DISCOVER YOUR STORY IN MATHEMATICS
Discover infinite possibilities.

If you think you love math now, just wait until you get here. You’ll study and work with people who enjoy math and computer science as much as you. With more than 8,000 students, 275 full-time professors, and 500+ courses in mathematics, statistics, and computer science, you’ll find your own unique path and graduate with a degree that can take you anywhere.

Let’s explore your story in the Faculty of Mathematics at Waterloo.

BOARDROOM BOUND?
Check out our Math, Business, and Accounting brochure to find programs to prep you for the world of business.

THE CODE FOR SUCCESS
Waterloo’s David R. Cheriton School of Computer Science is world renowned. Take a look at our Computer Science brochure to learn more about the cutting-edge programs that will prepare you for a successful future.
Waterloo is home to North America’s only dedicated Faculty of Mathematics and a community of passionate math students. You’ll be surrounded by peers with the same interests, a supportive network, and countless opportunities to join clubs and teams to make new friends.

Eli dove headfirst into the community in her first year on campus – she joined the Actuarial Science Club and became a Math Ambassador. One of the things she’s most passionate about is welcoming new mathies to Waterloo. That’s why she’s taken a leadership role on the Orientation team.

“I just really enjoy being outgoing and being loud. I have such a big passion for the math faculty and I love sharing it with others.”
With hundreds of course options available, you can pursue your interests and tailor your degree to focus on everything you love about math.

**MATHIE PRIDE**

Each year at Orientation, our dean welcomes new students to the Faculty with the math pledge, inducting the newest members of our Waterloo Mathematics family. It’s lots of fun seeing professors dress up for the ceremony, learn a dance and mathie songs – they’re all part of the tradition!

“Sine, sine, cosine, sine, 3.14159!”
IN THE CLASSROOM
In first year, it's all about keeping your options open. Each term, you'll take core courses in mathematics and computer science, plus one communications course and a non-math elective.
› Algebra
› Introduction to Computer Science
› Calculus
› Communications course

IN-DEMAND JOB SKILLS
Employers today are looking for people who have a well-rounded education. You'll stand out with your strong technical skills and an understanding of how to communicate effectively – a combination built for success.

HERE FOR YOU
Making the leap to university is exciting but it can also be a big change. At Waterloo, we have the resources to help you succeed. Get academic support through the Mathematics Tutoring Centre, academic advisors, and the Student Success Office. Professional and peer counselling services are also available whenever you need support.

Take your application to the next level.
Interested in applying to a math program at Waterloo? Here are some tips.

TAKE THE CHALLENGE
Put your mathematical problem-solving abilities to the test and have fun doing it! Participation in contests like the Euclid and/or Canadian Senior Mathematics Contest in your final year of high school can give your application a boost and is required to be considered for scholarships. Find more information and contest dates on page 21.

GET A JUMP START
Did you know that Waterloo offers free, open courseware that can teach you new math and programming skills and help you prepare for university? You’ll have access to lessons designed by world-class instructors, interactive worksheets, and unlimited opportunity for practice!

BECOME A WARRIOR FOR THE DAY
Experience the Waterloo difference first hand! See our facilities, hear from our students, and get a taste of life as a Warrior, through a campus visit or from home. Check out our website for information on in-person and virtual tours, and follow us on Instagram @waterloomath.
CO-OP

EARN AS YOU LEARN

7,100+ employers across the globe
Get ahead of the competition by combining theory with practice in a world-renowned co-op program. Waterloo is a global leader in co-operative education – we pioneered the concept and are still leading the way. Explore potential careers from a selection of top-notch employers, build your network, and master new skills through up to two years of work experience. To top it off, you’ll be earning a salary.

**HOW CO-OP WORKS**
You’ll alternate study and work terms, with most Mathematics programs offering multiple study and work sequences.

**WE’LL GET YOU READY**
We’ll teach you everything you need to know about finding a job that’s right for you. The Centre for Career Action is there for you every step of the way – whether you choose a co-op or regular program. We can help with everything from polishing your résumé, to developing your interview skills and offering advice as you navigate your career path.

