Master of Science in Computer Science [Dept. of Computer Science, College of Information Science & Technology]

Vision Statement
The Master of Science in Computer Science allows students to develop better planning, management and technical abilities necessary for leading a thriving organization in today's complex digital world. At the Peter Kiewit Institute, students not only receive degrees, they graduate with industry experience, a pocket full of business contacts, and lifelong friends.

Program Contact Information:
Dr. Haifeng Guo, Graduate Program Chair (GPC)
Peter Kiewit Institute (PKI) 282
402-554-2852
haifengguo@unomaha.edu

Ms. Carla Frakes, Advisor
Peter Kiewit Institute (PKI) 176C
402-554-2073
cfrakes@unomaha.edu

Program Website
http://www.cs.unomaha.edu/graduate/index.html

Application Deadlines:
- Fall: July 1
- Spring: November 1
- Summer: March 1

If you are applying for department financial aid, the deadlines are as follows:
- Fall: February 1
- Spring: September 1
- Summer: N/A

Application Requirements:
- Online Application
- One official copy of transcripts for ALL institutions previously attended
- Application Fee
- If English is not the language of nurture, official test scores from the TOEFL, IELTS, or PTE exam are required
  - 500 for the written TOEFL
  - 173 for the computer-based TOEFL
  - 61 for the internet-based TOEFL
  - 5.5 on the IELTS
  - 44 on the PTE
- Minimum GPA of at least 3.0 in undergraduate courses related to proposed major
Program-Specific Requirements:

- Entrance Exam is required
  - Applicants must have official results of the general Graduate Record Exam (GRE) sent to the university by ETS. For international applicants, official TOEFL results are also required. These scores must be valid during the time the application is being processed.
  - Recommended GRE scores are at least 740 on the Quantitative portion and 400 on the Verbal portion (158 in the new quantitative reasoning section and 146 in the new verbal reasoning section, for tests taken after August 1, 2011)
  - The GRE requirement is waived IF:
    - The student is a graduate of the University of Nebraska system with a degree in Computer Science and a GPA of 3.5 or more; or
    - The student has earned an MS or more advanced degree in a closely related discipline
  - For international applicants, official TOEFL results are also required. These scores must be valid during the time the application is being processed.
    - Minimum 550 on the written TOEFL; 213 for the computer-based; 79 for the internet-based; 6.5 on the IELTS

- 2 Letters of Recommendation
- Professional Resume

- Undergraduate Deficiencies: The curriculum for the MS in Computer Science requires a basic knowledge of computer fundamentals including mathematics, programming, data structures, computer architecture and operating systems. Successful completion of these courses with a “B” or better (3.0 on a 4.0 scale) in each course is required to become an unconditionally admitted student.
  - Programming:
    - CIST 1400 Introduction to Computer Programming (3)
    - CSCI 1620 Introduction to Computer Science II (3)
  - Data Structures and Foundation
    - CSCI 8010 Foundation of Computer Sciences (3)
  - Computer Organization and Architecture
    - CSCI 3710 Computer Organization and Assembly Language (3)
    - CSCI 4350 Computer Architecture (3)
  - Operating Systems
    - CSCI 4500 Operating Systems (3)
  - Programming Languages and Compilers
    - CSCI 4220 Programming Languages (3)
    - CSCI 4830 Introduction to Software Engineering (3)

[MS in Computer Science Degree Requirements]

**MS-CSCI Required Courses (15 hours):**
The five courses listed below provide overall breadth in the areas of languages, algorithms, architecture, operating systems, and software engineering. Students selecting the coursework, thesis, or project option with no area of concentration must take all five required courses (note that some required courses are needed as prerequisites for certain areas of concentration).

- CSCI 8000 Advanced Concepts in Programming Languages (3) (offered in the Fall semester)
- CSCI 8080 Design and Analysis of Algorithms (3) (offered in the Spring)
- CSCI 8150 Advanced Computer Architecture (3) (offered in the Spring)
- CSCI 8530 Advanced Operating Systems (3) (offered in the Fall)
- CSCI 8700 Software Specification and Design (3) (offered in the Fall)

**MS-CSCI Electives (9 hours, Thesis or Project option; 15 hours, Coursework option):**
To complete the thesis or Project options, a student must complete any three additional graduate-level computer science courses. The coursework option requires completion of any five additional graduate-level courses in computer science.

**MS-CSCI Concentrations: (9-15 hours depending on which option is selected coursework, project or thesis)**

### Artificial Intelligence
Students must take any 3 of the 5 Required Courses listed above (9 hours).

**Core Courses (9 hours):**
- CSCI 8300 Image Processing & Computer Vision (offered in the Fall semester in odd-numbered years)
- CSCI 8456 Introduction to Artificial Intelligence (offered in the Fall)
- CSCI/MATH 8480 Multi-Agent Systems & Game Theory (offered in the Spring)

**Elective Courses (6 hours; choose any two):**
- CSCI 8476 Pattern Recognition (offered in the Fall semester in even-numbered years)
- CSCI 8486 Introduction to Multi-Agent & Multi-Robot Systems (offered in the Fall in odd-numbered years)
- Any graduate-level course in Computer Science

