

BIOTECHNOLOGY

Program: BTEC

Credential: Ontario College Diploma

Delivery: Full-time

Length: 4 Semesters

Duration: 2 Years

Effective: Fall 2027

Location: Barrie

Description

Upon graduating from the Biotechnology program, you are prepared for a career in biotechnology, a high-tech trade that spans many employment sectors. You develop technical and knowledge-based skills through comprehensive experiential learning, as you are exposed to a variety of experimental techniques using cutting-edge scientific equipment across disciplines including microbiology, molecular biology, tissue culture, biochemistry, analytical chemistry, and pharmaceutical biotechnology. Throughout the program, you explore current topics in the field and research potential biotechnology applications to address them. In accordance with accepted industry standards, you learn to collect, document, analyze, and present your lab and experimental data. An introduction to changemaking and social entrepreneurship helps you to recognize opportunities in biotechnology and become serial problem solvers. Throughout the program, you are supported in the development of a living resumé as you expand your skillsets and create professional networks.

Career Opportunities

Graduates contribute to setting up and running laboratory-based tests and analyses and to support the smooth day-to-day operation of a lab. Potential employment opportunities exist for graduates as bench scientists, lab assistants, quality control/assurance technicians, and performance of technical roles specific to employers. Potential employers are varied and may include public, and private sector industries such as pharmaceutical, cannabis production, as well as academic and clinical institutions.

Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

1. perform all tasks in compliance with relevant legislation, regulations, and biotechnology standards and guidelines;
2. perform quality control and quality assurance procedures and processes to maintain compliance with relevant standards and requirements;
3. apply sustainable practices in biotechnology operations to minimize environmental impact and improve resource efficiency;
4. implement solutions to address biotechnological applications during the execution of lab responsibilities;
5. follow procedures to support quantitative and qualitative tests and analyses done in the laboratory;
6. perform standard cell culture procedures under aseptic conditions to produce experimental results and maintain laboratory safety;
7. perform molecular biology procedures to support biotechnological applications;

8. assist in collecting, analyzing and managing biological information to aid scientists in ensuring data integrity and adherence to approved protocols;
9. assist in collecting and communication scientific data to meet industry standards and support research;
10. develop and apply strategies for personal and professional development to enhance work performance and stay current in biotechnology;
11. apply basic entrepreneurial strategies to identify and respond to new opportunities in biotechnology.

Program Progression

The following reflects the planned progression for full-time offerings of the program.

Fall Intake

- **Sem 1:** Fall 2027
- **Sem 2:** Winter 2028
- **Sem 3:** Fall 2028
- **Sem 4:** Winter 2029

Articulation

A number of articulation agreements have been negotiated with universities and other institutions across Canada, North America and internationally. These agreements are assessed, revised and updated on a regular basis. Please contact the program co-ordinator for specific details if you are interested in pursuing such an option. Additional information can be found on our website at <https://www.georgiancollege.ca/admissions/credit-transfer/> (<http://www.georgiancollege.ca/admissions/credit-transfer/>)

Admission Requirements

- Ontario Secondary School Diploma (OSSD) or equivalent, or mature student status
- Grade 12 English (C or U)
- Grade 12 Mathematics (C or U)
- Grade 11 or 12 Biology (C or U)
- Grade 12 Chemistry (C or U)

Mature students, non-secondary school applicants (19 years or older), and home school applicants may also be considered for admission. Eligibility may be met by applicants who have taken equivalent courses, upgrading, completed their GED, and equivalency testing. For complete details refer to: www.georgiancollege.ca/admissions/academic-regulations/ (<https://www.georgiancollege.ca/admissions/academic-regulations/>)

Applicants who have taken courses from a recognized and accredited post-secondary institution and/or have relevant life/learning experience may also be considered for admission; refer to the Credit for Prior Learning website for details: www.georgiancollege.ca/admissions/credit-transfer/ (<https://www.georgiancollege.ca/admissions/credit-transfer/>)

Bring Your Own Device (BYOD) requirements

All Georgian College students are required to bring their own device (BYOD) (<https://georgiancollege.ca/byod/>) that meets the technology requirements (<https://georgiancollege.ca/byod/>) for their program. Having access to a personal laptop that meets your program's technical requirements will ensure you're prepared for in-class, online and hybrid learning activities. Students are responsible for the cost, software installation, maintenance and repair of their device.

Graduation Requirements

21 Program Courses

1 Communications Course

3 General Education Courses

Graduation Eligibility

To graduate from this program, the passing weighted average for promotion through each semester, from year to year, and to graduate is 60%. Additionally, a student must attain a minimum of 50% or a letter grade of P (Pass) or S (Satisfactory) in each course in each semester unless otherwise stated on the course outline.

Program Tracking

The following reflects the planned course sequence for full-time offerings of the Fall intake of the program. Where more than one intake is offered contact the program co-ordinator for the program tracking.

Semester 1		Hours
Program Courses		
BIOL 1031	Human Physiology 1	56
BIOL 1042	Cell Biology 1	42
BIOL 1043	Introduction to Biotechnology	28
CHEM 1013	Introduction to Measurement	56
CHEM 1014	Chemistry for Biotechnology 1	70
MATH 1044	Mathematics for Biotechnology	42
Communications Course		
COMM 1016	Communication Essentials	42
Hours		336

Semester 2		Hours
Program Courses		
BIOL 1032	Human Physiology 2	56
BIOL 1039	Introduction to Molecular and Biochemical Techniques	56
BIOL 2012	Microbiology	56
CHEM 1012	Chemistry for Biotechnology 2	56
STAT 1001	Statistics	28
General Education Course		
Select 1 course from the General Education list during registration.		42
Hours		294

Semester 3		Hours
Program Courses		
BIOL 2013	Molecular Techniques	56
BIOL 2021	Advanced Microbiology and Immunology	56
BIOL 2022	Biochemistry 1	42
CHEM 2004	Organic Chemistry	56
CHEM 2005	Analytical Chemistry	56
General Education Course		
Select 1 course from the General Education list during registration.		42
Hours		308

Semester 4
Program Courses

BIOL 2014	Pharmaceutical Biotechnology	56
BIOL 2023	Tissue Culture and Histology	70
BIOL 2024	Mendelian and Molecular Genetics	56
BIOL 2025	Protein Science	70
BIOL 2026	Current Topics in Biotechnology	28
General Education Courses		
Select 1 course from the General Education list during registration.		42
Hours		322
Total Hours		1260

Graduation Window

Students unable to adhere to the program duration of two years (as stated above) may take a maximum of four years to complete their credential. After this time, students must be re-admitted into the program, and follow the curriculum in place at the time of re-admission.

Disclaimer: *The information in this document is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis to ensure relevance to changing educational objectives and employment market needs.*

Program outlines may be subject to change in response to emerging situations, in order to facilitate student achievement of the learning outcomes required for graduation. Components such as courses, progression, coop work terms, placements, internships and other requirements may be delivered differently than published.