



Bachelor of Science, 4-Year Major in Biology

Program Planning Guide 2023/2024

Program Overview

The Bachelor of Science with a major in Biology is intended to provide students with the opportunity to pursue a program of study in biology with grounding in the other Liberal Arts. Students will master a depth of material and methodology to prepare them for graduate study, while acquiring a breadth of experience to maintain the flexibility of thinking and approach necessary for effective participation in a fluid and progressive society and workforce. Drawing on the existing strength of St. Mary's in the Liberal Arts, students will become broadly educated, grounded, practically-minded thinkers with experience in thinking across and outside disciplinary boundaries.

This program will develop students' capacity for independent, critical thinking. A stress on connections between class experience and real-world application, incorporating realistic discovery-based laboratory experiences, will allow graduates of the program to move quickly and effectively into roles as active, productive biologists. As they grow within the program, students will develop the capacity for self-directed learning, culminating in an independent study project in their final year.

Such an education serves to well prepare students for a wide array of careers, with roles from agriculture to biomedical laboratory research, from environmental consulting to veterinary medicine. Students will be prepared for further education, whether graduate work in biology, business, education, law, or medicine.

The program will challenge students to consider the effect of science on society, and the effect of society on scientific thinking. Part of the development of a "well-educated, free human being" is ensuring that students recognize their responsibility to our community and our world, and this is a vital component of the program.

In keeping with this sense of place, the courses comprising this program are informed by the setting of St. Mary's on the edge of Fish Creek Provincial Park, and in the larger landscape of Southern Alberta. Part of any thorough education in the natural sciences must consist of basic grasp of, and appreciation for, the natural resources in which this area is so rich. Students completing a BSc in Biology at St. Mary's will be independent, capable thinkers and doers, with an eye for the natural wealth of Alberta and a sense of responsibility to the people and the world around them.

Admission

New students may apply directly to the program when they apply for admission and **must have successfully completed Biology 30, Chemistry 30 and Math 30-1**. Current students may be admitted to the program by submitting a *Change of Program Form* to the Enrolment Services Office for processing.

Program Requirements

Students are strongly recommended to meet with an academic advisor on a regular basis throughout the program. It is the student's responsibility to ensure they have met the requirements for graduation.

This planning guide is designed to help students keep track of their progress in meeting degree requirements. Course descriptions may be found in the St. Mary's University calendar.

A. Liberal Arts Core (18 credits)

- _____ ENGL 200A: Studies in Literature: Middle Ages to 1660 (3 credits)
- _____ ENGL 200B: Studies in Literature: 1660 to the Present (3 credits)
- _____ HIST 200A: History of Ideas: Antiquity to the Reformation (3 credits)
- _____ HIST 200B: History of Ideas: Scientific Revolution to 20th Century (3 credits)
- _____ PHIL 351: Ethics (3 credits)
- _____ RLGS 205: Reading Biblical Texts (3 credits)

B. Special Requirements (15 credits)

- _____ 3 credits in Mathematics (MATH 211, MATH 249 or MATH 251)
- _____ BIOL 315: Biostatistics (3 credits) (to be taken in second year)
- _____ 3 credits in Physics
- _____ BIOL 491: Senior Project I (3 credits)
- _____ BIOL 493: Senior Project II (3 credits)

C. Introductory Science Core (21 credits)

- _____ BIOL 231: Introduction to Biology I
- _____ BIOL 233: Introduction to Biology II
- _____ CHEM 201: General Chemistry I
- _____ CHEM 203: General Chemistry II
- _____ CHEM 351: Organic Chemistry I
- _____ CHEM 353: Organic Chemistry II
- _____ BCEM 393: Introduction to Biochemistry

D. Senior Biology Core (21 credits)

- _____ BIOL 311: Principles of Genetics
- _____ BIOL 313: An Introduction to Ecology and Evolution
- _____ BIOL 331: Introduction to Cellular and Molecular Biology
- _____ BIOL 341: Introductory Microbiology
- _____ BIOL 411: Genetics
- _____ BIOL 413: Ecology
- _____ BIOL 415: Evolution

120-Credit Degree**Junior/Senior Requirements**

72 credits must be taken at the **300- or 400-level**.

Directed Studies

Students are allowed a **maximum of 9.0 credits hours** of directed studies in their degree program.

Program Standing

In order to remain in the program, you must maintain a cumulative **GPA of 2.0** with a **minimum cumulative GPA of 2.3 in senior Biology courses**.

You may have no more than one D or D+ in Biology courses. Students who do not meet these requirements may not graduate.

Residence Requirement

All students must complete at least **60 credits** at St. Mary's University. A minimum of 24 credits in Biology must be completed at StMU, including **BIOL 493**.

Graduation

In final year of study, an *Application to Graduate* must be submitted by October 1.

