

University of Waterloo
SENATE UNDERGRADUATE COUNCIL
Notice of Meeting

DATE: Tuesday 13 September 2022
 TIME: 12:30 p.m. – 2:30 p.m.
 PLACE: Teams – See meeting invitation or contact the secretary

Open Session

Item	Action
1. Declarations of Conflict of Interest - Excerpt from Senate Bylaw 1*	Information
2. Approval of the 28 June 2022 Minutes* and Business Arising	UGC
3. Curricular Items for Approval & Information	
a. Health*	5 SEN-C, rest UGC
b. Science*	5 SEN-R, rest UGC
4. Registrar’s Office	
a. Academic Regulations*	SEN-C
b. New Undergraduate Scholarships, Awards, And Bursaries*	Information
5. Accelerated Master's Programs	Information
6. Other Business	
a. Return to In-Person Meetings	Information
7. Next Meeting: Tuesday 4 October 2022, 12:30 to 2:30 p.m. in NH 3318	

*material attached/to be distributed**
 “SEN-C” to be recommended to Senate for approval (consent agenda)
 “SEN-R” to be recommended to Senate for approval (regular agenda)
 “UGC” to be approved on behalf of Senate & sent to Senate for information

7 September 2022

Tim Weber-Kraljevski
 Associate University Secretary

Excerpt from Senate Bylaw 1

8. Declarations of conflict of interest

8.01	At the beginning of each meeting of Senate or any of Senate's committees or councils, the chair will call for members to declare any conflicts of interest with regard to any agenda item. For agenda items to be discussed in closed session, the chair will call for declarations of conflict of interest at the beginning of the closed portion of the meeting. Members may nonetheless declare conflicts at any time during a meeting.
8.02	A member shall be considered to have an actual, perceived or potential conflict of interest, when the opportunity exists for the member to use confidential information gained as a member of Senate, or any of Senate's committees or councils, for the personal profit or advantage of any person, or use the authority, knowledge or influence of the Senate, or a committee or council thereof, to further her/his personal, familial or corporate interests or the interests of an employee of the university with whom the member has a marital, familial or sexual relationship.
8.03	Members who declare conflicts of interest shall not enter into debate nor vote upon the specified item upon which they have declared a conflict of interest. The chair will determine whether it is appropriate for said member to remove themselves from the meeting for the duration of debate on the specified item(s).
8.04	Where Senate or a committee or council of Senate is of the opinion that a conflict of interest exists that has not been declared, the body may declare by a resolution carried by two-thirds of its members present at the meeting that a conflict of interest exists and a member thus found to be in conflict shall not enter into debate on the specified item upon which they have declared a conflict of interest. The chair will determine whether it is appropriate for said member to remove themselves from the meeting for the duration of debate on the specified item(s).

University of Waterloo
SENATE UNDERGRADUATE COUNCIL
Minutes of the 28 June 2022 Meeting
[in agenda order]

Present: Veronica Austen, Monica Barra, Antonia Cass, Benoit Charbonneau, Victoria Chu, Martin Cooke, Vivian Dayeh, David DeVidi (Chair), Leeann Ferries, Fatma Gzara, Carol Ann MacGregor, Melody Mao, Catherine Newell Kelly, Tim Weber-Kraljevski (secretary), Richard Wikkerink, Stephanie Ye-Mowe

Resources/Guests: Jennifer Coghlin, Danielle Jeanneault, Carrie Molson

Regrets: Harry Cheung, Daniel Davison, Kristiina Montero, Chris Vigna

Organization of Meeting: David DeVidi took the chair, and Tim Weber-Kraljevski acted as secretary. The secretary advised that a quorum was present. The chair informed council of the addition of item 4.c. Academic Calendar and Curriculum Management System to the agenda. The agenda was approved without formal motion.

1. DECLARATIONS OF CONFLICTS OF INTEREST

No conflicts of interest were declared.

2. APPROVAL OF THE 10 MAY 2022 MINUTES AND BUSINESS ARISING

The minutes were approved without formal motion. There was no business arising from the minutes.

