics

Dependable Computing Systems (12 hours)
Required Courses (6 hours):
- CSCI 8430 - Trusted System Design, Analysis and Development
- CSCI/CYBR 8410 - Distributed Systems and Network Security
  Elective Courses (6 hours, choose two):
- CSCI 8420 - Software Assurance
- CSCI/CYBR 8440 - Secure Systems Engineering
- CSCI 8450 - Adv. Topics in Natural Language Understanding
- CSCI 8610 - Fault Tolerant Distributed Systems
- CSCI 8760 - Formal Methods in Software Engineering

Exit Requirements (3 or 6 hours)
- CSCI 8990 – Thesis (6 hours)
- CSCI 8960 – Thesis Equivalent Project (6 hours)
- CSCI 8910 – Master of Science Capstone (3 hours)

Network Technologies Concentration (12 hours)
Required Courses (3 hours):
- CSCI 8210 - Advanced Communication Networks
  Elective Courses (9 hours, choose three):
- CSCI 8040 - Large Scale Network Analysis Algorithms
- CSCI/MATH 8156 - Graph Theory & Applications
- CSCI/CYBR 8410 - Distributed System & Network Security
- CSCI 8610 - Fault Tolerant Distributed Systems
- CSCI 8620 - Mobile Computing & Wireless Networks

Software Engineering Concentration (12 hours)
Required Core Course:
- CSCI 8700 - Software Specification & Design
  Elective Courses (12 hours, choose four):
- CSCI 8256 - Human Computer Interaction
- CSCI 8266 - User Interface Design & Development
- CSCI/CYBR 8420 - Software Assurance
- CSCI 8430 - Trusted System Design, Analysis & Development
- CSCI 8710 - Modern Software Development Methodologies
- CSCI 8760 - Formal Methods in Software Engineering
- CSCI 8790 - Adv. Topics in Software Engineering

Systems Concentration (12 hours)
Required Core Course:
- CSCI 8150 - Advanced Computer Architecture
- CSCI 8530 - Advanced Operating Systems
  Required Courses (9 hours, choose three):
- CSCI 8170 - VLSI Testing
- CSCI 8160 - Introduction to VLSI Design
- CSCI 8446 - Introduction to Parallel Computing
- CSCI 8610 - Fault Tolerant Distributed Systems
- CSCI 8706 - Compiler Construction
  Elective Courses (3 hours, choose one):
- CSCI 8626 - Computer Graphics
- CSCI 8430 - Trusted System Design, Analysis, and Development
- CSCI 8040 - Large Scaled Network Analysis Algorithms
- CSCI 8620 - Mobile Computing and Wireless Networks
- CSCI 8156 - Graph Theory & Applications
- CSCI 8450 - Advanced Topics in Natural Language Understanding
- CSCI 8410 - Distributed Systems and Network Security
- CSCI 8440 - Secure Systems Engineering
- Any course not taken listed under required courses

Note: At most two graduate courses ending in 6 (8xx6) will be counted towards degree requirements.