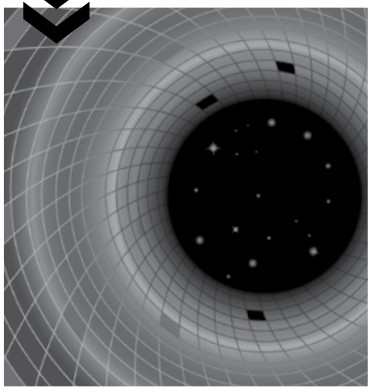
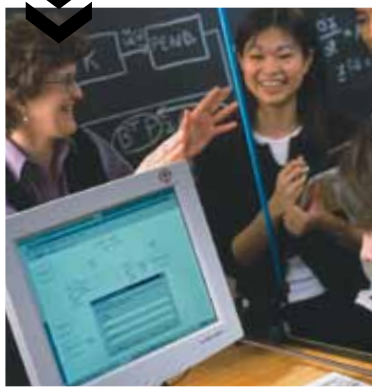
WATERLOO

ADMISSIONS 2011 » UWATERLOO.CA » UNIVERSITY OF WATERLOO

ideas start here

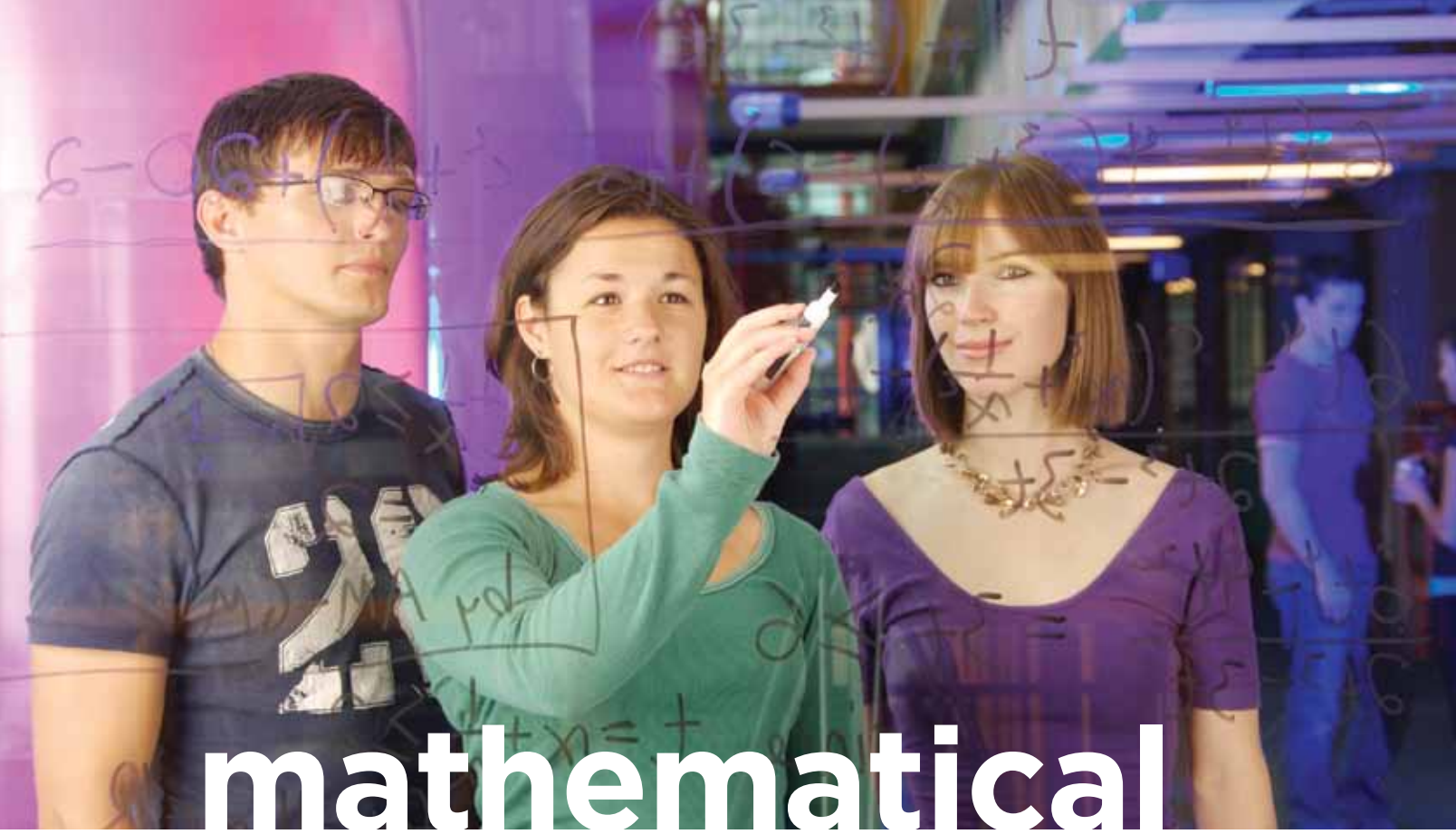




mathematics

- Bioinformatics
- Business Administration (WLU) and Computer Science (Waterloo) Double Degree
- Business Administration (WLU) and Mathematics (Waterloo) Double Degree
- Computational Mathematics
- Computer Science
- Computing and Financial Management
- Mathematics – leading to the majors listed below
- Mathematics/Business Administration
- Mathematics/Chartered Accountancy
- Mathematics/Financial Analysis and Risk Management
- Software Engineering

MAJORS AFTER FIRST YEAR: Actuarial Science » Applied Mathematics » Combinatorics and Optimization » Information Technology Management » Mathematical Economics » Mathematical Finance » Mathematical Physics » Mathematical Studies » Mathematics Teaching Option » Operations Research » Pure Mathematics » Statistics » Statistics for Health



mathematical and computer sciences

BY THE NUMBERS

5,479 Total number of full-time undergraduates

Percentage of undergraduates in co-op **70%**

204 Full-time professors

16,177 Students around the world who wrote the Euclid Mathematics Contest on April 12, 2010

The number of countries worldwide in which more than 26,082 of our BCS and BMath graduates are working today **97**

Waterloo's Faculty of Mathematics is a powerhouse of discovery and innovation. We're the world's largest centre for education in the mathematical and computer sciences.

From the very theoretical to the most applied, we offer a wide range of traditional and innovative programs. You'll have over 45 academic programs and over 200 courses from which to choose. Our graduates are working in every sector of business and industry, in government, in research centres, in education – anywhere their superior technical, analytical, and problem-solving skills can be put to good use.

The achievements of our students and graduates, including our high rankings in international competitions, are evidence of the high calibre of students we attract and the quality of education we offer. This is an exciting time to be studying the mathematical and computer sciences.

