

Computer Science

The Computer Science Program at Oberlin offers a major and a minor in Computer Science. Computer Science is one of the most active and rapidly growing fields of scientific inquiry. Oberlin graduates will be well prepared for both graduate programs and challenging careers in this field. The program gives students the opportunity to work on first-rate equipment and to take courses in some of the most exciting areas of current research. Recent Oberlin graduates have entered graduate programs in computer science at MIT, Stanford, Princeton, Cornell, North Carolina, and other leading centers for research. Others have taken jobs with companies like Microsoft, Adobe, and IBM. Still others have gone to work for small firms or have even started their own companies. Our students are creative, have sound technical knowledge, and are able to write and speak well. These qualities are prized by graduate schools and employers.

Success in this rapidly changing field requires a thorough knowledge of principles, not just familiarity with a few programming languages and processors. The principles will remain constant while the specifics will change every few years. The program at Oberlin is built around a complete study of the foundations of computer science. The major starts with a rigorous two-semester introduction and overview of the field. A two-semester course sequence at the sophomore level explores intermediate and advanced concepts. The last two years are composed of electives. Majors must take at least ten courses in the program plus at least three specified mathematics courses. No course is devoted just to teaching a programming language, although our students are very well grounded in programming.

The advanced courses cover a broad range of topics, giving students the opportunity, for example, to design and implement their own programming languages, to work on computer imaging, to create advanced network applications, or to program artificial neural networks that simulate the organization of the human brain.

The Computer Science Program maintains two computer teaching labs exclusively for the use of CS students. Both of these labs feature late model Intel based computers running both Linux and Windows operating systems. Altogether there

are 44 workstations. Students receive accounts on the CS Program's Sun SunFire 280R Unix server and the CS Program's Windows Domain servers, thereby affording them complete access on all College and CS networking services. The equipment is available 24 hours a day. Because of these facilities, computer science students never have to wait for a machine to become available.

The program has a firm commitment to preparing students for the environments they will use when they leave Oberlin. The software available at Oberlin for all computer science students and faculty includes the Unix, Windows, and Macintosh operating systems, the X windowing system, an Oracle Database system, open GL, cryptographic libraries and Java, C++, and Scheme programming languages. Many other computing utilities are available either in Computer Science itself or elsewhere on campus. These utilities include a variety of numerical and symbolic computation packages such as Mathematica, statistical packages, and many additional programming languages.

Oberlin has the facilities, the courses, and the faculty to stimulate and challenge dedicated computer science students.

OCCaM

The Oberlin Center for Computation and Modeling (OCCaM) is an interdisciplinary research organization founded in mid-2005. OCCaM is devoted to promoting computation and modeling in the curriculum, and helping coordinate and publish the research efforts of its members.

In their work, natural and social scientists often use the scientific techniques of model building and computer data analysis. This common thread unites the researchers, who are applying similar methods to their diverse fields of study. Because of an ever-growing need for powerful computers to perform simulations and process scientific data, Oberlin College acquired a 64-node Beowulf cluster in the summer of 2005. This machine, informally referred to as the supercomputer, is an excellent tool for this purpose.

On September 30, 2006 OCCaM received a two-year \$150,000 grant from the Booth-Ferris Foundation to promote modeling in the Oberlin curriculum.

For more information please visit the OCCaM Website at <http://occam.oberlin.edu>.

Computer Science Program Faculty

ESMAIL BONAKDARIAN

Visiting Assistant Professor (2004)

B.S. (1984) University of Iowa

M.S. (1987) University of Iowa

Ph.D. (2001) University of Iowa

Evolutionary Comparative, Simulation HCI

ALBERT BORRONI

Lecturer (1996)

B.A., (1985) Oberlin College

Ph.D., (1992) Northeastern Ohio University

College of Medicine

Artificial intelligence.

JOHN DONALDSON

Visiting Professor (2000)

B.S. (1971) Case Western Reserve University

M.S. (1972) Ohio State University

M.S. (1977) Ohio State University

Ph.D. (1975) Ohio State University

Operating Systems.

ROBERT F. GEITZ

Associate Professor (1980)

B.A., B.S. (1974) Case Western Reserve University

M.S., Ph.D. (1980), University of Illinois

Computer graphics, compilers, programming languages.

BENJAMIN A. KUPERMAN

Assistant Professor (2006)

B.S., B.S.E. (1997) University of Toledo

M.S. (1999) Purdue University

Ph.D. (2004) Purdue University

Computer security, intrusion detection, audit systems, systems programming.

RICHARD M. SALTER

Professor (1982)

B.A. (1973) Oberlin College

M.A. (1975) Indiana University

Ph.D. (1978) Indiana University

Programming languages, functional and logic programming, artificial intelligence, cryptology.

In addition to these professors, faculty members representing all divisions of the College and Conservatory have a strong interest in computing and its applications. If you have any questions or desire more information, please contact:

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Revised 11/2006