BIOTECHNOLOGY (HBSc)

Department of Biology

Biotechnology is the “application of scientific and technical advances in life science to develop commercial products”. This discipline combines biological sciences (genetics, biochemistry, molecular biology, microbiology, cell biology) with other science disciplines (chemistry, engineering, information technology, robotics, etc.). Advancement in biotechnology sees direct application in agriculture (e.g. genetic modification of food, environmental products), medicine (e.g. drug production, gene therapy), and industry (e.g. ‘white biotechnology’). With such rapid growth in this area, biotechnologists will play a vital role in shaping the future.

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

Programs of Study (POST)

- Specialist Program ERSPE1118 Biotechnology (Science)
- Minor Program ERMIN2364 Biology (Science)
- Minor Program ERMIN0840 Biomedical Communications (Science)

Check out...

Learn how to clone! In BIO314, you’ll perform advanced molecular biology techniques including cloning and transformation of bacteria and plants. Get excited about disease! In BIO315H5 you’ll learn exciting new topics in the structure and function of normal and diseased cells.

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: Pharmaceutical financial analyst; Biological technician; Regulatory / government affairs specialist; Compliance promotion specialist; Pharmacologist; Informationist; Doctor; Physician’s assistant; Nurse; Quality controller; Food science technologist / food scientist; Biotechnologist.

Workplaces: Manufacturing and processing; Government; Scientific R&D; Zoos, aquariums, national/ provincial parks; Hospitals and medical centres; Pharmaceutical; Academic medical centres/ laboratories; Consulting firms.
### BIOTECHNOLOGY

**SPECIALIST Program Plan**

**1ST YEAR**
- **Enrol in courses** BIO150H5, 153H5; CHM110H5, 120H5; and MAT134Y5/135Y5/137Y5. **Enrol in courses** BIO152H5, 153H5; CHM110H5, 202H5; 203H5, 206H5, 207H5; CHM211H5, 242H5, 243H5; and STA215H5.
- **Choose a program of study** (Subject POSO) once you complete 4.0 credits. Use the Degree Explorer Planner and the Academic Calendar to plan your degree.
- **Start strong and get informed with** utmONE and LAUNCH through the Office of Student Transition. Join a RA/GS- Peer Facilitated Study Group.
- **Use the Co-Curricular Record (CCR)**. Search for opportunities beyond the classroom, and keep track of your accomplishments.
- **Attend the Get Experience Fair** through the Career Centre (CC) to learn about on- and off-campus opportunities.
- **Networking simply means talking to people and developing relationships with them.** Start by joining the Erindale Biology Society (EBS). Follow them @utmEBS.
- **Put your skills to work** in a foreign lab through the iROP program. Speak to the IEC Global Mobility Coordinator to learn more. Prefer staying local? Apply for ROP courses BIO299Y and BIO399Y. Visit the EEO website for ROP Course Prerequisites. Attend the RGASC’s P.A.R.T. to enhance your research skills.
- **Gain practical collaborative research experience**! Apply for iROP Course ROP. Attend the RGASC’s ROP Course ROP Program. Speak to the RGASC’s ROP Course Requirements.
- **Establish a professional presence on social media** (e.g., LinkedIn). Go to the Ontario Biology Day or the Canadian Undergraduate Conference on Healthcare.
- **Earn credits overseas!** Study for a summer, term or year at one of 120 universities through the Course Based Exchange program. Speak to the Global Mobility Coordinator and the Biology Undergraduate Advisor to select the appropriate courses.
- **What’s your next step after undergrad?**
- **Entering the workforce?** Evaluate your career options through a CC Career Counselling appointment. Create a job search strategy — book a CC Employment Strategies appointment.
- **Considering further education?** Research application requirements, prepare for admission tests (LSAT, MCAT), and research funding opportunities (OGS, NSERC, CIHR).

**2ND YEAR**
- **Enrol in courses** MGM101H5, 150H5; BIO200H5, 202H5; 203H5, 206H5, 207H5; CHM211H5, 242H5, 243H5; and STA215H5.
- **Work in a foreign lab through the iROP program.** Speak to the IEC Global Mobility Coordinator to learn more. Prefer staying local? Apply for ROP courses BIO299Y and BIO399Y. Visit the EEO website for ROP Course Prerequisites. Attend the RGASC’s P.A.R.T. to enhance your research skills.
- **Ask your professor about volunteering in their lab.**
- **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.
- **Get a global experience through our Biology Seminar Series.** Every Friday during the academic year, the Department of Biology hosts an exciting seminar given by a guest speaker. Guest speakers are from Ontario, across Canada, as well as International. Topics cover every aspect of biology. All Biology students are welcome to attend. Feel free to bring your lunch!
- **Attend career events** held by the International Education Centre (IEC) to explore different cultures through food, music, and sport or through sight-seeing around the GTA.
- **Go Global** with the Career Centre. Attend the CC workshop Now That I’m Graduating What’s Next?
- **Join a professional association.** Check out the Canadian Association for Plant Biotechnology. Attend the Go Global Expo.

