

# MATHEMATICAL SCIENCES

## (HBSc)

*Department of Mathematical & Computational Sciences*

**Mathematical Sciences** teaches one to think analytically and creatively. It is a foundation for advanced careers in a knowledge-based economy. The past century has been a remarkable one for discovery in mathematics. Problems in computer science, physics, biology, and economics have opened new fields of mathematical inquiry, and discoveries at the most abstract level, for example in number theory, have led to breakthroughs in applied areas.

Our award winning faculty bring knowledge and experience from a variety of backgrounds. Your time in this program will be enriched with independent study courses and Research Opportunity Program (ROP) courses, as well as small group projects and thesis courses with the faculty.

## MAKE THE MOST OF YOUR TIME AT UTM!

We want to help you maximize your university experience, so we've pulled together information and interesting suggestions to get you started. As you review the chart on the inside pages, note that many of the suggestions need not be restricted to the year they are mentioned. In fact, activities such as joining an academic society, engaging with faculty and seeking opportunities to gain experience should occur in each year of your study at UTM. Read through the chart and create your own plan using **My Program Plan** found at [www.utm.utoronto.ca/program-plans](http://www.utm.utoronto.ca/program-plans)

### Programs of Study (POSt)

- Specialist Program ERSPE2511 Mathematical Sciences (Science)
- Major Program ERMAJ2511 Mathematical Sciences (Science)
- Minor Program ERMIN2511 Mathematical Sciences (Science)

### Check out...

What's a strange attractor? Take MAT332H5 to learn about bifurcation theory, chaos and fractals. Discover the beauty of proofs in MAT309H5! Study the nature of axioms, proofs and consistency as well as the theory of recursive functions.

### What can I do with my degree?

The career you choose will depend on your experience and interests. Visit the Career Centre to explore your career options.

**Careers for graduates:** Market research analyst; Mathematical technician; Purchaser; Actuary; Secondary school teacher; Numerical analyst; Operations research analyst; Budget analyst; Insurance underwriter; Logistics specialist; Risk analyst; Supply chain system analyst.

**Workplaces:** Government; Banks; Investment firms; Insurance; Retail; Research and development firms.



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## MAJOR Program Plan

## HOW TO USE THIS PROGRAM PLAN

Read through each year. Investigate what appeals to you here and in any other Program Plans that apply to you.

Visit [www.utm.utoronto.ca/program-plans](http://www.utm.utoronto.ca/program-plans) to create your own plan using [My Program Plan](#). Update your plan yearly.



