

MATHEMATICS

Department Website: <https://www.smu.ca/math-cs/>

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The Department of Mathematics and Computing Science offers a broad range of courses, including introductory courses intended for students with little mathematical or computing science background; preparatory courses for students intending to enter fields requiring mathematics or computing science; and specialized courses for more advanced mathematics and computing science students. The Department of Mathematics and Computing Science offers MATH courses required for the Engineering program, and a selection of 1000-level courses from which Science students select to fulfill the Faculty of Science BSc requirement 6b (<https://smu-ca-public.courseleaf.com/undergraduate/faculties/faculty-science/bachelor-science---major/>). Details on both the requirement and how it is satisfied for the different majors are found in the Faculty of Science (<https://smu-ca-public.courseleaf.com/undergraduate/faculties/faculty-science/>) section of this Calendar.

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 Mathematics

A Major in Mathematics can be completed in either a Bachelor of Arts or Bachelor of Science Program. The requirements for the degree of Bachelor of Science with Major apply as listed in this *Academic Calendar* under the heading of Faculty of Science, Bachelor of Science – Major (<https://smu-ca-public.courseleaf.com/undergraduate/faculties/faculty-science/bachelor-science---major/>). The specific list of required forty-eight (48) required credit hours of Major subject area courses used to satisfy 6(d) are as follows:

Code	Title	Credit Hours
MATH 1210	Introductory Calculus I	3
MATH 1211	Introductory Calculus II	3
CSCI 1226	Introduction to Computing Science and Programming	3
MATH 2301	Applied Linear Algebra	3
MATH 2305	Survey of Discrete Mathematics	3
MATH 2310	Introductory Analysis	3
MATH 2311	Intermediate Calculus	3
MATH 2321	Linear Algebra II	3
MATH 3441	Real Analysis I	3
MATH 4420	Abstract Algebra I	3
MATH 4436	Theory of Functions of a Complex Variable I	3
Select three credit hours in MATH at the 2000 level or above		3
Select twelve additional credit hours in MATH at the 3000 level or above		12
Total Credit Hours		48

A suggested sequence of courses for years 1 and 2 is available online on the Faculty of Science website listings for Program Requirement Tables. (<https://www.smu.ca/faculty-of-science/science-program-requirement-tables.html>) Students should consult with the Mathematics Advisor in the Department, or a Science Advisor for course selection and the suggested best sequence of courses for years 3 and 4.

Double Major in Mathematics and a Subject Other than Computing Science or Physics

The Departmental requirements for a double major in mathematics and a subject other than computing science or physics are the same as the requirements for a major in mathematics. Students enrolled in this program may substitute another mathematics course(s) approved by the Department Chair for Abstract Algebra I (MATH 4420) and/or Real Analysis I (MATH 3441).

Honours in Mathematics

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 (<https://smu-ca-public.courseleaf.com/undergraduate/faculties/faculty-science/bachelor-science---honours-double-honours/>).

The honours program is designed for mathematics majors of above average ability. Mathematics majors in Year 2 with a CGPA of at least 2.50, and with a GPA of at least 3.00 in their mathematics courses, are encouraged to enrol in the honours program, and are advised to consult with the Department Chairperson about admission. Students are required to achieve a DGPA of at least 3.00 to graduate with Honours. The specific list of sixty-six (66) required credit hours of Honours subject area courses used to satisfy 11 (a) are as follows:

Code	Title	Credit Hours
MATH 1210	Introductory Calculus I	3
MATH 1211	Introductory Calculus II	3
CSCI 1226	Introduction to Computing Science and Programming	3
CSCI 1227 or CSCI 1228	Computer Programming and Problem Solving Advanced Computer Programming and Problem Solving	3
MATH 2301	Applied Linear Algebra	3
MATH 2305	Survey of Discrete Mathematics	3
MATH 2310	Introductory Analysis	3
MATH 2311	Intermediate Calculus	3
MATH 2321	Linear Algebra II	3
MATH 3441	Real Analysis I	3
MATH 4420	Abstract Algebra I	3
MATH 4421	Abstract Algebra II	3
MATH 4442	Real Analysis II	3
Select a minimum of 27 additional credit hours in MATH ¹		27
Total Credit Hours		66

¹ Courses numbered Introduction to Mathematical Statistics (MATH 1216) or Differential Equations I (MATH 2303) or above, chosen

by the student in consultation with the Department and for which at least twelve (12) credit hours must be at the 3000 level or above.

Note: Students pursuing an honours in MATH may receive credit for only one of: Biostatistics (BIOL 3308), Introduction to Mathematical Statistics (MATH 1216), Introductory Statistics (MGSC 2207), and Psychological Statistics (formerly PSYC 2350) (Group C) (PSYC 2020).

A suggested program sequence for a B.Sc. with Honours in Mathematics and a complete list of the program requirements is available online on the Faculty of Science website listings for Program Requirement Tables (<https://www.smu.ca/faculty-of-science/science-program-requirement-tables.html>). Students should consult with a Science Advisor or the Department Chair to select courses and to chart their program.

Double Honours in Mathematics and a Subject Other than Computing Science or Physics

The Department requirements for a double honours in mathematics and a subject other than computing science or physics are the same as the requirements for a major in mathematics plus six (6) additional credit hours in mathematics courses numbered 3000 or above.