#1

IN CANADA

in the *Maclean's* reputational ranking of comprehensive universities

studies in the faculty of mathematics

Apply directly to one or more of the following 11 entry programs in the Faculty of Mathematics:

» **Business and Accounting programs – Pages 2-3**
- » Business Administration (WLU) and Mathematics (Waterloo) Double Degree
- » Mathematics/Business Administration - Information Technology Management (major after first year)
- » Mathematics/Chartered Accountancy
- » Mathematics/Financial Analysis and Risk Management

» **Computer Science programs – Pages 4-5**
- » Bioinformatics
- » Business Administration (WLU) and Computer Science (Waterloo) Double Degree
- » Computer Science
- » Computing and Financial Management
- » Software Engineering

» **Computational Mathematics – Page 6**

» **Mathematics programs – Pages 7-9**
Mathematics – apply to this entry program. At the end of first year or later, you select a major from this list:
- Actuarial Science
- Applied Mathematics
- Combinatorics and Optimization
- Mathematical Economics
- Mathematical Finance
- Mathematical Physics
- Mathematical Studies
- Mathematics Teaching Option
- Operations Research
- Pure Mathematics
- Statistics
- Statistics for Health

All programs are offered through both Co-op and Regular, with a few exceptions. Find out more on page 11.

NEW BUILDING: Math 3 to be completed by March 2011 » The new four-storey Math 3 building will house the Department of Statistics and Actuarial Science, as well as the Mathematics Business and Accounting programs. The 90,000 square feet of space will include 5 new undergraduate classrooms, 58 new research labs, and offices for 35 professors and 310 graduate students. One business classroom will have a Trans-lux board, like the one shown on page 3, for students to get trading floor experience.

WHAT'S INSIDE

CONTACT US

COME FOR A VISIT
Book your campus tour, get directions to campus, or find out about special visiting days
519-888-4567, ext. 33614
findoutmore.uwaterloo.ca/visitus

Faculty of Mathematics
University of Waterloo
Waterloo, ON N2L 3G1
math.uwaterloo.ca
Math Info Line: **mathinfo@math.uwaterloo.ca**
519-888-4567, ext. 36284

Business Administration (WLU) and Mathematics (Waterloo) Double Degree

First-year entry program

The University of Waterloo, in co-operation with Wilfrid Laurier University (WLU), is proud to offer Canada's only double degree program that combines studies in mathematics and business at 2 universities. You earn 2 degrees — an Honours BMath (co-op) from UW and an Honours BBA from WLU — in the time that it usually takes to complete one co-op degree. In this co-op-only program, you take courses at both universities in 10 school terms and have 4 or 5 business-focused work terms. You may pursue any one of the BBA specializations: Accounting, Finance, Financial Planning, Insurance and Risk Management, Marketing, Brand Communication, Human Resource Management, and Supply Chain Management. Additionally, students may choose to pursue one of several Honours Mathematics major programs, including Actuarial Science, Applied Mathematics, Combinatorics and Optimization, Mathematical Finance, Operations Research, Pure Mathematics, and Statistics.

Co-op Students at Work

» **Program Manager**, Delano Technology Corp.
» **Financial Analyst**, Toronto Dominion Bank

Grads at Work

» **Business Systems Analyst**, Dun & Bradstreet Canada Ltd.
» **VP Sales & Business Development**, Research in Motion
» **Manager**, Latin American Media and Promotion, Procter & Gamble

Mathematics/Financial Analysis and Risk Management

First-year entry program

The world of finance requires professionals with strong mathematical and analytical abilities. Combining mathematics with finance, accounting, economics, and risk management, you'll prepare for careers in banking, investment management, and risk management. You'll choose one of 2 specializations: Chartered Financial Analysis or Professional Risk Management. Mathematics/Financial Analysis and Risk Management will prepare you to write the Chartered Financial Analyst (CFA) exams. You'll also be prepared to pursue the Professional Risk Manager (PRM) designation.

Co-op Students at Work

» **Investment/Financial Analyst**, Illumina Partners Inc.
» **Risk Modeling Analyst**, TD Bank Financial Group

Grads at Work

» **Senior Financial Analyst**, Merrill Lynch Canada Inc.
» **Quantitative Analyst**, Nomura Asset Management Singapore Ltd.
» **Manager**, Financial Accounting, Xerox Canada
» **Financial Markets Research Analyst**, Finance Canada

» Get information about admission and mark requirements on page 12.
» For more information, visit **mathbus.uwaterloo.ca**.
» Request a business and accounting brochure at **findoutmore.uwaterloo.ca/request**.

Mathematics/Business Administration

First-year entry program

In operation for over 30 years, the Mathematics/Business Administration program has graduated more than 1,700 students, has well-established ties with industry, and capitalizes on its partnership with Wilfrid Laurier University's School of Business and Economics. Students in Mathematics/Business Administration acquire superior quantitative skills and are exposed to far more computer science and mathematics than students from more traditional business or commerce programs. The curriculum includes core business courses that cover the primary areas of any business program: accounting, business policy, economics, finance, human resources management, law, and marketing. While most traditional business programs contain 22-26 business and economics courses, the Mathematics/Business Administration program includes 22-24 such courses, depending on the electives that you choose.

Co-op Students at Work

- **Assistant Risk Advisor**, Securities Division, TD Bank
- **Internal Auditor,** AGF Management Ltd

Grads at Work

- **Technical Support Analyst**, Canadian Broadcasting Corporation
- **Technical Trainer**, Icon Entertainment
- **Marketing Specialist**, Lotus Development Canada Ltd.
- **Management Consultant**, Monitor Co.

Mathematics/ Chartered Accountancy

First-year entry program

Accountants are increasingly dependent on computer technology, statistical procedures for auditing and forecasting, and mathematical techniques, such as operations research. Mathematics/Chartered Accountancy is the only accounting program in Canada leading to a Bachelor of Mathematics degree. You'll acquire a strong background in mathematics, statistics, and computer science, complemented by an equally focused study in accounting, economics, and business-related topics. You'll focus your studies in one of 4 options: Actuarial Science, Finance, Information Systems Research, and Operations Research. Our co-op-only program places emphasis on workplace experience, helping you prepare for a career as a Chartered Accountant. Waterloo offers the only fully accredited Chartered Accountancy program in Ontario. The Mathematics/Chartered Accountancy program leads to the 8-month Master of Accountancy program that will qualify you to write the Uniform Final Exam (UFE) of the Canadian Institute of Chartered Accountants — only 5 years after admission to Waterloo.

