

# MATHEMATICS (MATH)

Updated Jan. 30, 2024

**Chair:** Professor N. Rampersad; **Professors:** J. Currie, V. Linek, A. Stokke, R. Stokke; **Associate Professor:** S. Dueck; **Assistant Professors:** P. Eskandari, I. Smythe, M. Wiersma; **Instructors:** M. Despic, E. Herrera, M. Nasri; **Professor Emerita:** O. Oellermann

## DEGREES/PROGRAMS OFFERED

3-Year BA  
3-Year BSc  
3-Year BSc (Business Stream)  
4-Year BA  
4-Year BSc  
4-Year BSc (Business Stream)  
BSc Honours  
Minor

## INTRODUCTION

Mathematics is the supreme intellectual achievement and the most original creation of the human spirit - Morris Kline.  
Mathematics is the Queen and servant of the Sciences - Karl Friedrich Gauss.

The scope of Mathematics ranges from Computer Science to Philosophy, from Physics to Finance. Mathematics emphasizes precision and logic, but also creativity and problem solving. Students heading for Law or Medicine are well served by a first degree in Mathematics. Other graduates move into the financial sector or high technology. Some graduates choose to go on to advanced degrees, not only in Mathematics, but also in Statistics, Computer Science, Meteorology or Physics.

The department offers 3-Year and 4-Year BA and BSc degrees, and the Honours BSc. Students pursuing a 3-year or 4-year BSc also have the opportunity to take a Business Stream – a set of core courses in the Faculty of Business that will provide them with the skills needed to enter and succeed in industry and business. See the "Science with a Business Stream" section of this Course Calendar.

The Mathematics department features one of the highest levels of research activity in the University, and offers students a unique glimpse into the ongoing creation of Mathematics.

## REQUIREMENTS FOR A 3-YEAR BA/BSc IN MATHEMATICS

### ADMISSION REQUIREMENT

Students must consult with the Department Advisor/Honours Advisor in planning their program. Students who have not obtained a grade of at least C in **MATH-1103(3)** Introduction to Calculus I AND **MATH-1104(3)** Introduction to Calculus II or the equivalent **MATH-1101(6)** Introduction to Calculus are advised not to proceed in a Mathematics major.

### GRADUATION REQUIREMENT

90 credit hours

### RESIDENCE REQUIREMENT

Degree: Minimum 30 credit hours.  
Major: Minimum 18 credit hours.

### GENERAL EDUCATION REQUIREMENTS Humanities

**Writing:** Minimum 3 credit hours of Academic Writing.  
**Indigenous:** 3 credit hours in designated Indigenous requirement courses  
**Maximum Introductory Courses:** Students may use a maximum of 42 credit hours at the 1000 level. Of these, a maximum of 6 credit hours may be below the 1000 level. As a result, students must take a minimum of 48 credit hours at the 2000 level or above in order to not exceed the maximum number of introductory courses.  
Distribution: Minimum three (3) credit hours from each of five (5) different subjects.

### MAJOR REQUIREMENT

Single Major: Minimum 36 credit hours/Maximum 54 credit hours.  
Double Major: Minimum 36 credit hours in Mathematics and specified number of credit hours in the other department/program.  
Required courses: **MATH-1103(3)** Introduction to Calculus I and **MATH-1104(3)** Introduction to Calculus II or the equivalent **MATH-1101(6)** Introduction to Calculus  
**MATH-1401(3)** Discrete Mathematics  
**MATH-2105(3)** Intermediate Calculus I and **MATH-2106(3)** Intermediate Calculus II  
**MATH-1201(3)** Linear Algebra I and **MATH-2203(3)** Linear Algebra II

A minimum additional fifteen (15) credit hours chosen from the following courses, of which six (6) credit hours must be at the 3000 or 4000 level:

**MATH-2102(3)** Differential Equations I  
**MATH-2103(3)** Differential Equations II  
**MATH-2202(3)** Cryptography and Other Applications of Algebra  
**MATH-2405(3)** Real Analysis I  
**MATH-2501(3)** Introductions to Number Theory  
**MATH-3101(6)** Introduction to Mathematical Analysis  
**MATH-3103(3)** Methods in Advanced Calculus  
**MATH-3202(3)** Group Theory  
**MATH-3203(3)** Linear Algebra III  
**MATH-3401(3)** Graph Theory

**MATH-3402(3)** Combinatorics  
**MATH-4003(3)** Topics in Mathematics  
**MATH-4101(3)** Complex Analysis  
**MATH-4202(3)** Rings and Fields  
**MATH-4204(3)** Topics in Algebra  
**MATH-4401(3)** Networks, Graph Theory and Combinatorial Optimization  
**MATH-4403(3)** Set Theory  
**MATH-4602(3)** Measure Theory and Integration  
**MATH-4603(3)** Topology

Combined Major:



**HONOURS SUBJECT REQUIREMENT**

Single Honours:

Minimum 66 credit hours/Maximum 72 credit hours in the Honours subject.

Minimum 30 credit hours in upper-level courses (3000/4000), not including courses that are cross-listed with Statistics, and of which a minimum of 12 credit hours must be at the 4000 level.

Required courses:

**MATH-1103(3)**

Introduction to Calculus I **and MATH-1104(3)**

# REQUIREMENTS FOR A 3-YEAR TEACHABLE MAJOR IN MATHEMATICS

## MATHEMATICS MAJOR – Teaching stream

Required courses:

**MATH-1103(3)** Introduction to Calculus I and **MATH-1104(3)** Introduction to Calculus II or the equivalent **MATH-1101(6)** Introduction to Calculus

**MATH-1401(3)** Discrete Mathematics

**MATH-2105(3)** Intermediate Calculus I and **MATH-2106(3)** Intermediate Calculus II

**MATH-1201(3)** Linear Algebra I and **MATH-2203(3)** Linear Algebra II

A minimum additional fifteen (15) credit hours chosen from the following courses, of which a minimum of six (6) credit hours must be at the 3000 or 4000 level:

**MATH-2102(3)** Differential Equations I

**MATH-2103(3)** Differential Equations II

**MATH-2202(3)** Cryptography and Other Applications of Algebra

**MATH-2405(3)** Real Analysis I

**MATH-2501(3)** Introduction to Number Theory

**MATH-3101(6)** Introduction to Mathematical Analysis

**MATH-3103(3)** Methods in Advanced Calculus

**MATH-3202(3)** Group Theory

**MATH-3203(3)** Linear Algebra III

**MATH-3401(3)** Graph Theory

3401(3 A)

En (2) 3 5 7 e

