MATHEMATICS
#BEOYONDIDEAS
The study of mathematics is an intense but satisfying preparation for just about any career path you desire.

Employers want the analytical, quantitative, and creative problem-solving skills you acquire as a math student at Waterloo. If you think you love mathematics now, just wait until you get here!

You can find information about our business, accounting, and computer science programs in separate brochures.

As a member of the Math HeForShe student committee, Meaghan wanted to get more students involved in the initiative. After a conversation with her faculty advisor, Waterloo’s Equithon came to life.

Meaghan is so proud of the success of the Equithon. The presence and involvement of the hackers, sponsors, volunteers, mentors, university staff, and everyone else, showed me just how many of us want to take a collective step to what we hope our future society will be.

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HAVE A MAJOR IN MIND?
In most cases, you can wait until the end of your first year or later to choose a major. Most math majors start in second year. Descriptions for each major are found on the following pages.

NOT SURE IF YOU WANT CO-OP?
Most programs are offered as co-op or regular (non-co-op); some programs are co-op only. If your program is offered in either system of study, we recommend applying to co-op when you submit your application. More information regarding co-op is located at the back of this brochure.

SAMPLE FIRST YEAR SCHEDULE

FALL
- MATH 135 Algebra
- MATH 137 Calculus 1
- 1 communications course
- 1 non-math elective

WINTER
- MATH 136 Linear Algebra 1
- MATH 138 Calculus 2
- CS 116 Introduction to Computer Science 1
- 1 communications course
- 1 non-math elective

COMMUNICATION COUNTS
Employers are looking for more than just technical skills. Strong communication skills are a top priority, and we’re doing everything we can to help you develop these skills in order to succeed academically and professionally.

Through small classes, you’ll complete 2 communication courses that will expand on your current skill set and prepare you for success.

uwaterloo.ca/math/communication-counts

YOUR FIRST YEAR
In first year, it’s all about keeping your options open. You’ll take core courses such as algebra, calculus, communications, and computer science to prepare you for whichever major you decide to choose.

#BEYONDIDEAS
Travel to Europe with our Math in Europe program. Available exclusively to first-year students, Math in Europe lets you take Waterloo math courses from Waterloo professors while exploring the history of Europe.

DIFFERENT COUNTRIES

Students in the Faculty of Mathematics come from more than

Waterloo Mathematics actively recruits the best students worldwide.
BEYOND CALCULATORS

MAJORS

Which major is right for you?

ACTUARIAL SCIENCE BMath

Effective health-care research teams need members with strong quantitative and data-based decision-making skills. Drawing from Waterloo’s strengths in statistics, biostatistics, computer science, health studies, gerontology, and economics, Statistics for Health focuses on research in the areas of clinical, public, and population health. The only program of its kind in Canada, Statistics for Health uniquely positions its graduates for successful careers in the quantitative sector of the health-care field.

DATA SCIENCE BMath

Data Science is the study, application, and development of methods to learn from available data in order to understand, predict, and improve business strategy, products and services, marketing campaigns, medicine, and public health and safety. These methods include elements of computer science and statistics.

COMBINATORICS AND OPTIMIZATION BMath

Combinatorics is the study of discrete structures and their properties and thus is indispensable to computer science. Optimization, also known as mathematics programming, is the study of maximizing and minimizing functions subject to specific conditions or constraints. Besides its importance to various branches of mathematics, the functions to be optimized arise in management sciences, engineering, and physical sciences.

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Which major is right for you?
MATHEMATICAL OPTIMIZATION BMath

APPLY TO MATHEMATICS
CHOOSE YOUR MAJOR AFTER FIRST YEAR

This field of mathematics quantifies complex management problems in business and government into mathematical models. Then, through sophisticated computing techniques, it identifies optimal solutions. Optimization, statistics, and computer science uniquely converge into this mathematics program with broad business applications. Students with these sophisticated business skills are in high demand.

Focus your studies › Operations Research specialization, Business specialization

MATHEMATICAL PHYSICS BMath

APPLY TO MATHEMATICS
CHOOSE YOUR MAJOR AFTER FIRST YEAR

Mathematical Physics is the application of advanced mathematical methods to solve problems rooted in physics. This field is exploding with advancements in everything from fundamental physics to quantum mechanics. You’ll take an integrated set of mathematics and physics courses during your undergraduate career.