This guide is for your convenience only and should not replace the St. Mary's University College Calendar, which is the final authority regarding degree program requirements and academic regulations.

E. Biology Electives (15 credits)

Two courses of the following (6 credits):

- _____ BIOL 375: Invertebrate Zoology
- _____ BIOL 377: Vertebrate Zoology
- _____ BIOL 381: Mycology

And three courses from the following, or any other courses listed above not taken to fulfil that category (9 credits):

- _____ BIOL 317: Marine Biology Field School
- _____ BIOL 417: Tropical Ecology Field School
- _____ BIOL 431: Cellular & Molecular Biology
- _____ BIOL 433: Immunology
- _____ BIOL 441: Microbiology
- _____ BIOL 451: Biological Conservation
- _____ BIOL 375/377/381(if not used above)
- _____ SCIE 399: Directed Studies in Science

F. Minor Program Requirements (18 credits) *if not pursuing a minor, take 18 credits of electives instead.

- Of the following 30 credits, **15 credits must be outside of Science** (ASTR, BCEM, BIOL, CHEM, CPSC 215, HMKN 205, MATH, PHYS, SCIE)
- BIOL 205, 305, 307, MATH 205, STAT 213 and STAT 217 are not open for credit for B.Sc. Biology majors
- At least 9 credits of a minor must be taken at the 300 or 400 level
- At least 9 credits of a minor must be completed at St. Mary's University

Minor (if applicable): _____

- _____ (3 credit)
- _____ (3 credit)
- _____ (3 credit)
- _____ (3 credit)
- _____ (3 credit)
- _____ (3 credit)

G. Electives (12 credits) *be attentive to Jr./Sr. requirements

- _____ elective: _____ (3 credit)
- _____ elective: _____ (3 credit)
- _____ elective: _____ (3 credit)
- _____ elective: _____ (3 credit)

Course Sequencing Worksheet – 4 YEAR BIOLOGY
Version 1 (if student starts in an odd-numbered Fall term, like Fall 2023)

1st YEAR	Fall	Winter
	BIOL 231	BIOL 233
	CHEM 201	CHEM 203
	PHYS 211	MATH 211
	ENGL 200A	ENGL 200B
	ELECTIVE	ELECTIVE

2nd YEAR	Fall	Winter
	BIOL 313	BIOL 311
	BIOL 331	BIOL 315
	CHEM 351	CHEM 353
	ELECTIVE	BCEM 393
	HIST 200A	HIST 200B

3rd YEAR	Fall	Winter
	BIOL 411	BIOL 491
	BIOL 413	RLGS 205
	BIOLOGY ELECTIVE	BIOLOGY ELECTIVE
	ELECTIVE	BIOLOGY ELECTIVE
	ELECTIVE	ELECTIVE

4th YEAR	Fall	Winter
	BIOL 341	BIOL 493
	BIOL 415	BIOLOGY ELECTIVE
	BIOLOGY ELECTIVE or ELECTIVE	BIOLOGY ELECTIVE or ELECTIVE (If BIOL elective taken in Fall, then take elective here. If elective taken in Fall, then take BIOL elective here)
	PHIL 351	ELECTIVE
	ELECTIVE	ELECTIVE

Extra Terms (e.g. Spring)		

*This is for planning purposes only. If you follow this plan and complete 5 courses per semester, you should be able to graduate in four years. This is just one example of how you could complete your major and degree requirements; your plan may vary. For questions about course selection or sequencing, please contact advising@stmu.ca

Course Sequencing Worksheet – 4 YEAR BIOLOGY
Version 2 (if student starts in an even-numbered Fall term, like Fall 2024)

1 st YEAR	Fall	Winter
	BIOL 231	BIOL 233
	CHEM 201	CHEM 203
	PHYS 211	MATH 211
	ENGL 200A	ENGL 200B
	ELECTIVE	ELECTIVE

2 nd YEAR	Fall	Winter
	BIOL 313	BIOL 311
	BIOL 331	BIOL 315
	CHEM 351	CHEM 353
	ELECTIVE	BCEM 393
	HIST 200A	HIST 200B

3 rd YEAR	Fall	Winter
	BIOL 341	BIOL 491
	BIOL 415	RLGS 205
	BIOLOGY ELECTIVE	BIOLOGY ELECTIVE
	ELECTIVE	BIOLOGY ELECTIVE
	ELECTIVE	ELECTIVE

4 th YEAR	Fall	Winter
	BIOL 411	BIOL 493
	BIOL 413	PHIL 351
	BIOLOGY ELECTIVE	BIOLOGY ELECTIVE
	ELECTIVE	ELECTIVE
	ELECTIVE	ELECTIVE

Extra Terms (e.g. Spring)		

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