

BIOLOGY

Department Website: <https://www.smu.ca/biology/>

Department Email: biology@smu.ca

The Department offers a concentration, major, honours, and minor in Biology. A double major or double honours in Biology and another science can be completed. Students may pursue a cooperative education option. See the Cooperative Education Office for details.

The Department trains graduate students through the M.Sc. and Ph.D. in Applied Science programs. Consult the *Graduate Academic Calendar* for details.

Programs

The Bachelor of Science (B.Sc.) is a well-established, foundational degree. Its specific requirements are listed below alongside general graduation requirements (<https://smu-ca-public.courseleaf.com/undergraduate/faculties/faculty-science/bachelor-science/>).

Major in Biology

The requirements for the degree of Bachelor of Science with Major in Biology apply as listed in this Academic Calendar under the heading of *Faculty of Science, Bachelor of Science – Major*. The specific list of required forty-eight (48) credit hours in BIOL required to satisfy 6(d) is contained in the following list of Science courses required for the program.

Code	Title	Credit Hours
BIOL 1211	Molecular and Cell Biology	3
BIOL 1212	Organismal and Ecological Biology	3
BIOL 1213	Applications in Biology	3
BIOL 2307	Genetics	3
BIOL 2321	Cell Biology	3
BIOL 2324	Ecology	3
BIOL 3308	Biostatistics	3
BIOL 3423	Evolution	3
Select 24 additional credit hours of BIOL courses at the 3000 and 4000-level ³		24
CHEM 1210	General Chemistry I	3
Select 3 credits of the following ⁴		3
CHEM 1211	General Chemistry II for Physical Sciences	
CHEM 1212	General Chemistry II for Life Sciences	
CHEM 1213	General Chemistry II for Engineering	
CHEM 2346	Organic Chemistry for Life Sciences ⁵	3
Select three credit hours from the following:		3
MATH 1210	Introductory Calculus I	
MATH 1250	Calculus for Life Sciences I	
Select three credit hours from the following:		3
MATH 1211	Introductory Calculus II	
MATH 1251	Calculus for Life Sciences II	
CSCI 1227	Computer Programming and Problem Solving	
CSCI 1226	Introduction to Computing Science and Programming	

Select nine additional credit hours of Science Electives not in the major subject	9
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Total Credit Hours	72
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- 1 BIOL 1201 may be used as a substitute in lieu of Molecular and Cell Biology (BIOL 1211) and Applications in Biology (BIOL 1213).
- 2 BIOL 1202 may be used as a substitute for Organismal and Ecological Biology (BIOL 1212) and Applications in Biology (BIOL 1213).
- 3 With at least nine (9) credit hours at each of the 3000 and 4000-levels.
- 4 Note specific MATH pre-requisites.
- 5 It is recommended that students complete their organic chemistry requirements in their second year. Students may substitute Organic Chemistry I (CHEM 2344) plus Organic Chemistry II (CHEM 2345) in lieu of Organic Chemistry for Life Sciences (CHEM 2346).

Note: Up to six (6) credit hours of BIOL electives may be substituted with any of the following:

Code	Title	Credit Hours
ANTH 3471	Forensic Skeletal Identification	3
ANTH 3472	Forensic Skeletal Analysis	3
CHEM 3451	Introductory Biochemistry	3
CHEM 4452	Biochemistry: Intermediary Metabolism	3
PSYC 2020	Psychological Statistics (formerly PSYC 2350) (Group C) (Group C)	3
PSYC 3120	Ethology (formerly PSYC 4407) (Group A) (Group A)	3

Note that these courses cannot count simultaneously as Biology electives and "other Science electives" (Regulation 6e) or Arts electives (Regulation 6c) for the Bachelor of Science with major.

Students should consult the Faculty of Science Program Requirement Tables (<https://www.smu.ca/faculty-of-science/science-program-requirement-tables.html>) available online for recommended Science Electives, and a suggested sequence of courses for years 1 and 2. Students should consult with a Biology Program Advisor or a Science Advisor to chart their courses, and to determine the best sequence of courses for years 3 and 4.

Double Major in Biology and Other Science

The requirements for the degree of Bachelor of Science with Double Major apply as listed in this *Academic Calendar* under the heading of Faculty of Science, Bachelor of Science – Double Major (<https://smu-ca-public.courseleaf.com/undergraduate/faculties/faculty-science/bachelor-science---double-major/>). The specific list of BIOL courses required to satisfy 7 (a) are the same as the major requirements above, except that they need only complete twelve (12) credit hours of BIOL electives:

- six (6) credit hours at the 3000 level.
- six (6) credit hours at the 4000-level.

