SOC APPROVALS
June 5, 2024

The following proposals were approved at the June 5, 2024 meeting of the Subcommittee on Undergraduate Academic Courses (SOC).

FACULTY OF ARTS AND HUMANITIES

DEPARTMENT OF LANGUAGES AND CULTURES

Course Introduction – Effective September 1, 2024, the following course be introduced:

INTERCULTURAL COMMUNICATIONS 2233A/B/Y:
A TASTE OF ITALY: EXPLORING ITALIAN CUISINE THROUGH THE ARTS
(Short title: A Taste of Italy)
Discover the intimate relationship between food and the arts in Italian culture by exploring how eating, drinking, banqueting, and reveling are portrayed in cinema, literature, music, and painting. This journey reveals the deep connections between the sharing of food and artistic expressions: a unique perspective on Italy's rich cultural tapestry. modules. Cross-listed with Italian 2233A/B/Y.

Course Weight: 0.50

Course Introduction – Effective September 1, 2024, the following course be introduced:

ITALIAN 2233A/B/Y
A TASTE OF ITALY: EXPLORING ITALIAN CUISINE THROUGH THE ARTS
(Short title: A Taste of Italy)
Discover the intimate relationship between food and the arts in Italian culture by exploring how eating, drinking, banqueting, and reveling are portrayed in cinema, literature, music, and painting. This journey reveals the deep connections between the sharing of food and artistic expressions: a unique perspective on Italy's rich cultural tapestry.

Antirequisite(s): Intercultural Communications 2233A/B/Y.
Extra Information:

Pre-or Corequisite(s): ECE 3330A/B, ECE 3331A/B **(or AISE 3351A/B or the former ECE 3351A/B)**, ECE 3370A/B, ECE 3375A/B.
Extra Information: 1 lecture hours, 3.0 laboratory hours.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

ELECTRICAL AND COMPUTER ENGINEERING 4429A/B
ADVANCED DIGITAL SIGNAL PROCESSING
Digital Signal Processing (DSP) is x (S)1 7dcE4.17 0ng (l)n .17 0pg (leerig ang (lorudatiEp Pro

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Course Revision – Effective September 1, 2024, the following change(s) be made:

ELECTRICAL AND COMPUTER ENGINEERING 4469A/B
APPLIED CONTROL SYSTEMS
The course covers analytical methods for analyzing and developing control strategies for industrial processes. These include identification and empirical modeling, tuning of PID controller, digital control systems, z-transformation. PLCs are discussed. Computer based simulation modules using Matlab^® and Simulink^® reused. Examples from different engineering disciplines are studied.

Prerequisite(s):

Course Introduction – Effective September 1, 2024, the following course be introduced:

NURSING 1140A/B
INTRODUCTION TO HEALTH INFORMATICS WITHIN NURSING
(Short title: Health Informatics in Nursing)

FACULTY OF LAW

Course Introduction – Effective September 1, 2024, the following course be introduced:

LAW 2301A/B
SEX AND THE LAW
This course explores sex, gender, and sexualities as sites of legal intervention through a study of law's distinctive role in regulating human relationships and institutions. Potential topics may include marriage and intimate relationships; families; reproduction; work; sport; privacy; sexual violence, coercion, and harassment; consent; sex work; and international law.

Antirequisite(s): Registration in the JD program in the Faculty of Law.
Extra Information: 3 lecture hours.
Course Weight: 0.50

SCHULICH SCHOOL OF MEDICINE & DENTISTRY

SCHULICH DENTISTRY

Course Introduction – Effective September 1, 2024, the following course be introduced:

DENTISTRY 5124
GROWTH AND DEVELOPMENT
This course will prepare students to understand details and the general concept of growth and development: early embryology, skeletal development, general and very specific diet and nutrition from pregnancy, childhood, adults to seniors, timelines of growth and development from pre-natal to puberty, craniofacial growth and development and its influence to treatment planning of paediatric dentistry and orthodontic problems. Through milestones the students will learn when the best biological time is to get specific treatments.

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Extra Information: First term: 1 lecture hour each week and 2 laboratory hours bi-weekly. Second term: students will be expected to spend up to 6 hours per week in the research project lab and up to 3 hours bi-weekly in lecture or laboratory, at the instructor’s discretion.
Course Weight: 1.00

Course Introduction – Effective September 1, 2024, the following course be introduced:

CHEMISTRY 2284B
PHYSICAL CHEMISTRY II: QUANTUM THEORY
(Short title: Physical Chemistry II)
Foundations of the quantum theory of chemical structure and bonding. Topics include chemically relevant model problems of quantum mechanics, elements of atomic and molecular spectroscopy, relationship between classical and statistical thermodynamics.

Antirequisite(s): Chemistry 2214A/B, Chemistry 3374A, the former Chemistry 2384B.
Prerequisite(s): Chemistry 1301A/B, Chemistry 1302A/B, 0.5 course from Calculus 1000A/B, Calculus 1500A/B, Numerical and Mathematical Methods 1412A/B, and any other 0.5 course at the 1000-level from Calculus, Applied Mathematics, Mathematics, or Numerical and Mathematical Methods. Integrated Science 1001X may be used as a substitute for the combination of Chemistry 1302A/B and Calculus 1301A/B.
Extra Information: 3 lecture hours, 1 tutorial hour.
Course Weight: 0.50

Course Withdrawal – Effective September 1, 2024, the following course be withdrawn:

CHEMISTRY 2374A
THERMODYNAMICS
Introduction to classical thermodynamics and its real-world applications. Topics include: the four laws of thermodynamics, enthalpy, entropy, Helmholtz and Gibbs energies, chemical potential, real gases, phase diagrams, ideal and real solutions, ionizing solvents, electrolytes, and electrochemical cells

Antirequisite(s): Chemistry 2214A/B.
Prerequisite(s): Chemistry 1301A/B, Chemistry 1302A/B, 0.5 course from Calculus 1000 A/B, Calculus 1500A/B, Numerical and Mathematical Methods 1412A/B, and any other 0.5 course at the 1000-level from Calculus, Applied Mathematics, Mathematics, or Numerical and Mathematical Methods. Integrated Science 1001X may be used as a substitute for the combination of Chemistry 1302A/B and Calculus 1301A/B.
Extra Information: 3 lecture hours.
Course Weight: 0.50

Course Withdrawal –

Methods 1414A/B) or the former Applied Mathematics 1411A/B or the former Applied Mathematics 1414A/B), or the former Applied Mathematics 1413.

1.0 course: Chemistry 1301A/B**,** ~~and~~ Chemistry 1302A/B.

1.0 course from: (Physics 1201A/B or Physics 1401A/B or Physics 1501A/B or the former Physics 1028A/B or the former Physics 1301A/B) and (Physics 1202A/B or Physics 1402A/B or Physics 1502A/B or the former Physics 1029A/B or the former Physics 1302A/B).

1.0 course from: (Calculus 1000A/B or Calculus 1500A/B or Numerical and Mathematical Methods 1412A/B or the former Applied Mathematics 1412A/B) and (Applied Mathematics 1201A/B or Calculus 1301A/B or Calculus 1501A/B or Mathematics 1600A/B **or Mathematics 1700A/B** or Mathematics 1229A/B or Numerical and Mathematical Methods 1411A/B or Numerical and Mathematical Methods 1414A/B) or the former Applied Mathematics 1411A/B or the former Applied Mathematics 1414A/B), or the former Applied Mathematics 1413.

Note: Physics 1101A/B with a minimum mark of 80% can be used to replace Physics 1201A/B.