3. CURRICULAR ITEMS FOR APPROVAL & INFORMATION

Arts. Cooke provided the brief overview of the new courses. There was a motion to approve the new course on behalf of Senate. Cooke and Ferries. Carried. Cooke spoke to the proposed course changes and indicated that the effective date for the AFM 323 changes should be 1 September 2023 instead of the effective date given in the material. There was a motion to approve the course changes on behalf of Senate. Cooke and Barra. Carried. Cooke presented course inactivations for PHIL 206J, PHIL 318J, PSCI 492, SMF 319, SMF 460, SMF 461, SMF 462 and SMF 498. There was a motion to approve the course inactivations on behalf of Senate. Cooke and Austen. Carried. Cooke presented the proposed change of the SPCOM (Speech Communication) subject code to COMMST (Communication Studies). There was a motion to approve the subject code change on behalf of Senate. Cooke and Charbonneau. Carried. Cooke presented the proposed three-year general English – Creative and Professional Writing plan in English Language and Literature. There was a motion to recommend that Senate approve the proposed new academic plan, effective 1 September 2023. Cooke and Austen. Carried. Cooke presented the new diploma in Health Humanities. There was a brief discussion on the marketing and teaching plan for the diploma. There was a motion to recommend that Senate approve the proposed new academic plan, effective 1 September 2023. Cooke and Austen. Carried. Cooke presented minor plan modifications in Accounting and Finance. There was a motion to approve the minor academic plan changes on behalf of Senate. Cooke and Barra. Carried. Cooke presented minor plan modifications in Communications Arts. There was a motion to approve the minor academic plan changes on behalf of Senate. Cooke and Ferries. Carried. Cooke presented minor plan modifications in English Language and Literature. There was a motion to approve the minor academic plan changes on behalf of Senate. Cooke and Ferries. Carried. Cooke presented minor plan modifications in Fine Arts. There was a motion to approve the minor academic plan changes on behalf of Senate. Cooke and Charbonneau. Carried. Cooke presented minor plan modifications in Sociology and Legal Studies. Council heard in response to a question that there is not a minimum number of 300 or 400 level course requirements for honour plans. There was a motion to approve the minor academic plan changes on behalf of Senate. Cooke and Barra. Carried. Cooke presented the proposed invalid credential combinations for Arts and changes to Bachelor of Arts breadth requirements. There was a motion to recommend that Senate approve the proposed academic regulations changes. Cooke and Barra. Carried. Finally, for information Cooke presented the transfer of ownership of the Management Studies Minor from the Department of Economics to the Dean of Arts

Office, effective 1 September 2023.

Mathematics. Charbonneau presented changes for course ACTSC 291 and provided an overview of the proposed new Mathematics/Chartered Professional Accountancy Data Analytics Specialization, along with changes related to the new specialization including: minor modifications to Math/CPA, Statistics, Joint Statistics, Biostatistics, Statistics Minor, and Actuarial Sciences; three new courses; and changes to existing courses. A brief discussion was had on the difference between data science and data analytics. There was a motion to recommend that Senate approve the proposed new academic plan: Math/CPA Data Analytics Specialization, and to approve the course changes, new courses, and minor modifications of academic plans on behalf of Senate. Charbonneau and MacGregor. Carried

4. REGISTRAR'S OFFICE

Academic Calendar Dates for 2022-2023. Newell Kelly presented revisions to the Academic Calendar Dates for 2022-2023 to designate in-person exam days for online courses. Discussion was on scheduling exam days to accommodate online learners who are working full-time, including those on co-op terms, and the use of the terms adult and mature learners. There was a motion to recommend that Senate approve the revisions to the Academic Calendar Dates for 2022-2023 and calendar guidelines for establishing academic dates. Newell Kelly and Ferries. Carried.

Effective Dates Chart for 2022-2023 academic year. This item was received for information.

Academic Calendar and Curriculum Management System. Jeanneault reported for information that the Academic Calendar and Curriculum Management project team has selected Quali to provide an academic calendar and curriculum management system for the University of Waterloo. Council heard that the initial focus will be on curriculum management and then it is anticipated that the system will also assist council in the curriculum approval process.

5. OTHER BUSINESS.

The chair reported that at the June 2022 Senate meeting there was a general endorsement of streamlining improvements to Senate and as a result the Senate Undergraduate Council may be up for review. Council heard of the possibility of a Senate Curriculum Committee being created.

The chair requested members reach out to the secretary and himself with preferences for how future meetings are held, either online, in-person, or a hybrid.

The chair also thanked the committee for their dedication and service throughout the last year and thanked Newell Kelly for chairing council in his absence.