Bachelor of Science available through the Faculty of Science

COMPUTATIONAL MATHEMATICS BMath

APPLY TO MATHEMATICS
CHOOSE YOUR MAJOR AFTER FIRST YEAR

Solving industrial-sized problems was next to impossible until recently. Now the power of computers can be harnessed to generate and run simulated mathematical models, producing data that can be mined for numerical solutions. Computational Mathematics is where math and computer science intersect to solve large-scale mathematical problems. These large problems arise in business, economics, engineering, finance, medicine, and science.

MATHEMATICS/TEACHING BMath, Co-op only

APPLY TO MATHEMATICS
CHOOSE YOUR MAJOR AFTER FIRST YEAR

Mathematics/Teaching is a co-op program that provides more classroom experience than any other bachelor of education preparation program in Canada. In addition to the academic and co-op terms taken through Waterloo, Mathematics/Teaching students spend 2 terms (8 months) in the classroom before attending a Faculty of Education. A second teachable subject can be chosen from the sciences or the arts. Graduates are prepared to apply to a faculty of education in Ontario to complete their BEd to teach at the intermediate and senior divisions, Grades 7 to 12.

Focus your studies › Mathematics/Teaching is a major that allows you to take a wide variety of math courses or focus your studies on one of the disciplines mentioned in this brochure.

MATHEMATICAL STUDIES BMath

APPLY TO MATHEMATICS
CHOOSE YOUR MAJOR AFTER FIRST YEAR

Mathematics is the foundation of commerce, computing, engineering, and science. This major is the most flexible of all the Math majors in the Faculty of Mathematics. It provides you with a broad education in mathematics, including algebra, calculus, combinatorics, computer science, geometry, number theory, and statistics. If you enjoy mathematics and want the opportunity to hone your analytical, technical, and problem-solving skills but don’t want to narrow your focus to one major only, then this program is for you.

Focus your studies › Business specialization

PURE MATHEMATICS BMath

APPLY TO MATHEMATICS
CHOOSE YOUR MAJOR AFTER FIRST YEAR

Pure Mathematics explores the boundary of mathematics and pure reason. It aims to creatively explore the “why and how” questions in mathematics. Pure Mathematics comprises algebra, number theory, analysis, geometry, topology, and logic. Most first-year students who lean towards majoring in Pure Mathematics take the advanced sections of calculus and algebra in preparation for upper-year courses. Pure Mathematics at Waterloo is a small, cohesive, and challenging program.

Focus your studies › Teaching
Numbers, calculators, code — they’re all part of the backbone of our faculty. However, they’re far from everything.

Here you’ll find your community, explore your ideas, and keep up with your favourite hobbies while gaining a world-class education.

uwaterloo.ca/math/get-involved

#BEYONDIDEAS

Waterloo has Canada’s only Faculty of Mathematics. That means you’ll study and work alongside people who are just as passionate about mathematics and computer science as you are!
BEYOND GRADUATION

Endless possibilities.

According to CareerCast, a degree in mathematics or computer science can lead to

6 OUT OF THE 10 BEST JOBS

- Data scientist
- Statistician
- Information security analyst
- Mathematician
- Software engineer
- Actuary

WONDERING WHAT YOU CAN DO WITH A DEGREE IN MATHEMATICS?

Graduating with a degree in mathematics opens plenty of doors for you. Our grads find challenging employment opportunities in sectors such as technology, finance, business, academia, government, education, and more.

Here are just a few examples of where your degree in mathematics can take you.

**SECTOR: FINANCE AND BUSINESS**

- Milenko Sikljovan
  BMath 2010
  Investment Banking Associate, Goldman Sachs
- Laura Chelaru
  BMath 2010
  Junior Portfolio Manager, TD Asset Management
- Angela A. Hughes
  BMath 1996
  President and CEO, Xogen Technologies
- Chris Krmpotic
  BMath 1992
  Consultant, Investors Group Financial Services
- Ajay Junnarkar
  BMath 1995
  CFO, East Bond Rating Agency

**SECTOR: TECHNOLOGY**

- Joanna Ritchie
  BCS 1993
  Vice President, Emerging Technologies, SAP
- Kyle Lemiere
  BCS 2012
  Software Development Engineer, Microsoft
- Michelle Chen
  BCS 2014
  UI Designer, Dolby Laboratories

**SECTOR: RESEARCH AND ACADEMIA**

- Mike Carter
  BMath 1971, MMath 1974, PhD 1980
  Professor, Centre for Healthcare Engineering, University of Toronto
- Nick Harvey
  BMath 1999
  Associate Professor, University of British Columbia
- Cherise R. Chin-Fatt
  BMath 2007
  Teaching Assistant, Research Intern, University of Texas at Dallas