|                        | 1 <sup>ST</sup> YEAR                                                                                                                                                                                                                                                                                                                                                                                                             | 2 <sup>ND</sup> YEAR                                                                                                                                                                                                                                                                                                                               | 3 <sup>RD</sup> YEAR                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4 <sup>TH</sup> OR FINAL YEAR                                                                                                                                                                                                                                                                                                                                        |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PLAN YOUR ACADEMICS*   | <p>Enrol in courses MAT102H5, 134Y5/ 135Y5/ 137Y5 /157Y5 and 223H5/ 240H5.</p> <p>Choose a program of study (Subject POST) once you complete 4.0 credits. Use the <b>Degree Explorer Planner</b> and the <b>Academic Calendar</b> to plan your degree.</p> <p>Start strong and get informed with <b>utmONE</b> and <b>LAUNCH</b> through the Office of Student Transition. Join a <b>RGASC Peer Facilitated Study Group</b>.</p> | <p>Enrol in courses MAT202H5, 232H5/ 233H5/ 257Y5, 224H5/ 247H5 and 244H5.</p> <p>Consider applying for the <b>Research Opportunity Program (ROP)</b> course MAT299Y. Visit the EEO website for <b>ROP Course Prerequisites</b>. Attend the RGASC's <b>Program for Accessing Research Training (P.A.R.T.)</b> to enhance your research skills.</p> | <p>Enrol in courses MAT301H5, 334H5, 378H5/ 392H5/ 405H5, 402H5, 236H5/ 311H5/ 332H5 and 302H5/ 315H5/ 344H5. Enrol in STA256H5 or attain 0.5 MAT credits at the 300+ level.</p> <p>Throughout your undergraduate degree:</p> <ul style="list-style-type: none"> <li>use the <b>Degree Explorer</b> to ensure you complete your degree and program requirements.</li> <li>see the <b>Office of the Registrar</b> and the <b>MCS Undergraduate Counsellor</b>.</li> </ul> | <p>Enroll in an Independent Study Course to expand your knowledge beyond the regular courses and work closely with a faculty member.</p> <p>Apply to become a mathematics teaching assistant. Polish your communication and presentation skills, and help first and second year students with their math courses.</p> <p>Log on to ACORN and request graduation.</p> |
| BUILD SKILLS           | <p>Use the <b>Co-Curricular Record (CCR)</b>. Search for opportunities beyond the classroom, and keep track of your accomplishments.</p> <p>Attend the <b>Get Experience Fair</b> through the Career Centre (CC) to learn about on- and off-campus opportunities.</p>                                                                                                                                                            | <p>Use the <b>Career Learning Network (CLN)</b> to find postings for on- and off-campus work and volunteer opportunities.</p> <p>Work on-campus through the <b>Work-Study program</b>. View position descriptions on the CLN.</p>                                                                                                                  | <p>Consider a practical work-based experience through UofT's <b>Professional Experience Year</b> — Canada's largest undergraduate paid internship program that offers 12- to 16-month work placements. Speak to the <b>MCS Undergraduate Counsellor</b>.</p>                                                                                                                                                                                                             | <p>Skills are transferrable to any job regardless of where you develop them. Need to strengthen your collaboration skills? Inspire young minds to enjoy and pursue math: ask to volunteer for <b>Math Circles</b> or the <b>Canadian Math Kangaroo Contest</b> (both offered through the MCS department). Speak to the <b>MCS Undergraduate Counsellor</b>.</p>      |
| BUILD A NETWORK        | <p>Networking simply means talking to people and developing relationships with them. Start by joining the <b>Mathematical and Computational Sciences Society (MCSS)</b>. Follow them @utmccss.</p> <p>Get to know your TA. View the <b>Math Help Room Schedule</b> on the MCS departmental website. Visit the UTM Library <b>Reference Desk</b>.</p>                                                                             | <p>Do you have a professor you really like or connect with? Ask them a question during office hours. Discuss an assignment. Go over lecture material. Don't be shy! Learn <b>Tips On How to Approach a Professor</b> available through the Experiential Education Office (EEO).</p>                                                                | <p>Establish a professional presence on social media (e.g., LinkedIn).</p> <p>Interested in the Rochester Math Olympiad? Take part in the <b>UofT Undergraduate Mathematics Competition</b> to see if you have what it takes.</p>                                                                                                                                                                                                                                        | <p>Join a professional association. Check out the <b>Canadian Mathematical Society</b>.</p> <p>Go to the <b>Canadian Undergraduate Mathematics Conference</b> or the <b>Actuarial Students National Association Convention</b>.</p>                                                                                                                                  |
| BUILD A GLOBAL MINDSET | <p>Attend events held by the <b>International Education Centre (IEC)</b> to explore different cultures through food, music, and sport or through sight-seeing around the GTA.</p>                                                                                                                                                                                                                                                | <p>Embark on a <b>UTM Abroad Co-Curricular Experience</b> through the IEC. Take advantage of this opportunity to travel with a faculty member and learn about a topic of interest in a unique location.</p> <p>Prefer traveling in Canada? Check out the IEC's <b>UTM Across Canada</b> program.</p>                                               | <p>Earn credits overseas! Study for a summer, term or year at one of 120 universities. The MCS department's topic pick is Lund University (Sweden). Speak to the <b>IEC</b> for details about <b>Course Based Exchange</b> and funding.</p>                                                                                                                                                                                                                              | <p>Why not work abroad? Read up on worldwide employment trends and industry outlooks through <b>GoInGlobal</b>. Attend the <b>Go Global Expo</b>. See if you are eligible for <b>International Experience Canada</b>.</p>                                                                                                                                            |
| PLAN FOR YOUR FUTURE   | <p>Attend the <b>Program Selection &amp; Career Options</b> workshop offered by the Office of the Registrar and the CC.</p> <p>Check out <b>Careers by Major</b> at the CC to see potential career options.</p>                                                                                                                                                                                                                  | <p>Explore careers through the CC's <b>Extern Job Shadowing Program</b>.</p> <p>Considering <b>further education</b>? Attend the CC's <b>Graduate and Professional School Fair</b>. Talk to professors – they are potential mentors and references.</p>                                                                                            | <p>What's your next step after undergrad?</p> <p>Entering the workforce? Evaluate your career options through a <b>CC Career Counselling appointment</b>. Create a job search strategy — book a <b>CC Employment Strategies appointment</b>.</p> <p>Considering further education? Research application requirements, prepare for admission tests (LSAT, GMAT) and research funding options (OGS, SSHRC)</p>                                                             | <p>Market your skills to employers. Get your <b>resume critiqued</b> at the CC. Attend the CC workshop <b>Now That I'm Graduating What's Next?</b></p> <p>Write a strong application for further education. Attend the CC's <b>Mastering the Personal Statement workshop</b>.</p>                                                                                    |

