

## Chemical Laboratory Technology

A Three-Year Ontario College Advanced  
Co-operative Education Endorsed Diploma

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### The Program

This three-year program provides students with a sound knowledge of biology, chemistry, mathematics and physics and emphasizes the principles and performance of standard laboratory practices, procedures and techniques for biological, chemical and physical analysis.

### The Content

Students study theory in a variety of science focused disciplines. The emphasis across the broad program is on acquiring “hands-on” or applied skills in laboratory practices and techniques in chemical, biological and physical analysis.

### The Outcomes

This is a co-op education program providing integration of related paid work experience in actual laboratory positions with classroom theory during the three years of the program so the students graduate with relevant work experience. Graduates find employment opportunities with applied research and development laboratories, educational laboratories, process and quality control laboratories, food and beverage industries, petrochemical companies and technical sales.

### Sample Co-op Progression Chart:

September Intake Only			
	Sep-Dec	Jan-Apr	May-Aug
Year 1	Acad. 1	Acad. 2	Acad. 3
Year 2	Work 1	Acad. 4	Work 2
Year 3	Work 3	Acad. 5	Work 4
Year 4	Acad. 6		

### Learning Outcomes

- Work as a technologist in consulting, industrial support, quality control or research and development in a biology, chemistry or physics laboratory
- Students have practical experience in the operation of infrared ultraviolet/visible and atomic absorption spectrophotometer, gas and liquid chromatographs.
- Interpret, calibrate, modify and/or prepare laboratory equipment and instrumentation specifications
- Prepare reports on the work completed, using statistical analyses where appropriate. Their statistical analyses include probability distributions, sample distributions and hypothesis testing
- Recognize, evaluate and control workplace hazards through direct action as well as make recommendations for engineering, administrative controls and personal protection devices
- Follow applicable test methods and procedures
- Apply mathematical, physical, chemical and biological concepts to theoretical laboratory tasks
- Conduct and accurately interpret manual quantitative and qualitative analyses using prescribed laboratory procedures
- Knowledge of relevant Quality Assurance and Quality Control procedures to ensure that processes remain within designated limits

## Course Outline

*For the official Degree Audit, please see Registrar's Office*

**Level 1** – Take all of the following Mandatory Courses

BIOL-1016	Cytology
CHEM-1003	General Chemistry I
WRIT-1039	Reason & Writing I - Technology
MATH-1172	Mathematics I
ENVR-1014	Environmental & Science Issues
SKLS-1020	Fundamentals of Science

**Level 2** – Take all of the following Mandatory Courses

Gen Ed – Take a 3 credit Gen. Ed. elective course

BIOL-3001	Microbiology I - Bacteriology
CHEM-1012	General Chemistry II
MATH-3062	Mathematics II
PHYS-1001	Physics
COOP-1020	Co-op Ed Employment Prep

**Level 3** – Take all of the following Mandatory Courses

Gen Ed – Take a 3 credit Gen. Ed. elective course

BIOL-3010	Anatomy & Physiology
CHEM-3003	Analytical Chemistry
MATH-3030	Statistics
BIOL-3014	Current Techniques in Plant Agriculture

**Level 4** – Take all of the following Mandatory Courses

BIOL-3003	Microbiology II
CHEM-3002	Organic Chemistry I
CHEM-3004	Instrumental Methods of Analysis I
MATH-1173	Calculus I
PHYS-3003	Thermodynamics & Optics

**Level 5** – Take all of the following Mandatory Courses

BIOL-5001	Biochemistry
CHEM-5001	Organic Chemistry II
CHEM-5003	Quantitative Food Chemistry
MATH-5017	Calculus II
BIOL-5003	Molecular Biology
PSYC-5011	Industrial Relations

**Level 6** – Take all of the following Mandatory Courses

BIOL-5002	Topics in Biotechnology
PHYS-5001	Modern Physics
CHEM-5004	Industrial Chemistry
CHEM-5005	Instrumental Methods of Analysis II
COMM-3005	Language & Communication Skills III
ENVR-5005	Industrial Hygiene

## Program Requirements:

- Take two 3-credit General Education Elective Courses
- Program Residency

Students must complete a minimum of 33 credits in this program at Fanshawe College to meet the Program Residency requirement and graduate from this program.

## Why Should You Hire a Co-operative Education Student?

Many employers feel today's graduates have no concept of the "real" world of work; we are providing this experience in Co-operative Education. Any job that gives the student related background in your business would be suitable.

Eligible employers can claim a tax credit for each qualifying work placement for up to \$3000.

Co-operative Education students are ultimately looking ahead to careers in businesses such as yours. For this reason they are not expecting to simply put in time on the job, but are eager to get involved and make a worthwhile contribution. Participation in co-operative education also gives the employer the opportunity to try out a student's capabilities without obligation or commitment to permanent employment.

This work oriented educational system integrates classroom study and paid, on-the-job work experience, by alternating periods in College with periods of employment by co-operating organizations. The work terms are spaced out through the academic program and students will be at various academic levels in successive work terms. The working experience will ideally increase in difficulty and responsibility as the student progresses academically. However, the College realizes it is often difficult in practice to do this.

It is essential that the work experience be a normal one; that the student be treated like a regular company employee so that a realistic picture of the working environment in that field may be obtained. Perhaps most important is what students gain from the working experience: an attitude for success and the ability to get along with co-workers at all levels.

