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Real-world thinking.

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Minnesota State University
Mankato

COMPUTER SCIENCE *College of Science, Engineering & Technology*

BACHELOR OF SCIENCE WITH A COMPUTER SCIENCE MAJOR

Computer science as a field spans a wide range of topics from theoretical and algorithmic foundations to cutting-edge developments in operating system design and implementation, machine learning, robotics and intelligent systems.

The Computer Science program at Minnesota State University, Mankato emphasizes project-based learning for meaningful, engaging experiences that prepare students for interesting industry careers or continued learning in graduate school. Lower-division courses follow the common computing core that is shared between Computer Science, Computer Information Technology, Management Information Systems, Computer Engineering, and Cognitive Science, along with courses that will earn a minor in mathematics. This allows undergraduate students two years to choose which computing program is best for them. The upper-division CS program is project-based. Students work on a series of four significant semester-long projects that come from industry challenges or research projects. Students work on teams that may include students from any upper-division term to complete the projects and have the option of doing a senior thesis prior to graduation.

While doing projects, students develop their skills in computational and algorithmic thinking and design work alongside skills in teamwork, time management, leadership, and communication. Current projects connected to industry sponsors include updating medical applications for smart phones, RF antennae device drivers, and building machine learning tools.

CAREER OPPORTUNITIES AVAILABLE FOR STUDENTS COMPLETING THIS DEGREE

Graduates with degrees in computer science can look forward to interesting careers that can benefit society in many ways. Some job titles are Data Scientist, Machine Learning Expert, Data Engineer, Software Engineer, Database Developer, Cloud Computing Developer, Roboticist, Network Architect, and Software Architect.

A HIGH QUALITY DEGREE

Faculty credentials

Our computer science faculty members have extensive educational and industrial experience. All tenured and tenure-track faculty have a terminal (PhD) degree. Faculty members have worked in industry as software architects, senior systems researchers, chief technologists and chief executives of Silicon Valley companies, and lead strategists at Fortune 500 companies. Faculty have active research programs with external funding that involve student researchers who present at local and national conferences.

Pedagogical Foundations

The computer science program is based on our award-winning project-based engineering programs. By learning computer science in the context of projects, students develop their professional skills like teamwork, time management, leadership, and communication along with their technical and problem solving skills.

Facilities

Lower-division classes are typically 25-30 students and upper-division classes have between 12-20 students. Classrooms are structured to support active and collaborative learning. There is a dedicated project room for upper-division teams to work collaboratively on industry-sponsored projects.

Extra-curricular Opportunities

Along with extra-curricular activities available for all Minnesota State Mankato students across a range of athletic, arts, service and pre-professional interests, computer science students can participate in a variety of computing student organizations like ACM, SWE, and NSBE as well as programs that provide project opportunities. Project Maverick hires students to work as consultants on external projects. Student teams participate in a variety of hackathons and MUDAC the midwest undergraduate data analytics competition.

HOW CAN I PREPARE FOR SUCCESS?

Students earning a computer science major also earn a mathematics minor. You should take math, science and programming classes in high school to prepare for the required coursework. Computer science also requires creativity, whether in problem solving or creating new things, like a challenging game or a new type of music. Taking a broad range of courses and learning about things you are passionate about will give you opportunities to apply your computing knowledge in areas that you care about, whether it's biomimetics (robots inspired by how living creatures move), predicting climate change, or computer animation.

FOR MORE INFORMATION PLEASE CONTACT

Department of Computer Information Science

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Phone

507-389-1412
800-627-3529 or 711 (MRS/TTY)

Email

computer.science@mnsu.edu

Website

http://cset.mnsu.edu/cs

You are encouraged to visit the campus.
To arrange for a visit, please call:
Office of Admissions: 507-389-1822
Toll-free: 800-722-0544

SAMPLE FOUR-YEAR CURRICULUM (COMPUTER SCIENCE FOUR YEAR PLAN)

First Year (Fall) *(15-18 credits)*	First Year (Spring) *(15-18 credits)*
CIS 121 Intro to Programming MATH 121 Calculus 1 ENG 101 Composition General Education Course	CIS 122 Data Structures MATH 122 Calculus 2 Science Elective General Education Course
Science electives can be chosen from: BIOL 105, 106, CHEM 201, 202, GEOL 121, 122, PHYS 221, 222+232, 223+233. Choose two from different departments to meet general education requirements.	
Second Year (Fall) *(15-18 credits)*	**Second Year (Spring)** *(15-18 credits)*
CIS 223 Algorithms MATH 280 Discrete Math for CS 1 Science Elective General Education Course	CIS 224 Computer Architecture MATH 247 Linear Algebra CMST 102 or ENG 271W General Education Course
Apply for admission to upper division, project-based computer science major during Second Year!	
Third Year (Fall) *(16 credits)*	**Third Year (Spring)** *(15 credits)*
CS 495 Seminar CS 391W CS Project 1 CS 301 CS Core: Operating Systems CS 302 CS Core: Software Engr & Parallel Computing MATH 354 Probability & Statistics General Education	CS 495 Seminar CS 392W CS Project 2 CS 303 CS Core: Programming Languages CS 304 CS Core: Databases & Info. Security MATH 380 Discrete Math for CS 2 CS Elective
CS Core and CS Elective classes are each 2 credits.	
Fourth Year (Fall) *(15 credits)*	**Fourth Year (Spring)** *(12-15 credits)*
CS 495 Seminar CS 491W CS Capstone Project 1 CS Elective (2) CS Elective (2) CS Elective (2) General Education Course	ECS 495 Seminar CS 492W CS Capstone Project 2 CS Elective (2) CS Elective (2) General Education Course General Education course
**Students earn a math minor while completing the requirements for the computer science degree. CS Electives are in a wide range of computer science topics and broadly relate to: Operating Systems, Programming Languages, Networking & Communication, Algorithms & Computability, Parallel & Distributed Computing, Architecture & Organization, Intelligent Systems, Information Management, Information Assurance & Security, Computational Science, Graphics & Visualization, Human Computer Interaction, Software Engineering, and Platform-based Development*	

For additional information about course requirements, please visit https://cset.mnsu.edu/academic-programs/computer-science/

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MINNESOTA STATE UNIVERSITY MANKATO