Module
6.0 courses:

6.0 courses: Chemistry 2271A, Chemistry 2272F, Chemistry 2273A, **Chemistry 2274A (or the former** Chemistry 2374A**)**, Chemistry 2281G, Chemistry 2283G, **Chemistry 2284B (or the former Chemistry 2384B),** Chemistry 2370A/B (or the former Chemistry 3370A/B), ~~Chemistry 2384B,~~ Chemistry 3371F, Chemistry 3372F/G, Chemistry 3373F, Chemistry 3374A/B.

Program Revision – Effective September 1, 2024, the following change(s) be made:

HONOURS SPECIALIZATION IN BIOCHEMISTRY ANNj0.28 0 Td( )7sP #MCI1Z 2h

1.0 course: Biology 1001A**,** ~~and~~ Biology 1002B.

1.0 course from: (Calculus 1000A/B or Calculus 1500A/B or Numerical and Mathematical Methods 1412A/B or the former Applied Mathematics 1412A/B)~~;~~ and (Applied Mathematics 1201A/B~~,~~ or Calculus 1301A/B~~,~~ or Calculus 1501A/B~~,~~ or Mathematics 1600A/B **or Mathematics 1700A/B** or Mathematics 1229A/B or Numerical and Mathematical Methods 1411A/B or Numerical and Mathematical Methods 1414A/B) or the former Applied Mathematics 1411A/B or the former Applied Mathematics 1414A/B), or the former Applied Mathematics 1413.

1.0 course from: (Physics 1201A/B or Physics 1401A/B or Physics 1501A/B or the former Physics 1028A/B or the former Physics 1301A/B) and (Physics 1202A/B or Physics 1402A/B or Physics 1502A/B or the former Physics 1029A/B or the former Physics 1302A/B). (This 1.0 course is required but is not considered to be a principal course.)

Note: Biology 1201A with a minimum mark of 70% can be used to replace Biology 1001A, and Biology 1202B with a minimum mark of 70% can be used to replace Biology 1002B.

Note: Physics 1101A/B with a minimum mark of 80% can be used to replace

DEPARTMENT OF COMPUTER SCIENCE

Course Revision – Effective September 1, 2024, the following change(s) be made:

COMPUTER SCIENCE 3342A/B
ORGANIZATION OF PROGRAMMING LANGUAGES
Specification and analysis of programming languages; data types and structures; bindings and access structures; run-time behavior of programs; compilation vs. interpretation. Comparative presentation of at least three programming languages addressing the above concepts.

Prerequisite(s): Computer Science 2211A/B or Software Engineering 3313A/B.
Extra Information: 3 lecture hours. **Completion of Computer Science 3331A/B prior to enrolling in Computer Science 3342A/B is recommended but not required.**
Course Weight: 0.50

DEPARTMENT OF EARTH SCIENCES

Course Introduction – Effective September 1, 2024, the following course be introduced:

ENVIRONMENTAL SCIENCE 2300F/G
FOUNDATIONS IN ENVIRONMENTAL SCIENCE
(Short title: Foundations in Enviro Sci)
A foundational course exposing students to the interdisciplinary fields of environmental science by identifying how current environmental issues (e.g., resource extraction, climate change) are addressed by different disciplines. Sustainability metrics will also be explored. Students will work through insightful case studies and assess scientific literature from different stakeholder perspectives.

Antirequisite(s): the former Environmental Science 3300F/G.
Prerequisite(s): Enrolment in any Environmental Science module, Honours Specialization in Integrated Science with Environmental Science, Honours Specialization or Major in One Health, Major in Ecosystem Health, or permission of the Department.
Extra Information: 3 lecture hours.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

ENVIRONMENTAL SCIENCE 3350F/G
RESEARCH TECHNIQUES IN ENVIRONMENTAL SCIENCE
A multi-module course where a case study approach will be used to acquaint students with the research tools of environmental science, and the analysis, interpretation and presentation of environmental data.

Prerequisite(s): **Environmental Science 2300F/G or the former Environmental Science 3300F/G, and enrolment in any Environmental Science module, Honours Specialization in Integrated Science with Environmental Science, Honours Specialization or Major in One Health, Major in Ecosystem Health, or permission of the Department**. ~~Environmental Science 3300F/G or special permission of the program coordinator.~~
Extra Information: 3 lecture/tutorial hours.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

EARTH SCIENCES 3369A/B
GEOMICROBIOLOGY
A study of ~~geomicrobiological~~ **biogeochemical** processes ~~recorded~~ in ~~the~~ Earth**'s** **geologic** record and **of** bacteria interactions in contemporary systems**.**~~, including~~ **Topics include** methods for the analysis of prokaryotes**,**~~. The~~ factors affecting their community structure and function, and their relationship to geochemistry. **Bacteriological culture techniques relevant to geomicrobiological research are introduced in the laboratory component.** ~~In the laboratory, students will develop bacteriological culture techniques used in geomicrobiological research.~~

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Pre-or Corequisite(s): Chemistry 2210A/B.
Extra Information: 3 lecture/tutorial hours.
Course Weight: 0.50

Program Revision – Effective September 1, 2024, the following change(s) be made:

HONOURS SPECIALIZATION IN ENVIRONMENTAL SCIENCE

Admission Requirements

Completion of first-year requirements with no failures. Students must have an average of at least 70% in 3.5 principal courses, with no mark in these principal courses below 60%, including:

1.0 course: Biology 1001A and Biology 1002B or Biology 1201A and Biology 1202B.

1.0 course: Chemistry 1301A/B and Chemistry 1302A/B.

0.5 course from: Environmental Science 1021F/G; a 1000-level 0.5 course in Geography; Earth Sciences 1022A/B, Earth Sciences 1023A/B, Earth Sciences 1070A/B, Earth Sciences 1081A/B; Physics 1101A/B, Physics 1102A/B, Physics 1201A/B, Physics 1202A/B, Physics 1401A/B, Physics 1402A/B, Physics 1501A/B, Physics 1502A/B, the former Physics 1028A/B, the former Physics 1029A/B, the former Physics 1301A/B, the former Physics 1302A/B.

1.0 course from: Calculus 1000A/B or Calculus 1500A/B or Numerical and Mathematical Methods 1412A/B or Mathematics 1225A/B; Calculus 1301A/B or Calculus 1501A/B or Numerical and Mathematical Methods 1414A/B; Mathematics 1228A/B, Mathematics 1229A/B or Mathematics 1600A/B **or Mathematics 1700A/B** or Numerical and Mathematical Methods 1411A/B; Data Science 1000A/B; Applied Mathematics 1201A/B; or the former Applied Mathematics 1411A/B, the former Applied Mathematics 1412A/B, the former Applied Mathematics 1414A/B, the former Applied Mathematics 1413, the former Statistical Sciences 1024A/B.

Module
9.0 courses:

0.5 course: Biology 2483A/B.
0.5 course: Chemistry 2210A/B.
0.5 course from: Environmental Science 2300F/G, the former Environmental Science 3300F/G.

~~1.0~~ **0.5** course ~~from~~**:** ~~Environmental Science 3300F/G,~~ Environmental Science 3350F/G.
0.5 course **from**: Biology 2244A/B**,** ~~or~~ Statistical Sciences 2244A/B.
0.5 course **from**: Geography 2220A/B (strongly recommended) or a Geography half-course from the Environmental Science Course List.
0.5 course at the 2000-level from Earth Sciences courses in the Environmental Physical Sciences Subject Courses List.
1.5 course: Environmental Science 4999E.
0.5 course from: Environmental Science 4949F/G, Biology 4230A/B, Biology 4405A/B, Biology 4410F/G, Biology 4412F/G, Earth Sciences 4431A/B, Earth Sciences 4440A/B.
2.5 additional courses from the Environmental Science Course List, including at least 0.5 course from each of the 3 subject areas.
1.0 additional course at the 3000 level or above from the Environmental Science Course List

Note: Students should plan the modules taking into account prerequisites of senior courses.

