Mathematics and Computer Science

About the Major

The Interdisciplinary Mathematics and Computer Science major is designed for students interested in the connections between computer science, mathematics and the sciences. Current research areas, such as biomedical informatics, computational finance, computer vision, and robotics, require a strong mathematical foundation. In mathematics, computer models play an increasing role in investigating traditional mathematical problems. The development of computational thinking and its application is an important component of the program. The Math-CS major is particularly recommended to those students interested in pursuing a graduate degree in computer science or mathematical computation.

Research and Internship Opportunities

The Center for Information Science and Technology (IST), based in the computer science department, is engaged in a number of nationally funded research projects. The Center's research areas include data mining, bioinformatics, medical imaging, image recognition, mobile networks, robotics and text mining. In addition, the Departments of Mathematics and Computer Science are both involved in collaborative research in computational science using a hybrid supercomputing cluster. A student majoring in Math-CS would be in a strong position to participate and contribute in these research programs either as a summer intern or in an independent study. The knowledge, skills and techniques acquired through research participation are also needed in many research activities at Temple University in other science departments and at Temple Hospital. Opportunities also exist for participation in undergraduate research programs hosted at other institutions in the USA and abroad.

Career Opportunities

Employers actively seek candidates with the ability to apply math and computer science skills to problems from diverse fields and would find a successful Math-CS major particularly attractive. For example, large software companies like Google and Microsoft often ask mathematical questions during the interview process. Philadelphia is the center of a number of major pharmaceutical companies who need quantitative computer scientists to participate in and support their research programs. Some of the really challenging problems that confront science require a comprehensive knowledge of both mathematics and computer science.

Courses Include:

Computer Vision and Pattern Recognition
Data Mining and Databases
Data Structures and Algorithms
Game Programming and Virtual Reality
Graphics and Image Processing
Math Concepts in Computing
Natural Language Processing
Applied Mathematics
Combinatorics
Linear Algebra
Mathematical Statistics
Modern Algebra
Number Theory
Probability

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