Co-op Students at Work

- **Student in Accounts**, Deloitte & Touche Chartered Accountants
- **Junior Auditor**, Hudson's Bay Company

Grads at Work

- **Accountant**, Blue Cross Life Insurance Company of Canada
- **Tax Specialist**, Coopers & Lybrand
- **Corporate Accounting Analyst**, Imperial Oil Ltd.
- **Corporate Budget Analyst**, Ontario Ministry of Transportation

Information Technology Management

– Major, enrol in 2nd year or later

Mathematics/Business Administration now offers a new spin-off major in Information Technology Management that begins in second year. Today's business leaders recognize the importance of using technology to solve real-world business problems. In this Bachelor of Mathematics program, the focus is on the application of computers to difficult business issues, and it includes courses in systems analysis, software engineering, databases, e-business, networks, project management and management information systems. You'll learn about a variety of information systems and techniques and their uses and graduates will be prepared to apply modern IT solutions to business processes.

Co-op Students at Work

- **Finance and IT Support Specialist**, Pacific & Western Bank of Canada
- **Junior Analyst** – Financial Engineering, Scotia Capital Inc, Global Markets

You'll get trading floor experience using a Trans-lux board, like the one shown in the adjacent photo.

Computer Science

First-year entry program

Computer Science applies the power of computers to today's problems. From searching through the vast amount of information on the web (database management) to creating new special effects for movies (computer graphics), to designing a successor to the Java programming language, Computer Science explores the practical and theoretical limits of what can be solved. The Computer Science program at UW covers the fundamentals of the discipline while giving you opportunities in later years to tailor your studies to specific interests. You may choose from electives in diverse areas such as artificial intelligence, computer networks, quantum computing, and real-time programming, either as part of a plan of your own design, or as one of the following options: Bioinformatics, Business, Digital Hardware, and Software Engineering. **cs.uwaterloo.ca**.

Co-op Students at Work

- **System Quality Specialist**, Research in Motion
- **Software Designer**, Microsoft Corporation

Grads at Work

- **Head of Digital Imagery**, National Film Board of Canada
- **Graphics Software Engineer**, Mental Images
- **Wireless Software Developer**, Entrust Inc.
- **Manager**, Animation Research and Development, Pixar Animation Studios
- **Research Scientist**, Oak Ridge National Laboratory

For more information about studies in the Cheriton School of Computer Science, visit **cs.uwaterloo.ca**. Request a David R. Cheriton School of Computer Science Admissions 2011 brochure or a Computing and Financial Management Admissions 2011 brochure at **findoutmore.uwaterloo.ca/request**.

Business Administration (WLU) and Computer Science (Waterloo) Double Degree

First-year entry program

Our information-rich, global marketplace today needs individuals who can solve sophisticated, industry-specific problems using advanced technology combined with comprehensive business knowledge and experience. The Faculty of Mathematics is pleased to introduce a new co-op-only program in Business Administration (WLU) and Computer Science (Waterloo) Double Degree that prepares graduates to meet this demand. This program integrates the strengths of Waterloo's School of Computer Science with Wilfrid Laurier University's (WLU) School of Business and Economics. You earn 2 degrees – an Honours Bachelor of Computer Science from Waterloo and a Bachelor of Business Administration from WLU. Over 10 academic terms and 4 to 5 work terms, you take a broad range of courses in computing, mathematics, business, and economics.

Co-op Students at Work

- **Information Systems Specialist**, Toyota Motor Manufacturing Canada, Ltd.
- **Program Manager**, Delano Technology Corp.

Grads at Work – sample careers

- **Business Analyst**, Canadian Imperial Bank of Commerce
- **Manager, Information Systems**, Locus Systems Inc.
- **President**, Software Optimization Inc.

Bioinfomatics

First-year entry program

Bioinformatics applies the latest ideas of computer science to the wealth of new biological data to solve important biological problems, study the interactions of small molecules with biological receptors, and search for novel therapies for disease. The Faculties of Mathematics and Science jointly prepare students with a sophisticated understanding of the problem domain in biology and appropriate analytical skills in computer science. After second year, you can choose to focus on either the computer science aspect (leading to a Bachelor of Computer Science) or the biological aspect (leading to a Bachelor of Science).

Co-op Students at Work

- **Biomedical Information Intern**, Ontario Cancer Institute
- **Computer Data Analyst**, Environment Canada

Grads at Work

- **Manager**, Informatics and Program Support, Toronto Centre for Phenogenomics
- **Software Engineer**, Bioinformatics Solutions Inc.
- **Research Scientist**, Public Health Agency of Canada
- **IM/IT Programmer**, Environment Canada

Computing and Financial Management

First-year entry program

There is a growing demand for software professionals who are well versed in financial applications and financial management professionals who are completely at home with modern software development methods. This program combines both of these distinct areas. Computing and Financial Management provides a strong core background in computer science as well as financial management. Leading firms in the financial services sector recognize that the ability to design and deploy sophisticated information technology is now a necessary part of their day-to-day operations. As the demand for complex financial services increases, more reliance will be placed on software systems to deliver such services. Visit **cfm.uwaterloo.ca.**

Co-op Students at Work

- **Business Analyst**, Financial Engineering – Scotia Capital Inc.
- **Trading Strategist**, ITG Canada Corp.
- **Financial & Technology Analyst**, Manulife Financial
- **Financial Software Developer**, Sybase Canada Limited

Grads at Work

As a graduate of this program, your interdisciplinary knowledge and 24 months of co-op work experience will prepare you for

- a career in the **financial services** industry
- graduate studies in **finance, computer science** or both
- the **Chartered Financial Analyst** (CFA) examinations

» Get information about admission and mark requirements on page 12.

Software Engineering

First-year entry program

Software engineering applies computer science and engineering philosophies, principles, and techniques to the creation, operation, and maintenance of computer software. Our program combines the University's strengths in computer science and computer engineering. Graduates earn a Bachelor of Software Engineering (BSE), which provides a solid foundation in software design, evaluation, project management, and technical documentation. You'll learn to develop software systems that ensure the reliability, performance, and usability demanded by today's industrial and business applications. Our program is accredited by the Canadian Engineering Accreditation Board and the Computer Science Accreditation Council. Two accreditations will expand your employment opportunities during your co-op work terms and after graduation. Visit **softeng.uwaterloo.ca.**

Co-op Students at Work

- **Software Engineering**, Google
- **Technical Advisor**, Bereskin & Parr

Grads at Work

- **System Design Engineer**, Microsoft Corporation
- **Software Engineer**, IBM Corporation
- **Software Engineer**, Allied Signal Aerospace Canada
- **Senior Software Developer**, Iris Power Engineering
- **Software Engineer**, Mortice Kern Systems Inc.

"...Waterloo is the university we hired the most people from of any university in the world."

- **BILL GATES**, while at the University of Waterloo

Computational mathematics

First-year entry program

Today, many sectors of industry face increasingly larger-scale problems that can be solved only by people who have specialized knowledge and skills in computer modelling of mathematical problems, such as those found in business, economics, engineering, finance, medicine, and science. To meet this need, Waterloo offers Computational Mathematics, a program at the intersection of mathematics and computer science that teaches students to exploit the increasing power of computers for solving industrial-size mathematical problems. There is a significant demand for people educated in the field of computational mathematics who are able to deploy effectively a wide range of mathematical and computational techniques in diverse areas of application.

