



This specialized bachelor degree program prepares qualified professionals for a variety of applied fields of microbiology, i.e. its clinical, environmental, molecular, food processing and industrial applications. The Microbiology program graduates become eligible to join the Association des Microbiologistes du Québec (Association of Microbiologists of Quebec). This program puts particular focus on in-depth studies of microorganisms such as bacteria, fungi and viruses. Students thus receive thorough training in microbiology and its related sectors.

The educational model can be best described as a gradual learning process towards full autonomy, preparing students for their professional career. Such approach combines and balances traditional instruction, project experience, personalized learning and assisted self-training. Starting in the third study term, students are exposed to their professional workplace environment; they acquire the skills and competencies needed to be effective and efficient in demanding true-life situations. Sherbrooke microbiologists are well-known in the field for their solid laboratory training background.

WHAT OUR STUDENTS CAN DO FOR YOU

Techniques

- Bacteria culture
- Aseptic environment
- Bacteria, fungus and virus diagnostics
- DNA, RNA and proteins I solation and manipulation
- PCA and real-time PCA
- Containment level 2
- Chromatography, immunoblotting and SDS-PAGE gel
- ELISA
- Optic microscopy
- FACS
- Bacteriophage culture and manipulation

Project management

- Experiment design
- Experiment protocol update and optimization
- Oral and written presentation of results
- Reports
- Team work
- Quality control



KNOWLEDGE AND SKILLS

Term	Description
S-1	Introduction to biology Properties of biological molecules; eukaryotic cells; anatomy, morphology, reproduction and classification of plants; ecosystems; relations between organisms; study of microorganisms.
S-2	Theoretical foundations and tool handling Intermediate metabolism; integration of anabolic and catabolic pathways; basic analytical and biochemical methods; microorganism handling; understanding and analysis of an experiment protocol; principles of animal physiology.
S-3	Experimentation and theory of microorganisms Preparing an experiment protocol; molecular biology and modern experimental biochemistry; limits of the methods used; foundations of genetics; prokaryotic and eukaryotic microorganisms; microbial metabolism; bacteria of clinical interest; microbial adaptation and environment; food microbiology.
S-4	Applications and new theoretic concepts Immunology; physiological and molecular manipulation of microorganisms; physiological principles in animals; experiments in plant physiology; interactions plants/microorganisms; virology; basic bacteriophage manipulation techniques; analytical molecular methods.
S-5	Processes and infectious diseases Microbiological processes; infection mechanisms; molecular mechanisms; microbial virulence; evolution and control of infectious diseases.
S-6 S-7	Introduction to research Notions of water microbiology and extreme environments; research project in clinical and environmental microbiology; presentation and discussion of results.

ORGANIZATION OF STUDY (S) AND WORK TERM (W)

1st year			2nd year			3rd year			4th year			5th year
FALL	WIN	SUM	FALL	WIN	SUM	FALL	WIN	SUM	FALL	WIN	SUM	FALL
S-1	S-2		S-3	W-1	S-4	W-2	S-5	W-3	S-6			
	S-1		S-2	S-3		S-4	W-1	S-5	W-2	S-6	W-3	S-7