

THE FIELD

The College of Information and Computer Sciences offers undergraduate programs in computer science leading to bachelor of science (BS) and bachelor of arts (BA) degrees. The curriculum prepares students for innovative and rewarding positions in the computing profession as well as computer science master's and doctoral programs. Computing is now a fundamental part of a diverse set of fields including biology, communications, education, environmental studies, health care, law, art, finance, manufacturing, transportation, entertainment, agriculture, energy, sports, and government. Students in the computer science major benefit from exciting electives and join a community that is performing state-of-the-art research. Computer science majors have the opportunity to become involved with one of the college's many research projects, especially in their senior year.

A minor in computer science is also available.

THE MAJOR

The computer science major is intended to provide a solid foundation for students whose goals span a wide range of endeavors within the rapidly changing computing field.

CURRICULUM

The BS curriculum includes between one and three introductory courses and four core courses that supply the essential theory, programming, and technical foundations of computer science. Students also complete four mathematics courses, two lab science courses, the Junior Year Writing requirement, and the Integrative Experience (IE) requirement. Eight advanced technical electives are required, giving students the flexibility to maintain breadth in their choices or pursue their interests focusing on a sub-discipline of computer science. The college offers upper-level elective courses in many sub-disciplines of computer science, including artificial intelligence, data science, information retrieval, robotics, computer vision, computer graphics, natural language processing, computer architecture, networking, computer security and privacy, software engineering, and theory of computation.

The BA in computer science is designed to allow interdisciplinary study and requires 11 computer science courses, three math courses, and an outside concentration. The computer science courses include between one and three introductory courses, three core courses, the Junior Year Writing requirement, and the Integrative Experience (IE) requirement. BA students also take five computer science technical electives at the 300-level or higher. The outside concentration consists of four courses (200-level or higher) in another discipline (or, where appropriate, more than one discipline) with relevance to the theory or practice of computer science. Courses offered by any department at UMass Amherst outside computer science can be the basis of a concentration. Students who graduate with a BA will have the necessary depth of expertise in computer science to have lifelong careers in the field. They will also have sufficient exposure to a second discipline to be able to interact with professionals in that field in a knowledgeable manner and to apply advanced computer science techniques to problems in that second area.

ADMISSION TO THE MAJOR

Some first-year students and transfers are admitted directly into the computer science major when they apply to the university. Once on campus, students in the computing and informatics exploratory track, and students in other majors, must apply to join the computer science major. For more information on applying to the computer science major after admission to the university, please visit, cics.umass.edu/content/major-change-cs-revised.

HONORS

Many computer science majors are in the Commonwealth Honors College and several computer science courses offer honors components. Students in the honors track have the opportunity to gain research experience by completing an honors thesis or project under the supervision of a faculty member. See cics.umass.edu/ugrad-education/honors-track for more information.

STUDY ABROAD

Majors may choose to study abroad if it supports their academic and career goals. Students should contact the International Programs Office (413-545-2710, umass.edu/ipo) and complete the college's Transfer Credit Evaluation (TCE) process for prior approval to choose the appropriate courses in preparation to study abroad.

CAREER OPPORTUNITIES

Students graduating with a computer science degree are well prepared for a professional career in many different economic sectors and for graduate study. Computer science graduates have great opportunities for making a difference in the world. Almost every major challenge facing our world depends on computing for a solution, from conquering disease to eliminating hunger, from improving education to protecting the environment. Graduates of the program pursue careers both in traditional areas including software development, computer security, computer networking, and information management; and in emerging areas such as computational medicine, finance, business, agriculture, government, entertainment, and more.

Our highly ranked graduate research program offers undergraduates a significant opportunity to gain research experience. Further, the Bay State Scholars program offers top undergraduate computer science students scholarship support for completing a master's degree within the college following completion of their undergraduate major.

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