[www.uwaterloo.ca/co-operative-education](http://www.uwaterloo.ca/co-operative-education)

**EXPERIENCE MATTERS**
Some past co-op roles include:
- Lab support administrator
- Mobile application developer
- Process/Product software quality assurance analyst
- Project engineering support
- Technical trading associate
- Web solutions developer/technical analyst

**CO-OP OR REGULAR?**
With the exception of Mathematics/Teaching (co-op only), you can choose co-op or regular. If you haven’t decided before you apply, we recommend applying to co-op when you submit your application.
EXPERIENTIAL EDUCATION

DRIVING INNOVATION

#1 IN CANADA for experiential learning
(Maclean’s Student Satisfaction Ranking – Comprehensive Universities 2021)

WATERLOO’S UNIQUE CREATOR-OWNED INTELLECTUAL PROPERTY POLICY:
Any idea you come up with while at the University is 100% yours!
It takes a wealth of knowledge to build the vehicle of the future. Waterloo’s emphasis on innovation and interdisciplinary research gives our students a distinct advantage in the race to create and share new ideas.

WATonomous is a student-run design team that develops autonomous vehicles, and students from the Faculty of Mathematics have been integral to the team’s success. They are applying what they learn in the classroom to build a self-driving car, with the goal of winning the SAE AutoDrive Challenge.

BRING YOUR LESSONS TO LIFE
Go beyond the classroom to show the world how technical skills and creativity can overcome the toughest challenges. Our students apply their talents at events across campus and around the globe. We’re home to Hack the North, StarterHacks, WATonomous, Equithon, The Data Open, ASA DataFest, iGEM, and more. Solve real-world problems by diving into data, pushing your programming skills to the limit, or hacking to help the world. Form a squad and jump in!

RESEARCH FOR REAL LIFE
At Waterloo, you’ll learn from researchers who are pushing boundaries, and you’ll have opportunities to participate in ground-breaking research. Consider applying for an undergraduate research award to be a part of the latest discoveries.

YOUR IDEA COULD EARN YOU $5,000!
Each term, students pitch their innovative business ideas for a chance to win $5,000 in funding from Concept, Waterloo’s pre-incubator for entrepreneurs. It’s your chance to jump start your start up!

concept.uwaterloo.ca
MAJORS

When you apply to our Honours Mathematics program, you’ll choose your major once you get here. You will use your first year to figure out what kinds of math you like so you can dive into what’s most interesting to you later in your studies.

uwaterloo.ca/math/future-programs

GURT AJ REFLECTS ABOUT HIS EXPERIENCE AS AN HONOURS MATHEMATICS STUDENT.

“I enjoy that there’s so many layers to math that you don’t really learn until you get into university, and there are so many things you can do with it. Just being exposed to all the different things you can do with math makes me appreciate it a lot more.”

GURT AJ
HONOURS MATHEMATICS MAJOR, CO-OP

#1 for computer science, engineering, and mathematics (Maclean’s Program Ranking 2021)
APPLIED MATHEMATICS

Applied Mathematics brings math to life. The program offers an understanding of the explanatory and predictive power of math. You’ll learn how to formulate and analyze mathematical models in a broad range of disciplines, so you’re prepared to tackle the intricacies and the speed of the 21st-century workplace. Focus your studies with a specialization in biology, economics, engineering, physics, or scientific computation.

CAREER POSSIBILITIES:
- Research analyst
- Professor or teacher

COMBINATORICS AND OPTIMIZATION

Combinatorics is the mathematics of finite structures. Optimization explores ways to make any operation work more efficiently within given constraints. Together, they provide powerful methods for modelling and solving large management problems – from optimizing flight schedules, to making a factory’s layout as efficient as possible. Study in the first department of its kind in the world and you’ll graduate with the skills to solve problems in computer science, business, communications, and more.

CAREER POSSIBILITIES:
- Operations research analyst
- Cryptographer
You’ll find resources and support at Waterloo to help you succeed – from the Mathematics Tutoring Centre, to academic program advisors, to Campus Wellness, to your fellow students.

