

Department of Biology

Biotechnology Specialist



What is Biotechnology?

Biotechnology in modern society 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.).

Why Biotechnology?

Advancement in this discipline 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.

Why Study Biotechnology at UTM?

UTM Biology offers a unique curriculum to provide students with a firm grounding in the science of biotechnology, a thorough understanding of the industry, and its social and ethical implications in a global framework. Our courses are taught by faculty from the Departments of Biology, Chemistry, Management, as well as our professional graduate program, Master of Biotechnology.

First-Year Life Sciences at UTM

All Biotechnology Specialist program students complete the following courses in their first year:

- **BIO152H5** – Intro to Evolution & Evolutionary Genetics
- **BIO153H5** – Diversity of Organisms
- **CHM110H5** – Chemical Principles I
- **CHM120H5** – Chemical Principles II
- **MAT134Y5** – Calculus for Life Sciences

How Do You Study Biotechnology at UTM?

Biotechnology Specialist (15.0 credits)

Courses to Look Forward To!

Required courses:

- **MGM101H5**: Introduction to Management Functions
- **MGM102H5**: Management in a Changing Environment
- **BIO200H5**: Introduction to Pharmacology
- **BIO202H5 or BIO203H5**: (Animal or Plant Physiology)
- **BIO206H5**: Introductory Cell & Molecular Biology
- **BIO207H5**: Introductory Genetics
- **CHM211H5**: Fundamentals of Analytical Chemistry
- **CHM242H5 & CHM243H5**: Introduction to Organic Chemistry I & II
- **STA215H5**: Introduction to Applied Statistics
- **BIO314H5**: Laboratory in Cell & Molecular Biology
- **BIO315H5**: Human Cell Biology
- **BIO360H5**: Biometrics I
- **BIO370Y5**: Microbiology
- **BIO372H5**: Molecular Biology
- **BIO374H5**: Biotechnology & Society
- **CHM311H5**: Instrumental Analytical Chemistry
- **CHM361H5**: Structural Biochemistry
- **JBC472H5**: Seminars in Biotechnology

Elective Courses (students must take 1.0 credits from a list of courses, plus 1.0 of any Chemistry of Biology courses at the 400 level). Selected courses from the list are below:

- **BIO304H5**: Integrative Animal Physiology I
- **BIO341H5**: Advanced Genetics
- **BIO375H5**: Introductory Medical Biotechnology
- **Other possible courses are:** CHM333H5, CHM341H5, CHM345H5, CHM347H5, CHM362H5, CHM372H5, CHM373H5

Experiential Learning in Biotechnology

We offer a wide-range of unique learning opportunities across all of our disciplines:

- **Research Opportunity Program (ROP)** – participate in original research with a professor, learn research methods, and share in the excitement and discovery of acquiring new knowledge
- **BIO481 - Senior Research Project**: conduct an independent research project under the supervision of a faculty member; learn how to design, carry out, and analyze and evaluate results/ data
- **BIO400 – Internship**: learn to apply biology knowledge and skills through a 200-hour work placement in the private or public sector
- **BioPath Professional Development Program**: two-year program open to all biology students. The program aims to facilitate the development of transferrable skills that will help students be successful beyond university.

Career Paths

- Graduate School (Research)
- Professional Graduate School (M.Biotech)
- Biotechnology
- Pharmaceuticals
- Food & Dairy Industry
- Consulting

Departmental Events

The Biology Department offers exciting opportunities for students to expand their interest in biology through a weekly departmental seminar featuring exciting guest speakers from across North America as well as our popular “Walk with your Professor” series where participants are led on a nature walk through the beautiful Mississauga campus.

For more information on career options, please visit the Career Centre site
<http://www.utm.utoronto.ca/careers/>.

For more information on these programs, please explore our Academic Calendar -
<https://student.utm.utoronto.ca/calendar/calendar.pl>.