Program Revision – Effective September 1, 2024, the following change(s) be made:

1411A/B; Data Science 1000A/B; Applied Mathematics 1201A/B; or the former

0.5 course from: Environmental Science 1021F/G; a 1000-level 0.5 course in Geography; Earth Sciences 1022A/B, Earth Sciences 1023A/B, Earth Sciences 1070A/B, Earth Sciences 1081A/B; Physics 1101A/B, Physics 1102A/B, Physics 1201A/B, Physics 1202A/B, Physics 1401A/B, Physics 1402A/B, Physics 1501A/B, Physics 1502A/B, the former Physics 1028A/B, the former Physics 1029A/B, the former Physics 1301A/B, the former Physics 1302A/B.

1.0 course from: Calculus 1000A/B or Calculus 1500A/B or Numerical and Mathematical Methods 1412A/B or Mathematics 1225A/B; Calculus 1301A/B or Calculus 1501A/B or Numerical and Mathematical Methods 1414A/B; Mathematics 1228A/B, Mathematics 1229A/B or Mathematics 1600A/B or **Mathematics 1700A/B or** Numerical and Mathematical Methods 1411A/B; Data Sc(h)10 (e 34.88 13.8 ref*BT0 g12 -0 0 12 1c 0 Tw 12 -0 0 12 310.2 556.3M(en

Program Revision – Effective September 1, 2024, the following change(s) be made:

MINOR IN ENVIRONMENTAL SCIENCE

Admission Requirements

Completion of first-

Note: Students should plan the module taking into account prerequisites of senior courses.

DEPARTMENT OF MATHEMATICS

Course Introduction

Course Revision – Effective September 1, 2024, the following change(s) be made:

APPLIED MATHEMATICS 2814F/G
NUMERICAL ANALYSIS

Extra Information: 3 lecture hours.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

APPLIED MATHEMATICS 3815A/B
PARTIAL DIFFERENTIAL EQUATIONS I

Course Revision – Effective September 1, 2024, the following change(s) be made:

DATA SCIENCE 2100A
MATHEMATICS FOR DATA SCIENCE
Mathematical background for students wanting to take Data Science 3000A/B, but missing background in linear algebra and calculus. Vector and matrix algebra, norms, linear dependence, inverses, vector spaces, eigenvectors and eigenvalues, Gradients, Hessians, basics of optimization. All concepts are explained in the context of data science examples.

Antirequisite(s): Mathematics 1600A/B, **Mathematics 1700A/B, Numerical and Mathematical Methods 1411A/B, the former** Applied Mathematics 1411A/B.
Prerequisite(s): 1.0 courses from Mathematics, Calculus, or Applied Mathematics (1000 and higher) with a minimal grade of 60%. Data Science 2000A/B or Integrated Science 2002B can be used to fulfil 0.5 of the requirements.
Extra Information: 3 lecture hours/week, 1 tutorial hour/week.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

MATHEMATICS 1120A/B
FUNDAMENTAL CONCEPTS IN MATHEMATICS
Primarily for students interested in pursuing a degree in one of the mathematical sciences. Logic, set theory, relations, functions and operations, careful study of the integers, discussion of the real and complex numbers, polynomials, and infinite sets.

Antirequisite(s): Mathematics 2155F/G.
Prerequisite(s): ~~One or more of~~ Ontario Secondary School MCV4U **or equivalent**~~, Mathematics 1600A/B~~.
Extra Information: 3 lecture hours.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

MATHEMATICS 1229A/B
METHODS OF MATRIX ALGEBRA
Matrix algebra including vectors and matrices, linear equations, determinants. This course is intended primarily for students in the Social Sciences, but may meet minimum requirements for some Science modules.

Antirequisite(s): ~~Applied Mathematics 2811B,~~ Mathematics 1600A/B, **Mathematics 1700A/B,** ~~Mathematics 2120A/B,~~ Mathematics 2155F/G, Mathematics 2211A/B, Numerical and Mathematical Methods 1411A/B, ~~or~~ the former Applied Mathematics 1411A/B**, the former Applied Mathematics 2811A/B, the former Mathematics 2120A/B**.
Prerequisite(s): One or more of Ontario Secondary School MCF3M, MCR3U, or equivalent.
Extra Information: 2 lecture hours, 1 tutorial hour (Main campus); 3 lecture hours (Huron, King's).
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

MATHEMATICS 1600A/B
LINEAR ALGEBRA I
Complex numbers; vectors, lines and planes; solving linear systems; spanning sets and linear independence; matrix algebra; the fundamental subspaces of a matrix, bases, dimension and rank; introduction to linear transformations; determinants; eigenvalues and eigenvectors; similarity and diagonalization; Markov chains and other applications. ~~Properties and applications of vectors; matrix algebra; solving systems of linear equations; determinants; vector spaces; orthogonality; eigenvalues and eigenvectors.~~

Antirequisite(s): **Mathematics 1700A/B,** Numerical and Mathematical Methods 1411A/B, Applied Mathematics 2811A/B, the former Applied Mathematics 1411A/B.
Prerequisite(s): One or more of Ontario Secondary School MCV4U, Mathematics 1229A/B, **Mathematics 1120A/B,** Calculus 1000A/B or Calculus 1500A/B. Calculus 1000A/B or Calculus 1500A/B may be taken as a pre-or corequisite.
Extra Information: 3 lecture hours **(Main Campus, Huron); 4 hours (King's)**~~, 1 laboratory hour~~.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

MATHEMATICS 3020A/B
INTRODUCTION TO ABSTRACT ALGEBRA
Properties of integers, rational, real and complex numbers: commutativity, associativity, distributivity. Polynomials, prime and irreducible elements. Rings, ideals, integral and Euclidean domains, fields, and unique factorization. First isomorphism theorem, quotient rings and finite fields. Introduction to groups.

Prerequisite(s): Mathematics 1600A/B **or Mathematics 1700A/B;** ~~and~~ **plus** one of ~~Mathematics 1120A/B, Mathematics 2120A/B, Mathematics 2124A/B,~~ Mathematics 2151A/B, Mathematics 2155F/G **(recommended)**~~, Applied Mathematics 2811A/B,~~ **or** Computer Science 2214A/B.
Extra Information: 3 lecture hours.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

MATHEMATICS 3120A/B
GROUP THEORY
An introduction to the theory of groups: cyclic, dihedral, symmetric, alternating; subgroups, quotient groups, homomorphisms, cosets, Lagrange's theorem, isomorphism theorems; group actions, class equation, p-groups, Sylow theorems; direct and semidirect products, wreath products, finite abelian groups; Jordan-Hölder theorem, commutator subgroup, solvable and nilpotent groups; free groups, generators and relations.

Prerequisite(s): Mathematics 3020A/B (recommended); or **one of** Mathematics 1600A/B **or Mathematics 1700A/B** and one of Mathematics 1120A/B, **Mathematics 2700A/B,** ~~Mathematics 2120A/B,~~ Mathematics 2124A/B, Mathematics 2155F/G, **the former** Applied Mathematics 2811A/B**, or the former Mathematics 2120A/B**.
Extra Information: 3 lecture hours.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

MATHEMATICS 3157A/B
INTRODUCTION TO GAME THEORY
A first course in the mathematical theory of games. Topics begin with the modelling of games: extensive and strategic forms; perfect information; chance. Sprague-Grundy theory of impartial combinatorial games. Modelling preferences with utility functions. Nash equilibria, analysis of two-player games.

