

# MATHEMATICS MAJOR CONCENTRATION (B.A.) (46 CREDITS)

**Offered by:** Mathematics and Statistics (Faculty of Science)

**Degree:** Bachelor of Arts

**Program credit weight:** 46

## Program Description

The B.A.; Major Concentration in Mathematics aims to provide an overview of the foundations of mathematics.

### Degree Requirements — B.A. students

To be eligible for a B.A. degree, a student must fulfil all Faculty and program requirements as indicated in Degree Requirements for the Faculty of Arts.

We recommend that students consult an Arts OASIS advisor for degree planning.

### Degree Requirements — B.A. & Sc. students

***This program is offered as part of a Bachelor of Arts & Science (B.A. & Sc.) degree.***

To graduate, students must satisfy both their program requirements and their degree requirements.

- The program requirements (i.e., the specific courses that make up this program) are listed under the Course Tab (above).
- The degree requirements—including the mandatory Foundation program, appropriate degree structure, and any additional components—are outlined on the Degree Requirements page.

Students are responsible for ensuring that this program fits within the overall structure of their degree and that all degree requirements are met. Consult the Degree Planning Guide on the SOUSA website for additional guidance.

**Note:** For information about Fall 2025 and Winter 2026 course offerings, please check back on May 8, 2025. Until then, the "Terms offered" field will appear blank for most courses while the class schedule is being finalized.

**Note:** For information about Fall 2025 and Winter 2026 course offerings, please check back on May 8, 2025. Until then, the "Terms offered" field will appear blank for most courses while the class schedule is being finalized.

## Guidelines for Course Selection

Students who received advanced standing or the CEGEP equivalent of the 100-level Math courses listed below are no longer required to take them. Whenever an exemption without credits is granted for a 200-level and above required Math course, the latter must be replaced with a complementary course chosen in consultation with a program advisor.

Where appropriate, Honours-level courses may be substituted for their Majors-level counterparts. Students planning to undertake graduate

studies in mathematics are urged to make such substitutions. If there is no major counterpart available for a course, please see a departmental advisor to discuss its inclusion into your program as a complementary course in the lower section.

Students interested in computer science should consider the courses MATH 317, MATH 318, MATH 327, MATH 340, MATH 417, and take the Minor Concentration Computer Science.

Students interested in probability and statistics should consider either taking the Minor Concentration Statistics under option C or taking the major concentration in statistics.

Students interested in applied mathematics should consider the courses MATH 317, MATH 319, MATH 324, MATH 326, MATH 327, and MATH 417.

Students interested in careers in business, industry or government should consider the courses MATH 317, MATH 319, MATH 327, MATH 417, MATH 423, and MATH 447.

Students who have done well in MATH 242 and MATH 235 at the end of their first term should consider, in consultation with their adviser and the instructors of the courses involved, the possibility of entering an Honours program in Mathematics, in Applied Mathematics, in Probability and Statistics, or a Joint Honours program in Mathematics and another discipline.

## Required Courses (28 Credits)

Expand allContract all

Course	Title	Credits
MATH 133	Linear Algebra and Geometry.	3
MATH 140	Calculus 1.	3
MATH 141	Calculus 2.	4
MATH 222	Calculus 3.	3
MATH 235	Algebra 1.	3
MATH 236	Algebra 2.	3
MATH 242	Analysis 1.	3
MATH 243	Analysis 2.	3
MATH 323	Probability.	3

## Complementary Courses (18 Credits)

9-18 credits from:

Expand allContract all

Course	Title	Credits
MATH 249	Honours Complex Variables. <sup>1</sup>	3
MATH 314	Advanced Calculus.	3
MATH 315	Ordinary Differential Equations.	3
MATH 316	Complex Variables. <sup>1</sup>	3
MATH 317	Numerical Analysis.	3
MATH 318	Mathematical Logic.	3
MATH 324	Statistics.	3
MATH 340	Discrete Mathematics.	3

2 Mathematics Major Concentration (B.A.) (46 credits)

MATH 346	Number Theory.	3
MATH 378	Nonlinear Optimization .	3
MATH 417	Linear Optimization.	3
MATH 451	Introduction to General Topology.	3

<sup>1</sup> Note: Either MATH 249 Honours Complex Variables. or MATH 316 Complex Variables. may be taken but not both.

0-3 credits from:

Expand allContract all

Course	Title	Credits
MATH 329	Theory of Interest.	3
MATH 338	History and Philosophy of Mathematics.	3

0-9 credits from:

Expand allContract all

Course	Title	Credits
MATH 208	Introduction to Statistical Computing.	3
MATH 308	Fundamentals of Statistical Learning.	3
MATH 319	Partial Differential Equations .	3
MATH 326	Nonlinear Dynamics and Chaos.	3
MATH 327	Matrix Numerical Analysis.	3
MATH 335	Groups, Tilings and Algorithms.	3
MATH 348	Euclidean Geometry.	3
MATH 352	Problem Seminar.	1
MATH 410	Majors Project.	3
MATH 420	Independent Study.	3
MATH 423	Applied Regression.	3
MATH 427	Statistical Quality Control.	3
MATH 430	Mathematical Finance.	3
MATH 447	Introduction to Stochastic Processes.	3
MATH 463	Convex Optimization.	3
MATH 478	Computational Methods in Applied Mathematics .	3