

Computer Science

Program Highlights

- A staff of dedicated computer science faculty, not just cross-over professors from other departments who know a bit about computers.
- The department maintains four computer laboratories exclusively for its own classes.
- Outside of class, experienced students can participate on one of our competitive programming teams.
- Lab components in all of our introductory courses.
- Students have many choices of electives (12 elective credits of the 50 required for a major)
- A research project. Students choose either to examine current developments in computing or to pursue their own original research.

Program Overview

Our 50-credit major (28-credit minor) focuses on the study and implementation of algorithms and the theoretical foundations of computing. The computer science curriculum provides students with a broad foundation on which to build more specialized understanding. At the same time, the curriculum seeks to combine these principles with the design of applications current to each topic.

An emphasis on problem solving as a core component of the major develops skills that are valuable to many different careers and are not limited to software development. The program is appropriate for students interested in the full range of computing, including software design, systems analysis and graduate study in computer science.

- The computer science department also offers a 52-credit major in numerical computation jointly with the mathematics department. This major is designed for students who are interested in learning to use computers for modeling and simulation as a tool for discovery across many areas of science, engineering and other quantitative disciplines.

Outcomes:

Our graduates have been in high demand and usually have no difficulty finding employment after graduation. For some, the difficulty is choosing among multiple competing offers! Students have found employment with consulting companies, technology companies, software companies, insurance companies, web development companies and many others. The major is also a good background for further schooling, and graduates have gone on in computer science, law and even culinary school!

Computer science students at CSB and SJU benefit from small classes taught by professors who love their subject and who want to teach. The liberal arts provide students an opportunity to reflect and write about what they are doing instead of focusing solely on the technical aspects of a computer education.

Examples of recent graduates career paths:

- Lead programmer analyst, Mayo Foundation, Rochester, Minn.
- Management information specialist, Hennepin County, Coon Rapids, Minn.
- Associate engineer, Unisys Corporation, San Jose, Calif.
- Ph.D., computer science, University of Minnesota, Minneapolis, Minn.
- Ph.D., computer science, Rochester Institute of Technology, Rochester, N.Y.

Computer Science Curriculum

Our curriculum starts students with a strong fundamental foundation before allowing them to select electives such as networking, graphics, databases, web application development and many others. All students complete a capstone requirement either by investigating the state of the art in some aspect of computer science or by completing an honors senior thesis after researching an area of computer science in depth. Past thesis topics include: "Exploring Distributed Peer-to-Peer Co-evolutionary Genetic Programming of Finite State Automata," "Artificial Neural Networks Applied in a Strategic Bidding Environment," "The Virtual Classroom: A Fusion of Education and Computer Technology," and "A Machine Model for Color Constancy."

Sample of courses:

- Computing: Science and Applications
- Introduction to Problem-Solving and Programming
- Problem-Solving, Programming and Data Representation
- Intro to Computing
- Data Communications and Networks
- Computer Graphics
- Algorithm Design and Analysis
- Senior Research in Computer Science

A full listing of courses can be found at www.csbsju.edu/computerscience/curriculum

Internship Opportunities

The majority of our students do paid internships after their junior year and some also do so after their sophomore year. These internships enable students to get a real feeling of what a career in computer science is like (as well as earning a lot of money in their summer job — internships in computer science are very well compensated). For example, a recent internship took one student to Rockwell International in Houston, Texas, where she helped to create computer programs for use by NASA. Internships frequently lead to full-time jobs. Many who worked on a summer internship were offered permanent employment at the same company following graduation.

Faculty

Mike Heroux (scientist-in-residence)

Ph.D., Colorado State University

Noreen Herzfeld

Ph.D., Graduate Theological Union

J. Andrew Holey

Ph.D., University of Minnesota

John Miller

M.S., University of Minnesota

Imad Rahal

Ph.D., North Dakota State University

James Schnepf

Chair; Ph.D., University of Minnesota

Lynn Ziegler

Ph.D., University of Michigan

Computers and information technology now permeate human society. People in almost any career find themselves using computers, many on a daily basis. This activity is supported by computing professionals who work in many areas, including computer design, software development, systems management, technology, consulting and computing education. Study in the field of computer science provides both computer users and professionals with an understanding of what is computable, how it can be computed and how the power of computation affects human society.
