Faculty of Natural Sciences and Mathematics

Overview

The Faculty of Natural Sciences and Mathematics offers a diverse range of courses, programs and degrees (B.Sc., B.A., M.Sc.) in Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Pre-Medicine and Physics and Astronomy.

Students enrolled in the experimental science classes receive extensive laboratory experience. Laboratories and classes tend to be small (often fewer than 20 students) and students are able to obtain essential feedback from Professors. The Faculty also offers students free help in learning mathematics/statistics, physics and computer science through Help Centres staffed with upper year students and/or professional tutors, under the supervision of Faculty members. The Bishop's University Astronomical Observatory is also available for graduate and undergraduate research as well as for public viewing.

Graduates from the Faculty pursue careers in many diverse fields. In recent years these careers have included, but are not limited to: medicine, veterinary medicine, dentistry, biomedical research, engineering, actuarial science, statistics, software engineering, pharmacology, physiotherapy, secondary and primary school science teaching and the chemical industry.

Degrees and Programs

Detailed descriptions of the degrees and programs offered are found under the respective Departmental sections of this calendar. The Faculty of Natural Sciences and Mathematics offers selected Masters of Science (M.Sc.) degrees and a wide range of programs leading to the Bachelor of Science (B.Sc.) or Bachelor of Arts (B.A.) degrees with Honours or Majors specialization. In addition, several departments offer Minor programs that can be added to one's Honours/Major program, and Computer Science offers a certificate program. Please see the complete list of programs in Table I below.

Natural Sciences Divisional Major MAJDNS

The Faculty offers an entry-level program for a limited number of students, allowing them to register as Divisional Majors (rather than into a specific program) for a maximum of two semesters. After two semesters of full-time study completed, students must enrol into a specific program (Major). Students who are not accepted into one of the regular programs must consult with with the Academic Advisor to determine an academic plan.

Length of Degrees and Collegial Equivalent Science Courses

All students admitted into their first Bachelor's degree come into a 4-year, 120-credit program. Students having a Québec collegial diploma (DEC), as well as Mature students (please consult the Admission section of the calendar for the definition of Mature status), will be granted up to one year of advanced credits (30 credits) if they have completed all the collegial courses that are equivalent to the introductory science courses which must be taken as part of the various science programs. CEGEP/Bishop's course equivalencies are listed below; Bishop's collegial-equivalent science courses that must be completed in each of our science programs are listed in Table II. Note that the labs that are associated with many of these courses (e.g. the course BIO 196 has an associated lab named BIL 196), must be taken concurrently.

Cellular/Molecular Biology	**BIO 196**
General Chemistry	**CHM 191**
Solutions Chemistry	**CHM 192**
Differential Calculus	**MAT 191**
Integral Calculus	**MAT 192**
Mechanics	**PHY 191 or PHY 193**
Electricity and Magnetism	**PHY 192 or PHY 194**

Arts and Science Requirement

In addition to the courses listed in Table II, in order to encourage students enrolled in the Faculty of Natural Sciences & Mathematics to broaden the scope of their education, all majors and honours are required to complete at least three credits in either the Faculty of Humanities or the Faculty of Social Sciences. While this requirement will not in itself ensure against excessive specialization, it is hoped that it will lead students to find and pursue various areas of interest. Students with program combinations which require more than 72 credits are exempt from this requirement.

Advanced Placement

The Faculty of Natural Sciences and Mathematics grants credit for successful completion of AP examinations in the Sciences as follows. Note that a minimum score of 4 is required. When applicable, credit will also be granted for the lab that is associated with the course (e.g. the course BIO 196 and associated lab BIL 196).

Biology	**BIO 196**
Chemistry	**CHM 191 and CHM 192**
Computer Science AB	**CS 311**
Mathematics BC	**MAT 191 and MAT 192**
Physics C-Mechanics	**PHY 191 (or PHY 193)**
Physics C-Electricity	**PHY 192 (or PHY 194)**

Table I: Programs Offered

Department	Program/Concentration	Degree type	Specialization Level
Biology and Biochemistry	Biochemistry	B.Sc.	Honours, Major, Minor
	Biology: Health Sciences	B.Sc., B.A.	Honours, Major
	Biology: Biodiversity and Ecology	B.Sc., B.A.	Honours, Major
	Biology		Minor
Chemistry		B.Sc.	Honours, Major, Minor
Computer Science		M.Sc.	
		B.Sc.	Honours, Major, Minor
		Certificate	
	Information Technology	B.A.	Major
Environment, Agriculture and Geography (Social Sciences Faculty)	Environmental Science	B.Sc.	Honours, Major, Minor
Mathematics		B.Sc., B.A.	Honours, Major, Minor
	Matemáticas en Español	B.Sc., B.A.	Honours, Major
	Mathematical Contexts		Minor
Physics		M.Sc.	
		B.Sc.	Honours, Major, Minor
Psychology (Social Sciences Faculty)	Neuroscience	B.Sc.	Honours, Major