Concentration in Mathematics (B.Sc. – 90 credits)

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) (<https://smu-ca-public.courseleaf.com/undergraduate/faculties/faculty-science/bachelor-science--general-w-concentration/>). The specific list of thirty (30) required credit hours in MATH used to satisfy 3(d) are:

Code	Title	Credit Hours
MATH 1210	Introductory Calculus I	3
MATH 1211	Introductory Calculus II	3
MATH 2305	Survey of Discrete Mathematics	3
MATH 2310	Introductory Analysis	3
MATH 2311	Intermediate Calculus	3
MATH 2301	Applied Linear Algebra	3
MATH 2321	Linear Algebra II	3
Select an additional nine credit hours in MATH numbered 1200 or above (not to include MATH 1250 or MATH 1251)		9
Total Credit Hours		30

Interested students should consult with a Science Advisor or the Department Chair.

Concentration in Mathematics (B.A. 90 credit)

To obtain a concentration in Mathematics in partial fulfillment of the B.A. General degree (i.e., one with Double Arts Concentrations and a minimum of ninety (90) credit hours), a minimum of twenty-four (24) credit hours in MATH is required; also a minimum PGPA of 2.00 is required. Interested students should consult with an Arts Advisor or the Department Chair.

NOTE: Only one of Calculus for Life Sciences I (MATH 1250) or Introductory Calculus I (MATH 1210) may be used to satisfy the requirements for a concentration in Mathematics in partial fulfillment of the B.A. General degree.

Minor in Mathematics

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 (<https://smu-ca-public.courseleaf.com/undergraduate/faculties/faculty-science/bachelor-science--major-minor/>). The specific list of thirty (30) required credit hours in MATH used to satisfy 9(b) are:

Code	Title	Credit Hours
MATH 1210	Introductory Calculus I	3
MATH 1211	Introductory Calculus II	3
MATH 2305	Survey of Discrete Mathematics	3
MATH 2310	Introductory Analysis	3
MATH 2311	Intermediate Calculus	3
MATH 2301	Applied Linear Algebra	3
MATH 2321	Linear Algebra II	3
Select an additional nine credit hours in MATH numbered 1200 or above (not to include MATH 1250 or MATH 1251)		9
Total Credit Hours		30

Interested students should consult with a Science Advisor or the Department Chair.

Double Major or Double Honours in Mathematics and Physics

Detailed requirements for these programs are found in the Department of Astronomy and Physics (<https://smu-ca-public.courseleaf.com/undergraduate/programs/astronomy-astrophysics/>).

Certificate

Certificate in Mathematical Sciences for Education

The Certificate in the Mathematical Sciences for Education is intended to provide holders of a Bachelor of Education (B.Ed.) degree with a broad background in mathematics, statistics, and computing science, enabling them to teach high school mathematics courses effectively. Teachers who complete this program will have a deep understanding of the mathematics that they teach, and a familiarity with the various contexts in which their own university-bound students will use that mathematics. A teaching methods course is an integral part of this program.

Admission

To gain entry to this program, students must have a B.Ed. (or equivalent). They must also have at least Grade 12 precalculus mathematics (or equivalent) before starting Fundamental Calculus I (MATH 1208). (Among possible equivalents are Fundamental Mathematics (MATH 1190) and some non-credit courses offered at Saint Mary's.)

Note: Fundamental Mathematics (MATH 1190) forms part of the Certificate Program; the non-credit courses do not. Pre-calculus mathematics is not a prerequisite for Concepts and Topics in Mathematics (MATH 1202).

Students must register in the actual program before starting courses.

Courses

Students must take at least thirty (30) credit hours as delineated below.

Where the student has already obtained credit for one or more of these courses (or equivalents) as part of a program leading to an earlier certification by the Nova Scotia Department of Education, MATH or CSCI courses numbered 1200 or above and acceptable to the Department of Mathematics and Computing Science may be substituted. (Students should note that each individual's program must be approved ahead of time by the Registrar for Teacher Certification in order to be recognized for teacher certification in Nova Scotia.)

Code	Title	Credit Hours
MATH 1190	Fundamental Mathematics	3
MATH 1202	Concepts and Topics in Mathematics	3
MATH 1203	Concepts in High School Mathematics	3
MATH 1204	Introduction to Geometry	3
MATH 1208	Fundamental Calculus I	3
MATH 1209	Fundamental Calculus II	3
MATH 1216	Introduction to Mathematical Statistics	3
CSCI 1226	Introduction to Computing Science and Programming	3
MATH 2301	Applied Linear Algebra	3
EDUC 5523	Methods in Mathematics for In-Service Teachers	3
Total Credit Hours		30

1. To obtain the Certificate, a student in this program must achieve a minimum grade of C in all courses forming part of the certificate.
2. The Department of Mathematics and Computing Science restriction on receiving credit for Fundamental Calculus I (MATH 1208) and then receiving credit for Fundamental Mathematics (MATH 1190) does not apply to the Certificate program.
3. All courses must normally be taken at Saint Mary's University. In very exceptional circumstances, the Department of Mathematics and Computing Science may recommend to the Acting Dean of Education for one or more courses to be taken at another university on a Letter of Permission. Courses taken at or transferred from other universities must meet the program's requirement of a minimum grade of C.
4. A student who intends to use this program to obtain a license upgrade or other professional certification MUST obtain prior written approval from the appropriate authorities (in Nova Scotia, the Registrar for Teacher Certification). The student is responsible for obtaining such approval; Saint Mary's University takes no responsibility for the approval of individual programs of study.