



MORAVIAN COLLEGE

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

An overview of the department and its offerings. For further information, visit the website at www.mathcs.moravian.edu.

The mathematics and computer science department offers a wide range of courses for students interested in teaching, in graduate school, or in professional work upon graduation. Study in this department ensures students will gain abilities that will help them throughout their work life. Students learn how to problem-solve and how to approach mathematics as a tool. They also gain in-depth knowledge of software and systems concepts in computer science, learning where they may fit in the quickly growing field of technology.

Both programs encourage double major and major/minor combinations. For example, the programs are flexible enough for a math/English double major, a computer science major with a biology minor, or a psychology major with a math minor, for example. Our faculty work with interested students to tailor a program to meet their individual needs.

Students have 24-hour access to a laboratory of UNIX-based Sun workstations, located in Collier Hall of Science. This lab contains graphics workstations and other advanced equipment. There also are two microcomputer classrooms (Windows and Macintosh) in Memorial Hall, and a microcomputer classroom and a small lab equipped with Windows computers in Comenius Hall. Most mathematics courses have a computer lab component, utilizing appropriate software: Maple, the Geometer's Sketchpad, Minitab, Excel, and other special courseware.



Strong, Personalized Academic Majors

Every fall, a special topics course in mathematics is offered, which provides a chance to explore new and exciting realms of mathematics. Recent courses include Chaos, Fractals, and Dynamical Systems, Graph Theory, Cryptography, and Econometrics.

Special courses in computer science have included Game Programming, Simulation, and Artificial Intelligence.

Students who wish to explore a topic in mathematics that might not otherwise fit into a busy academic schedule may take a half-unit course such as Applications in Mathematics, Mathematics and Origami, or History of Infinity. These courses have been quite popular with our students, and fit into a wide variety of other majors.

At Moravian, we understand that much of our students' learning happens outside the classroom, and that it can be fun. To that end, this department participates in an annual mathematics competition held in the Lehigh Valley. The Mathematical Society organizes social events, including weekly meetings and annual road trips such as a visit to the Cryptography Museum in Fort Meade, Md., and a math murder mystery night.

Moravian has a chapter of the mathematical honor society Pi Mu Epsilon, which hosts the annual Moravian





Student Mathematics Conference. And the Moravian chapter of the Association for Computing Machinery (ACM) participates in annual programming competitions organized by the national arm of ACM. Teams from Moravian regularly place in the top five and won the contest in 2005 and 2007.

Our students have the opportunity to take advantage of summer research with the national Research Experiences for Undergraduates (REU) program, which provides a substantial stipend and allows students to work independently within their discipline, demonstrating their motivation and creativity as they earn an income.

Our Mathematical Society also hosts weekly talks that offer students a taste of the breadth of mathematics, and longer lunchtime math/CS colloquia that explore new research in mathematics or computer science.

Hands-On Learning

The mathematics and computer science department has always encouraged students to pursue research and projects that allow them the hands-on experience and learning for which Moravian is known.

Through the SOAR program (Student Opportunities for Academic Research) students work collaboratively with faculty on a common research goal. The computer science program recently won a grant with jAmeseis to develop software for sharing seismographic data with schools across the country. Other SOAR projects have explored robotic path-finding, network analysis, and the mathematics underlying the card game SET. Projects generally take place over the summer and offer a stipend to student participants.

Exceptional students will be offered a chance to complete an Honors project during their senior year, in which they engage in independent research under the

guidance of a faculty member and defend their results before a faculty committee. Past Honors projects include *The Collatz Conjecture: A Conjugacy Approach*, *Analyzing the Performance of a Computer Chess Program*, *Examining Network Routing Algorithm Efficiency*, and *Explorations of Benford's Law*.

In addition, this department offers many opportunities for internships and work-related experiences where credit is earned for work at a local business. In recent years, students have completed such work at an actuarial consulting firm and the Allentown Museum of Art.

Alumni Careers in Mathematics and Computer Science

Graduates of this department have found careers such as accounting consultant, systems or telecommunications analyst, actuary, technical writer, mathematician, programmer, and statistician. Many math and computer science students go on to teach at all levels.

- Allison Bruckart '10 is a fee schedule analyst for Guardian Life Insurance Company.
- Rachael Todd '08 is a graduate student at the University of Delaware.
- Jayme Baker '08 teaches math in the Bethlehem Area School District.
- George Gray '06 works as an IT advisory senior associate for KPMG, LLP.
- Ekow Bedu-Amissah '06 is a financial data analyst for Moody's Investors Service.
- Renee Garin '05 works for PPL Electric Utilities as a staff analyst in the finance department.
- Robert Swan '05 works as a software engineer for Verifone, Inc.
- Ryan Shultz '04 works for Health Network Laboratories as a database analyst.

Long before 1776,
Moravian College stood for
life, liberty, and the pursuit of happiness.
As the sixth-oldest college in America,
we believe everyone is born with an innate love of learning.

Our mission is to set it free.

To every student of every circumstance,
we promise the power of the liberal arts,
a whole wide world of experience,
and a deeper enjoyment of life.

Pursue them all with passion.