Co-op Students at Work

- **Ice Model Research Assistant**, Data Assimilation, Environment Canada
- **Jr. Business Analyst Intern**, Clear-to-Close Solutions, Denville, NJ, USA
- **Quality Assurance Technicians**, Farm Business Consultants

Grads at Work

- **Network Manager**, Canada Institute of Linguistics
- **Process and Technology Officer**,Canadian National Railway Co.
- **Development Analyst**, Network-Centric Product and Technologies, IBM
- **Senior Structural Designer**, Zefer Corporation

» Get information about admission and mark requirements on page 12.

» alex perel BMath 2006

Program: Honours Co-op Mathematics/Business Administration, Finance Option
Current job: Equities Trader, TD Newcrest

You had this job lined up before before you graduated, didn't you? Tell us about it.
Alex: I'm at TD Newcrest, the institutional equities division of TD Securities, Toronto, Canada. We work with large investors such as mutual fund companies and pension plans to help them invest in the Canadian stock market.

What factors helped you clinch this job?
Alex: I did my last 4 work terms with TD Securities. Between terms I stayed in touch and helped out when they needed it. Over that period, I completed my CFA Level 1 and 2 exams, which people don't usually complete until they've graduated and are working in the field.

Any advice for prospective students?
Alex: You get as much out of the University as you put into it. Set the bar high for yourself. Get organized and do things in advance so that you can do your best work and still have time for some fun!

Jobs and salaries in IT on the rise

"This year, predicts Mark Zandi, chief economist of Economy.com, the tech industry will create 782,000 jobs or 8.6% of the economy's projected 9.1 million new jobs. Last year the average salary in high tech grew 5.1% to $69,000, up from a 4.3% gain the previous year. This year, wages will rise in the mid- to high-single digits."

– BusinessWeek

Mathematics First-year entry program

Spend first year in Mathematics before you pick your major

Mathematics is an ideal program in which to begin your studies. In this flexible program, you'll sample courses from a variety of disciplines within and outside the Faculty of Mathematics. You'll pick one of these majors (see pages 7-9) at the end of first year, or you may even wait until the end of second year.
Get information about admission and mark requirements on page 12.

Actuarial Science

Major, enrol in 2nd year or later

Actuaries measure risk. Based on past experience, they use mathematics and statistics to predict the future behaviour of uncertain events, such as stock market performance and income from insurance policies and pension plans. For example, your goal as an actuary may be to run an insurance or pension plan in a way that balances financial success with an acceptable level of risk. At Waterloo, actuarial science courses are taught by professors who are qualified actuaries. You'll take courses that help you work toward your professional designation as a Fellow of the Canadian Institute of Actuaries.

Co-op Students at Work

- **Actuarial Student**, Towers Perrin
- **Actuarial Student**, SunLife

Grads at Work

- **Actuarial Officer**, Prudential Assurance Co., Hong Kong
- **Senior Group Underwriter**, Munich Reinsurance Co. of Canada
- **Actuarial Specialist**, Towers Perrin, Inc.

Combinatorics and Optimization

Major, enrol in 2nd year or later

Combinatorics, the mathematics of finite structures, is often used in computer science and communications. Optimization, mathematical programming that explores how to make any operation work more efficiently within given constraints, is often used in engineering and the physical and management sciences. Applications of combinatorics and optimization include cryptography, which provides security for electronic communications; graph theory, such as modeling transportation networks; and optimization, for improving efficiency in many business and scientific settings. Major topics of study include enumeration, graph theory, linear programming, nonlinear optimization, and operations research.

Co-op Students at Work

- **Cryptographic Security Analyst**, Bank of Nova Scotia
- **Design Specialist**, Clearnet

Grads at Work

- **Quality Assurance Specialist**, Mortice Kern Systems Inc.
- **Operations Research Analyst**, 3M Canada Inc.
- **Cryptographer**, Entrust Technologies Ltd.
- **Simulation Consultant**, Sandwell Inc.
- **Business Analyst**, CIBC

Applied Mathematics

Major, enrol in 2nd year or later

Applied Mathematics occupies the fertile ground between pure mathematics on one side and science and engineering on the other. You'll find that calculus, together with the related subject of differential equations, is of fundamental importance in these programs, since it provides the foundation for most mathematical models in science and engineering. Within Applied Mathematics, you may focus your studies in one of Applied Mathematics with Engineering Electives, Mathematical Physics, Scientific Computation/Applied Mathematics, Biology Option, Economics Option, and Earth Science Option. Some graduates work in research, development and consulting, in areas as diverse as aerospace, environment, communications, finance, energy, and software. Others pursue graduate studies in applied mathematics, computer science, engineering, or physics.

Co-op Students at Work

- **Software Designer**, Telesat Canada
- **Research Assistant**, Communications Research Centre

Grads at Work

- **Manager**, Flight Dynamics Systems, Telesat Canada
- **Meteorologist**, Environment Canada
- **Project Manager**, Nuclear Safety Solution Ltd.
- **Site Manager and Team Leader**, Agfa Healthcare

Mathematical Physics

Major, enrol in 2nd year or later

Advanced mathematical methods are important in the entire spectrum of physics, from basic research into the fundamental laws of nature to the development of new types of technologies. The Department of Applied Mathematics, in collaboration with the Department of Physics, offers an integrated set of courses in mathematics and physics and leads to the Bachelor of Mathematics degree. This program prepares you for graduate studies or for employment opportunities in the energy sector, in the semi-conductor industry, in the field of telecommunication, and in medical technology.

Co-op Students at Work

- **Prototype Tester**, Triumf
- **Ice Model Research Assistant**, Environment Canada
- **Research Assistant**, University of Waterloo

Grads at Work

- **Reactor Core Physics Researcher**, Atomic Energy of Canada
- **Associate Analyst**, Nuclear Safety Solutions Limited

Apply to Mathematics for access to the majors listed on pages 7-9.

Mathematical Economics

Major, enrol in 2nd year or later

Much of current day economics is expressed in terms of mathematical models and uses mathematical, statistical and computational concepts extensively. Problems in economics have led to advances in mathematics. Indeed, economics and mathematics are complementary disciplines. Mathematical Economics is a new program offered jointly by the Faculty of Mathematics and the Department of Economics in the Faculty of Arts. In this program, you'll learn how to apply mathematical methods to represent economic theories, and to analyze and solve problems that arise in economics.

Co-op Students at Work

- **Junior Analyst**, Department of Foreign Affairs and International Trade
- **Economic Analyst/Researcher**, Health Canada
- **Consumer Intelligence Business Analyst**, LoyaltyOne Inc.

