



## Department of Mathematics & Computer Science

# MATHEMATICS

**This document is meant as a planning guide only. Students are advised to consult with the Chair of the Department if they have specific questions about the program.**

### **Program Objectives:**

- Objective 1: Appreciate the beauty and rigor that is mathematics;
- Objective 2: Clearly communicate mathematical ideas to others, including solutions to practical problems as well as more abstract ideas; and
- Objective 3: Develop good critical thinking skills, including the ability to recognize relationships between mathematical concepts.

### **Program Outcomes:**

Students graduating with a BSc in Math from Brandon University will be able to:

- Understand numerical concepts and analyze mathematical systems;
- Filter information from a variety of sources, using this information to create and explore new ideas;
- Comprehend fundamental mathematical properties, objects, and principles, both theoretical and applied;
- Solve a variety of mathematical problems using mathematical methods;
- Demonstrate depth and breadth of knowledge in mathematics; and
- Demonstrate effective communication skills.

#### 4-YEAR MAJOR (HONOURS)

Formal application must be made to enter the Honours Degree in all departments in the Faculty of Science. Application forms are available through the Dean of Science Office or Financial and Registration Services.

Students considering a 4-Year (Honours) Mathematics Major must complete a minimum of **48 credit hours** consisting of:

<b>Required Courses:</b>			<b>42</b>
62:171	Introduction to Statistics	3	
62:181	Calculus I	3	
62:182	Linear Algebra	3	
62:191	Calculus II	3	
62:261	Introduction to Set Theory and Logic	3	
62:290	Calculus III	3	
62:291	Calculus IV	3	
62:330	Real Analysis	6	
62:331	Modern Algebra	6	
62:363	Functions of a Complex Variable	3	
62:482	Senior Seminar in Mathematics	3	
62:488	Measure and Integration	3	
<b>Plus:</b>	<b>one</b> of the following		<b>3</b>
62:252	Applied Linear Algebra	3	
62:292	Linear Algebra II	3	
	<b>Must achieve a 3.0 gpa for Major requirements</b>	<b>Major Total:</b>	<b>45</b>
<b>Plus:</b>	<b>Ancillary Course</b>		
62:160	Computer Science I	3	
<b>Plus:</b>	Minor Requirement	<b>Must achieve 2.0 gpa for Minor requirement</b>	<b>Min.18</b>
<b>Plus:</b>	Liberal Education requirement		
	Humanities (6 credit hours) and Social Sciences (6 credit hours)		
<b>Plus:</b>	Additional elective credit hours		
	<b>Must achieve 2.5 gpa for Graduation requirement</b>	<b>Degree Total:</b>	<b>120</b>

## 4-YEAR MAJOR

Students considering a 4-Year Mathematics Major must complete a minimum of **48 credit hours** consisting of:

<b>Required Courses:</b>			<b>39</b>
62:171	Introduction to Statistics	3	
62:181	Calculus I	3	
62:182	Linear Algebra	3	
62:191	Calculus II	3	
62:261	Introduction to Set Theory and Logic	3	
62:290	Calculus III	3	
62:291	Calculus IV	3	
62:330	Real Analysis	6	
62:331	Modern Algebra	6	
62:363	Functions of a Complex Variable	3	
62:488	Measure and Integration	3	
<b>Plus:</b>	<b>one of the following</b>		<b>3</b>
62:252	Applied Linear Algebra	3	
62:292	Linear Algebra II	3	
<b>Plus:</b>	<b>one of the following</b>	3	<b>3</b>
62:355	Operations Research	3	
62:365	Introduction to Combinatorics	3	
62:375	Systems Models in Mathematics	3	
62:383	Mathematical Statistics	3	
62:385	Ordinary Differential Equations	3	
62:398	Topics in Mathematics	3	
62:448	Advanced Thesis in Mathematics	6	
62:456	Computational Methods in Graph Theory	3	
62:461	Theory of Computation	3	
62:472	Mathematical Physics II	3	
62:473	Analysis of Algorithms	3	
62:482	Senior Seminar in Mathematics	3	
62:486	Topology	3	
62:487	Projective Geometry	3	
62:498	Advanced Topics in Mathematics	3	
	<b>Must achieve a 2.0 gpa for Major requirements</b>	<b>Major Total:</b>	<b>45</b>
<b>Plus:</b>	<b>Ancillary Course</b>		
62:160	Computer Science I	3	
<b>Plus:</b>	Minor Requirement	<b>Must achieve 2.0 gpa for Minor requirement</b>	<b>Min. 18</b>
<b>Plus:</b>	Liberal Education requirement		
	Humanities (6 credit hours) and Social Sciences (6 credit hours)		
<b>Plus:</b>	Additional elective credit hours		
	<b>Must achieve 2.0 gpa for Graduation requirement</b>	<b>Degree Total:</b>	<b>120</b>

### 3-YEAR MAJOR

Students considering a 3-Year Mathematics Major must complete a minimum of **30 credit hours** consisting of:

<b>Required Courses:</b>			<b>21</b>
62:171	Introduction to Statistics	3	
62:181	Calculus I	3	
62:182	Linear Algebra	3	
62:191	Calculus II	3	
62:261	Introduction to Set Theory and Logic	3	
62:290	Calculus III	3	
62:291	Calculus IV	3	
<b>Plus:</b>	<b>one</b> of the following		<b>3</b>
62:252	Applied Linear Algebra	3	
62:292	Linear Algebra II	3	
<b>Plus :</b>	<b>one</b> of the following		<b>6</b>
62:330	Real Analysis	6	
62:331	Modern Algebra	6	
	<b>Must achieve a 2.0 gpa for Major requirements</b>	<b>Major Total:</b>	<b>30</b>
<b>Plus:</b>	<b>Ancillary Course</b>		
62:160	Computer Science I	3	
<b>Plus:</b>	Minor Requirement	<b>Must achieve 2.0 gpa for Minor requirement</b>	
<b>Plus:</b>	Liberal Education requirement		
	Humanities (6 credit hours) and Social Sciences (6 credit hours)		
<b>Plus:</b>	Additional elective credit hours		
	<b>Must achieve 2.0 gpa for Graduation requirement</b>	<b>Degree Total:</b>	<b>90</b>

## MINOR

Students considering a Mathematics Minor must complete a minimum of **18 credit hours** consisting of:

Required Courses			
<b>Choose:</b>	A maximum of <b>9 credit hours</b> of the following		<b>9</b>
62:156	Finite Mathematics		
62:171	Introduction to Statistics	3	
62:172	Introduction to Statistical Inference	3	
62:181	Calculus I	3	
62:182	Linear Algebra I	3	
62:191	Calculus II	3	
<b>Plus:</b>	A minimum of <b>9 credit hours</b> from courses with the prefix 62:MATH: and 62:M&CS (group A or B courses)		<b>9</b>
	<b>Must achieve 2.0 gpa for Minor requirement</b>	<b>Minor Total:</b>	<b>18</b>



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