

The following proposals, received on DAP between December 16-31, 2017, have been approved. For more information on the DAP process, [see the Secretariat's website](#).

FACULTY OF SCIENCE and SCHULICH SCHOOL OF MEDICINE & DENTISTRY

STATISTICAL AND ACTUARIAL SCIENCES

*Effective **September 1, 2018**, the following courses be introduced.*

Statistical Sciences 4860A/B - Advanced Regression

A review of multiple regression including assumptions, estimation and inference, diagnostics, and modelling with factors. Variable selection techniques including cross-validation. Smoothing techniques, generalized additive models, and the incorporation of random effects and/or serial auto-correlated error structures.

Prerequisite(s): Statistical Sciences 3859A/B.

Extra Information: 3 lecture hours, 0.5 course.

Statistical Sciences 4864A/B - Advanced Statistical Computing

Review of fundamental concepts in statistical computing, including programming, optimization methods and Monte Carlo simulations. A selection of advanced topics such as bootstrapping, robust methods, statistical graphics, Markov chain Monte Carlo, nonlinear regression, relational databases, time series analysis, and spatial statistics.

Prerequisite(s): Statistical Sciences 2864A/B and Statistical Sciences 3859A/B

Extra Information: 3 lecture hours, 0.5 course.

Statistical Sciences 4960F/G - Business Skills for Financial Professionals, Data Scientists and other Quantitative Professionals

Short title: *Business Skills*

This course aims to develop important business skills that are often not emphasized in the formal education of quantitative financial professionals. The course focuses on four main topic areas: how businesses work, financial statement analysis, oral and written communications skills, and leadership and people management.

Prerequisite(s): Registration in fourth year of an Actuarial Science, Data Science, Statistics or Financial Modeling module.

Extra Information: 3 lecture hours, 0.5 course.

*Effective **September 1, 2018**, the following courses be revised.*

Actuarial Science 2053 MATHEMATICS FOR FINANCIAL ANALYSIS

Prerequisite(s): ~~Mathematics 0110A/B or Grade 12U Advanced Functions and Introductory Calculus (MCB 4U) or equivalent, and 1.0 course or two 0.5 courses at the 1000 level or higher~~ from Applied Mathematics, Calculus, ~~Linear Algebra~~, or Mathematics.

Statistical Sciences 2857A/B PROBABILITY AND STATISTICS I

Prerequisite(s): A minimum mark of 60% in 0.5 course from ~~(Calculus 1000A/B, the former Calculus 1100A/B or Calculus 1500A/B)~~ plus 0.5 course from Calculus 1301A/B (minimum mark 85%) or Calculus 1501A/B (minimum mark 60%). **A minimum mark of 60% in Applied Mathematics 1413 may also be used to meet this 1.0 course prerequisite.**

*Effective **September 1, 2018**, the following modules be revised.*

HONORS SPECIALIZATION IN ACTUARIAL SCIENCE

Admission Requirements

Completion of first-year requirements with no failures. Students must have an average of at least 70% in 3.0 principal courses, including: (Calculus 1000A/B, **or** Calculus 1500A/B ~~or the former Calculus 1400A/B~~) and (Calculus 1501A/B or (Calculus 1301A/B with a mark of at least 85%)), Mathematics 1600A/B ~~or the former Linear Algebra 1600A/B~~, Economics 1021A/B and Economics 1022A/B, plus 0.5 additional principal course, with no mark less than 60% in any of the 3.0 principal courses.

Recommended (but not required) first year courses: Actuarial Science 1021A/B, Business Administration 1220E, Philosophy 1200.

Please note: Economics 1021A/B and Economics 1022A/B, if not taken in first year, must be completed in one of the upper years in the program.

Applied Mathematics 1413 may be substituted for Calculus requirement.
Applied Mathematics 1411A/B may be substituted for Mathematics 1600A/B. Mathematics 1600A/B ~~or the former Linear Algebra 1600A/B~~ (or Applied Mathematics 1411A/B), if not taken in the first year, must be completed prior to the second term of second year.