**SECTOR: TEACHING AND EDUCATION**

- Rich Qin
  BMath 1993, MMath 2012
  Mathematics Department Chair, Tanenbaum Community Hebrew Academy of Toronto
- Ann Elliott
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- Daniel Pinizzotto
  BMath 2010
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ADMISSIONS

2018 REQUIREMENTS

PROGRAM MAJORS


ADMISSION NOTES:

- Admission decisions are based on your high school grade average, including required courses. Students may be penalized on their Admission Information Form (AIF) score for repeated courses and required courses taken outside of regular day school without proper explanation.
- The AIF is to be submitted after applying through OUAC. The AIF includes questions about your extracurricular activities and work experience. Completion of an AIF is required for admission to all programs.
- If you’re not offered admission to the program of your choice, you may be considered for other Mathematics programs.
- Participation in the Euclid and the Canadian Senior Mathematics Contests is strongly recommended.
- After you’ve applied - Watch for our email with your Waterloo ID number and details on what to do next. It’s worth the wait - In an effort to base our decisions on the most relevant grades possible, most admission offers for Mathematics programs are made in early May. We base our final decisions on your interim or final grades of your required courses, your AIF and your Euclid contest score (if applicable) from the year you apply.

ENGLISH LANGUAGE REQUIREMENTS

If English is not your first language and your 4 most recent years of full-time education have not been taught in English, you’ll be required to submit one of these English language test scores.

INTERNET-BASED TOEFL IELTS MELAB IELTS MELAB IELTS MELAB

93 writing 25 8.0 writing 81 speaking 25 6.0 speaking 6.5 speaking 100 listening 6.0 speaking 65 listening 6.5 speaking 100 listening 65 listening

Students with an overall IELTS score of 7.0 and no band score below 6.0 will be given individual consideration for admission to full-time undergraduate studies. Get deadlines and other details: uwaterloo.ca/findoutmore/admissions.

MATH/ENGLISH LANGUAGE FOR ACADEMIC STUDIES (MATH/EELAS)

For strong applicants who need additional training to meet our English language requirements, you may receive an alternative offer of admission to Math/EELAS instead of receiving a direct offer of admission to the program you applied to. Find out more: uwaterloo.ca/math/elas.

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CONTESTS

Get contest preparation resources, registration details, and deadlines: cemc.uwaterloo.ca.

EUCLID MATHEMATICS CONTEST

While the Euclid Mathematics Contest is not required for admission, your participation is strongly encouraged, and is an asset to your application — approximately 50% of students who received offers in Fall 2017 wrote the Euclid. The contest is required for Entrance Scholarship consideration. The contest will be written in your high school on April 11, 2018.

CANADIAN COMPUTING COMPETITION (CCC)

The CCC is not required for admission, but a high score may be an asset for admission to the David R. Cheriton School of Computer Science programs. The CCC will be written on February 14, 2018.

FINANCING YOUR EDUCATION

When thinking about university, it’s important to prepare a realistic budget for your first 4 months (2 terms).

- List your financial needs: tuition and other student fees, residence fees, books, supplies, living expenses. uwaterloo.ca/future/financing
- List the financial resources available to fund your education: savings, RESP, co-op earnings (if applicable).
- Augment your resources, if you’re eligible, with scholarships, provincial financial aid (such as Ontario’s ONAP program), and a Waterloo Entrance Bursary.
- You only pay 4 months (one term) at a time.
- Participate in CEMC contests and apply for entrance scholarships.

ENTRANCE SCHOLARSHIPS

For high academic performance, and outstanding extracurricular achievements. Based on marks, AIF, Euclid Contest score.

uwaterloo.ca/future/admissions

CO-OP OR REGULAR?

Not sure if you want to choose co-op? We’ve made it easy for you to compare the differences.

CO-OP – EARN AS YOU LEARN

Through co-op you’ll have opportunities to explore potential career paths. You’ll make career contacts and pick up transferable skills that will be an asset after graduation. Get the details: uwaterloo.ca/co-op.

Get the co-op advantage

more than 4,000 co-op employers worldwide

UP TO 24 MONTHS' paid experience

PICK THE STUDY/WORK SEQUENCE YOU PREFER

In co-op, you’ll alternate study and paid work terms. For most Mathematics majors, there are multiple study/work sequences available. If available, you will be able to request your sequence when you make your course selections. This table shows a sample of the sequences that are available.

uwaterloo.ca/future/financing