DISCOVER
MATHEMATICAL AND STATISTICAL SCIENCES
UNDERGRADUATE STUDIES
THE LANGUAGE OF SCIENCE

MATHEMATICS & STATISTICS

MATHEMATICS AND STATISTICS play a fundamental role in our modern world and provide us with the tools for analyzing and solving problems in a variety of fields.
BUILT ON THREE IMPORTANT PILLARS:

**TEACHING, RESEARCH, AND OUTREACH**—the Department of Mathematical and Statistical Sciences offers an outstanding and continuously evolving learning and study environment.

Driven by the ambition to assist our students in developing the best possible foundation for their professional careers, we incorporate technology into teaching and learning in multiple and innovative ways.

ENGAGE YOUR COMPETITIVE NATURE

**OUR DEPARTMENT HAS A LONG HISTORY** of participating in mathematical competitions, and we welcome undergraduate students to join our teams. Two notable competitions include:

**THE MATHEMATICAL CONTEST IN MODELING (MCM)** and the **INTERDISCIPLINARY CONTEST IN MODELING (ICM).** These are annual international contests for undergraduate students that challenge them to clarify, analyze, and propose solutions to open-ended problems.

**THE WILLIAM LOWELL PUTNAM MATHEMATICAL COMPETITION,** or “the Putnam” for short, is an annual mathematics competition for undergraduate students in Canada and the USA.

DID YOU KNOW?

**THE SPIRAL SHAPES OF SUNFLOWERS FOLLOW A FIBONACCI SEQUENCE.**

Mathematics is present throughout nature and can be found in the most unexpected places. The Fibonacci Sequence is the sequence of numbers where the next number is found by adding up the two numbers before it. So it starts **1, 1, 2, 3, 5, 8, 13, 21, etc.** The exponential growth of the spiral is determined by this sequence, and is present in flowers, some seashells, and even the shape of a human fist.
OUR PROGRAMS

**GERDA DE VRIES, MATHEMATICS PROFESSOR,** has combined her passion for math with her love of quilting, and is known for her “Quilts as Mathematical Objects” lecture that she presents on campus every so often.

“I used tessellations, which is how shapes fit together without any overlap and without gaps. Think mosaics and floor tiles. One of the things mathematicians like to do is create rules and then, within the boundary of the rules, find out what all the possibilities are.”
OUR PROGRAMS

WE OFFER BACHELOR OF SCIENCE SPECIALIZATION AND HONORS DEGREES in several disciplines. Students can also select a Mathematics or Statistics major or minor within the Bachelor of Science General degree.

DEGREE OPTIONS IN MATHEMATICS INCLUDE:

HONORS IN MATHEMATICS OR SPECIALIZATION IN MATHEMATICS

OUR MATHEMATICS DEGREES ARE VERY FLEXIBLE, allowing students to steer their studies in the direction they are most passionate about: analysis, coding theory, differential equations, functional analysis, geometry, manifolds, number theory, numerical methods, operator theory, or topology.

HONORS IN MATHEMATICS, MINOR IN COMPUTING SCIENCE

THIS COMBINATION IS OF INTEREST to students wishing to study the mathematical foundations of computing, algorithms, logic, or the application of modern algebraic theory to error-correcting codes and cryptography.

HONORS IN MATHEMATICS, MINOR IN STATISTICS

THIS PROGRAM INCLUDES THE FUNDAMENTAL PRINCIPLES, philosophy and historical origins of statistics and probability theory, and allows students to broaden their portfolio of interests and transfer their theoretical skills to the discipline of statistics.

SPECIALIZATION IN MATHEMATICS–COMPUTATIONAL SCIENCE

IN THIS PROGRAM, STUDENTS COMBINE THE ANALYTICAL and problem-solving skills of mathematical training with the power of modern computing science.

SEE ADMISSIONS.UALBERTA.CA FOR ADMISSION REQUIREMENTS.
MATHEMATICAL BIOLOGY (RESEARCH BRANCH OF APPLIED MATHEMATICS)

Mark Lewis, Professor and Senior Canada Research Chair in Mathematical Biology and his PhD student Stephanie Peacock are working with environmental groups, salmon producers, and fisheries regulators in B.C. to find ways to control sea lice infestations in farmed salmon.

Their research combines mathematical models with experimental and observational data to understand the impact of sea lice from farmed salmon on wild salmon ecology. **PHOTO COURTESY OF STEPHANIE PEACOCK**
OUR PROGRAMS

HONORS IN APPLIED MATHEMATICS

OUR APPLIED MATHEMATICS PROGRAM will train you to apply mathematical ideas to solve practical problems in the physical, social, and life sciences, as well as in engineering and finance.

With its combination of pure and applied courses, the program delivers the theory you need while putting the focus on application. Students in the Applied Mathematics program can also opt for a minor in Computing Science or Statistics.