6. NEXT MEETING

The next meeting is Tuesday 13 September 2022 12:30 – 2:30 p.m. via Teams.

20 July 2022

Tim Weber-Kraljevski
Associate University Secretary

FACULTY OF HEALTH – UNDERGRADUATE REPORT (FUGS: May 11, 2022 & FC: May 27, 2022)

to

SENATE UNDERGRADUATE COUNCIL (September 13, 2022)

Faculty of Health undergraduate curricular changes for
for inclusion in the 2023/2024 Undergraduate Studies Academic Calendar

1. NEW COURSES – Undergraduate Catalog Report 13 (7-SEP-2022)
HEALTH
HLTH
2. COURSE CHANGES – Undergraduate Catalog Report 13 (7-SEP-2022)
GERON
HLTH
KIN
REC
3. COURSE INACTIVATIONS – Undergraduate Catalog Report 13 (7-SEP-2022)
WKRPT
4. ACADEMIC PLANS (MINOR MODIFICATIONS)
 - 4.1. Bachelor of Science, Honours Health Sciences
 - 4.2. Bachelor of Public Health, Honours
 - 4.3. Pre-Clinical Specialization
 - 4.4. Health Research Specialization
 - 4.5. Gerontology Minor
 - 4.6. Aging Studies Option
 - 4.7. Diploma in Gerontology
5. REGULATIONS
 - 5.1. Undergraduate Communication Requirement

Legend

Bold = new text being added

Strikeout = text being removed

1. NEW COURSES (for approval)

Dean of Health

Effective 01-SEP-2023

HEALTH 490 (0.50) SEM Interdisciplinary Health Topics

This course will cover interdisciplinary health topics of emerging research and teaching interest.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Requisites : Prereq: Level at least 4A Faculty of Health students

Rationale : To add a new course. The proposed special topics course will facilitate the implementation of interdisciplinary courses that support the Faculty of Health and University of Waterloo Strategic Plans. In the future, similar to other special topics courses in other faculties at the University of Waterloo, this special topics course will allow for the development of future interdisciplinary courses open to students across the Faculty of Health and the University. Short course title: Interdisciplinary Health Topic

Public Health Sciences - School of

Effective 01-SEP-2023

HLTH 403 (0.50) SEM Global Health Innovation

Innovation is needed to address some of the world's biggest global health challenges. This course will explore the development, implementation, and evaluation of new ideas and approaches to address contemporary global health needs. Emphasis will be placed on interdisciplinary, multi-sectoral, and community-engaged efforts to achieve health equity.

Requisites : Prereq: HLTH 102, HLTH 245; Level at least 4A

Rationale : To add a new course. This seminar course will add to the number and breadth of options for the health systems and policy core content cluster requirement for Bachelor of Science, Honours Health Sciences and Bachelor of Public Health, Honours programs. Further, this course directly engages with the Sustainable Development Goals (SDGs), which are intended to guide global action and address some of the world's greatest challenges. As global and local focus shifts toward the implementation and execution of the how the SDGs will be reached, students in this course will have the opportunity to learn more about the role of innovation in achieving the SDGs. This course aligns with the recent strategic plan of School of Public Health Sciences (SPHS) and has been a popular offer when previously taught as a special topics seminar course. Short course title: Global Health

Effective 01-SEP-2023

HLTH 445 (0.50) LEC, TUT Pandemic Preparedness

This course will provide an in-depth examination of pandemics with emphasis on preparedness, planning, and control. It will include topics on history of pandemics, their origins, prevention, and control, and their impacts (e.g., social, economic, political). Students will learn about infectious diseases mainly related to pandemics, best practices to prevent and control transmission, and impacts on society and populations.

Requisites : Prereq: HLTH 101, HLTH 333; Level at least 4A

Rationale : To add a new course. This course would address a gap in the School of Public Health Sciences (SPHS) curricula especially pertaining to the origin, prevention, control, and impact of pandemics. The COVID-19 pandemic has illustrated the importance of understanding how to prepare for and manage ongoing pandemics and how to make evidence-informed policy and planning decisions. The School of Public Health Sciences is seeking accreditation from the Council on Education for Public Health. Part of the accreditation process includes seeking advice from an external advisory committee of public health practitioners. After reviewing the curriculum, some of the committee members noted the need for a course on infection control and pandemic preparedness. Short course title: Pandemic Preparedness

2. COURSE CHANGES (for approval)

Current Catalog Information

GERON 245 (0.50) LEC Canadian Health Systems

This course examines Canadian health systems by considering organizational principles, health resources, service utilization, health care planning, and health promotion strategies. There is a focus on societal and political issues which affect the health of the society through the delivery system.