Table II: Collegial-equivalent courses

Department/Program	Biology	Chemistry	Mathematics	Physics	Humanities*
Biology and Biochemistry / Biochemistry B.Sc.	BIO 196	CHM 191	MAT 191	PHY 191 or PHY 193	Humanities courses **
		CHM 192	MAT 192	PHY 192 or PHY 194	
Biology and Biochemistry / Biology B.Sc.	BIO 196	CHM 191	MAT 191	PHY 191 or PHY 193	Humanities courses **
		CHM 192	MAT 192	PHY 192 or PHY 194	
Biology and Biochemistry / Biology B.A.	BIO 196				Humanities courses **
Chemistry		CHM 191	MAT 191	PHY 191	Humanities courses **
		CHM 192	MAT 192	PHY 192	
Computer Science / B.Sc.			MAT 191	PHY 191	Humanities courses **
			MAT 192	PHY 192	
Computer Science / Information Technology B.A.			MAT 196		Humanities courses **
			MAT 197		
Environment, Agriculture and Geography* / (Environmental Science)**	BIO 196	CHM 191	MAT 191	PHY 193	
		CHM 192	MAT 192	PHY 194	
Mathematics / B.Sc.			MAT 191	PHY 191	Humanities courses **
			MAT 192	PHY 192	
Mathematics / B.A.			MAT 191		Humanities courses **
			MAT 192		
Physics		CHM 191	MAT 191	PHY 191	Humanities courses **
		CHM 192	MAT 192	PHY 192	
Psychology* / (Neuroscience)**	BIO 196	CHM 191	MAT 191	PHY 191 or PHY 193	
		CHM 192	MAT 192	PHY 192 or PHY 194	

** Any CEGEP DEC fulfils the Humanities requirement*

*** Two courses (6 credits) selected from any Humanities courses. It is recommended that at least one of these courses be a writing intensive course.*

**** The Environment, Agriculture and Geography department and the Psychology department are part of the Faculty of Social Sciences.*

Transfers from other Universities and Colleges

Students entering a program in the Faculty of Natural Sciences and Mathematics from another Canadian University or College, or from accredited international post-secondary institutions, will have their transcripts of grades examined individually for possible transfer credit against a Bishop's program's requirements. Please consult the Admission section of this Calendar or the Admissions Office, admissions@ubishops.ca for details.

Transfers from other programs at Bishop's University

Bishop's students wishing to transfer into a program offered by the Faculty of Natural Sciences and Mathematics normally require a cumulative average of 65% on all courses attempted at Bishop's. Students whose average is below 65% may still register in courses offered in the Faculty, subject to the normal regulations regarding course registration in the University. Program transfers are not normally permitted in a student's first semester of studies at Bishop's University.

Graduation "with Distinction"

The notation "with Distinction" will appear on the transcript of students who graduate with a cumulative average of 80% or more. It is only available for first degree students.

Department of Biology and Biochemistry

Faculty

Patrick Bergeron
B.Sc. (McGill University), Ph.D. (Université de Sherbrooke)
Professor
Research and Honours Project Coordinator

Marylène Boulet
B.Sc. (Université Laval), M.Sc. (Université Laval),
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Professor

Elizabeth Prusak
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Ph.D. (Polish Academy of Science)
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Professor

Ginny (Virginia) Stroeher
B.Sc. (Montana State University), Ph.D. (University of Washington)
Professor
Chair of the Department

Sarathi Weraduwage
B.Sc. (University of Colombo), Ph.D. (University of Guelph)
Associate Professor

Departmental Overview

Our programs cover a wide range of subjects, all with a focus on the components and processes that make up life. Whether it is studying biologically important molecules or entire ecosystems, our programs are designed to help students gain an understanding of one of the many fields within the life sciences and develop their own abilities to further explore subjects in these fields. Many of our graduates go on to professional and graduate studies in medicine, dentistry, veterinary science, forestry, wildlife biology, physiology, microbiology, and biotechnology; while others go into direct employment in the biotechnology sector, conservation, agriculture, education, or the allied health fields. The best attribute of our department is its teachers. Our faculty members are dedicated to undergraduate education and thrive on helping students develop their knowledge and skills both inside and outside the classroom. This dedication, coupled with a strong faculty culture of inquiry and research, encourages students to develop an analytical approach to investigating the world around them. This is further facilitated by a focus on hands-on learning in our modern