Grads at Work – sample careers

- **Economist/Analyst**
- **Investment Manager**
- **Securities Broker**
- **Strategic Planner**
- **Commodities Trader**
- **Market Researcher**

Mathematical Studies

Major, enrol in 2nd year or later

Mathematics is the foundation of commerce, computing, engineering, and science and is the language of all scientific inquiry. Mathematical Studies is the most flexible of all the Math Faculty majors. You'll sample courses from the broad spectrum of courses available in the Faculty without having to make any one area of study your major. You'll acquire strong analytical, mathematical, computing, and problem-solving skills. Career paths after graduation are as varied as the courses you'll package together in this program.

Co-op Students at Work

- **Space and System Software Developer**, TMI Communications

Grads at Work

- **Controller**, Extendicare Health Services
- **Chief Scientist**, OpenGraphics Corp.
- **Financial Analyst**, Philex Gold Inc.
- **Manager**, Information Systems, Locus Systems Inc.
- **President**, Software Optimization Inc.

Mathematical Finance

Major, enrol in 2nd year or later

The Faculty of Mathematics is pleased to introduce Mathematical Finance, a new major for mathematics students. Pure Mathematics and Actuarial Science operate Mathematical Finance jointly. This program offers a challenging curriculum, including courses in Corporate Finance, Mathematical Models in Finance, Asset-Liability Management, Real and Complex Analysis, Mathematical Statistics, Applied Linear Models, Applied Probability, and Forecasting. Though a number of finance programs exist for UW students, Mathematical Finance is designed for students with elite mathematical abilities. Students in this plan will learn both the pure mathematics and the mathematical finance necessary for a career in the highest echelons of banking and mathematical finance.

Co-op Students at Work

- **Junior Risk Analyst**, ING Life Korea
- **Risk Modeling Analyst**, TD Canada Trust Financial Group, Risk Analytics

Grads at Work – sample careers

- **Financial Advisor,** Assante Financial
- **Assistant Portfolio Manager,** Normura Asset Management Singapore Ltd.
- **Financial Services Assistant,** Clow Actuarial Consulting Inc.
- **Finance Manager Asia Region,** Key Safety Systems Inc.

Mathematics Teaching Option

Major, enrol in 2nd year or later, Co-op only

This program integrates studies in education and the mathematical and computer sciences with practical classroom experience. The Teaching Option is offered jointly by Waterloo and the Faculty of Education at Queen's University in Kingston. Admission takes place in second year, and admission decisions are made by representatives from both UW and Queen's. You'll complete 2 years of study and 2 work terms in industry before your first teaching term. At the end of third year, you'll spend 8 months at Queen's completing your Bachelor of Education (BEd) and a teaching apprenticeship, followed by your second teaching term. At graduation, you'll receive both your BMath and BEd and will be qualified to teach in Ontario's middle and high schools.

Co-op Students at Work

- **Teaching Intern**, Thornlea Secondary School
- **Teaching Intern**, Upper Canada College

Grads at Work

- **Assistant Professor**, University of Western Ontario
- **Computer Science Teacher**, Peel Board of Education
- **Instructor**, User Services, Software ACR of Canada
- **Head of Mathematics**, Waterloo Board of Education

Degrees of difference

» When you complete your undergraduate degree in one of the Mathematics majors, you'll earn a respected Bachelor of Mathematics – BMath – degree.

» For more information about studies in the Faculty of Mathematics, visit **math.uwaterloo.ca**.

Apply to Mathematics for access to the majors listed on pages 7-9.

Operations Research

Major, enrol in 2nd year or later

Operations Research has become indispensable to businesses concerned with identifying optimal solutions for complex problems in areas such as inventory, production control, and scheduling. This program involves constructing mathematical models of real-world situations and uses sophisticated techniques for solving problems. Operations Research integrates courses in optimization, probability, statistics, and computer science with courses in business, economics, and management science, including real-world case studies. Our graduates are analysts, consultants, systems designers, and operations specialists in many areas of industry, including manufacturing, transportation, banking, and communications.

Co-op Students at Work

- **Service Design Analyst**, CP Rail
- **Information Systems Specialist**, Toyota Motor Manufacturing Canada, Ltd.

Grads at Work

- **Supply Chain Analyst**, Apex Systems Integrators Inc.
- **Quality Assurance Analyst**, Numetrix, Ltd.
- **Project Manager**, Union Pacific Railroad

Statistics

Major, enrol in 2nd year or later

Statistics, the science of drawing reliable conclusions from data, involves the careful planning of studies, the computational exploration and analysis of possibly large collections of data, and the development of mathematical models. Statistics plays a role in all aspects of a data-based investigation from the design of studies and surveys to the empirical discovery of patterns in data, to the determination of the principal causes of an important effect. Statistics provides the fundamental collection of research methods and tools for business, medicine, epidemiology, industrial design and quality improvement, pattern recognition, pharmaceutical development, artificial intelligence, genetic pattern determination and discovery, and marketing.

Co-op Students at Work

- **Modelling Analyst**, Tener Solutions Group Inc.
- **Quality Specialist**, Standard Products Canada Ltd.

Grads at Work

- **Director of Research**, Ontario Teachers Pension Plan Board
- **Market Researcher**, Statistical Modelling Co.
- **VP**, Risk Management Systems, TD Securities Inc.
- **Biostatistician**, Pharmacia and Upjohn Inc.
- **Statistician**, AC Nielsen, Canada

Pure Mathematics

Major, enrol in 2nd year or later

Pure Mathematics is the study of the beauty, the power, and the "why" of mathematics. This program is comprised of a broad spectrum of mathematics ranging from classical to modern, including algebra, number theory, analysis, geometry, topology, logic, and functional equations. In courses that explore the boundaries of mathematics and pure reason, you'll be challenged to think critically and creatively. You may choose to focus your studies in the Finance Option or the Teaching Option (co-op only). This program is characterized by high standards, small classes, and a supportive environment.

Co-op Students at Work

- **Student Consultant**, Algorithmics
- **System Integration**, Bank of Montreal

Grads at Work

- **Chief Scientist**, Zero-Knowledge Systems Ltd.
- **Assistant Professor**, University of British Columbia
- **Systems Analyst**, Royal Bank of Canada

Statistics for Health

Major, enrol in 2nd year or later, Co-op only

There is a critical shortage of people with quantitative health research skills. Statistics for Health, a new co-op-only program that is housed in the Department of Statistics and Actuarial Science, draws from Waterloo's strengths in statistics, biostatistics, computer science, health studies, gerontology, and economics. It emphasizes the statistical elements of research in the areas of clinical, public and population health, through an innovative curriculum, including the use of data collection and statistical analysis for supporting decisions and informing policy for public health and health care. Statistics for Health, the only program of its kind in Canada, will equip students with skills, knowledge, and experience, and it will prepare graduates for successful careers in the quantitative sector of the health care industry.