No Special Consent Required

Requisites : Prereq: Level at least 1B; Gerontology or Option in Aging Studies students only

Cross-listed as: HLTH 245

Effective 01-SEP-2023

Course Attribute Change: Also offered Online

Rationale : To add a new course attribute. By leveraging the exceptional content created during the pandemic, the School of Public Health Sciences will include an online option for HLTH 245 and GERON 245 (cross-listed courses) through the Centre for Extended Learning, which will enhance the variety of course delivery options offered to our students.

Current Catalog Information

HLTH 101 (0.50) LEC, TST, TUT Introduction to Health 1

This course will be of interest to students pursuing careers in health and those with a general interest in health and health care. Various perspectives of the concepts of health and illness will be introduced. Emphasis is on understanding the origins, factors and conditions that determine health throughout the lifespan, how these factors influence one another and the role/impact of health care. Additional topics include how health is measured, the leading causes of death, illness and disability, as well as how health status has changed throughout history. Students will also learn how to research and critically analyze the health literature and discuss important health issues with their peers.

No Special Consent Required

Effective 01-SEP-2023

Course Attribute Change: Also offered Online

Rationale : To add a new course attribute. By leveraging the exceptional content created during the pandemic, the School of Public Health Sciences will include an online option for HLTH 101 through the Centre for Extended Learning, which will enhance the variety of course delivery options offered to our students.

Current Catalog Information

HLTH 245 (0.50) LEC Canadian Health Systems

This course examines Canadian health systems by considering organizational principles, health resources, service utilization, health care planning, and health promotion strategies. There is a focus on societal and political issues which affect the health of the society through the delivery system.

No Special Consent Required

Requisites : Prereq: Level at least 1B

Cross-listed as: GERON 245

Effective 01-SEP-2023

Course Attribute Change: Also offered Online

Rationale : To add a new course attribute. By leveraging the exceptional content created during the pandemic, the School of Public Health Sciences will include an online option for HLTH 245 and GERON 245 (cross-listed courses) through the Centre for Extended Learning, which will enhance the variety of course delivery options offered to our students.

Current Catalog Information

HLTH 290 (0.50) LAB, LEC An Introduction to Health Neuroscience

The primary objective of the course will be to explore the dynamic and bidirectional relationship that develops between the brain and physical health over the life span. By investigating the interaction of individual biological factors (e.g., genetic, epigenetic, and life history traits) and social context (e.g., poverty, socioeconomic position), we would hope to understand how the brain acts as both a target and mediator of processes that influence a person's health and vulnerability to disease. Topics such as developmental programming, gene-environment interactions, resilience, and stress physiology will be considered.

No Special Consent Required

Requisites : Prereq: AHS/HEALTH 150 or BIOL 130; PSYCH 101

Effective 01-SEP-2023

Requisite Change : Prereq: One of AHS/HEALTH 150, BIOL 130, PSYCH 261; PSYCH 101

Rationale : To revise the course prerequisite. PSYCH 261 is being added as another prerequisite option since this course also provides sufficient introductory biological and physiological knowledge for HLTH 290. This prerequisite change will make the HLTH 290 course more accessible to students in the BA Psychology program who may also want to complete the Addictions, Mental Health, and Policy Minor. Permission to include PSYCH 261 in the list of prerequisites has been granted by the Department of Psychology.

Current Catalog Information

HLTH 350 (0.50) LEC Principles of Environmental & Occupational Health

Methodological approaches to the detection, assessment, and management of toxic hazards (especially carcinogens) in the workplace and external environment. The health effects of chemical toxicants on specific human organ systems (lung, nervous system, immune system, etc.) are also examined.

No Special Consent Required

Requisites : Prereq: Level at least 3A Faculty of Health students

Effective 01-SEP-2023

Title Change: Principles of Occupational Health and Safety

Description Change: This course explores methodological approaches to the recognition, evaluation, and control of health and safety hazards in the workplace. The health effects of chemicals, physical energies and agents, biological agents, as well as psychosocial stressors are examined. Policies, programs, and practices that encourage a holistic approach to worker well-being are also considered.