Prerequisite(s): Mathematics 1600A/B **or Mathematics 1700A/B**, Calculus 1301A/B or Calculus 1501A/B, and one of Mathematics 1120A/B, ~~Mathematics 2120A/B,~~ Mathematics 2122A/B, Mathematics 2124A/B**,** ~~or~~ Mathematics 2155F/G**,** ~~or~~ **Mathematics 2700A/B, the former Mathematics 2120A/B**.
Extra Information: 3 lecture hours.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

MATHEMATICS 3159A/B
INTRODUCTION TO CRYPTOGRAPHY
Modern cryptological algorithms will be discussed with an emphasis placed on their mathematical foundation. Main topics will include: basic number theory, complexity of algorithms, symmetric-key cryptosystems, public-key cryptosystems, RSA encryption, primality and factoring, discrete logarithms, elliptic curves and information theory.

Prerequisite(s): Mathematics 1600A/B **or Mathematics 1700A/B** and one of ~~Mathematics 2120A/B,~~ Mathematics 2124A/B, Mathematics 2151A/B, Mathematics 2155F/G, **Mathematics 2700A/B,** Mathematics 3150A/B, ~~Applied Mathematics 2811A/B, or~~ Computer Science 2214A/B**, the former Applied Mathematics 2811A/B, the former Mathematics 2120A/B**.
Extra Information: 3 lecture hours.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

MATHEMATICS 4123A/B
RINGS AND MODULES
Rings: fractions and localization, Chinese Remainder Theorem, factorization in commutative rings, Euclidean algorithm, PIDs, algebraic integers, polynomials and formal power series, factorization in polynomial rings; Modules: generation, direct products and sums, freeness, presentations, tensor algebras, exact sequences, projectivity, injectivity, Hom and duality, Zorn's Lemma, chain conditions, modules over PIDs.

Prerequisite(s): Mathematics 3020A/B.

Extra Information: 3 lecture hours. Note: It is recommended that **Mathematics 3700A/B or the former** Mathematics 3121A/B ~~(or the former Math 2121A/B)~~ be taken before or concurrently with Mathematics 4123A/B.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

MATHEMATICS 4154A/B
FUNCTIONAL ANALYSIS

Course Withdrawal –

One of Mathematics 1700A/B (recommended), Mathematics 1600A/B, ~~or~~ Numerical and Mathematical Methods 1411A/B or the former Applied Mathematics 1411A/B, with a mark of at least 60% and completed by the end of Term 1 in Year 2.

Module
9.0 courses:

0.5 course from: Mathematics 2700A/B, the former Applied Mathematics 2811A/B.
~~2.5~~ **2.0** courses: ~~Applied Mathematics 2811A/B,~~ Applied Mathematics 2814F/G, Applied Mathematics 3811A/B, Applied Mathematics 3815A/B, Mathematics 2155F/G.
0.5 course from: Applied Mathematics 3813A/B, Applied Mathematics 4815A/B, Numerical and Mathematical Methods 4617A/B or the former Applied Mathematics 4617A/B.
1.0 course: Calculus 2502A/B**,** ~~and~~ Calculus 2503A/B.
0.5 course: Applied Mathematics 2402A/B.
0.5 course from: Mathematics 2122A/B, Mathematics 3020A/B, Mathematics 3120A/B.
0.5 course: Statistical Sciences 2857A/B.
1.5 additional courses from: Financial Modelling 3613A/B, Financial Modelling 3817A/B, Mathematics 2124A/B, Mathematics 2156A/B, Mathematics 3152A/B, Mathematics 3153A/B, Mathematics 3157A/B, Mathematics 3159A/B, Physics 3151A/B, Physics 3926F/G, Statistical Sciences 2858A/B, Statistical Sciences 3657A/B or any course in Applied Mathematics, Data Science, or Numerical and Mathematical Methods at the 3000 level or above. Note that some of these courses have prerequisites that are not part of the module.
1.0 additional course in Applied Mathematics, Mathematics, or Numerical and Mathematical Methods at the 2100 level or above.
1.0 additional course in Applied Mathematics or Numerical and Mathematical Methods at the 4000 level or above.

Program Revision – Effective September 1, 2024, the following change(s) be made:

MAJOR IN APPLIED MATHEMATICS

Admission Requirements

Completion of first-year requirements, including 0.5 course from Calculus 1000A/B, Calculus 1500A/B, Numerical and Mathematical Methods 1412A/B, the former Applied Mathematics 1412A/B, and 0.5 course from Calculus 1301A/B (with a mark of at least 85%), Calculus 1501A/B, Numerical and Mathematical Methods 1414A/B, the former Applied Mathematics 1414A/B. The former Applied Mathematics 1413 may be substituted for the 1.0 Calculus course requirement. Each of these courses requires a minimum mark of 60%.

One of Mathematics 1700A/B (recommended), Mathematics 1600A/B, ~~or~~ Numerical and Mathematical Methods 1411A/B or the former Applied Mathematics 1411A/B, with a mark of at least 60% and completed by the end of Term 1 in Year 2.

Module
6.0 courses:

0.5 course from: Mathematics 2700A/B, the former Applied Mathematics 2811A/B.
~~2.5~~ **2.0** courses: ~~Applied Mathematics 2811A/B,~~ Applied Mathematics 2814F/G, Applied Mathematics 3811A/B, Applied Mathematics

plus 2.0 additional courses, with no mark in these principal courses below 60%. ~~Mathematics 1600A/B,~~ **(Mathematics 1600A/B or Mathematics 1700A/B)** and Mathematics 1120A/B, if taken in first year, will count toward the 3.0 principal courses. Mathematics 1120A/B and Mathematics 1600A/B **1700A0A/o/4 (o)10 (uc**

0.5 course: A mark of at least 60% in Calculus 1501A/B (recommended) or a mark of at least 85% in Calculus 1301A/B. (Numerical and Mathematical Methods 1412A/B or the former Applied Mathematics 1412A/B) and (Numerical and Mathematical Methods 1414A/B or the former Applied Mathematics 1414A/B), or the former Applied Mathematics 1413 (each with a mark of at least 60%) may be used to replace the 1.0 Calculus course requirement.

Program Revision – Effective September 1, 2024, the following change(s) be made:

MINOR IN MATHEMATICS

Admission Requirements

Completion of first-year requirements, including:

0.5 course: A mark of at least 60% in Calculus 1000A/B or Calculus 1500A/B.

0.5 course: A mark of at least 60% in Calculus 1501A/B (recommended) or a mark of at least 85% in Calculus 1301A/B. (Numerical and Mathematical Methods 1412A/B and Numerical and Mathematical Methods 1414A/B) or (the former Applied Mathematics 1412A/B and Applied Mathematics 1414A/B) or the former Applied Mathematics 1413 (each with a mark of at least 60%) may be used to replace the 1.0 Calculus course requirement.

Mathematics 1120A/B and Mathematics ~~1600A/B~~ **1700A/B** are recommended.

Students with a complete first year that does not meet the above requirements may be admitted after a second-year half-course in Calculus with a mark of at least 60%.

Module
4.0 courses:

0.5 course **from**: **Mathematics 2700A/B, the former** Mathematics 2120A/B ~~or the former Mathematics 2211A/B~~.
0.5 course from: Calculus 2302A/B, Calculus 2402A/B**,** ~~or~~ Calculus 2502A/B.
0.5 course from: Applied Mathematics 2402A/B, Applied Mathematics 2814F/G, Calculus 2303A/B, Calculus 2503A/B, ~~or~~ Mathematics 2122A/B**.**
2.5 additional courses from: Earth Sciences 2222A/B, Economics 2122A/B, Economics 2123A/B, Economics 2141A/B, Economics 2210A/B, Economics 2222A/B, Economics 2223A/B, Economics 3310A/B, Philosophy 2250, Philosophy 2251F/G, Philosophy 2252W/X, Philosophy 2254A/B, **the former** Philosophy 3201A/B, any Actuarial Science, Applied Mathematics, Computer Science, Data Science, Financial Modelling, Mathematics, Numerical and Mathematical Methods, or Statistical Sciences course at the 2000 level or above. Note that some of these courses have prerequisites that are not part of the module.