HONORS OR SPECIALIZATION IN MATHEMATICS AND ECONOMICS

ECONOMISTS RELY HEAVILY ON MATHEMATICAL and statistical methods when they study how a society produces, consumes, and distributes goods and services. Therefore, mathematical and statistical techniques for economic analysis are integrated in our economics program.

Through this program, you will not only learn the essentials of economics and the related mathematical and statistical tools but also better understand the mathematics and statistics behind these tools.

HONORS OR SPECIALIZATION IN MATHEMATICS AND FINANCE

THIS IS AN INTERDISCIPLINARY AREA whose understanding requires a broad education including courses from statistics, economics, accounting, and operations management.

A degree in Mathematics and Finance provides a solid foundation for careers in the financial industry and graduate studies in financial engineering and mathematical finance.

HONORS OR SPECIALIZATION IN STATISTICS

THE STATISTICS PROGRAM will train you in the discipline of collecting, analyzing, and interpreting data.

You can choose from an extensive selection of courses or subjects ranging from the experimental—such as sampling techniques and statistical inference—to the theoretical—such as probability theory and stochastic processes. Statistics is an area that calls for strong mathematical skills and an interest in problem solving.
ENHANCE YOUR DEGREE

CENTENNIAL PROFESSOR, VAKHTANG PUTKARADZE’S mathematical background has allowed him to work in such diverse fields as nanotechnology, biomedical engineering, computer animation and most recently—renewable energy.

He is currently collaborating with partners from the Department of Mechanical Engineering at the University of New Mexico on a project using a form of renewable energy production known as solar updraft. The team hopes to answer an age-old problem: “How do you build a really tall, free standing structure that can withstand the unpredictable and destructive force of wind?”
ENHANCE YOUR DEGREE

RESEARCH

ATTENDING A RESEARCH INTENSIVE UNIVERSITY—like the University of Alberta—means you benefit by learning from professors who are leaders and game-changers in their fields. As an undergraduate student, you can work with a professor as a research assistant, take one of our mathematics or statistics research courses, or engage in your own research through the Undergraduate Research Initiative (URI).

We also offer facilities to support research and teaching excellence. These include:

- Applied Mathematics Institute
- Centre for Mathematical Biology
- Institute for Geophysical Research

SCIENCE INTERNSHIP PROGRAM

THE SCIENCE INTERNSHIP PROGRAM (SIP) is a 4-16 month paid work experience opportunity. Students participating in SIP work with employers in a mathematical or statistical capacity, develop professional skills, and learn to network.

STUDY ABROAD

GLOBAL EXPERIENCE IS VITAL The University of Alberta offers an extensive list of global partners with study abroad opportunities for students.

MATH IN MOSCOW

MATHEMATICS STUDENTS can also participate in the Math in Moscow program, which allows Canadian students to study mathematics at a small, elite university in Moscow, Russia for a semester or a year.
SUPPORT & COMMUNITY

**THE DECIMA ROBINSON SUPPORT CENTRE** named after Decima Robinson, the first graduate at the University of Alberta, who received a BSc with advanced standing in Mathematics.
DECIMA ROBINSON SUPPORT CENTRE FOR MATHEMATICAL AND STATISTICAL SCIENCES

THE DECIMA ROBINSON SUPPORT CENTRE offers comprehensive support for students taking introductory mathematics and statistics courses at the University of Alberta. The centre is staffed by graduate students who are available to offer one-on-one help to students with their homework on a drop-in basis.

We also offer exam study sessions for select courses, a pre-calculus program for students who are looking to refresh their high school math skills while taking a calculus course, a weekly calculus review seminar for students taking introductory calculus, and a university mathematics primer course to help high school students make the transition to university.

JOIN OUR COMMUNITY

STUDENTS, FACULTY MEMBERS, ADMINISTRATION, AND STAFF in the Department of Mathematical and Statistical Sciences form a strong and active community within the University of Alberta. We offer opportunities for you to share your passion for math, and learn with some of the brightest minds.

Our student clubs, collaborations with other departments, and math competitions are just some of the opportunities to network, enhance your studies, and grow as an individual. Our students actively join our large outreach network to connect with and engage the rest of our Alberta community.

OUR OUTREACH EFFORTS INCLUDE:

- Alberta High School Mathematics Competition
- Alberta Summer Mathematics Institute
- CMS Regional Math Camps
- CAME in the Schools
- JAMES Math Circle
- Math Fair & Unfair
- SNAP Math Fair

DID YOU KNOW?

OUR EXAM STUDY SESSIONS AND INTRODUCTORY CALCULUS REVIEW SEMINARS are free of charge and open to all UofA students.
DISCOVER MATHEMATICAL AND STATISTICAL SCIENCES

CONTACT

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