Rationale : To revise the course title and description. The HLTH 350 course title and description are being revised to reflect the new focus of the course on occupational health and safety. Both environmental as well as occupational health are large fields with many topics to cover. Other courses in the School of Public Health Sciences offer sufficient coverage of environmental health topics, such as HLTH 202, HLTH 355, HLTH 340, HLTH 370, HLTH 401, and HLTH 420. Thus, we felt it was better to narrow the focus and provide more coverage of occupational health and safety in HLTH 350 since there are few other courses in the curricula that provide coverage of these topics. Since the focus of the course is on methods in occupational health and safety, the course will also be added as an option to the methods/application cluster for the Bachelor of Science, Honours Health Sciences and Bachelor of Public Health, Honours programs. Short course title: Princ of Occup Hlth & Safety

Current Catalog Information

HLTH 380 (0.50) LEC Applied Public Health Ethics

This course explores ethical issues in health sciences, emphasizing population and public health. The course begins by considering canonical ethical theories and frameworks for applying these theories to population health. Specific topics in population health, including the conflict between public health and individual autonomy, the just distribution of health resources, and responsibility for health outcomes will then be discussed. The overall objective of the course is to provide students with tools to discuss and assess ethical arguments and to form their own views on issues within population health.

No Special Consent Required

Requisites : Prereq: Level at least 2A. Antireq: HLTH 280/GSJ 280

Cross-listed as: GSJ 380

Effective 01-SEP-2023

Requisite Change : Prereq: Level at least 3A; Antireq: HLTH 280/GSJ 280

Rationale : To revise the course prerequisite. The HLTH 380 prerequisite is being changed to 'Level at least 3A' to ensure that School of Public Health Sciences students are enrolling in 3rd year, rather than 2nd year, according to their course sequence. This will ensure that students in 2nd year do not take seats from 3rd year students who need the course. The prerequisite for GSJ 380 will not be changed.

Current Catalog Information

HLTH 435 (0.50) LEC Knowledge Translation for Public Health and Health Care

This course is about bridging gaps between evidence-based knowledge and real world policies and practices. Along with concepts and skills about knowledge synthesis, the focus is on integrated knowledge-to-action processes for engagement, collaboration, implementation, and scale-up to meet objectives of changing policies, behaviours of health care providers and other individuals, and organizational practices. Topics and skills may include use of systematic and scoping reviews of literature, Diffusion of Innovations and Social Marketing frameworks, behavioural economics, policy change strategies, public health ethics, Health Impact Assessments, Critical Public Health perspectives, and issues from current events.

No Special Consent Required

Requisites : Prereq: HLTH 260 and HLTH 344; Level at least 4A

Effective 01-SEP-2023

Requisite Change : Prereq: HLTH 333; Level at least 4A

Rationale : To revise the course prerequisite. HLTH 333, Principles of Epidemiology, provides sufficient background knowledge in critical appraisal to prepare students for HLTH 435, and is more appropriate as a prerequisite than HLTH 260/GSJ 260 (cross-listed courses) or HLTH 344. The removal of GSJ 260 from the HLTH 435 prerequisites has been communicated to the Faculty of Arts.

Current Catalog Information

HLTH 471 (0.50) SEM Psychopharmacology

The primary objective of the course will be to provide a basic understanding of how drugs can alter the function of neural cells and how these changes can affect mood, cognition, and behaviour. Key topics to be discussed include biological principles of pharmacology; general structure and function of the nervous system; major neurotransmitter systems of the brain; mechanisms of drug action on neurotransmission; and pharmacotherapy for mental health illness.

Department Consent Required

Requisites : Prereq: BIOL 273 or PSYCH 261; Level at least 4A

Effective 01-SEP-2023

Consent Change: No Special Consent Required

Rationale : To remove course consent. Department Consent is not required for HLTH 471 since the course already has appropriate prerequisites (BIOL 273 or PSYCH 261 and Level at least 4A) to ensure students have the appropriate background knowledge and level. The removal of 'Department Consent Required' will allow students to self enrol in Quest, rather than requiring academic advisors in the School of Public Health Sciences to manage enrolment (a very time-intensive process).