Concentration in Biology

The requirements for the degree of Bachelor of Science – General - with Concentration apply as listed in this Academic Calendar under the heading of *Faculty of Science, Bachelor of Science – General (with*

a Concentration). The specific list of courses required to satisfy 3(d) are contained in the following list of required Science courses for the program:

Code	Title	Credit Hours
BIOL 1211	Molecular and Cell Biology	3
BIOL 1212	Organismal and Ecological Biology	3
BIOL 1213	Applications in Biology	3
BIOL 2307	Genetics	3
BIOL 2321	Cell Biology	3
BIOL 2324	Ecology	3
Select twelve additional credit hours of BIOL at the 3000-level or above		12
CHEM 1210	General Chemistry I	3
Select three credits of the following: ³		3
CHEM 1211	General Chemistry II for Physical Sciences	
CHEM 1212	General Chemistry II for Life Sciences	
CHEM 1213	General Chemistry II for Engineering	
CHEM 2346	Organic Chemistry for Life Sciences ⁴	3
Select three credit hours of the following:		3
MATH 1210	Introductory Calculus I	
MATH 1250	Calculus for Life Sciences I	
Select three credit hours from the following:		3
MATH 1211	Introductory Calculus II	
MATH 1251	Calculus for Life Sciences II	
CSCI 1227	Computer Programming and Problem Solving	
CSCI 1226	Introduction to Computing Science and Programming	
Total Credit Hours		45

1 BIOL 1201 may be substituted in lieu of Molecular and Cell Biology (BIOL 1211) and Applications in Biology (BIOL 1213).

2 BIOL 1202 may be substituted in lieu of Organismal and Ecological Biology (BIOL 1212) and Applications in Biology (BIOL 1213).

3 Note specific MATH pre-requisites.

4 It is recommended that students complete their organic chemistry requirement in their second year. Students may substitute Organic Chemistry I (CHEM 2344) and Organic Chemistry II (CHEM 2345) in lieu of Organic Chemistry for Life Sciences (CHEM 2346).

Honours in Biology

The requirements for the degree of Bachelor of Science with Honours apply as listed in this Academic Calendar under the heading of *Faculty of Science, Bachelor of Science – Honours*. Students with a minimum CGPA of 3.00 are encouraged to apply for admission to the honours program. Students must secure a supervisor for the honours thesis (Research Thesis (BIOL 4500)) before applying to the honours program. The Department website lists the research interests of faculty. The specific list of BIOL courses used to satisfy the honours requirements 11 (a) is contained in the following list of requirements for the program:

Code	Title	Credit Hours
BIOL 4549	Honours Seminar	6
All requirements of the Major in Biology listed above (p. 1)		45

BIOL 4500	Research Thesis	6
BIOL 3308	Biostatistics	3
Select three additional credit hours in BIOL at the 4000-level for a total of 30 credit hours of BIOL electives (including 3308) at the 3000 and 4000-level, with at least 12 credit hours at each of the 3000 and 4000-levels		3
Total Credit Hours		63

Minimum DGPA of 3.00 (Faculty of Science regulation 13)

Double Honours in Biology and Other Science

The requirements for the degree of Bachelor of Science with Double Honours apply as listed in this *Academic Calendar* under the heading of *Faculty of Science, Bachelor of Science – Double Honours*. The specific list of BIOL courses required to satisfy 11 (d) includes those requirements for the Major plus the following:

Code	Title	Credit Hours
BIOL 4549	Honours Seminar	6
BIOL 4500	Research Thesis	6

Minimum DGPA of 3.00 (Faculty of Science regulation 13)

Minor in Biology

The requirements for a Minor apply as listed in this *Academic Calendar* under the heading of *Faculty of Science, Bachelor of Science – Major and Minor*. The specific thirty (30) credit hours of BIOL courses required to satisfy 9(b) are the following:

Code	Title	Credit Hours
BIOL 1211	Molecular and Cell Biology	3
BIOL 1212	Organismal and Ecological Biology	3
BIOL 1213	Applications in Biology	3
BIOL 2307	Genetics	3
BIOL 2321	Cell Biology	3
BIOL 2324	Ecology	3
Select twelve additional credit hours in BIOL at the 3000-level or above		12
Total Credit Hours		30

1 BIOL 1201 may be substituted in lieu of Molecular and Cell Biology (BIOL 1211) and Applications in Biology (BIOL 1213).

2 BIOL 1202 may be substituted in lieu of Organismal and Ecological Biology (BIOL 1212) and Applications in Biology (BIOL 1213).