Program Revision – Effective September 1, 2024, the following change(s) be made:

HONOURS SPECIALIZATION IN MATHEMATICAL AND STATISTICAL SCIENCES

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 0.5 course from Calculus 1000A/B, Calculus 1500A/B, Numerical and Mathematical Methods 1412A/B, the former Applied Mathematics 1412A/B, and 0.5 course from Calculus 1301A/B **(with a mark of at least 85%)**, Calculus 1501A/B, Numerical and Mathematical Methods 1414A/B, the fc 0 Tw 25s.p70e0 (000)12 ( )]TJ-24.4ATIC

0.5 course **from**: **Mathematics 1700A/B,** Mathematics 1600A/B**,** ~~or~~ Numerical and Mathematical Methods 1411A/B**,** ~~or~~ the former Applied Mathematics 1411A/B.

0.5 additional course from the Faculty of Science. It is highly recommended that students complete one of the following: Chemistry 1301A/B, Chemistry 1302A/B, Computer Science 1025A/B or Computer Science 1026A/B, Data Science 1000A/B or the former Statistical Sciences 1024A/B.

0.5 additional course.

Program Revision – Effective September 1, 2024, the following change(s) be made:

MAJOR IN ASTROPHYSICS

Admission Requirements

Completion of first-year requirements including the following 2.0 courses, each with a mark of at least 60%:

1.0 course from: (Physics 1201A/B, Physics 1401A/B, Physics 1501A/B, the former Physics 1301A/B or 80% in the former Physics 1028A/B) and (Physics 1202A/B, Physics 1402A/B, Physics 1502A/B, the former Physics 1302A/B or 80% in the former Physics 1029A/B).

1.0 course: (Calculus 1000A/B or Calculus 1500A/B or Numerical and Mathematical Methods 1412A/B) and (Calculus 1501A/B (recommended) or Calculus 1301A/B with a minimum mark of 70% or Numerical and Mathematical Methods 1414A/B); or the former Applied Mathematics 1413 or the former Applied Mathematics 1412A/B and the former Applied Mathematics 1414A/B.

Students must complete **Mathematics 1700A/B or** Mathematics 1600A/B or Numerical and Mathematical Methods 1411A/B or the former Applied Mathematics 1411A/B with a minimum mark of 55% by the end of Term 1 in Year 2.

Program Revision – Effective September 1, 2024, the following change(s) be made:

1202A/B, Physics 1402A/B, Physics 1502A/B, the former Physics 1302A/B or 80% in the former Physics 1029A/B).

1.0 course: (Calculus 1000A/B or Calculus 1500A/B or Numerical and Mathematical Methods 1412A/B) and (Calculus 1501A/B

1202A/B, Physics 1402A/B, Physics 1502A/B, the former Physics 1302A/B or 80% in the former Physics 1029A/B).

1.0 course: (Calculus 1000A/B or Calculus 1500A/B or Numerical and Mathematical Methods 1412A/B) and (Calculus 1501A/B (recommended) or Calculus 1301A/B with a minimum mark of 70% or Numerical and Mathematical Methods 1414A/B); or the former Applied Mathematics 1413 or the former Applied Mathematics 1412A/B and the former Applied Mathematics 1414A/B.

0.5 course **from**: **Mathematics 1700A/B,** Mathematics 1600A/B**,** ~~or~~ Numerical and Mathematical Methods 1411A/B**,** ~~or~~ the former Applied Mathematics 1411A/B.

0.5 additional course from the Faculty of Science. It is highly recommended that students complete one of the following: Chemistry 1301A/B, Chemistry 1302A/B, Computer Science 1025A/B or Computer Science 1026A/B, Data Science 1000A/B or the former Statistical Sciences 1024A/B.

Mathematics 1411A/B with a minimum mark of 55% by the end of Term 1 in Year 2.

Program Revision – Effective September 1, 2024, the following change(s) be made:

MINOR IN PHYSICS

Completion of first-year requirements including the following courses, each with a mark of at least 60%:

1.0 course from: (Physics 1201A/B, Physics 1401A/B, Physics 1501A/B, the former Physics 1301A/B or 80% in the former Physics 1028A/B) and (Physics 1202A/B, Physics 1402A/B, Physics 1502A/B, the former Physics 1302A/B or 80% in the former Physics 1029A/B).

1.0 course: (Calculus 1000A/B or Calculus 1500A/B or Numerical and Mathematical Methods 1412A/B) and (Calculus 1501A/B (recommended) or Calculus 1301A/B with a minimum mark of 70% or Numerical and Mathematical Methods 1414A/B); or the former Applied Mathematics 1413 or the former Applied Mathematics 1412A/B and the former Applied Mathematics 1414A/B.

1.0 additional course, at least 0.5 of which must be from the Faculty of Science.

Students must complete **Mathematics 1700A/B or** Mathematics 1600A/B or Numerical and Mathematical Methods 1411A/B or the former Applied Mathematics 1411A/B with a minimum mark of 55% by the end of Term 1 in Year 2.

Program Revision – Effective September 1, 2024, the following change(s) be made:

MAJOR IN SCIENTIFIC COMPUTING AND NUMERICAL METHODS

Admission Requirements

Completion of first-year requirements including the following courses, each with a mark of at least 60%:

1.0 course from: (Calculus 1000A/B, Calculus 1500A/B, Numerical and Mathematical Methods 1412A/B or the former Applied Mathematics 1412A/B) and (Calculus 1301A/B, Calculus 1501A/B (recommended), Numerical and Mathematical Methods 1414A/B or the former Applied Mathematics 1414A/B); or the former Applied Mathematics 1413.

1.0 course from: (Physics 1201A/B, Physics 1401A/B, Physics 1501A/B or the former Physics 1301A/B) and (Physics 1202A/B, Physics 1402A/B, Physics 1502A/B or the former Physics 1302A/B).
1.0 course from: Computer Science 1025A/B or Computer Science 1026A/B and Computer Science 1027A/B.

Students must complete **Mathematics 1700A/B or** Mathematics 1600A/B or Numerical and Mathematical Methods 1411A/B ~~or the former Linear Algebra 1600A/B~~ with a minimum mark of 55% by the end of Term 1 in Year 2.

Module
6.0 courses:

0.5 course: Applied Mathematics 2814F/G.
0.5 course from: Calculus 2302A/B**,** ~~or~~ Calculus 2502A/B.

0.5 course: Applied Mathematics 2402A/B.
0.5 course

WESTERN INTEGRATED SCIENCE PROGRAM

Course Revision – Effective September 1, 2024, the following change(s) be made:

INTEGRATED SCIENCE 1001X
EXPLORING SCIENCE
Explore foundational topics in astronomy, biology, chemistry, ~~computer science,~~ earth science, mathematics, and physics through an integrated questions-based approach. Small-group interactions and interdisciplinary laboratory experiments are designed to foster teamwork, interdisciplinary thinking, and the development problem-solving and critical-thinking skills.