Tiana understands the challenges of achieving a good work-life balance, and it’s a skill she’s hoping to share through a program she designed for incoming mathies. She founded the First-Year Mentorship program, which pairs new students with mentors in upper years to provide them with guidance, support, and a friendly face. It was an idea inspired by her own first-year mentor. “He really helped me along, not just with my academics and how to have a life. He shared some tiny life hacks. It was really helpful to me, so I wanted to make sure that more students got help in their transition from high school to university.”

**CAREER POSSIBILITIES:**
- Actuarial analyst
- Defined benefits pension administrator

Math’s crystal ball. Today’s real-life financial problems require statistics, probability, and risk theory. Actuaries address the uncertainties associated with life insurance, property and casualty insurance, annuities, and pensions or other employee benefit plans. We’ll provide you with the four basic requirements to becoming an Actuary – education, experience, strong communication skills, and assistance in the completion of a series of qualifying exams by various professional bodies.
BIOSTATISTICS

Quantitative skills and statistical methods are a powerful combination and are in high demand. You’ll take the same core courses as statistics majors, with the addition of specialized upper-year courses designed specifically for biostatistics students, including statistical methods used in health research, longitudinal studies, and spatial data analysis.

CAREER POSSIBILITIES:
- Biostatistician
- Senior policy developer

STATISTICS

With the massive volume of data available to us every day, businesses and governments need someone to make sense of it all. You’ll acquire skills and learn statistical methods for designing studies and surveys, collecting and analyzing data, forecasting, mathematical modelling, and extracting meaning behind data to apply the results.

Where can you put these skills to work? Everywhere! You’ll find our grads in a broad range of fields, including engineering, finance, health sciences, sports, and business management.

CAREER POSSIBILITIES:
- Statistician
- Researcher
- Risk modelling or business intelligence specialist
In Mathematical Optimization, you’ll learn to use analytic tools and sophisticated mathematical techniques to identify optimal solutions to complicated problems. With a strong grounding in math and computer science combined with courses in business, economics, and management science, you’ll acquire the skills that will put you in high demand.

Discover the mathematical and theoretical underpinnings of the laws of nature, such as the foundations of quantum theory and its applications in nanotechnology, the structure of spacetime and cosmology, fluid mechanics, and atmospheric physics. Get hands on in the lab and dig deep into mechanics, electricity and magnetism, computer programming, optics, and more. Learn from world-class researchers at the Institute for Quantum Computing, the Waterloo Institute for Nanotechnology, and the Perimeter Institute for Theoretical Physics.
COMPUTATIONAL MATHEMATICS

Dominate data and predict the future. Harness the power of computers to generate and run mathematical models to understand trends and find industrial-sized solutions. Learn how to code mathematical models to solve problems in business, economics, engineering, environment, finance, medicine, and science. Gain a competitive edge by combining math and computer science in one degree.

CAREER POSSIBILITIES:
- Software developer
- Process and technology officer
- Data analyst

DATA SCIENCE

Every day, 2.5 quintillion bytes of data are generated by the business, scientific, and social activity taking place all around us. Find out how data coming from sensors, digital images, streaming video, satellites, medical imagery, and interactions with cloud computing is shaping our future. You’ll take courses in computer science and statistics, and learn the methods used to analyze large data sets in order to predict trends and improve business strategy, products and services, marketing campaigns, medicine, and public health and safety.

CAREER POSSIBILITIES:
- Data engineer
- Business analyst
- Machine learning researcher/practitioner

DATA SCIENTIST NAMED SEXIEST JOB OF THE 21ST CENTURY
(Harvard Business Review)
MATHEMATICAL STUDIES

Choose your own adventure at one of the world’s top centres for math and computer science. If you’re looking for an education that covers the full spectrum of math courses and topics, you’re on the right track. Design a program that’s the best fit for your specific interests and choose from courses in algebra, calculus, combinatorics, computer science, number theory, statistics, and more. By graduation, your analytical, technical, and problem-solving skills will set you apart from the competition, no matter which career you choose!