Sample Co-op Students at Work

- **Research Assistant**, Department of Health

Grads at Work – sample careers

- **Regional Health Authorities**
- **Hospitals**
- **Pharmaceutical companies**
- **Statistics Canada**
- **University-based health research groups**

International Award Winners

Waterloo student teams have reached the finals – the world level – in the ACM International Programming Competition for 18 consecutive years and have won twice. In the Putnam Mathematics Competition, a North American competition, student teams have placed in the top 10 teams (first place in 2000) in all but 3 of the last 21 years.

FIRST YEAR AND BEYOND

International Studies: Make the world your classroom

Take advantage of one of our over 50 international connections: academic exchanges* are available for third-year students with universities in Australia, Austria, China, Finland, France, Germany, Great Britain, Hong Kong, Hungary, India, Israel, Italy, Japan, Korea, Mexico, Norway, Singapore, Spain, Sweden, Switzerland, Taiwan, Turkey, and the West Indies. **math.uwaterloo.ca/exchanges**

* If you're awarded a President's Scholarship of Distinction, you'll receive $1,500 to help defray exchange program expenses. Some restrictions apply.

Exciting exchange opportunity at Singapore Management University!

The Math Faculty is pleased to announce our new partnership with Singapore Management University. Each year, up to 20 students will be given the opportunity to experience the cultural and academic environment that this great city has to offer.

what you'll be studying

Your first year in the Faculty of Mathematics will prepare you for more advanced studies and give you a chance to explore your academic strengths. You'll take 5 courses each term, including the "core" courses that are common to all Math Faculty programs. Core courses provide a flexible academic foundation from which you may select or change your major.

Examples of First-Year "Core" Courses

- Classical Algebra
- Linear Algebra 1
- Calculus 1 and Calculus 2
- Introductory Computer Science courses

Advanced versions of Calculus, Algebra and Computer Science are available. Students with Euclid scores above 80 will be eligible for these advanced sections.

You'll choose a sequence of first-year computer science courses based on your prior experience, aptitude, and academic goals. We offer course sequences ranging from those for students with no high school computer science to those for experienced programmers. Information about the courses is available from **cs.uwaterloo.ca/prospect**.

Consider Enrolling at St. Jerome's

An attractive feature of studying the mathematical and computer sciences at Waterloo is the option of registering through St. Jerome's University (SJU). Located on Waterloo's campus, near the Math and Computer building, SJU provides a smaller academic and residence environment for interested students.

At St. Jerome's, you get the best of both worlds: you earn a University of Waterloo degree while remaining part of the close-knit community atmosphere that sets St. Jerome's apart. All Math Faculty programs are offered through the University of Waterloo and St. Jerome's University, except Software Engineering and Computing and Financial Management, which are offered through Waterloo only. You'll receive instructions for registering for Math Faculty programs through St. Jerome's after we receive your application from OUAC.

If you'd like more information about St. Jerome's University, please call 519-884-8110, ext. 28243, or 1-888-752-4636 (toll-free in Canada), email you@sju.uwaterloo.ca, or visit **sju.ca**.

co-op or regular – it's your choice

In most programs, you can choose to complete your studies through either the regular or the co-op system of education. Both approaches have valuable benefits, depending on your academic goals.

Co-op

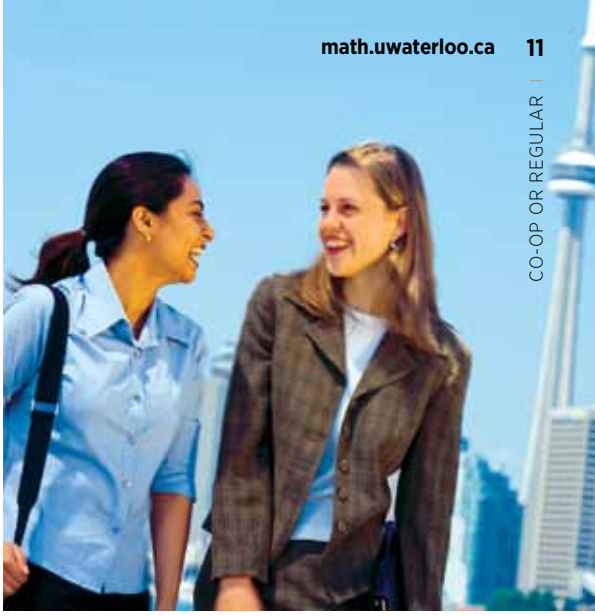
- 70% of all Math Faculty students are enrolled in co-op
- Co-op may begin in first-year, except for the Math/CA program
- Graduate with up to 2 years of work experience to add to your résumé
- Choose from the world's largest selection of co-op jobs
- Explore different career areas before graduation
- Obtain diverse and relevant work experience in your field
- Earn between $55,000 and $80,000 over 4-6 work terms to help finance your education
- Make valuable career contacts

Regular

- 30% of all Math Faculty students are enrolled in regular
- Study from September to April
- Plan your own summers
- Focus on school and campus life
- May be easier to participate in some varsity sports or get a part-time job
- Move more quickly into a career or further education
- Graduate a year sooner than in the co-op system

Co-op-only entry programs

Business Administration (WLU) and Computer Science (Waterloo) Double Degree
Business Administration (WLU) and Mathematics (Waterloo) Double Degree
Computing and Financial Management
Mathematics/Chartered Accountancy
Software Engineering



$550-$805 Average weekly salary ranges in work terms 1-6

Potential earnings over 4-6 work terms **$55,000-$80,000**

4-6 Number of possible work terms, depending on your program

$609 Co-op fee per term

Average work-term employment rate for co-op students over the last 2 years **90-95%**

The Co-op Study/Work-Term Sequences Compared with the Regular Sequence

In most programs, you'll have the opportunity to select the co-op study/work sequence you want to follow.*

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
	F **W** S	**F** W **S**	F **W** S	**F** W **S**	F **W** S
Regular	Study **Study** Off	**Study** Study **Off**	Study **Study** Off	**Study** Study **Off**	
Sequence A/CFM	Study **Study** Work	**Study** Work **Study**	Work **Study** Work	**Study** Work **Study**	Work **Study**
Sequence B	Study **Study** Work	**Study** Study **Work**	Study **Work** Study	**Work** Study **Work**	Work **Study**
Sequence C	Study **Study** Off	**Study** Work **Study**	Work **Study** Work	**Study** Work **Study**	Work **Work** Study
Sequence D	Study **Study** Study	**Work** Study **Work**	Study **Work** Study	**Work** Study **Work**	Work **Study**
Math/CA	Study **Study** Off	**Study** Work **Study**	Study **Work** Study	**Study** Work **Work**	Study
Math TO	Study **Study** Work	**Study** Work **Study**	Study **Teach** Study	**QU** QU **Study**	Teach **Study**
BBA/BCS, BBA/BMath*	Study **Study** Work	**Study** Work **Study**	Study **Work** Study	**Study** Study **Work**	Study **Study**
Software Engineering	Study **Study** Work	**Study** Work **Study**	Work **Study** Work	**Study** Work **Study**	Work **Study**