Antirequisite(s): Chemistry 1302A/B; Physics 1102A/B, Physics 1202A/B, Physics 1502A/B, the former Physics 1029A/B, and the former Physics 1302A/B; Biology 1002B; Mathematics 1225A/B; Calculus 1301A/B and Calculus 1501A/B~~; Computer Science 1026A/B; Data Science 1200A/B~~.
Prerequisite(s): Enrolment in Year 1 of the Western Integrated Science program and a minimum of 60% in each of Calculus 1000A/B or Calculus 1500A/B; Chemistry 1301A/B; and Physics 1201A/B or Physics 1501A/B or the former Physics 1301A/B.
Extra Information: 13 lecture hours and 10 laboratory/tutorial hours per week.
Course Weight: 2.00

Course Withdrawal – Effective September 1, 2024, the following course be withdrawn:

INTEGRATED SCIENCE 2002B
INTRODUCTION TO DATA SCIENCE
Three basic data science concepts and their corresponding techniques are explored while emphasizing practical data handling and programming skills in

Program Revision – Effective September 1, 2024, the following change(s) be made:

HONOURS SPECIALIZATION IN INTEGRATED SCIENCE WITH ASTROPHYSICS

The Western Integrated Science (WISc) program is a first entry, four-year program administered by the Faculty of Science. It is designed to provide select students with the diverse science education necessary to address the interdisciplinarity of today's major scientific challenges (e.g., climate change, world hunger, alternative energy). WISC combines unique Integrated Science courses with traditional discipline-specific courses. In Year 2, WISC students will enroll in an Integrated Science Honours Specialization module administered jointly by the Faculty of Science and individual Science departments.

Students who complete WISc Program will graduate with an “Honours Bachelor of Science in Integrated Science with (specific discipline).”

Admission Requirements

Admission into WISc is competitive, limited and open only to students who apply to Western through the ES stream of the Ontario Universities' Application Centre. In addition to the Grade 12 requirements, a personal statement is required and will be used as part of the adjudication for admission. See the Western Faculty of Science website (https://www.uwo.ca/sci/undergraduate/future_students/index.html) for details

~~2.5~~ **2.0** courses: Integrated Science 2001F/G*, ~~Integrated Science 2002B*,~~ Integrated Science 3001F/G**, Integrated Science 3002A/B**, Integrated Science 4001Y*****.

Program Revision – Effective September 1, 2024, the following change(s) be made:

HONOURS SPECIALIZATION IN INTEGRATED SCIENCE WITH BIOLOGY

The Western Integrated Science (WISc) program is a first entry, four-year program administered by the Faculty of Science. It is designed to provide select students with the diverse science education necessary to address the interdisciplinarity of today's major scientific challenges (e.g., climate change,

courses with traditional discipline-

Students who complete WISc Program will graduate with an “Honours Bachelor of Science in Integrated Science with (specific discipline).”

Admission Requirements

Admission into WISc is competitive, limited and open only to students who apply to Western through the ES stream of the Ontario Universities' Application Centre. In addition to the Grade 12 requirements, a personal statement is required and will be used as part of the adjudication for admission. See the Western Faculty of Science website (https://www.uwo.ca/sci/undergraduate/future_students/index.html) for details about the admission selection process.

Completion of first year requirements with no failures. Students must complete the following courses with an average of at least 70%, with no individual course mark below 60%:

0.5 course: Integrated Science 1000Z;
0.5 course **from**: Calculus 1000A/B**,** ~~or~~ Calculus 1500A/B;
0.5 course: Chemistry 1301A/B;
0.5 course **from**: Physics 1201A/B**,** ~~or~~ Physics 1501A/B**,** ~~or~~ the former Physics 1301A/B;
2.0 course: Integrated Science 1001X.

Module
13.0 courses:

~~2.5~~ **2.0** courses: Integrated Science 2001F/G, ~~Integrated Science 2002B,~~ Integrated Science 3001F/G, Integrated Science 3002A/B, Integrated Science 4001Y.
1.5 course: Integrated Science 4999E.
0.5 course from: Computer Science 2034A/B, Computer Science 2035A/B, Computer Science 2120A/B (recommended).
0.5 course: Philosophy 2320F/G.
0.5 course **from**: Science 3377A/B**, Business Administration 1220E**, Business Administration 2257**, Business Administration 2295F/G**.
~~1.5 course: Integrated Science 4999E.~~
6.0 courses:

Completion of first year requirements with no failures. Students must complete the following courses with an average of at least 70%, with no individual course mark below 60%:

0.5 course: Integrated Science 1000Z;
0.5 course **from**: Calculus 1000A/B**,** ~~or~~ Calculus 1500A/B;
0.5 course: Chemistry 1301A/B;
0.5 course **from**: Physics 1201A/B**,** ~~or~~ Physics 1501A/B**,** ~~or~~ the former Physics 1301A/B;
2.0 course: Integrated Science 1001X.

Module
13.0 courses:

~~2.5~~ **2.0** courses: Integrated Science 2001F/G*, ~~Integrated Science 2002B*,~~ Integrated Science 3001F/G**, Integrated Science 3002A/B**, Integrated Science 4001Y***.
1.5 course: Integrated Science 4999E*.**
0.5 course from: Computer Science 2034A/B, Computer Science 2035A/B, Computer Science 2120A/B (recommended).
0.5 course*: Philosophy 2320F/G.
0.5 course **from**: Science 3377A/B~~**.~~**, Business Administration 1220E****, Business Administration 2257****, Business Administration 2295F/G**.
~~1.5 course: Integrated Science 4999E***.~~
0.5 course: Computer Science 2121A/B.
3.5 courses: Computer Science 2208A/B, Computer Science 2209A/B, Computer Science 2210A/B, Computer Science 2211A/B, Computer Science 2212A/B/Y, Computer Science 3305A/B, Computer Science 3307A/B/Y.
0.5 course from: Computer Science 2214A/B, Mathematics 2155F/G.
3.5 additional courses from: Mathematics 2156A/B, Computer Science courses at the 3000 level or above.

<u>Notes:</u>

Year 1 consists of 5.5 courses.

* indicates courses taken in Second Year of Program
** indicates courses taken in Third Year of Program
*** indicates courses taken in Fourth Year of Program
**** The module will consist of 13.5 courses if either Business Administration 1220E or Business Administration 2257 is taken. Business Administration 1220E cannot be used towards both Fir0.2 g12 -olYcean2e moduen Pr0.2 (**

Program Revision – Effective September 1, 2024, the following change(s) be made:

HONOURS SPECIALIZATION IN INTEGRATED SCIENCE WITH EARTH SCIENCES

The Western Integrated Science (WISc) program is a first entry, four-year program administered by the Faculty of Science. It is designed to provide select students with the diverse science education necessary to address the interdisciplinarity of today's major scientific challenges (e.g., climate change, world hunger, alternative energy). WISC combines unique Integrated Science courses with traditional discipline-specific courses. In Year 2, WISC students will enroll in an Integrated Science Honours Specialization module administered jointly by the Faculty of Science and individual Science departments.

Students who complete WISc Program will graduate with an “Honours Bachelor of Science in Integrated Science with (specific discipline).”

Admission Requirements

Admission into WISc is competitive, limited and open only to students who apply to Western through the ES stream of the Ontario Universities' Application Centre. In addition to the Grade 12 requirements, a personal statement is required and will be used as part of the adjudication for admission. See the Western Faculty of Science website
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1.5 course: Integrated Science 4999E**.**
0.5 course from: Computer Science 2034A/B, Computer Science 2035A/B, Computer Science 2120A/B (recommended).
0.5 course**: Philosophy 2320F/G.
0.5 course **from**: Science 3377A/B~~**.~~**, Business Administration 1220E*****, Business Administration 2257*****, Business Administration 2295F/G.**
~~1.5 course: Integrated Science 4999E****.~~
3.0 courses: Earth Sciences 2200A/B, Earth Sciences 2201A/B, Earth Sciences 2206A/B, Earth Sciences 2250Y, Earth Sciences 2260A/B, Earth Sciences 2265A/B.

