

# Biotechnology Technologist – Industrial Microbiology

Program Code: 3602

3612 (co-op)

Program Length: 3 years/6 semesters (3602)

3 years/9 semesters (3612)

Credential: Ontario College

Advanced Diploma

Start: Fall

Campus: Centennial Science and

Technology Centre

bio@centennialcollege.ca

## Program Overview

This nationally accredited program prepares you for the scientific principles, techniques and skills required in industrial microbiology. Specialized study also includes biotechnology applications, biochemistry, microbial genetics, clinical and environmental microbiology.

You will learn to:

- isolate, enumerate and identify microorganisms from many types of samples
- accurately calibrate and use instruments such as pH and BOD meters, Gas Chromatographs, spectrophotometers, HPLC's, centrifuges, PCR thermocyclers, Gel electrophoresis equipment etc.
- prepare media and reagents to culture pathogenic microbes; design and perform advanced microbiology and microbial genetics experiments
- Isolate DNA; perform gel electrophoresis and PCR (polymerase chain reaction) on samples

### CO-OP

Academically-qualified students enhance their education by working three terms as paid employees in their field. This experience allows you to put classroom learning into practice, and provides valuable contacts for future careers.

For more on co-op work terms, please see pages 18 and 194.

### JOINT SPECIALIST DEGREE/DIPLOMA PROGRAM (UTSC)

Students can earn a Biotechnology Technologist diploma from Centennial while working on an Honours BSc degree in Industrial Microbiology from the University of Toronto, Scarborough (UTSC).

### Fast-track Option

If you have a related science degree/diploma, fast forward to the accelerated options available on pages 136 and 137.

## BENEFITS

### CAREER OUTLOOK

Besides laboratory work, graduates may choose to work in product development, production or sales management. The organizations our graduates work for include:

- Hermann Laue Spice Company
- Apotex Inc.
- Agropur – Division Natrel
- MAXXAM Analytics
- bioMerieux Canada Inc.
- Cosmetica laboratories Inc.

### PROGRAM HIGHLIGHTS

- national accreditation improves the mobility of graduates anywhere in Canada and abroad
- graduates may apply for certification through OACETT (Ontario Association of Certified Engineering Technicians and Technologists) to use one of the following professional designations CET (Certified Engineering Technologist) or ASCt (Applied Science Technologist)

### CTAB NATIONALLY ACCREDITED PROGRAM

The Biotechnology Technologist – Industrial Microbiology program has met the national technology accreditation requirements established by the Canadian Council of Technicians and Technologists (CCTT) and, as such, has received national accreditation status by the Canadian Technology Accreditation Board (CTAB).

### DEGREE COMPLETION

Qualified Biotechnology graduates are granted access with credit transfer to Ryerson University or the University of Toronto Scarborough

### RECOGNITION AS A CERTIFIED ENGINEERING TECHNICIAN/TECHNOLOGIST



OACETT (The Ontario Association of Certified Engineering Technicians and Technologists) recognizes the Biotechnology Technologist – Industrial Microbiology

program as meeting all the academic requirements for certification in the Technologist category.

### ADMISSION REQUIREMENTS

Centennial College expects students applying for admission to certificate or diploma programs to present at minimum an Ontario Secondary School Diploma (OSSD) or equivalent or be 19 years of age or older. Possession of minimum admission requirements does not guarantee admission to the program.

## ACADEMIC REQUIREMENTS

- compulsory English 12C or U, or skills assessment or equivalent
- math 11M or U or 12C or U, or skills assessment or equivalent

For information on the admission process, please see p. 14.

### CO-OP REQUIREMENTS

To qualify for co-op work terms, completion of 80 per cent of year one courses, a minimum 2.5 GPA, and a minimum C grade in ENGL-170 are required.

## PROGRAM OUTLINE

### Semester 1

BI-111	Intro to Biological Systems**
CH-101	Chemistry 1**
MATH-154	Microcomputer Applications for Technology A
MATH-176	Mathematics 2*
COMM-170/171	College Communications 2
GNE-126	Occupational Health & Safety

### Semester 2

BI-121	Microbiology**
BI-122	Microbiology Techniques**
CH-122	Lab Instrumentation**
CH-125	Inorganic Chemistry for Microbiology
MATH-186	Statistics for Applied Science*
GNE-126	General Education Elective

### Semester 3

BI-207	Microbiology Project 1**
BI-208	Food Microbiology**
CH-121	Organic Chemistry**
CH-207	Analytical Chemistry**
ENGL-250	Communication for Technology
GNE-500	Global Citizenship: From Social Analysis to Social Action
COOP-221	Employment Pre-placement (program 3612 only)

### Co-op Work Term 1 (3612)

### Semester 4

BI-206	Microbiology Project 2**
BI-209	Pharmaceutical Microbiology**
CH-203	Food Chemistry**
CH-222	Biochemistry 1**
GNE-126	General Education Elective

### Co-op Work Term 2 (3612)

### Semester 5

BI-302	Microbial Genetics
BI-303	Microbiology Project 3
BI-312	Applications of Biotechnology
CH-302	Biochemistry 2

### Co-op Work Term 3 (3612)

### Semester 6

BI-304	Environmental Microbiology
BI-305	Advanced Biotechnology
BI-307	Microbiology Project 4
BI-308	Systematic Microbiology

Note: Students will be placed in the appropriate English level based on skills assessment results.

\* students who test at an advanced level may be accelerated directly into MATH-176 in semester 1 and MATH-186 in semester 2. Those taking MATH-140 will have the opportunity to complete MATH-186 between semesters 2 and 3.

\*\* minimum C grade required for entry into semester 5.