Division of Natural Sciences and Mathematics

Overview

The Division of Natural Sciences and Mathematics offers a diverse range of courses, programs and degrees (B.Sc., B.A., M.Sc.) in Biochemistry, Biological Sciences, Chemistry, Computer Science, Environmental Science, Mathematics, and Physics and Astronomy.

Students enrolled in the experimental science classes receive extensive laboratory experience. Laboratories are well equipped and laboratory courses are instructed by the regular faculty. Each department has its own computer facilities and dedicated study rooms. Laboratories and classes tend to be small (often fewer than 20 students) and students are able to obtain essential feedback from Professors. The Division 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 Division 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 Division 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.

Divisional Major

The Division 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 are completed, students must enrol into a specific program (Major). Students who are not accepted into one of the regular programs must consult with the Dean of Arts and Science 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 or MAT 198**
Integral Calculus	**MAT 192 or MAT 199**
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 Division 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 Division of Humanities or the Division 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 Division 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
Biochemistry		B.Sc.	Honours, Major, Minor
Biological Sciences	Health Science	B.Sc., B.A	Honours, Major
	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
Environmental Science (part of Environment and Geography)	Physics	B.Sc.	Major
	Chemistry	B.Sc.	Major
	Environmental Science		Minor
Mathematics		B.Sc., B.A	Honours, Major, Minor
	Mathematics Education	B.Sc., B.A	Double Major*
	Matematicas en Español	B.Sc., B.A	Honours, Major
	Mathematical Contexts		Minor
Physics		M.Sc.	
		B.Sc.	Honours, Major, Minor
Science Teaching	Biology	B.Sc.	Double Major*
	Chemistry	B.Sc.	Double Major*
	Physics	B.Sc.	Double Major*

The Division of Natural Sciences and Mathematics, in cooperation with the School of Education, offers students in these programs the opportunity to prepare for professional careers as Secondary School science and mathematics educators. Students must also be registered Education majors in the **School of Education. The specific required course lists and program regulations for these double Major programs are found in the School of Education section of this Calendar. All questions concerning application to the School and course requirements should be referred to the Dean of the School of Education.*

Table II: Collegial-equivalent courses

Department/Program	Life Science	Chemistry	Mathematics	Physics	Humanities*
Biochemistry	BIO 196	CHM 191	MAT 198	PHY 191 or PHY 193	ENG 116 + 1**
		CHM 192	MAT 199	PHY 192 or PHY 194	
Biological Sciences B.Sc.	BIO 196	CHM 191	MAT 198	PHY 191 or BIO 197	ENG 116 + 1**
		CHM 192	MAT 199	PHY 192 or PHY 194	
Biological Sciences B.A.	BIO 196				ENG 116 + 1**
	BIO 197				
Chemistry		CHM 191	MAT 198	PHY 191	ENG 116 + 1**
		CHM 192	MAT 199	PHY 192	
Computer Science B.Sc.			MAT 191	PHY 191	ENG 116 + 1**
			MAT 192	PHY 192	
Information Technology B.A.			MAT 196		ENG 116 + 1**
			MAT 197		
Environmental Science	BIO 196	CHM 191	MAT 191	PHY 191	ENG 116 + 1**
		CHM 192	MAT 192	PHY 192	
Mathematics B.Sc.			MAT 191	PHY 191	ENG 116 + 1**
			MAT 192	PHY 192	
Mathematics B.A.			MAT 191		ENG 116 + 1**
			MAT 192		
Physics		CHM 191	MAT 191	PHY 191	ENG 116 + 1**
		CHM 192	MAT 192	PHY 192	
Science Teaching	BIO 196	CHM 191	MAT 191 or MAT 198	PHY 191 or PHY 193	ENG 116 + 1**
		CHM 192	MAT 192 or MAT 199	PHY 192 or PHY 194	

** Any CEGEP DEC fulfils the Humanities requirement*

*** ENG 116 (Effective Writing) can be replaced by another English course (coded 'ENG'). The second humanities course can be selected from the 100- or 200-level courses in the following disciplines: Classical Studies (CLA), English (ENG), History (HIS), Liberal Arts (LIB), Philosophy (PHI) and Religion (REL)*