Mathematics, Applications of: Bachelor of Science Major (also: Honours)

Faculty of Science and Horticulture	kpu.ca/science
Mathematics	kpu.ca/mathematics
Program Type	Undergraduate
Credential Granted	Baccalaureate Degree
Offered At	Surrey
Start Date(s)	September January May
Intake Type	Open intake
Format	Full-time Part-time
Instructional Cycle	Semester-based
Curriculum Effective Date	01-Sep-2017
How to Apply	www.kpu.ca/admission

DESCRIPTION

In the BSc in Applications of Mathematics program, traditional mathematics courses are combined with specialized courses that enable students to apply their mathematical skills in diverse fields, providing a broad range of options for careers or further education. Students can choose from among three concentrations, Biomathematics, Computational Mathematics and Mathematics Education, that are not readily available at the undergraduate level elsewhere in Canada.

Please note, courses in Years 2, 3, and 4 may not be available on the Richmond campus.

ADMISSION REQUIREMENTS

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

DECLARATION REQUIREMENTS

Students intending to graduate with this Faculty of Science and Horticulture degree must declare the credential by the time they complete 60 credits of undergraduate coursework. At the time of declaration, the student must satisfy all of the following requirements:

- In good academic standing with the University
- Completion of a minimum of 24 credits of undergraduate coursework
- Completion of MATH 1220 with a minimum grade of "C" or MATH 1230 with a minimum grade of "C+"

CURRICULAR REQUIREMENTS

General Requirements

Students must meet the following minimum requirements for a Bachelor of Science at KPU:

- 120 credits from a minimum of 40 courses (at least 3 credits each) at the 1100 level or higher.
- Cumulative GPA of 2.0 or higher.
- 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

CORE REQUIREMENTS

Students must complete the following Core Requirements, as well as the requirements of one of the three concentrations below.

One of:

MATH 1120	Differential Calculus	3 credits
MATH 1130	Calculus for Life Sciences I	3 credits
MATH 1140	Calculus I (Business Applications)	3 credits

One of:

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

One of:

ENGL 1202	Reading and Writing about Selected Topics: An Introduction to Literature	3 credits
ENGL 1204	Reading and Writing about Genre: An Introduction to Literature	3 credits
A course approved to meet the writing-intensive requirement for KPU credentials		3 credits

One of:

PHYS 1101	Physics for Life Sciences I	4 credits
PHYS 1120	Physics for Physical and Applied Sciences I	4 credits

One of:

BIOL 1110	Introductory Biology I	4 credits
CHEM 1110	The Structure of Matter	4 credits

All of:

CPSC 1103	Principles of Program Structure and Design I	3 credits
CPSC 1204	Principles of Program Structure and Design II	3 credits
ENGL 1100	Introduction to University Writing	3 credits
MATH 2232	Linear Algebra	3 credits
MATH 2315	Probability and Statistics	3 credits
MATH 2321	Multivariate Calculus (Calculus III)	3 credits
MATH 2410	Discrete Mathematics	3 credits
MATH 3120	Introduction to Applied Mathematics	3 credits
MATH 3315	Applied Inferential Statistics	3 credits
MATH 3421	Ordinary Differential Equations	3 credits
MATH 4240	Mathematical Modelling	3 credits

BIOMATHEMATICS CONCENTRATION REQUIREMENTS

All of:

BIOL 1110	Introductory Biology I	4 credits
BIOL 1210	Introductory Biology II	4 credits
BIOL 2322	Ecology	4 credits
CHEM 1110	The Structure of Matter	4 credits
21 credits from courses at the 1100 level or higher		21 credits
3 credits from a course at the 1100 level or higher in any area of study except BIOL, CHEM, MATH or PHYS		3 credits
3 credits from a course in BIOL at the 2000 level or higher		3 credits

One of:

BIOL 2320	Genetics	4 credits
BIOL 2321	Cell Biology	4 credits

All of:

MATH 3140	Mathematical Computing	3 credits
MATH 4210	Biomathematics	3 credits
9 credits from courses at the 3000 level or higher		9 credits
3 credits from a course at the 3000 level or higher in any area of study except BIOL, CHEM, MATH or PHYS		3 credits
6 credits from courses in BIOL at the 3000 level or higher (BIOL 3165 and 3320 are recommended)		6 credits
3 credits from a course in MATH at the 3000 level or higher except MATH 3130 or 4130		3 credits
6 credits from courses in MATH at the 4000 level except MATH 4130		6 credits

COMPUTATIONAL MATHEMATICS CONCENTRATION REQUIREMENTS

All of:

CPSC 2302	Data Structures and Algorithms	3 credits
CPSC 3110	Simulation	3 credits
MATH 2331	Introduction to Analysis	3 credits
MATH 3140	Mathematical Computing	3 credits
MATH 4220	Numerical Analysis	3 credits
21 credits from courses at the 1100 level or higher		21 credits
9 credits from courses at the 1100 level or higher in any area of study except BIOL, CHEM, MATH or PHYS		9 credits
9 credits from courses at the 3000 level or higher		9 credits
9 credits from courses in MATH at the 3000 level or higher except MATH 3130 or 4130		9 credits
3 credits from a course at the 3000 level or higher in any area of study except BIOL, CHEM, MATH or PHYS		3 credits
6 credits from courses in MATH at the 4000 level except MATH 4130		6 credits

It is recommended that students choose sufficient electives from the physical sciences (Physics and Chemistry), computer science, or economics and business to provide expertise in an area of application.

MATHEMATICS EDUCATION CONCENTRATION REQUIREMENTS

One of:

PHYS 1102	Physics for Life Sciences II	4 credits
PHYS 1220	Physics for Physical and Applied Sciences II	4 credits

All of:

EDUC 2220	Introduction to Educational Psychology	3 credits
MATH 2331	Introduction to Analysis	3 credits
MATH 3130	Introduction to the Mathematics Classroom	3 credits
MATH 3150	The Structure of Mathematics	3 credits
MATH 3250	Geometry	3 credits
MATH 3322	Vector Calculus (Calculus IV)	3 credits
MATH 3450	History of Mathematics	3 credits
MATH 4130	Theory of Mathematics Education	3 credits
30 credits from courses at the 1100 level or higher		30 credits
6 credits from courses at the 3000 level or higher		6 credits
3 credits from a course at the 3000 level or higher in any area of study except BIOL, CHEM, MATH or PHYS (EDUC recommended)		3 credits
3 credits from a course in MATH at the 3000 level or higher		3 credits
3 credits from a course in MATH at the 4000 level		3 credits

It is recommended that students wishing to teach secondary level mathematics also prepare in a second teachable area; check the requirements of the institution that offers the desired education program.

Honours

In addition to meeting the requirements listed above for the Major, Honours students will need to complete MATH 4350 as part of a total of 36 credits from courses in MATH numbered 3000 or higher, excluding MATH 3130 and 4130.

Honours students must complete 132 credits overall and maintain a Program Grade Point Average (PGPA) of 3.0, with a minimum grade of B in those MATH courses numbered 3000 or higher used to satisfy the degree requirements.

To qualify for the Applications of Mathematics Honours degree, students must have been admitted to the Honours program prior to earning the Applications of Mathematics degree. Students may receive either the Applications of Mathematics degree or the Applications of Mathematics Honours degree, but not both.

CREDENTIAL AWARDED

Upon successful completion of the honours program, students are eligible to receive a **Bachelor of Science (Honours)**. Transcripts will indicate **Major in Applications of Mathematics**.

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