Module

10.5 courses:

2.5 courses: Actuarial Science 2553A/B, Actuarial Science 2427A/B, Actuarial Science 3429A/B, Actuarial Science 3431A/B, Actuarial Science 4426F/G.

4.5 courses: Statistical Sciences 2503A/B (or the former Applied Mathematics 2503A/B), Statistical Sciences 2857A/B, Statistical Sciences 2858A/B, Statistical Sciences 2864A/B, Statistical Sciences 3657A/B, Statistical Sciences 3843A/B, Statistical Sciences 3858A/B, Statistical Sciences 3859A/B, Statistical Sciences 4861A/B.

1.5 courses: Financial Modelling 2555A/B (or the former Actuarial Science 2555A/B), Financial Modelling 2557A/B (or the former Actuarial Science 2557A/B), Financial Modelling 3520A/B (or the former Statistical Sciences 3520A/B).

0.5 courses: Calculus 2402A/B.

0.5 course from Actuarial Science 3424A/B or Actuarial Science 4824A/B.

1.0 courses: ~~in~~ **Any additional** Actuarial Science **course(s)** at the 4000 level **or Statistical Sciences 4960F/G or Financial Modelling 4521A/B** or any other course at the 4000 level approved by the Department of Statistical and Actuarial Sciences.

~~Financial Modelling 4521F/G is highly recommended and may be counted towards the 1.0 courses in Actuarial Science at the 4000 level requirement.~~

Calculus 2402A/B may be replaced by either (Calculus 2502A/B and Calculus 2503A/B) or (Calculus 2502A/B and the former Mathematics 2123A/B). When such a replacement occurs, the module will include 11.0 courses.

HONORS SPECIALIZATION IN FINANCIAL MODELLING

Admission Requirements

Completion of first-year requirements with no failures. Students must have an average of at least 70% in 3.0 principal courses, including: (Calculus 1000A/B, **or** Calculus 1500A/B ~~or the former Calculus 1400A/B~~) and (Calculus 1501A/B or (Calculus 1301A/B with a mark of at least 85%)), plus 2.0 additional principal courses, with no mark less than 60% in any of the 3.0 principal courses.

Mathematics 1600A/B ~~or the former Linear Algebra 1600A/B~~ or Applied Mathematics 1411A/B with a mark of at least 60% for either, is normally taken in Year 1. If not taken in Year 1, it must be completed in the first term of Year 2.

Recommended (but not required) first year courses: Economics 1021A/B and Economics 1022A/B, Philosophy 1200, Computer Science 1026A/B and/or Computer Science 1027A/B.

Please note: Applied Mathematics 1413 may be substituted for the 1.0 Calculus course requirement.

Module

9.5 courses:

3.5 courses: Statistical Sciences 2503A/B (or the former Applied Mathematics 2503A/B), Statistical Sciences 2857A/B, Statistical Sciences 2858A/B, Statistical Sciences 2864A/B, Statistical Sciences 3657A/B, Statistical Sciences 3858A/B, Statistical Sciences 4861A/B (or the former Statistical Sciences 3861A/B).

0.5 course: Actuarial Science 2553A/B.

3.0 courses: Financial Modelling 2555A/B (or the former Actuarial Science 2555A/B), Financial Modelling 2557A/B (or the former Actuarial Science 2557A/B), Financial Modelling 3520A/B (or the former Statistical Sciences 3520A/B), Financial Modelling 3613A/B (or the former Applied Mathematics 3613A/B), Financial Modelling 3817A/B* (or the former Applied Mathematics 3817A/B), Financial Modelling 4521A/B (or the former Statistical Sciences 4521F/G).

2.0 courses: Calculus 2402A/B, Applied Mathematics 2811B, Applied Mathematics 2814F/G, Applied Mathematics 3815A/B, the former Applied Mathematics 2813B.

0.5 course from: Applied Mathematics 3611F/G (or the former Applied Mathematics 4611F/G), Applied Mathematics 4613A/B** or Applied Mathematics 4617A/B*, Applied Mathematics 4999Z, Financial Modelling 4998F/G/Z (or the former Statistical Sciences 4998F/G/Z), **Statistical Sciences 4960F/G**, Statistical Sciences 4999F/G/Z, or Actuarial Science 4997F/G/Z.