**3RD YEAR**
- **For third year and higher, view the Academic Calendar for course requirements and options.** Throughout your undergraduate degree:
  - **use the Degree Explorer to ensure you complete your degree and program requirements.**
  - **see the Office of the Registrar about degree requirements and the Biology Undergraduate Advisor about program requirements.**
- **Explore your interests.** Why not pass on your passion for science? Be a UTM Let’s Talk Science Outreach volunteer.
- **Apply to the Ontario Ministry of Natural Resources Internship Program as a recent graduate.** Look at the MNRF website for eligibility and application details.
- **Establish a professional presence on social media** (e.g., LinkedIn).
- **Join a professional association.** Check out the Canadian Association for Plant Biotechnology. Attend the Go Global Expo.
- **Go to the Ontario Biology Day or the Canadian Undergraduate Conference on Healthcare.**
- **Earn credits overseas!** Study for a summer, term or year at one of 120 universities through the Course Based Exchange program. Speak to the Global Mobility Coordinator and the Biology Undergraduate Advisor to select the appropriate courses.

**4TH OR FINAL YEAR**
- **Attain 1.0 credit from CHM/BIO courses at the 400 level. Ensure you have at least 7.0 credits at the 300/400 level, of which 1.5 must be at the 400 level.**
- **Gain practical collaborative research experience! Apply for JCB487Y5. Speak to the Biology Undergraduate Advisor.**
- **Log on to ACORN and request graduation.**

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

**BUILD SKILLS FOR YOUR PLAN**
- **Mindset**
- **Global Build A**

**BUILD A NETWORK**
- **Attend events held by the International Education Centre (IEC) to explore different cultures through food, music, and sport or through sight-seeing around the GTA.**

**BUILD A GLOBAL MINDSET**
- **Attend the Program Selection & Career Options workshop offered by the Office of the Registrar and the CC.**
- **Check out Careers by Major at the CC to see potential career options.**

**PLAN FOR YOUR FUTURE**
- **Attend the Program Selection & Career Options workshop offered by the Office of the Registrar and the CC.**
- **Check out Careers by Major at the CC to see potential career options.**
BIOTECHNOLOGY

Skills developed in Biotechnology

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:

**Communication & interpersonal:** write scientific reports; present research findings; interact professionally with a multidisciplinary team of researchers, technicians, students and professors; and literacy writing.

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

**Technical:** use specialized computer programs; perform laboratory procedures; maintain laboratory equipment and instrumentation; and comply with quality control procedures.

**Quantitative:** analyze data for trends and apply statistical tests to data.

**Critical thinking & problem-solving:** logically interpret trends and results.

Get involved

Check out student organizations on campus.

Here are a few:

- Erindale Biology Society (EBS)
- UTM Student Union (UTMSU)
- UTM Athletics Council (UTMAC)

For a listing of clubs on campus visit www.utm.utoronto.ca/clubs.

Department of Biology

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Undergraduate Advisor: 905-828-3999 d.matias@utoronto.ca www.utm.utoronto.ca/biology

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)

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, Biology and Chemistry. The approximate average required for admission is low- to mid-80s. More information is available at utm.utoronto.ca/viewbook.

**NOTE:** During the application process, applicants will select the Life 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**

Curious about pharmacology? Take BIO200H5 and learn about the absorption and calculation of dosages. Our courses are taught by faculty from the departments of Biology, Chemistry and Management, as well as from the Master of Biotechnology.

Effective biological training involves careful study of real organisms, both living and dead. Consequently, almost all Biology courses with laboratories involve students in one or more of the following activities with animals, plants, and/or microorganisms: collecting and preserving organisms from the field; dissecting or handling preserved or euthanized specimens (or properly anaesthetized living specimens); observing and making measurements on organisms maintained under laboratory conditions approved by the Canadian Council of Animal Care.

**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