MATHEMATICS/TEACHING

Inspire young minds. Get paid classroom experience that will prepare you for a Bachelor of Education (BEd) program in Canada. You’ll spend at least two work terms (the equivalent of eight months) in the classroom, with additional work terms in the area of your choice – either the classroom or industry.

Open to all co-op students in Honours Mathematics, you can apply to the program as a major in your second year. Choose a second teachable subject from the Arts or Sciences to give you more options, whether you’re into physics or prefer to parlez en français. By the time you graduate, you’ll be ready to pursue a Bachelor of Education and be on your way to teaching at the intermediate/senior level (grades 7 to 12).
Go beyond the basics and find the answers to the “how” and “why” behind the mathematics. Pure Mathematics is the foundation of all mathematical reasoning. If first-year calculus teaches you how to drive a car, Pure Mathematics teaches you how to build one! You can use this program as a springboard into a career in information technology, finance, business, science, education, or insurance, or go on to graduate studies at some of the world’s most prestigious universities.

PURE PASSION

Choosing a university can be a challenge - but not for Josué. From his first visit to campus in Grade 9, he knew that Waterloo was the place for him, a place that would fuel his passion for math. He dove into books about math and cryptography in high school to help him prepare for the future.

“You need to have the right drive when you really want to do something. But you also need to be in the right environment for it too. Waterloo was the perfect environment for me, because having so much math available to you makes you want to learn more about it. There are so many times where I’m genuinely blown away by the stuff I see.”

CAREER POSSIBILITIES:

- Operations or data analyst
- Research and academia
- Computer scientist
MATHEMATICAL ECONOMICS

Math and economics go hand in hand. Economics are often expressed in terms of mathematical models, and most branches of economics use mathematical, statistical, and computational concepts extensively. But we’ve also seen many advances in mathematics that were motivated by problems in economics. Get the best of both worlds in the Mathematical Economics program, offered jointly by the Faculty of Mathematics and the Department of Economics in the Faculty of Arts. Emphasizing economic theory, the program uses quantitative methods to understand and represent economic theories and to solve complex problems found in a wide range of economic systems.

MATHEMATICAL FINANCE

Mathematical Finance is an elite program designed for students with outstanding mathematical skills who want a career in high-level quantitative finance. This is one of the most advanced undergraduate finance programs in the world, where you’ll take courses in corporate finance, quantitative risk management, mathematical analysis, and statistical forecasting. The program provides solid mathematical training and a modern understanding of financial markets. These skills will prepare you for the world’s best graduate programs in quantitative finance and job opportunities in the broad fields of banking and finance.
OPEN MINDS, OPEN DOORS

NIDHI
MATHEMATICAL FINANCE AND STATISTICS

To Nidhi, the Mathematical Finance program was the perfect blend of technical mathematics and financial applications. The breadth of the program has allowed Nidhi to develop an interdisciplinary approach to math, giving her a unique skill set and competitive edge in her academic and career goals.

“I’ve been able to take courses from every department in the Faculty of Mathematics. This has taught me to use a flexible mindset when working on problems. Moving forward, I know it will prepare me for the future I want.”

CAREER OPTIONS

What can you do with a degree in math?

A Bachelor of Mathematics (BMath) degree from the University of Waterloo is your path to almost any career you can think of. Our strengths in mathematics, statistics, and computer science give graduates a competitive edge in some of these profitable industries.

› Health and medical technology
› Data science
› Artificial intelligence and machine learning
› Cybersecurity and privacy
› Business and financial technology

uwaterloo.ca/math/future-careers

96.9% of graduates employed within two years

70% of top jobs start with a degree in Math (careercast.com)
COMMUNITY

FORMULA TO THRIVE

With more than 200 clubs and student groups on campus, Waterloo offers events to spark any interest and build your network!

“Hobby clubs are a great way to get involved on campus. I enjoyed learning Bachata in the Student Life Centre, getting to meet new people, and forcing myself outside my comfort zone.”

“Orientation Week is one of the most blissful parts of first year. While not in the itinerary, getting lost around campus, meeting new people, and sporadic games nights all frequently occurred. The real value of Orientation was the social aspect to meet new people from other programs and faculties.”