Calculus 2402A/B may be replaced by either (Calculus 2502A/B and Calculus 2503A/B) or (Calculus 2502A/B and Mathematics 2122A/B or the former Mathematics 2123A/B). When such a replacement occurs, the module will include 10.0 courses.

* May be offered only in odd-numbered academic years.

** May be offered only in even-numbered academic years.

MAJOR IN ACTUARIAL SCIENCE

Admission Requirements:

Completion of first-year requirements, including the following:

(Calculus 1000A/B, **or** Calculus 1500A/B ~~or the former Calculus 1100A/B~~) and (Calculus 1501A/B or (Calculus 1301A/B with a mark of at least 85%), Mathematics 1600A/B ~~or the former Linear Algebra 1600A/B~~, Economics 1021A/B and Economics 1022A/B, plus 0.5 other principal course with no mark less than 60% in any of the 3.0 principal courses.

Recommended (but not required) first year courses: Actuarial Science 1021A/B, Business Administration 1220E, Philosophy 1200.

Please note: Economics 1021A/B and Economics 1022A/B, if not taken in first year, must be completed in one of the upper years in the program.

Applied Mathematics 1413 may be substituted for Calculus requirement.

Applied Mathematics 1411A/B may be substituted for Mathematics 1600A/B. Mathematics 1600A/B ~~or the former Linear Algebra 1600A/B~~ (or Applied Mathematics 1411A/B), if not taken in the first year, must be completed prior to the second term of second year.

Module

6.0 courses:

1.5 courses: Actuarial Science 2553A/B, Actuarial Science 2427A/B, Actuarial Science 3429A/B.

0.5 course: Financial Modelling 2555A/B (or the former Actuarial Science 2555A/B).

0.5 course: Calculus 2402A/B.

2.5 courses: Statistical Sciences 2503A/B (or the former Applied Mathematics 2503A/B), Statistical Sciences 2857A/B, Statistical Sciences 2858A/B, Statistical Sciences 2864A/B, Statistical Sciences 3657A/B.

1.0 additional Actuarial Science course at the 3000 level or higher. **Statistical Sciences 4960F/G can also be used to meet this requirement.**

Calculus 2402A/B may be replaced by either (Calculus 2502A/B and Calculus 2503A/B) or (Calculus 2502A/B and the former Mathematics 2123A/B). When such a replacement occurs, the module will include 6.5 courses.

Note: This module can only be completed in a four-year (honors or non-honors) degree.

MAJOR IN APPLIED STATISTICS

Admission Requirements

Completion of first-year requirements, including the following:

Calculus 1000A/B, **or** Calculus 1500A/B ~~or the former Calculus 1100A/B~~ plus Calculus 1501A/B (or Calculus 1301A/B with a mark of at least 85%); Mathematics 1600A/B ~~or the former Linear Algebra 1600A/B~~; 1.0 course from Psychology 1000, Biology 1001A or Biology 1201A, Biology 1002B or Biology 1202B, Sociology 1020; plus 0.5 other principal course, with no mark less than 60% in any of the 3.0 principal courses.

Recommended (but not required) first-year courses: Statistical Sciences 1024A/B and/or Statistical Sciences 1023A/B.

Please note: Applied Mathematics 1413 may be substituted for Calculus requirements. Applied Mathematics 1411A/B may be substituted for Mathematics 1600A/B. Mathematics 1600A/B ~~or the former Linear Algebra 1600A/B~~ (or Applied Mathematics 1411A/B), if not taken in the first year, must be completed prior to the second term of second year.

Module

6.0 courses:

3.0 courses: Statistical Sciences 2857A/B, Statistical Sciences 2858A/B, Statistical Sciences 2864A/B, Statistical Sciences 3843A/B, Statistical Sciences 3850F/G, Statistical Sciences 3859A/B.

0.5 course: Calculus 2402A/B.

