

# BIOLOGICAL CHEMISTRY (HBSc)

*Department of Chemical & Physical Sciences*

**Biological Chemistry** deals with the chemical processes of and relating to living organisms. The program, with its solid core of chemistry, plus the required biology and biochemistry courses, provides an interesting and challenging interdisciplinary study experience. Biological Chemistry examines nature at the molecular level by using a combination of synthetic, inorganic, analytical and physical chemistry as well as the tools of molecular biology. This program provides the context to understand the chemical reactions and interactions that occur in biological processes, as well as how chemical strategies can be used to control these systems. Students graduating from this program will be prepared for career paths in the biotechnology, biomedical and pharmaceutical sectors, as well as for research and teaching in related areas of chemistry and biology.

## 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, although there are many more! 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 ERSPE1995 Biological Chemistry (Science)
- Specialist Program ERSPE1376 Chemistry (Science)
- Major Program ERMAJ1376 Chemistry (Science)
- Minor Program ERMIN1376 Chemistry (Science)

### Check out...

Is health care where your heart is at? Take CHM444H5 and learn about drug development. Curious about forensics? Learn how to analyze physical evidence — drugs and alcohol, gunshot residue, explosives and paint analysis — through FSC311H5. Interested in science education? Consider ER1398H5, Teaching Opportunities in Sciences.

### 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:** Food scientist; Brewmaster; Biological technician; Quality controller; Pulping and bleaching manager; Biochemistry technologist; Toxicologist; Water purification chemist; Regulatory / government affairs specialist; Forensic laboratory analyst; Medical lab technologist; Industrial hygienist; Doctor.

**Workplaces:** Cosmetics and fragrance production; Pulp and paper production; Pharmaceuticals; Government; Healthcare; Food and beverage production; Plastic manufacturing; Industrial inspection firms; Scientific R&D companies.



# BIOLOGICAL CHEMISTRY

## SPECIALIST 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 BIO152H5; (CHM110H5, 120H5); MAT134Y5/ 135Y5/ 137Y5/ 157Y5; and (PHY136H5, 137H5)/ (146H5, 147H5).</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 Centre for Student Engagement (CSE). Join a RGASC <b>Peer Facilitated Study Group</b>.</p>	<p>Enrol in courses CHM211H5, 231H5, 242H5, 243H5; JCP221H5; BIO206H5, 207H5; and attain 0.5 MAT/CSC/ STA credit at any 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>CPS Academic Counsellor</b>.</li> </ul>	<p>Enrol in courses CHM333H5, 341H5/ 345H5, 347H5, 361H5, 362H5, 372H5, 373H5; and BIO372H5.</p> <p>Consider applying for the <b>Research Opportunity Program (ROP)</b> course CHM399Y. Visit the EEU website for ROP <b>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 CHM399Y5/ 489Y5/ CPS400Y5/ JCB487Y5/ BCH472Y1(G) or BCH473Y1(G) with the permission of the CPS department, and attain 1.5 credits from BIO324H5; CHM412H5, 444H5, 462H5; JCP410H5, 422H5, 463H5; JBC472H5; CHM447H1(G), 479H1(G), or any 400 level BCH(G) lecture course.</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>Skills are transferrable to any job regardless of where you develop them. Need to strengthen your presentation skills? Consider a role as a RGASC <b>Facilitated Study Group Leader</b>.</p>	<p>Work on-campus through the <b>Work-Study program</b>. View position descriptions on the CLN.</p> <p>Explore your interests. Why not apply to become a <b>Wellness Ambassador</b> with the Health &amp; Counselling Centre's Physical Health team?</p>	<p>Explore your interests. Be a <b>UTM Let's Talk Science Outreach</b> volunteer to support educators and help youth form positive attitudes towards the role that STEM plays in their lives and futures.</p>
BUILD A NETWORK	<p>Networking simply means talking to people and developing relationships with them. Start by joining the <b>Erindale Chemical and Physical Sciences Society (ECPS)</b>. Make sure to go to the ECPS's <b>Meet the Profs Night</b>.</p> <p>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 Unit (EEU).</p>	<p>Establish a professional presence on social media (e.g. LinkedIn).</p> <p>Attend the <b>E.A. Robinson Science Education Lecture</b> through the CPS department.</p> <p>Thinking about life after UTM? Connect with a UTM alumnus through the CSE's <b>Alumni Mentorship Program!</b></p>	<p>Join a professional association. Check out the <b>Chemical Institute of Canada</b> and the <b>Association of the Chemical Profession of Ontario</b>.</p> <p>Go to the <b>Southern Ontario Undergraduate Student Chemistry Conference</b> or the <b>Society for Chemistry Conference and Exhibition</b>.</p>
BUILD A GLOBAL MINDSET	<p>Attend events held by the <b>International Education Centre (IEC)</b>, whether you are an international or domestic student. Explore different cultures through food, music, and sport or through sight-seeing around the GTA.</p> <p>Start with the <b>International Education Week</b> events and learn about the diversity, culture, and international opportunities on campus!</p>	<p>Embark on a <b>UTM Abroad Global Impact Project</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>Interested in deepening your global perspective? Register for the <b>Global Citizenship Certificate</b> offered by the IEC.</p>	<p>Earn credits overseas! Study for a summer, term or year at one of 120 universities. The CPS department has identified 9 partners which are most relevant to our students. 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 Professionals 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 CC <b>Career Counselling appointment</b>. Create a job search strategy — book a CC <b>Employment Advising</b> appointment.</p> <p>Considering further education? Research application requirements, prepare for admission tests (LSAT, MCAT), and research funding options (OGS, NSERC, CIHR).</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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Visit [www.utm.utoronto.ca/program-plans](http://www.utm.utoronto.ca/program-plans) for the online version and links.



# BIOLOGICAL CHEMISTRY

## Skills developed in Biological Chemistry

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:

**Research:** conduct journal research and utilize logical reasoning to interpret results/data derived from scientific experimentation.

**Technical:** experience with state-of-the-art laboratory technology and instruments; ability to use computer programs to manipulate and display data; and comply with quality control procedures while conducting experiments.

**Quantitative:** analyze data for trends and apply statistical packages to data to test for significance.

**Communication:** organize research ideas and information into comprehensive reports and interact professionally with a multidisciplinary team of researchers, technicians, students and professors.

## Get involved

Check out the 100+ student organizations on campus. Here are a few:

- Erindale Chemical and Physical Sciences Society (ECPS)
- 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

- Accessibility Services (AS)
- Career Centre (CC)
- Centre for Student Engagement (CSE)
- Experiential Education Unit (EEU)
- Health & Counselling Centre (HCC)
- Indigenous Centre (IC)
- International Education Centre (IEC)
- 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 Chemical & Physical Sciences

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[www.utm.utoronto.ca/cps](http://www.utm.utoronto.ca/cps)

## 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. Your admission average is calculated using English plus your next best five courses. The Grade 12 prerequisites for Biological Chemistry are Advanced Functions, Biology, Chemistry and Physics. The approximate average required for admission is mid- to 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 Chemical & Physical Sciences 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

Support is available to first-year chemistry students through tutorial classes, office hours, Facilitated Study Groups and a 24/7 system of Virtual Office Hours. In addition, all of our students have access to new, state-of-the-art teaching laboratories.

Upper-year students can become involved in cutting-edge research projects in our research labs. We recently launched the Centre for Medicinal Chemistry, an interdisciplinary centre for the development of new drugs. It will become a research hub of leading scientists dedicated to developing innovative approaches in the fight against cancer and other diseases.

### 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)