“Not only did going to the gym help maintain my health, it also helped me beat some of the stress and take my mind off a lot of the work. It helps me get a clear head afterward.”

“I love participating in Waterloo Women’s Impact Network events. It’s a wonderfully supportive community that discusses current topics and holds interesting talks for the network. I encourage every woman in math, and allies, to attend an event or become a member to see themselves represented and hear inspiring stories. Representation matters.”
JONATHAN

“It’s really special to be a part of a group of people who are like me and are passionate about math and computer science in the same way I am.”

KESHAV

“The Math CnD is the quickest place to grab a bite before or after class, chat with friends, or get some work done! It does get busy during lunch hours, but it has some of the greatest selections of food and snacks on campus.”

AYAAN

“Waterloo really gives you all the opportunities. You want to learn, you want to create something, you want to do something – there is always a resource out there for you to do something like that.”

JULIA

“What sets Waterloo apart is the focus not only on application, but also the theoretical skills needed to succeed. We’re encouraged to approach problems by understanding the theory behind them.”

NAVYA

“The Math Comfy, facing the Rock Garden, has been one of my favourite spots on campus over the years – may it be for hackathons, exam prep, MathSoc events, or more.”

ROSIE

“MathSoc hands out about 1,400 slices of pie on Pi Day. That is a heck of a lot of pie! It’s a fun event to volunteer at because you get to meet so many math students excited to celebrate.”
HOW TO APPLY

1. Apply online and pay fees through the Ontario Universities’ Application Centre (OUAC).

2. Watch for an acknowledgement email with your next steps and Waterloo ID number.

3. Submit any additional required documents, including your AIF, before the deadline.

4. Accept your Offer of Admission through OUAC and submit your Residence Community Ranking Form and deposit.

AN ADMISSION INFORMATION FORM IS REQUIRED FOR ADMISSION!

Your Admission Information Form (AIF) is submitted through Quest after you complete your OUAC application. It includes questions about your extracurriculars and work experience. It’s your opportunity to tell us what makes you a unique and well-rounded student, and helps us make admissions decisions.

2022 REQUIREMENTS

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>MAJORS available beginning second year*</th>
<th>REQUIRED COURSES</th>
<th>ADMISSION AVERAGE (includes required courses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuarial Science, Applied Mathematics, Biostatistics, Combinatorics and Optimization, Computational Mathematics, Data Science, Mathematical Economics, Mathematical Finance, Mathematical Optimization, Mathematical Physics, Mathematics/Teaching Pure Mathematics, Statistics</td>
<td>Advanced Functions, Calculus and Vectors, any 12 U English, one other Grade 12 U course, Admission Information Form</td>
<td>Individual selection* from the high 80s</td>
<td></td>
</tr>
</tbody>
</table>

*Individual selection refers to content submitted on the AIF. Admission decisions are strongly based on academic performance, but extracurricular activities listed in the AIF and a good contest score (if applicable) are also taken into consideration.

IT’S WORTH THE WAIT!

In an effort to base our decisions on the most relevant grades possible, most admissions offers are made in mid-May. We base our final decisions on your interim or final grades in your admission average and your AIF. In some cases, a strong score on the CSMC and/or Euclid Contest can also improve your chances of admission.

TIPS

› Show us how you’re involved in activities outside of the classroom and in your community
› Demonstrate your ability to manage multiple activities and priorities while performing at a high level
› Use the “Additional Information” fields on your AIF to highlight what’s special or different about your extracurriculars, awards, and/or employment
› Strongly consider writing our Euclid Math Contest, Canadian Senior Math Contest, and/or Canadian Computing Competition
ENGLISH LANGUAGE REQUIREMENTS

If English is not your first language and your four 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.