0.5 course from: Biology 2290F/G, Sociology 2206A/B, **Psychology 2800E.****

0.5 course: Epidemiology 2200A/B or the former Epidemiology and Biostatistics 3330B.

1.0 course from: Applied Mathematics 2402A, Applied Mathematics 3615A/B, Financial Modelling 3817A/B (or the former Applied Mathematics 3817A/B); Psychology 3800F/G, Psychology 3840F/G; Sociology 2236A/B, Sociology 4441A/B; Statistical Sciences 4846A/B, Statistical Sciences 4850F/G, Statistical Sciences 4853A/B, or any approved Statistics course at the 3000-level or higher.

0.5 course from: Statistical Sciences 4846A/B, Statistical Sciences 4853A/B.

Calculus 2402A/B may be replaced by either Calculus 2502A/B and 2503A/B, or Calculus 2502A/B and the former Mathematics 2123A/B. When such a replacement occurs, the module will include 6.5 courses.

**** Psychology 2800E may be used to fulfill this 0.5 course requirement and in these cases the module will consist of 6.5 courses.**

This module can only be completed in a four-year (honors or non-honors) degree.

HURON UNIVERSITY COLLEGE

HISTORY

Effective **September 1, 2018**, the following course be introduced.

History 2712F/G - Tyrants: Historical Profiles in Oppression and Resistance

Short title: *Tyrants: Oppression and Resistance*

This course explores tyranny in human history, from ancient to modern times, with a focus on the early modern West and its global expansion. It will explore the evolution of the concept of the tyrant, the idea of legitimate vs illegitimate rule, and the resistance and agency of oppressed peoples.

Extra Information: 3 hours, 0.5 course
(Huron)

HURON UNIVERSITY COLLEGE and KING'S UNIVERSITY COLLEGE

POLITICAL SCIENCE

Effective **September 1, 2018**, the following course be reintroduced at King's University College and have the antirequisites be revised at King's University College and Huron University College.

Political Science 3345E INTERNATIONAL LAW & ORGANIZATION

Antirequisite(s): **Political Science 3369F/G, Political Science 3201F/G.**
(Huron, **King's**)

KING'S UNIVERSITY COLLEGE

POLITICAL SCIENCE

Effective **September 1, 2018**, the following courses be introduced.

Political Science 3327F/G – Representing Diversity: Paths to Power

Short Title: *Representing Diversity*

For women's and minority movements equal political representation has been a significant goal. However, attaining equal representation has been elusive and complicated with significant implications for citizenship and political power. This course examines the complexities of insuring the representation of diversity in political institutions.

Prerequisites: Enrolment in third or fourth year in either Political Science or Social Justice and Peace Studies, or permission of the department.

Extra Information: 2 seminar hours, 0.5 course

(King's)

Political Science 3387F/G – Surveillance, Security and Society

Short title: *Surveillance, Security, Society*

An examination of how surveillance has become ubiquitous and taken for granted in contemporary society. Beyond general themes of surveillance studies, such as control, visibility, classification, authentication, etc., this course focuses on the role of surveillance in social sorting and (in)security in society.

Antirequisite(s): Sociology 3325F/G if taken in 2017-18, Sociology 3387F/G, or the former Political Science 4430E.

Prerequisite(s): Enrolment in 3rd or 4th year in either Political Science or Sociology.

Extra Information: 3 hours, 0.5 course.

(King's)

DAP UPDATE: MINOR CHANGES

FACULTY OF SCIENCE and SCHULICH SCHOOL OF MEDICINE & DENTISTRY

MICROBIOLOGY AND IMMUNOLOGY

Effective September 1, 2018, the following courses be revised.

Microbiology and Immunology 3100A – Microbiology

Antirequisite(s): the former Microbiology and Immunology 2100A,); **the former** Microbiology and Immunology 3400B

Prerequisite(s): Biochemistry 2280A; Biology 2581A/B; Microbiology and Immunology 2500A/B.

Pre-or Corequisite(s): It is recommended that Biochemistry 3381A be taken concurrently or previously.

