Computer Science

Gonzaga’s computer science students gain the skills to work with innovative technology, while expanding their capacities for critical thinking and ethical reflection in the Jesuit tradition.

THE PROGRAMS

The School of Engineering & Applied Science offers two different degree paths in Computer Science:

**Bachelor of Science in Computer Science (BSCS): Focus on computing.** Students pursuing the B.S. degree study mathematics, science, and computer science, including computer architecture, operating systems, programming language design, computer security, and theoretical computer science.

**Bachelor of Arts in Computer Science and Computational Thinking (BACSCT): Computing combined with humanities, social and natural sciences.** Students pursuing the B.A. degree take many of the same computer science courses, and study one additional discipline: Art, Biology, Communication Studies, Economics, English, Environmental Studies, Philosophy, Sociology, or Theatre Arts.

CURRICULUM

Both degrees are built on a foundation of courses in mathematics, computer programming, data structures and algorithms, software design and development, and software engineering. Both degrees also offer students a broad range of courses in advanced computer science topics, including:

- Machine learning and artificial intelligence
- Human-computer interaction
- Computer networks
- Database management systems
- Speech and natural language processing
- Data science
- Computer security

RESEARCH OPPORTUNITIES

Undergraduates can assist in faculty research as early as their first year. Many professors have guided students through the process of presenting their results at regional, national, and international conferences.

Students interested in research frequently receive funding through the National Science Foundation-sponsored program, Research Experience for Undergraduates.

CO-CURRICULAR CLUBS

Clubs and professional organizations offer support and hands-on projects that reinforce classroom learning. These include:

- Association for Computing Machinery (ACM)
- Women in Computing
- GU Robotics
- Institute of Electrical and Electronics Engineers (IEEE)
CONCENTRATIONS
The department offers three minors and concentrations; minors are for students pursuing non-computer science majors, and concentrations are for students in the department’s B.S. or B.A. program:

- Software Application Development: How to design and develop large-scale software
- Data Science: How to use machine learning and other advanced techniques to make predictions and discover patterns
- Software Security: How to secure computers and computer networks from attack

CS STUDENT LABS
The Project Lab has a mix of PC and Mac workstations, a work bench for assembly projects, and meeting space for student teams and clubs. Two instructional labs—one running Linux, the other Windows—are open 24/7 for teaching, tutoring, or student work.

The Advanced Computing Lab holds high-end workstations and a server to learn cybersecurity techniques.

The Research Lab supports collaborative work with a high-speed server—24 core processor and GPU support—and several pods, each with TV display monitors. Student researchers may also use the server remotely.

The department also provides an assortment of hardware for students to check out during the academic year for independent study projects.

AFTER COLLEGE
Graduates of computer science programs work as software developers and computer scientists in the computer industry, universities, and research labs. Many go on to careers in business, law, and healthcare.

The Bureau of Labor Statistics predicts that the need for software developers and computer scientists will both grow “much faster than the average of all occupations” (BLS, Occupational Outlook Handbook: Software Developers; Computer and Information Research Scientists, 7/21). Advanced degrees are necessary for careers in research. Some graduates go on to Ph.D. programs which cover tuition and living expenses. Others pursue part-time M.S. degrees while working in the computer industry.

SENIOR DESIGN CAPSTONE
All seniors participate in a two semester software development project with guidance from a faculty advisor and a project sponsor, often from the computer industry.

Faculty Contacts
Paul De Palma, Ph.D.
Department Chair
depalma@gsu.edu

For more information: cs.gonzaga.edu