\*Consult the Academic Calendar for greater detail on course requirements, program notes and degree requirements.

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## Skills developed in Mathematical Sciences

To be competitive in the job market, it is essential that you can explain your skills to an employer. Visit the Career Centre to learn how to articulate and market the following skills:

### Critical thinking & interpersonal:

construct sound arguments and expose illogical ones; collaborate with others; and effectively communicate ideas and abstract concepts.

**Problem solving:** approach problems from different angles to identify key issues and apply a range of mathematical skills to different situations.

**Technical:** understand mathematical concepts and the rules of logic, as well as solve problems using specialized software.

**Investigative & organizational:** analyze large quantities of numerical data; find patterns and draw conclusions, as well as present mathematical arguments with accuracy.

## Get involved

Check out student organizations on campus. Here are a few:

- Mathematical and Computational Sciences Society (MCSS)
- UTM Student Union (UTMSU)
- UTM Athletics Council (UTMAC)

For a listing of clubs on campus visit [www.utm.utoronto.ca/clubs](http://www.utm.utoronto.ca/clubs).

## Services that support you

- AccessAbility Services (AS)
- Career Centre (CC)
- Centre for Student Engagement (CSE)
- Experiential Education Office (EEO)
- Health & Counselling Centre (HCC)
- Indigenous Centre (IC)
- International Education Centre (IEC)
- Office of Student Transition (OST)
- Office of the Registrar (OR)
- Recreation, Athletics and Wellness Centre (RAWC)
- Robert Gillespie Academic Skills Centre (RGASC)
- UTM Library, Hazel McCallion Academic Learning Centre (HMALC)

## Department of Mathematical & Computational Sciences

Deerfield Hall, Room 3018  
University of Toronto Mississauga  
3359 Mississauga Rd  
Mississauga ON Canada L5L 1C6

905-828-3801  
[ugmcs.utm@utoronto.ca](mailto:ugmcs.utm@utoronto.ca)  
[www.utm.utoronto.ca/math-cs-stats/](http://www.utm.utoronto.ca/math-cs-stats/)

## FUTURE STUDENTS

### Admission to UTM

All program areas require an Ontario Secondary School Diploma, or equivalent, with six Grade 12 U/M courses, or equivalent, including English. The admission average is calculated with English plus the next best five courses. The Grade 12 prerequisites for this program are Advanced Functions and Calculus. The approximate average required for admission is high-70s. More information is available at [utm.utoronto.ca/viewbook](http://utm.utoronto.ca/viewbook).

**NOTE:** During the application process, applicants will select the Computer Science, Mathematics & Statistics admissions category but will not officially be admitted to a formal program of study (Specialist, Major, and/or Minor) until after first year.

### Sneak Peek

Where does Mathematics derive its great power from? Find out in MAT202H5 – a course that looks at abstraction and its power through a study of topics from discrete mathematics. Dive in to Linear Algebra in MAT240H5! Topics include Vector spaces over arbitrary fields, linear equations and matrices, bases and linear independence, diagonalization, the characteristic and minimal polynomials as well as the Cayley-Hamilton theorem.

### Student Recruitment & Admissions

Innovation Complex, Room 1270  
University of Toronto Mississauga  
3359 Mississauga Rd  
Mississauga ON Canada L5L 1C6

905-828-5400

[www.utm.utoronto.ca/future-students](http://www.utm.utoronto.ca/future-students)

