# Computer Science and Computer Information Systems

The computer science program recognizes the growing and pervasive use of computers and believes that liberal arts colleges are the correct place to explore the function and use of computers. Such study stimulates students' intellectual development, encourages critical thinking, and teaches analytical evaluation and quantification of observations.

Internships and field experiences allow students to spend a term at a business or industry such as Blue Cross/Blue Shield, Chemical Abstracts, Control Data Corporation, COVIA, CUNA Mutual Insurance Society, Hewlett-Packard, IBM, John Deere Waterloo Operations, NASA Goddard Space Flight Center, and Principal Financial Group.

Wartburg computer science and computer information systems majors use computers on an NT network located near classrooms and have use of them both inside and outside of class. The department also has a computer science "Home Room," which has a group of Linux servers and workstations. Additionally, students have access to a variety of Linux- and Windows-based computer labs.

Computer science program goals:

- Students will develop a coherent and broad-based understanding of the discipline of computer science, including an appreciation for its intellectual depth and for its abstract issues.
- Students will be prepared to apply their knowledge to produce computer solutions to problems large and small.
- Students will confront the ethical and social issues associated with the computing field and be prepared to face the personal ethical challenges of the discipline.
- Students will learn to work and communicate effectively with their peers through group projects and through assignments emphasizing oral and written communication skills.
- Students will be prepared for success in the computing profession or in graduate school in accordance with their personal ability and goals.

## *Major in Computer Science*

14 course credits:
CS 120 Introduction to Computers and Programming
CS 220 Object-Oriented Programming and Introduction to Data Structures
CS 230 Organization of Programming Languages
CS 270 Software Engineering
CS 320 Data Structures and Algorithm Analysis
CS 340 Computer Organization
CS 360 Operating Systems
CS 460 Systems Design Project
CS 461 Perspectives in Computer Science
MA 250 Applied Calculus
MA 303 Discrete Structures
One MA course credit at the 251 level or higher excluding MA 312, MA 371, and
MA 461
Two CS elective course credits
Students meet the requirement for OCAC/ILAC in Computer Science by completing the required number of presentations and information searches.

## *Major in Computer Information Systems*

16 course credits:
AC 121 Principles of Accounting I
AC 122 Principles of Accounting II
BA 345 Principles of Management
BA 361 Operations Management
CS 120 Introduction to Computers and Programming
CA 210 COBOL with Business Applications
CS 220 Object-Oriented Programming and Introduction to Data Structures
CS 250 Systems Analysis
CS 350 Information Resource Management
CS 460 Systems Design Project
CS 461 Perspectives in Computer Science
MA 214 Statistical Methods
One course credit from
- MA 107 Finite Mathematics
- MA 250 Applied Calculus
- MA 251 Foundational Differential Calculus (½)
- MA 252 Foundational Integral Calculus (½)

Two course credits from
- BA 325 Business Communication
- BA 331 Business Law I
- BA 334 Business Finance
- BA 353 Marketing
- BA 438 Organizational Behavior and Management or PSY 223 Human Behavior in Organizations
- BA 371 Internship

One course credit from
- CS 230 Organization of Programming Languages
- CS 240 Assembly Language Programming
- CS 295, 395, 495 Special Topics
- CS 249 Computer Science Seminar
- CS 260 Introduction to Computer Graphics
- CS 270 Software Engineering
- CS 280 Internet Programming
- CS 310 Automata and Formal Languages
- CS 320 Data Structures and Algorithm Analysis
- CS 330 Computer and Data Networks
- CS 340 Computer Organizations
- CS 360 Operating Systems
- CS 371 Internship
- CS 373 Artificial Intelligence

Students meet the requirements for OCAC/ILAC in Computer Information Systems by completing the required number of presentations and information searches.

## *Minor in Computer Science*

6 course credits:
CS 120 Introduction to Computers and Programming
CS 220 Object-Oriented Programming and Introduction to Data Structures
MA 107 Finite Mathematics, MA 250 Applied Calculus, or MA 251 Foundational
Differential Calculus (½), MA 252 Foundational Integral Calculus (½)
Three CS course credits

## *Minor in Management Information Systems*

6 course credits:
BA 345 Principles of Management
CS 120 Introduction to Computers and Programming

CS 210 COBOL with Business Applications
CS 250 Systems Analysis
CS 350 Information Resource Management
CS 460 Systems Design Project