# Mathematics, Applications of: Bachelor of Science Minor

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| **Faculty of Science and Horticulture** | kpu.ca/science |
| **Mathematics** | kpu.ca/mathematics |
| **Implementation Date** | 01-Sep-2014 |
| **Start Date(s)** | September<br>January<br>May |
| **Intake Type** | Open intake |
| **Instructional Cycle** | Semester-based |
| **Program Type** | Undergraduate |
| **Credential Granted** | Baccalaureate Degree |
| **Offered At** | Richmond<br>Surrey |
| **Format** | Full-time<br>Part-time |
| **How to Apply** | www.kpu.ca/admission |

## DESCRIPTION

The Bachelor of Arts Minor in Mathematics program is primarily intended for students who plan to enter a post-baccalaureate education program, with mathematics as one of their teachable subjects. It has been developed specifically to meet the requirements of admission to the post-baccalaureate Secondary Education Programs at UBC, SFU and UVic. However, it is also intended for students who are planning professional careers for which a sound foundation in formal or mathematical reasoning is required and for students with a specific interest in mathematics.

The primary focus of the Minor in Mathematics is as an expression of human understanding rather than as a science or an aid to science. The courses included in the Minor in Mathematics are designed with the mathematically interested arts student in mind, concentrating on the development of an understanding of the mathematical enterprise and including topics that illuminate and extend those taught in the secondary school curriculum. The scientific applications of mathematics, however, will continue to be addressed in many of the courses offered.

Teaching has consistently been one of the more frequent career choices for secondary school graduates, and these students require further education in teachable subjects before proceeding into a professional program of teacher training. The Minor in Mathematics, when paired with minors in English or History, will provide the necessary background for admission to a school of education and an excellent path to the attainment of students' career goals. As well, the Minor in Mathematics can form part of a B.A. leading students into other professions such as law or technical writing.

Students within the Bachelor of Arts Minor in Mathematics program will take a general academic program in the first and second year, including at least five mathematics courses in the first four semesters. As well, students will select elective courses from the humanities, social sciences, sciences, fine arts, modern languages, music and business, as per the Bachelor of Arts Degree Framework.

Students completing appropriate courses in Years 1 and 2 will be eligible to exit with an Associate of Science in Mathematics.

## ADMISSION REQUIREMENTS

Students pursuing a Bachelor of Science Minor in Mathematics must be admitted to the Faculty of Science & Horticulture.

## DECLARATION REQUIREMENTS

Students pursuing this minor must declare their intention prior to graduation.

## CURRICULAR REQUIREMENTS

### General Requirements

All students must complete the following general requirements for a Bachelor of Science:

- A minimum of 120 credits and a minimum of 40 courses (at least 3 credits each) at the post-secondary level (numbered 1100 or higher).
- At least 45 of the credits (15 courses) must be at the 3000- or 4000-level; at least 9 of these credits must be at the 4000-level.
- A minimum of 18 credits of breadth electives (see Electives) including:
  - at least one 3000- or 4000-level course; and
  - at least 12 credits from fields or courses not regarded as science; and
  - a maximum of 6 credits may come from fields of science not already included in the Applications of Mathematics Major requirements.
- A minimum of a passing grade (D or better) in all courses counting towards the BSc, with a cumulative GPA of 2.0.

To meet residency requirements, at least 50% of all courses for the BSc, and at least 66% of upper level courses for the BSc, must be completed at KPU.

**Note:** The following courses with considerable content overlap may only be counted once:

- (MATH 1120 or MATH 1130 or MATH 1140),
- (MATH 1220 or MATH 1230 or MATH 1240),
- (MATH 2321 or MATH 2821),
- (MATH 2335 or MATH 2341 or BUQU 1230),
- (MATH 1152 or MATH 2721),
- (BIOL 1112 or BIOL 1210),
- (ENVI 1106 or CHEM 1110),
- (ENVI 1206 or CHEM 1154 or CHEM 1210),
- (CHEM 3310 or CHEM 2311 or CHEM 2310),
- (PHYS 1101 or PHYS 1120),
- (PHYS 1102 or PHYS 1220)

### Applications of Mathematics Minor

In order to complete the Minor program, students must complete the following requirements:

**Year 1 and 2**

**One of:**

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| MATH 1120 | Differential Calculus | 3 credits |

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| MATH 1130 | Calculus for Life Sciences I | 3 credits |
| MATH 1140 | Calculus I (Business Applications) | 3 credits |

**And one of:**

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| MATH 1220 | Integral Calculus | 3 credits |
| MATH 1230 | Calculus for Life Sciences II | 3 credits |

**And one of:**

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| MATH 2315 | Probability and Statistics | 3 credits |
| MATH 2335 | Statistics for Life Sciences | 3 credits |
| MATH 2341 | Introduction to Statistics for Business | 4 credits |

**And all of:**

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| MATH 2232 | Linear Algebra | 3 credits |
| MATH 2321 | Multivariate Calculus (Calculus III) | 3 credits |

**Year 3 and 4**

**15 credits:**

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| chosen from List A (see below). | 15 credits |

## List A - Selected Mathematics Courses

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| MATH 3120 | Introduction to Applied Mathematics | 3 credits |
| MATH 3140 | Mathematical Computing | 3 credits |
| MATH 3150 | The Structure of Mathematics | 3 credits |
| MATH 3160 | Group Theory | 3 credits |
| MATH 3170 | Complex Variables | 3 credits |
| MATH 3250 | Geometry | 3 credits |
| MATH 3315 | Inferential Statistics | 3 credits |
| MATH 3322 | Vector Calculus (Calculus IV) | 3 credits |
| MATH 3421 | Ordinary Differential Equations | 3 credits |
| MATH 3431 | Partial Differential Equations | 3 credits |
| MATH 3450 | History of Mathematics | 3 credits |
| MATH 4150 | Number Theory | 3 credits |
| MATH 4190 | Introduction to Point-Set Topology | 3 credits |
| MATH 4210 | Biomathematics | 3 credits |
| MATH 4220 | Numerical Methods | 3 credits |
| MATH 4240 | Mathematical Modelling | 3 credits |
| MATH 4250 | Special Topics in Mathematics | 3 credits |
| MATH 4350 | Senior Project | 3 credits |

## CREDENTIAL AWARDED

Upon successful completion of the minor as part of a Bachelor of Science program, transcripts will indicate a **Minor in Applications of Mathematics**.