CFM – Computing and Financial Management

Math/CA – Mathematics/ Chartered Accountancy

BBA/BCS – Business Administration (WLU) and Computer Science (Waterloo) Double Degree

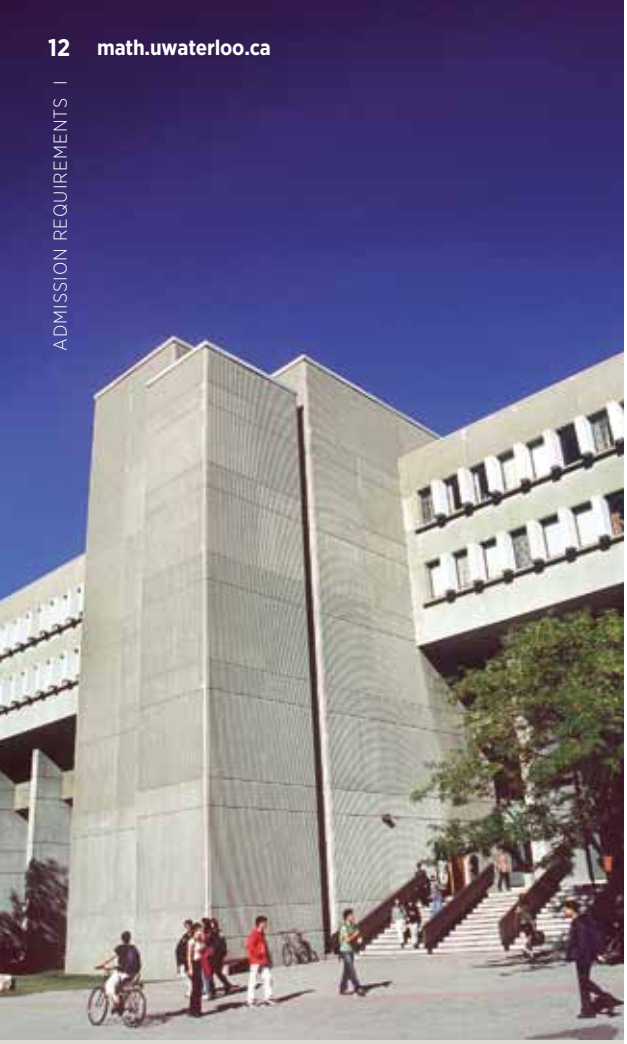
BBA/BMath – Business Administration (WLU) and Mathematics (Waterloo) Double Degree

Math TO – Mathematics Teaching Option

QU – Queen's University/ Faculty of Education

F = FALL TERM (September-December) **W** = WINTER TERM (January-April) **S** = SPRING TERM (May-August)

* There maybe additional co-op sequence options for students in upper years in programs such as BBA/BCS and BBA/BMath.



English Language Requirements

If your first language is not English and you've not studied in an English-language school system for the most recent 4 years immediately before you start your studies at UW, you must satisfy one of these English language test options. Deadlines for submitting these scores are at **findoutmore.uwaterloo.ca/admissions/elr.php**.

Minimum Test of English Language Scores

Paper-based TOEFL	Internet-based TOEFL	IELTS	MELAB	CAEL	PTE* (Academic)
580 TSE 50	90 writing 25 speaking 25	7.0	85; 80 per section For co-op programs: speaking 3	70 60 per band writing 70 speaking 70	63 writing 65 speaking 65

***PTE (Academic)** – Pearson Test of English (Academic)

Note: If your scores are lower than those listed above, you may be considered for our Math/ELAS program.

Admission Through Mathematics/English Language for Academic Studies (Math/ELAS)

If your English language test scores are below those listed in the chart above, but you have a strong background in mathematics, you may be eligible for admission through the Math/English Language for Academics Studies (Math/ELAS) program. You may not apply to Math/ELAS, but you may receive an alternative offer of admission to Math/ELAS. For more information, visit **math.uwaterloo.ca/ELAS**.

admission requirements 2011 for Ontario High School students

Requirements:

- Ontario Secondary School Diploma (OSSD) or equivalent
- At least 6 grade 12 university (U) preparation or university/college (M) preparation courses, including all the required courses for each program you are applying to. See the chart below.
- Advanced Placement (AP) courses can be substituted for required courses. AP and International Baccalaureate (IB) courses will be considered for transfer credit.
- Software Engineering – Learn about additional Software Engineering requirements at **findoutmore.uwaterloo.ca/admissions/requirements.php**.

Recommended courses:

- All programs – Grade 11 U Introduction to Computer Science.
- Mathematics/Chartered Accountancy or Computing and Financial Management – Grade 12 M Principles of Financial Accounting.

Strongly recommended:

- Complete and submit an Admission Information Form.
- Prepare for and write the Euclid Mathematics Contest.