<table>
<thead>
<tr>
<th>INTERNET-BASED TOEFL</th>
<th>IELTS</th>
<th>CAEL</th>
<th>PTE (academic)</th>
<th>DUOLINGO</th>
<th>CAMBRIDGE ASSESSMENT (C1 or C2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 overall; 25 writing; 25 speaking</td>
<td>6.5 overall; 6.5 writing; 6.0 per band; 7.0 speaking</td>
<td>70 overall; 60 per band; 70 writing; 70 speaking</td>
<td>63 overall; 65 writing; 65 speaking</td>
<td>120 overall; subscore results must be submitted</td>
<td>180 overall; 176 writing; 176 speaking; 176 reading; 176 listening</td>
</tr>
</tbody>
</table>

If you’re applying to a program in the Faculty of Mathematics and achieve an overall IELTS score of 7.0 (with no band score below 6.0), you meet the language requirements needed for admission. Get deadlines and other details:

[www.uwaterloo.ca/future/elr](http://www.uwaterloo.ca/future/elr)

MATH/BRIDGE TO ACADEMIC SUCCESS IN ENGLISH (MATH/BASE)

Strong applicants who need additional training to meet our English language requirements may receive an alternate offer of admission to MATH/BASE, instead of a direct offer of admission to the program they applied to. Find out more:

[www.uwaterloo.ca/base/math](http://www.uwaterloo.ca/base/math)

CONTESTS

Get contest preparation resources, registration details, and deadlines:

[www.cemc.uwaterloo.ca](http://www.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. You must participate in the Euclid Contest or CSMC to be considered for a math entrance scholarship. The contest will be written in your high school in early April 2022.

CANADIAN SENIOR MATHEMATICS CONTEST (CSMC)

While the CSMC is not required for admission, your participation is strongly encouraged and is an asset to your application. You must participate in the CSMC or Euclid Contest to be considered for a math entrance scholarship. The contest will be written in your high school in mid-November 2021.

CANADIAN COMPUTING COMPETITION (CCC)

The CCC is not required for admission, but a high score may be an asset for admission to David R. Cheriton School of Computer Science programs. The CCC will be written in mid-February 2022.

FINANCING YOUR EDUCATION

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

› List your financial needs: tuition and other student fees, residence fees, books, supplies, and living expenses. [www.uwaterloo.ca/future/financing](http://www.uwaterloo.ca/future/financing)

› List the financial resources available to fund your education: savings, RESP, and co-op earnings (if applicable).

› If you’re eligible, augment your resources with scholarships, provincial financial aid (such as the Ontario Student Assistance Program), and a Waterloo Entrance Bursary.

› You pay only four months (one term) at a time.

› Participate in contests and apply for entrance scholarships.

ENTRANCE SCHOLARSHIPS

<table>
<thead>
<tr>
<th>SCHOLARSHIPS</th>
<th>VALUE</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRESIDENT’S AND MERIT SCHOLARSHIPS</td>
<td>Scholarships ranging in value from $1,000 to $5,000 - awarded to all students who meet marks criteria</td>
<td>Based on marks: 85-89.9% – $1,000; 90-94.9% – $2,000; ≥95% – $2,000+ (up to $5,000*)</td>
</tr>
<tr>
<td>FACULTY OF MATHEMATICS SCHOLARSHIPS</td>
<td>Scholarships ranging in value from $10,000 to $25,000</td>
<td>Based on application, high academic performance, and outstanding extracurricular achievements</td>
</tr>
<tr>
<td>FACULTY OF MATHEMATICS ENTRANCE SCHOLARSHIPS</td>
<td>200 scholarships ranging in value from $1,000 to $15,000</td>
<td>Based on marks, AIF, Euclid Contest, and/or CSMC score</td>
</tr>
</tbody>
</table>

*Entrance scholarship plus $1,500 International Experience Award and/or $1,500 Research Award. International Experience and Research Awards are available in upper years, should you choose to claim them. Students must complete their first-year courses with an 80% average.

[www.uwaterloo.ca/future/scholarships](http://www.uwaterloo.ca/future/scholarships)
ACKNOWLEDGEMENT OF TRADITIONAL TERRITORY

The University of Waterloo acknowledges it is situated on the Haldimand Tract, land granted to the Haudenosaunee of the Six Nations of the Grand River in the Haldimand Treaty of 1784. The Haldimand Tract and surrounding area, including our Stratford campus, is the traditional territory of the Attawandaron, Anishinaabeg, and Haudenosaunee.