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Administration 1220E cannot be used towards both First Year Requirements and modular requirements.

Program Revision – Effective September 1, 2024, the following change(s) be made:

HONOURS SPECIALIZATION IN INTEGRATED SCIENCE WITH GENETICS

The Western Integrated Science (WISc) program is a first entry, four-year program administered by the Faculty of Science. It is designed to provide select students with the diverse science education necessary to address the interdisciplinarity of today's major scientific challenges (e.g., climate change, world hunger, alternative energy). WISC combines unique Integrated Science courses with traditional discipline-specific courses. In Year 2, WISC students will enroll in an Integrated Science Honours Specialization module administered jointly by the Faculty of Science and individual Science departments.

Students who complete WISc Program will graduate with an "Honours Bachelor of Science in Integrated Science with (specific discipline)."

Admission Requirements

Admission into WISc is competitive, limited and open only to students who apply to Western through the ES stream of the Ontario Universities' Application Centre. In addition to the Grade 12 requirements, a personal statement is required and will be used as part of the adjudication for admission. See the Western Faculty of Science website (https://www.uwo.ca/sci/undergraduate/future_students/index.html) for details about the admission selection process.

Completion of first year requirements with no failures. Students must complete the following courses with an average of at least 70%, with no individual course mark below 60%:

0.5 course: Integrated Science 1000Z;
0.5 course **from**: Calculus 1000A/B**,** ~~or~~ Calculus 1500A/B;
0.5 course: Chemistry 1301A/B;
0.5 course **from**: Physics 1201A/B**,** ~~or~~ Physics 1501A/B**,** ~~or~~ the former Physics 1301A/B;
0.5 course: Biology 1001A;
2.0 course: Integrated Science 1001X.

Module
13.0 courses:

~~2.5~~ **2.0** courses: Integrated Science 2001F/G*, ~~Integrated Science~~

~~2002B*,~~ Integrated Science 3001F/G**, Integrated Science 3002A/B**, Integrated Science 4001Y***.
1.5 course: Integrated Science 4999E*.**
0.5 course from: Computer Science 2034A/B, Computer Science 2035A/B, Computer Science 2120A/B (recommended).
0.5 course*: Philosophy 2320F/G.
0.5 course **from**: Science 3377A/B~~**.~~**, Business Administration 1220E****, Business Administration 2257****, Business Administration 2295F/G.**
~~1.5 course: Integrated Science 4999E***.~~
1.5 courses: Biology 2290F/G, Biology 2382A/B, Biology 2581A/B.
0.5 course from: Biology 2244A/B**,** ~~or~~ Statistical Sciences 2244A/B
0.5 course: Biochemistry 2280A.
0.5 course: Biology 3596A/B.
0.5 course~~s~~ from: Biology 3594A/B, Biology 3595A/B, Biology 3597A/B.
1.5 courses (not already taken above) from: Biology 3466A/B, Biology 3592A/B, Biology 3593A/B, Biology 3594A/B, Biology 3595A/B, Biology 3597A/B.
[redacted]gy 4560A/B, Biology 4561F/G, Biology 4562A/B.
0.5 course

world hunger, alternative energy). WISC combines unique Integrated Science

2814F/G, Applied Mathematics 3815A/B, Calculus 2502A/B, Calculus 2503A/B, Mathematics 2122A/B, Mathematics 2155F/G, Mathematics 3020A/B, Statistical Sciences 2857A/B, Statistical Sciences 2858A/B.
1.0 additional course in Actuarial Science, Financial Modelling or Statistical Sciences at the 2100 level or above.
1.5 courses at the 3000 level or above from Actuarial Science~~s~~, Applied Mathematics, Financial Modelling, Mathematics, or Statistical Sciences.

Notes:
Year 1 consists of 5.5 courses.
* indicates courses taken in Second Year of Program
** indicates courses taken in Third Year of Program
*** indicates courses taken in Fourth Year of Program
****** The module will consist of 13.5 courses if either Business Administration 1220E or Business Administration 2257 is taken. Business Administration 1220E cannot be used towards both First Year Requirements and modular requirements.**

Completion of first year requirements with no failures. Students must complete

** indicates courses taken in Third Year of Program
*** indicates courses taken in Fourth Year of Program
****** The module will consist of 13.5 courses if either Business Administration 1220E or Business Administration 2257 is taken. Business Administration 1220E cannot be used towards both First Year Requirements and modular requirements.**

Program Revision – Effective September 1, 2024, the following change(s) be made:

HONOURS SPECIALIZATION IN INTEGRATED SCIENCE WITH SYNTHETIC BIOLOGY

The Western Integrated Science (WISc) program is a first entry, four-year program administered by the Faculty of Science. It is designed to provide select students with the diverse science education necessary to address the interdisciplinarity of today's major scientific challenges (e.g., climate change, world hunger, alternative energy). WISC combines unique Integrated Science courses with traditional discipline-specific courses. In Year 2, WISC students will enroll in an Integrated Science Honours Specialization module administered jointly by the Faculty of Science and individual Science departments.

Students who complete WISc Program will graduate with an "Honours Bachelor of Science in Integrated Science with (specific discipline)."

Admission Requirements

Completion of first year requirements with no failures. Students must complete the following courses with an average of at least 70%, with no individual course mark below 60%:

0.5 course: Integrated Science 1000Z;
2.0 course: Integrated Science 1001X;
0.5 course **from**: Calculus 1000A/B**,** ~~or~~ Calculus 1500A/B;
0.5 course: Chemistry 1301A/B;
0.5 course **from**: Physics 1201A/B**,** ~~or~~ Physics 1501A/B;
0.5 course: Biology 1001A.

Module
13.0 courses:

[redacted]

~~2.5~~ **2.0** courses: Integrated Science 2001F/G**, ~~Integrated Science~~
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HURON UNIVERSITY COLLEGE

CENTRE FOR GLOBAL STUDIES – FACULTY OF ARTS AND SOCIAL SCIENCE

Program Revision – Effective September 1, 2024, the following change(s) be made:

HONOURS SPECIALIZATION IN GLOBAL HEALTH STUDIES

Module
9.0 courses:

5.0 courses: CGS 2002F/G, **CGS 3220F/G (or the former CGS 3520F/G),** CGS 3519F/G, ~~CGS 3520F/G;~~ CGS 3532F/G, CGS 3533F/G; Geography 2411F/G or Indigenous Studies 2601F/G; Health Sciences 2244 or GSWS 2244; Health Sciences 2250A/B, Health Sciences 3250F/G.
0.5 course from: CGS 2003F/G, CGS 2004F/G.
0.5 course from: CGS 3001F/G, CGS 3006F/G.
1.0 course~~s~~ from: CGS 3509F/G, CGS 3512F/G, CGS 3513F/G, CGS 3514F/G, CGS 3517F/G, CGS 3518F/G, CGS 3525F/G, CGS 3526F/G, CGS 3527F/G, CGS 3528F/G, CGS 3530F/G; and with permission: CGS 3100E, CGS 3101F/G, CGS 3201F/G, CGS 3202F/G, CGS 3203F/G, CGS 3206F/G.
0.5 course from: Geography 2430A/B, Geography 3431A/B, Geography 3432A/B.
0.5 course from: Health Sciences 3010F/G, Health Sciences 3025A/B, Health Sciences 3042A/B, Health Sciences 3071A/B, Health Sciences 3302210 (,)2 (C)6 (G)2 (S)1 (
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Program Revision – Effective September 1, 2024, the following change(s) be made:

SPECIALIZATION IN GLOBAL HEALTH STUDIES

Module
9.0 courses:

5.0 courses: CGS 2002F/G, **CGS 3220F/G (or the former CGS 3520F/G)**, CGS 3519F/G, ~~CGS 3520F/G,~~ CGS 3532F/G, CGS 3533F/G; Geography 2411F/G or Indigenous Studies 2601F/G; Health Sciences 2244 or GSWS 2244; Health Sciences 2250A/B, Health Sciences 3250F/G.
0.5 course from: CGS 2003F/G, CGS 2004F/G.
0.5 course from: CGS 3001F/G, CGS 3006F/G.
1.5 courses from: CGS 3509F/G, CGS 3512F/G, CGS 3513F/G, CGS 3514F/G, CGS 3517F/G, CGS 3518F/G, CGS 3525F/G, CGS 3526F/G, CGS 3527F/G, CGS 3528F/G, CGS 3530F/G; and with permission: CGS 3201F/G, CGS 3202F/G, CGS 3203F/G, CGS 3206F/G.
1.0 course from: Health Sciences 3010F/G, Health Sciences 3025A/B, Health Sciences 3042A/B, Health Sciences 3071A/B, Health Sciences 3262F/G, Health Sciences 3624A/B, Health Sciences 3630F/G, Health Sciences 3704A/B, Law 3101A/B, and with permission: Health Sciences 3090A/B, Health Sciences 3091A/B, Health Sciences 3092A/B, Health Sciences 3093F/G, the former Health Sciences 3290A/B, Sociology 3370F/G, Sociology 3371F/G.

CHINESE, JAPANESE, AND EAST ASIAN STUDIES – FACULTY OF ARTS AND SOCIAL SCIENCE

Course Revision – Effective September 1, 2024, the following change(s) be made:

CHINESE 1150
BEGINNERS' CHINESE I
An introduction to oral and written standard Chinese for students with no previous knowledge of the language and no previous exposure to Chinese culture. Students will learn approximately 400 characters, 40 sentence structures, basic grammar, and will be able to write short passages and conduct brief, informal dialogues. The pinyin romanization system will be introduced. Prepares students for progression to Chinese 2250.

Antirequisite(s): Chinese 1151, Chinese 1152A/B, Chinese 1153A/B, Grade 12U Chinese or equivalent.
Prerequisite(s): Permission of the department **based on placement**.
Extra Information: 4 hours.
Course Weight: 1.00

Course Revision – Effective September 1, 2024, the following change(s) be made:

CHINESE 1151
CHINESE I
An introduction to oral and written standard Chinese for students with no previous knowledge of the language. Students will learn approximately 400 characters, 40 sentence structures, basic grammar, and will be able to write short passages and conduct brief, informal dialogues. The pinyin romanization system will be introduced.

Antirequisite(s): Chinese 1150, Chinese 1152A/B, Chinese 1153A/B; Grade 12U Chinese or equivalent.
Prerequisite(s): Permission of the department **based on placement**.
Extra Information: 4 hours.
Course Weight: 1.00

Course Revision – Effective September 1, 2024, the following change(s) be made:

CHINESE 2250
BEGINNERS' CHINESE 2
A course in standard Chinese and a continuation of Chinese 1150. Students will build on skills in reading, writing, and speaking developed in earlier courses. They will gain an increased vocabulary (approximately 1000 characters) and a greater understanding of more complex grammatical structures. The pinyin romanization system will be used.

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MANAGEMENT AND ORGANIZATIONAL STUDIES (BMOS PROGRAM) – FACULTY OF ARTS AND SOCIAL SCIENCE

Course Revision – Effective September 1, 2024, the following change(s) be made:

MANAGEMENT AND ORGANIZATIONAL STUDIES 2185A/B
ANIMALS, SUSTAINABILITY, AND BUSINESS
~~ANIMAL WELFARE AND SUSTAINABILITY LEADERSHIP~~
(Short title: **Animals, Sustain & Business**)

1.0 course from: Analytics and Decision Sciences 2298A/B, Computer Science 2035A/B, Computer Science 2120A/B, Data Science 2100A, Digital Communication 2309A/B, Digital Communication 3203F/G, Digital Communication 3204A/B, Digital Communication 3209F/G.

1.5 courses

1.0 course normally taken in third or fourth year from: MOS 3330A/B, MOS 3398A/B, **MOS 4489A/B** ~~MOS 4498A/B~~.
1.0 course from: MOS 2265F/G, MOS 3321F/G, MOS 33310 (310)Tj00.0/(S)-9B

Course Introduction – Effective September 1, 2024, the following course be introduced:

RELIGIOUS STUDIES 3210F/G
ISLAM AND WELLNESS
How do Islamic traditions and communities understand and promote wellness, especially mental health? This course explores historical and contemporary perceptions of mental health within an Islamic theological perspective, with a special focus on Islamic principles of holistic well-being and the mental health challenges facing Muslim communities today.

Prerequisite(s): 0.5 course in Religious Studies.
Extra Information: 3 hours.
Course Weight: 0.50

Course Introduction – Effective September 1, 2024, the following course be introduced:

RELIGIOUS STUDIES 3280F/G
INTERRELIGIOUS DIALOGUE: THEORY AND PRACTICE
(Short title: Interreligious Dialogue)
This course introduces students to the theory and practice of interreligious dialogue, with the goal of encouraging critical, generous, and constructive thinking about diverse religious perspectives. Students navigate the complexities of interreligious dialogue to foster mutual learning and respect, and to promote universal values and collaborative justice advocacy.

Prerequisite(s): 0.5 course in Religious Studies.
Extra Information: 3 hours.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

ARABIC 3260A/B
ADVANCED QURANIC ARABIC ~~READINGS FROM THE QUR'AN~~
~~Readings from the Qur'an~~ **This course** is a study in classical Arabic. Its main focus is the vocabulary frequently encountered in the Qur'an. The course objective is to equip the student with the skills necessary to understand the grammar, vocabulary, and syntactical and morphological structure of the Qur'an.

Antirequisite(s): ~~Arabic 5260A/B.~~
Prerequisite(s): Arabic 2080A/B or permission of instructor.
Extra Information: 3 hours.
Course Weight: 0.50

Course Revision – Effective September 1, 2024, the following change(s) be made:

RELIGIOUS STUDIES 3100F/G
STUDIES IN THE ~~QUR'AN,~~ SUNNAH AND HADITH

KING'S UNIVERSITY COLLEGE

SCHOOL OF MANAGEMENT, ECONOMICS, AND MATHEMATICS

Course Revision – Effective September 1, 2024, the following change(s) be made:

ANALYTICS AND DECISION SCIENCES 2036A/B
PREDICTIVE ANALYTICS
Predictive analytics for business, accounting, and marketing with emphasis on multiple regression models, inference for regression parameters, categorical independent variables, model assumptions and diagnostics, goodness of fit and test of independence, analysis of variance for one factor and multiple factor designs, and model selection and validation.

Prerequisite(s): Economics 2122A/B or Economics 2222A/B, or permission of the department.
Antirequisite(s): ~~All other courses in Introductory Statistics (except Statistical Sciences 1023A/B, Data Science 1000A/B or Statistical Sciences 1024A/B):~~ Biology 2244A/B, Data Science 2000A/B, ~~Economics 2122A/B, Economics 2222A/B,~~ Geography 2210A/B, Health Sciences 3801A/B, MOS 2242A/B, Psychology 2811A/B or the former Psychology 2810, Psychology 2801F/G or the former Psychology 2820E, Psychology 2830A/B, Psychology 2850A/B, Psychology 2851A/B, Sociology 2205A/B, Statistical Sciences 2035, Statistical Sciences 2141A/B, Statistical Sciences 2143A/B, Statistical Sciences 2244A/B, Statistical Sciences 2858A/B.
Extra Information: 3 lecture hours, 2 laboratory hours.
Course Weight: 0.50