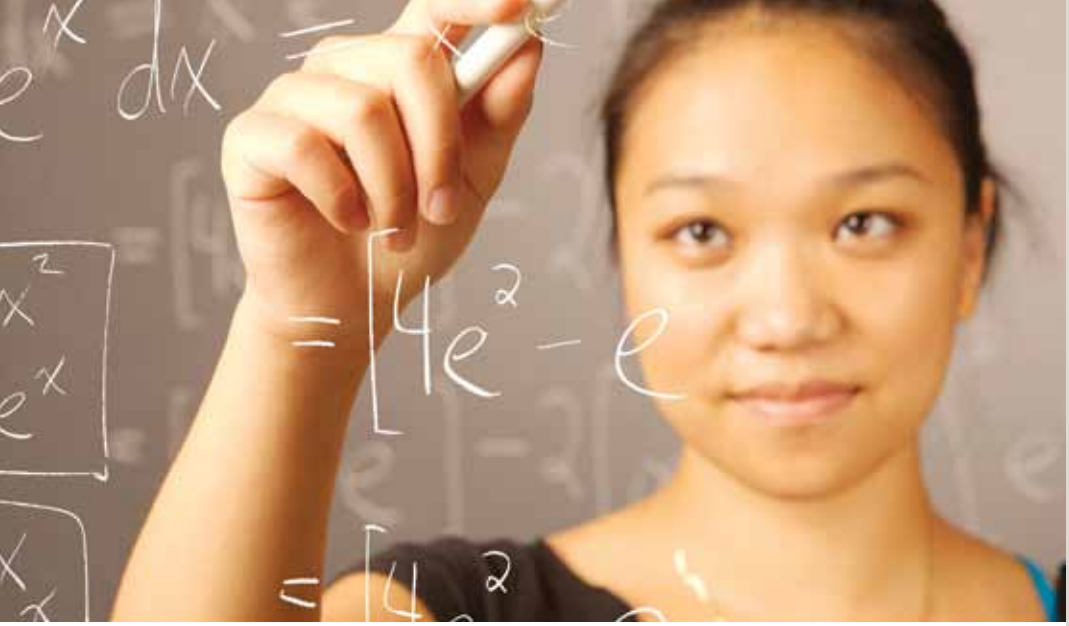
APPLY TO	INDIVIDUAL SELECTION FROM THE	REQUIRED COURSES
Bioinformatics Regular and Co-op	Mid-80s	Advanced Functions, Calculus and Vectors, Chemistry, English, one of Biology or Physics
Business Administration (WLU) and Computer Science (Waterloo) Double Degree Co-op only	High 80s	Advanced Functions; Calculus and Vectors; English; one other Grade 12 U Course
Business Administration (WLU) and Mathematics (Waterloo) Double Degree Co-op only	Mid-80s	
Computational Mathematics Regular and co-op	Low 80s	
Computer Science Regular and Co-op	Mid-80s	
Computing and Financial Management Co-op only	Mid-80s	
Mathematics – Note 1 Regular and co-op	Low 80s	
Mathematics/Business Administration Regular and co-op	Mid-80s	
Mathematics/Chartered Accounting Co-op only	Low 90s	
Mathematics/Financial Analysis and Risk Management Regular and co-op	High 80s	
Software Engineering Co-op only	Mid-80s	Advanced Functions, Calculus and Vectors, Chemistry, English (ENG4U), Physics (a final grade of at least 70% is normally required in each of these courses.)

Note 1: Mathematics – this application category leads to majors in Actuarial Science, Applied Mathematics, Combinatorics and Optimization, Mathematical Studies, Mathematical Economics, Mathematical Finance, Mathematical Physics, Mathematics Teaching Option, Operations Research, Pure Mathematics, Statistics, Statistics for Health.

- For equivalent requirements based on the province or country in which you have completed your high school credits, go to **findoutmore.uwaterloo.ca/admissions**.
- All Faculty of Mathematics programs, except Software Engineering and Computing and Financial Management, are offered through St. Jerome's University (SJU). After applying to a Faculty of Mathematics program through the Ontario Universities Application Centre, you may choose to register at SJU.

January Admission 2011 or 2012

If you're eligible for early admission in January 2011 or if you want to be considered for admission in January 2012, visit **math.uwaterloo.ca/Januaryadmission.**



finance your education

Take time to prepare a realistic budget for university: list your financial needs and all the resources available to finance your education. **findoutmore.uwaterloo.ca/financing/budget.php**

President's Scholarships
findoutmore.uwaterloo.ca/financing/president.php

- President's Scholarships of Distinction (95% and higher): $2,000 plus a $1,500 Research Award and/or a $1,500 International Experience Award
- President's Scholarships (90-94.9%): $2,000
- Merit Scholarships (85-89.9%): $1,000

A President's Scholarship may be combined with one of the following other scholarships.

National Scholarships

- 13 scholarships ranging in value from $12,000 to $25,000
- Criteria: high academic performance, and extra-curricular activities. National Scholarship application form must be completed and submitted by February 7, 2011. Application is available from October 2010 at **math.uwaterloo.ca/scholarships**

Entrance Scholarships
math.uwaterloo.ca/scholarships

- 150 scholarships ranging in value from $1,000 to $10,000
- Criteria: high academic performance, Euclid Mathematics Contest results, completed and submitted Admission Information Form
- Every applicant to the Math Faculty is automatically considered
- Recipients are notified near the end of May

Bursaries

- $500 to $4,000 for your first year
- Eligibility: Ontario resident, demonstrate financial need, attend a university for the first time in September 2011
- For Bursary and OSAP application deadlines, please check **findoutmore.uwaterloo.ca/financing/bursary.php**

Important Dates 2010-11

February 7, 2011	Deadline for National Scholarship Application
March 1, 2011	Canadian Computing Competition
April 12, 2011	Euclid Mathematics Competition
April 15, 2011	Deadline for supporting documents to reach Waterloo

For more details, visit findoutmore.uwaterloo.ca/thenextstep

Events

November 6, 2010	Fall Open House – for all students and their families
March 15, 2011	March Break Open House – for applicants and their families
May 2011	You@Waterloo Day – for all students with offers of admission

For event and date details, visit findoutmore.uwaterloo.ca/visitus

participate in contests

Euclid Mathematics Contest

While the Euclid Contest is not required for admission, **we encourage you to participate because it will help develop your problem-solving skills and prepare you for university studies**. As well, strong performance in the Euclid Contest can help earn you a place in the Faculty of Mathematics. If you're not an Ontario high school student, you're particularly encouraged to write the Euclid Contest to demonstrate that you have sufficient mathematical background to enter our programs. **To be eligible for a Faculty of Mathematics entrance scholarship, the Euclid Contest is a requirement.** It will be written in Canada and around the world on April 12, 2011. The deadline to register is March 2, 2011. For more information, visit **math.uwaterloo.ca/contests**.

Mathematics Resource Manual for High School Students and Undergraduate Studies
This manual will help you prepare for the Euclid Contest and first-year Mathematics courses. Cost is $21.00 in Canada, $30.00 outside Canada, plus S & H. To order a copy, visit **cemc.uwaterloo.ca**.

Canadian Computing Competition (CCC)

While the CCC is not an admission requirement, we encourage you to participate as high marks will be an asset for your admission into the School of Computer Science. It will be written on March 1, 2011. The deadline to register is January 26, 2011. For more information, visit **math.uwaterloo.ca/contests**.

CONTACT US

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math.uwaterloo.ca
Math Info Line
mathinfo@math.uwaterloo.ca
519-888-4567, ext. 36284

REQUEST A BROCHURE

If you don't already have a copy, request Waterloo's *Admissions 2011* or one of Mathematics' other brochures:

» *Computing and Financial Management*

» *David R. Cheriton School of Computer Science*

» *Mathematics Business and Accounting*

findoutmore.uwaterloo.ca/request

E-NEWSLETTER

Stay connected with Waterloo through the admissions process, subscribe to our electronic newsletter,
findoutmore.uwaterloo.ca/newsletter/subscribe.php

ideas start here

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Questions about Waterloo:
findoutmore.uwaterloo.ca

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DESIGN: CREATIVE SERVICES, UNIVERSITY OF WATERLOO
EDITORIAL: G. GOODFELLOW 95516