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.

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**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. Interested in science education? Consider CPS401Y5, Research and Development in Science Education. Or instead, would you prefer to apply your knowledge within the industry or lab? Take a look at CPS400Y5, Chemical and Physical Sciences Internship, and CPS489Y5, Introduction to Research in the Chemical and Physical 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**

**1ST YEAR**
- Enrol in courses BIO152H5; CHM110H5 and CHM120H5; (MAT135H5 or MAT137H5 and MAT138H5) or (MAT135H5 and MAT136H5) or (MAT137H5 and MAT138H5) or MAT139H5 or MAC101H5 or MAC101H5 or (MAT137H5 or MAT138H5) or MAT139H5 or (MAT137H5 or MAC101H5 or (MAT136H5 or (PHY140H5 or PHY141H5) or PHY140H5) or PHY141H5) or PHY100H5.
- Choose a program of study (Subject POSt) once you complete 4.0 credits. Use the Degree Explorer to ensure you complete your degree and program requirements.
- Throughout your undergraduate degree:
  - use the Degree Explorer to ensure you complete your degree and program requirements.
  - use the CPS Academic Counsellor and the Office of the Registrar.

**2ND YEAR**
- Enrol in courses CHM211H5 and CHM231H5 and CHM242H5 and CHM243H5; JCP221H5; BIO206H5 and BIO207H5; 0.5 credit of MAT or CSC or STA (at any level).
- Skills are transferrable to any job regardless of where you develop them. Need to strengthen your presentation skills? Consider a role as a RGASC Facilitated Study Group Leader.
- 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 Tips On How to Approach a Professor available through the Experiential Education Unit (EEU).

**3RD YEAR**
- Enrol in courses CHM333H5; CHM341H5 or CHM345H5; CHM347H5 and CHM361H5 and CHM362H5 and CHM372H5 and CHM373H5; BIO372H5.
- Consider applying for the Research Opportunity Program (ROP) course CHM399Y. Visit the EEU website for ROP Course Prerequisites. Attend the RGASC’s Program for Accessing Research Training (PART) to enhance your research skills.
- Work on-campus through the Work-Study program. View position descriptions on the ECLN.
- Establish a professional presence on social media (e.g. LinkedIn).

**4TH OR FINAL YEAR**
- Enrol in CHM399Y5 or CPS489YS or CPS400YS or JCB487YS or (BCD472Y1 or BC473Y1, with permission of the CHM Program Advisor) and 1.5 credits from the following courses: BIO304H5 or CHM412H5 or CHM444H5 or CHM465H5 or JCP410H5 or JCP422H5 or JCP463H5 or JBC472H5 or CHM447H1 or CHM479H1 or any 600 level BCH lecture course.
- Explore your interests. Be a UTM Let's Talk Science Outreach volunteer to support educators and help youth form positive attitudes towards the role that STEM plays in their lives and futures.
- Participate in the Community Leadership Development Program as a community leader and gain skills on various competencies while giving back to the community.

**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 to create your own plan using My Program Plan.
Update your plan yearly.

**PLAN YOUR ACADEMICS**
- Visit www.utm.utoronto.ca/program-plans for the online version and links.

**BUILD SKILLS**
- Skilled individuals are needed in today’s workplace.
- Networking simply means talking to people and developing relationships with them. Start by joining the Erindale Chemical and Physical Sciences Society (ECPS). Make sure to go to the EECPS’s Meet the Profs Night.
- Visit the UTM Library Reference Desk.

**BUILD A NETWORK**
- Participate in International Education Week and engage in programs like Global and Intercultural Fluency Training Series (GIFTS) to build on your leadership and communication skills in global citizenship. Learn about and prepare for a future UTM Abroad Experience through the IELC to strengthen and enhance your intercultural skill set, and learn about other cultures while sharing your own!
- Attend the E.A. Robinson Science Education Lecture through the CPS department.

**BUILD A GLOBAL MINDSET**
- Expanding your intercultural awareness and developing intercultural skills will help you in your academics, personal growth and are highly sought after by employers.
- Earn credits overseas: Apply to study for a summer term, or year at one of 170+ universities. Speak to the IEC for details about Course Based Exchange, funding and travel safety. Attend Global Learning Week to learn about the various opportunities available to you!

**PLAN FOR YOUR FUTURE**
- What’s your next step after undergrad?
  - Considering further education? Research application requirements, prepare for admission tests (LSAT, MCAT), and research funding options (OGS, NSERC, CIHR).
  - Market your skills to employers. Get your resume critiqued at the CC. Attend the CC workshop Now That I’m Graduating What’s Next?
  - Write a strong application for further education. Attend the CC’s Mastering the Personal Statement workshop.
- Ready to transition from the classroom to the workplace? Check out the Recent Graduate Opportunities Program (RGOP).
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 the Student Groups and Societies Directory

Services that support you

- Accessibility Services (AS)
- Career Centre (CC)
- Centre for Student Engagement (CSE)
- Equity, Diversity & Inclusion Office (EDIO)
- 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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905-828-5351; 905-828-3800 cpscounsellor.utm@utoronto.ca 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](https://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