### Database & Knowledge Engineering
Students must take any 3 of the 5 Required Courses listed above (9 hours).

**Core Courses (9 hours)**
- CSCI 8340 Database Management Systems II (offered in the Fall in odd-numbered years)
- Choose two from the following:
  - CSCI 8350 Data Warehousing & Data Mining (offered in the Spring in odd-numbered years)
  - CSCI 8360 Information Storage & Retrieval (offered in the Fall in even-numbered years)
  - CSCI 8390 Advanced Topics in Database Management Systems (offered in the Spring in even-numbered years)

**Elective Courses (6 hours; choose any two):**
- CSCI 8876 Database Search & Pattern Discovery in Bioinformatics (offered in the Spring)
- Any graduate-level course in Computer Science

### Information Assurance
Students must take any 3 of the 5 Required Courses listed above (9 hours).

**Core Courses (9 hours; choose any three):**
- CSCI 8410 Distributed System & Network Security (offered in the Spring in even-numbered years)
- CSCI 8430 Trusted System Design, Analysis & Development (offered in the Fall in even-numbered years)
• CSCI 8610 Fault Tolerant Distributed Systems (offered in the Spring in odd-numbered years)
• CSCI 8760 Formal Methods & High Assurance Software Engineering (offered in the Spring in odd-numbered years)

Electives (6 hours; choose any two):
• ISQA 8560 Information Warfare & Security (offered in the Spring in odd-numbered years)
• ISQA 8570 Information Security, Policy & Ethics (offered in the Spring in even-numbered years)
• Any graduate-level course in Computer Science

Network Technologies
Students must take any 3 of the 5 Required Courses listed above (9 hours).

Core Courses (9 hours; choose any three):
• CSCI 8210 Advanced Communication Networks (offered in the Fall in odd-numbered years)
• CSCI 8410 Distributed Systems & Network Security (offered in the Spring in even-numbered years)
• CSCI 8610 Fault Tolerant Distributed Systems (offered in the Spring in odd-numbered years)
• CSCI 8620 Mobile Computing & Wireless Networks (offered in the Fall in even-numbered years)
• CSCI 8760 Formal Methods & High Assurance Software Engineering (offered in the Spring in odd-numbered years)

Electives (6 hours; choose any two):
• CSCI 8156 Graph Theory (offered in the Spring)
• Any graduate-level course in Computer Science

Software Engineering
Students must take CSCI 8700 Software Specification & Design (3). Choose two from the remaining Required Courses listed above (9 hours total).

Core Courses (9 hours; choose any three):
• CSCI 8430 Trusted System Design, Analysis & Development (offered in the Fall in even-numbered years)
• CSCI 8710 Modern Software Development Methodologies (offered in the Fall in odd-numbered years)
• CSCI 8760 Formal Methods & High Assurance Software Engineering (offered in the Spring in odd-numbered years)
• CSCI 8790 Advanced Topics in Software Engineering (offered in the Spring in even-numbered years)

Electives (6 hours; choose any two):
• ISQA 8210 Management of Software Development (offered in the Fall and Spring)
• Any graduate-level course in Computer Science

Systems
Students must take CSCI 8150 Advanced Computer Architecture and CSCI 8530 Advanced Operating Systems (6 hours). Choose one from the remaining Required Courses listed above (9 hours total)

Core Courses (9 hours):
• CSCI 8170 VLSI Design & Testing (offered in the Spring in odd-numbered years)
• CSCI 8446 Introduction to Parallel Computing (offered in the Fall)
- CSCI 8610 Fault Tolerant Distributed Systems (offered in the Spring in odd-numbered years)

Electives (6 hours; choose any two):
- CSCI 8626 Computer Graphics (offered in the Spring)
- Any graduate-level course in Computer Science

**MS-CSCI Exit Requirements:**
- Thesis Option
  - CSCI 8990 Thesis (6)
- Project Option
  - CSCI 8960 Project (6)
- Coursework Option
  - CSCI 8910 Capstone (3)
  - The Capstone course should be taken only after students have completed at least **75%** of course requirements for the major. **Those who have not made sufficient progress toward degree completion are prohibited from enrolling.**

**Total:**
- Thesis Option: 30 hours
- Project Option: 30 hours
- Coursework Option: 33 hours

**Other Program-Related Information:**
The Department of Computer Science offers an Integrated Undergraduate-Graduate Program that is a 146-149 hour undergraduate-graduate program. It allows eligible students to work toward the master’s degree in computer science while completing their undergraduate degree. For further information about this program please contact the Department of Computer Science at 402-554-2423.

Graduate Assistantships
- Complete [this form](#) to apply for a graduate assistantship.

Advantage Scholarship for Non-Nebraska Residents ONLY:
- Tuition scholarships for an amount up to the difference between resident and non-resident tuition; click [here](#) to apply.
- Multiple awards available
- Application submission deadlines:
  - Fall: April 15
  - Spring: November 15
- Awarded to students who are not residents of Nebraska
- These awards are renewable
  - Must maintain a cumulative GPA of 3.00 or better
- **Submitting an application does not guarantee an award.**
- If an application is submitted after a deadline, it will be added to a wait-list. If funds become available, the department will notify the applicant.