Microbiology and Immunology 3300B – Immunology:

Prerequisite(s): Biochemistry 2280A; Biology 2581A/B; Microbiology and Immunology 2500A/B

Microbiology and Immunology 3610F – Microbiology Laboratory:

Antirequisite(s): the former Microbiology and Immunology 3600G, **the former** Microbiology and Immunology 2100A

Prerequisite(s): Biology 2581A/B; Microbiology and Immunology 2500A/B.

Pre-or Corequisite(s): Biochemistry 3381A; Microbiology and Immunology 3100A

Microbiology and Immunology 3620G – Immunology Laboratory

Antirequisite(s): the former Microbiology and Immunology 3600G.

Prerequisite(s): Biochemistry 2280A with a mark of at least 65%; Biology 2581A/B; Chemistry 2213A/B and 2223B with marks of at least 60% in both courses; Microbiology and Immunology 2500A/B.

Pre-or Corequisite(s): Microbiology and Immunology 3300B.

PHYSICS AND ASTRONOMY

Effective September 1, 2018, the following module be revised following the withdrawal of Pharmacology 3580Z which was approved May 16, 2017.

HONORS SPECIALIZATION IN BIOCHEMISTRY AND CANCER BIOLOGY*

Module

11.0 courses

0.5 course: Biochemistry 2280A.

1.0 course: Biology 2382A/B, Biology 2581A/B.

0.5 course from: Biology 2244A/B, Statistical Sciences 2244A/B.

0.5 course from: Chemistry 2213A/B, Chemistry 2273A.

0.5 course from: Chemistry 2223B, Chemistry 2283G.

0.5 course: Microbiology and Immunology 2500A/B.

0.5 course: Medical Biophysics 2582B.

1.5 courses: Biochemistry 3381A, Biochemistry 4450A, Biochemistry 4455G.

1.0 course: Pharmacology 3620.

0.5 course from: Biochemistry 3382A, Chemistry 3393A/B, Microbiology and Immunology 3300B (see note 1 below).

1.0 course from: Anatomy and Cell Biology 3309, Pathology 3500 (or the former Pathology 3240A and the former Pathology 3245B).

0.5 course from: Biochemistry 3380G, Microbiology and Immunology 3620G, **the former** Pharmacology 3580Z (see note 1 below).

1.0 course from: Anatomy and Cell Biology 4461B, Microbiology and Immunology 4300A, Pharmacology 4360A/B.

1.5 courses: Biochemistry 4486E (Research Project = 1.5 courses).

Notes:

1. Biochemistry 3380G requires both Biochemistry 3381A and Biochemistry 3382A as prerequisite courses; Microbiology and Immunology 3620G requires Microbiology and Immunology 3300B as a pre- or corequisite course; the prerequisite for **the former** Pharmacology 3580Z includes a minimum average of 75% in the previous year.
2. See the Weighted Average Chart (MODULES OFFERED IN THE BMSc PROGRAM) for information about admission to the Honors Specialization modules in Year 4 and which specific courses must be completed prior to Year 4.
3. Some modular courses include a mark requirement in their prerequisite(s). See UNDERGRADUATE COURSE INFORMATION.

HURON UNIVERSITY COLLEGE

HISTORY

Effective **September 1, 2018**, the following course be revised.

History 3201E ~~EUROPEAN-FIRST NATIONS RELATIONS~~ FIRST PEOPLES AND COLONIALISM IN CANADA

A survey of the interaction between North American "First peoples" and expanding European communities from the sixteenth century to the present. Particular attention will be paid to the effects of European colonialism on **aboriginal-Indigenous** peoples as well as to First Nations' responses, from resistance to **adaptation** **survival and accommodation**.

Effective **September 1, 2018**, the following module be revised to incorporate changes that were approved at the [January 2016 meeting of Senate](#).

MINOR IN HISTORY

Admission Requirements

Completion of first-year requirements, including **History 1801E or equivalent** **at least 0.5 course in History** with a mark of at least 60%. **Students are encouraged to take History 1801E..**