Kinesiology and Health Sciences

Current Catalog Information

KIN 100L (0.25) LAB Regional Human Anatomy Laboratory

Regional gross anatomy of the limbs and trunk, including a brief introduction to the central nervous and cardiovascular systems. The anatomy is explored using pre-dissected human cadavers. For the limbs and trunk, the emphasis is placed on structures (muscles, nerves, and bones) involved in gross movement.

No Special Consent Required

Effective 01-SEP-2023

Component Change: LAB, TST

Rationale : To add an additional course component. To facilitate the administration of a midterm bell-ringer exam for KIN 100L, the Department of Kinesiology and Health Sciences would like to add a TST (test slot) designation to the course.

Current Catalog Information

KIN 343 (0.50) LEC Micronutrient Metabolism

This course examines the metabolism of vitamins and minerals in the context of normal human development and aging with an emphasis on disease prevention and understanding the pathogenesis of deficiencies and toxicities. The function and role of vitamins and minerals will be discussed in specific groupings.

No Special Consent Required

Requisites : Prereq: KIN 146; One of KIN 217, CHEM 233, CHEM 237

Effective 01-SEP-2023

Course Attribute Change: Also offered Online

Rationale : To add a new course attribute. By leveraging the exceptional content created during the pandemic, the Department of Kinesiology and Health Sciences will include an online option for KIN 343 through the Centre for Extended Learning, which will enhance the variety of course delivery options offered to our students.

Current Catalog Information

KIN 406 (0.50) LEC Physiology of Muscle Aging and Disease

This course will examine the cellular and molecular adaptations that occur in skeletal muscle during aging and disease. Topics to be covered include skeletal muscle satellite cells/stem cells, apoptosis and necrosis, mitochondrial dysfunction, oxidative stress, and inflammation. The influence of physical activity on these biological processes and in the prevention and treatment of skeletal disorders will also be discussed.

No Special Consent Required

Requisites : Prereq: BIOL 130; Level at least 3A

Effective 01-SEP-2023

Requisite Change : Prereq: BIOL 130 or BME 285; Level at least 3A

Rationale : To revise the course prerequisite. The Faculty of Engineering is planning to offer a specialization in biomaterials and tissues. The Director of Biomedical Engineering requested approval to add KIN 406 to a list of elective courses within the specialization. The Department of Kinesiology and Health Sciences approves the addition of KIN 406 to the elective list. To facilitate enrollment of BME students into KIN 406, BME 285 will be added as a prerequisite.

Current Catalog Information

KIN 407 (0.50) LEC Cardiovascular Pathophysiology

This course explores the pathophysiology, electrophysiology, risk factors, and assessment and rehabilitation options related to cardiovascular diseases. Emphasis is placed on the utility of exercise in the assessment and rehabilitation of primary and secondary cardiovascular disease.

No Special Consent Required

Requisites : Prereq: BIOL 273; Level at least 3A

Cross-listed as: HLTH 407

Effective 01-SEP-2023

Requisite Change :

Prereq: KIN 308/408; Level at least 3A

Rationale :

To inactivate the HLTH 407 course cross-listing and revise the KIN 407 prerequisite. KIN 407 (cross-listed with HLTH 407), hosted by the Department of Kinesiology and Health Sciences (KHS), is an elective in the Medical Physiology Minor and available to students outside of the Faculty of Health who choose to enroll in KIN 407/HLTH 407. To avoid confusion for students external to the Faculty of Health and to simplify the scheduling process, we propose inactivating the cross-listing of HLTH 407 from KIN 407. The department will adjust the reserves and enrollment capacity for KIN 407 as needed to meet demand. The School of Public Health Sciences has been consulted and approves the removal of HLTH 407 as a cross-listing from KIN 407. KIN 407 is an advanced cardiovascular pathophysiology course. The addition of KIN 308/408, Cardiovascular and Pulmonary Physiology, as a prerequisite will provide students fundamental knowledge, which will ensure student success and will allow for the delivery of advanced concepts in KIN 407. The removal of BIOL 273 from the KIN 407 prerequisites has been communicated to the Department of Biology.

Recreation & Leisure Studies

Current Catalog Information

REC 120 (0.50) LEC Program Management and Evaluation

The scope of recreation program design and delivery is examined with particular emphasis on needs assessment, planning, implementation, and evaluation. This course emphasizes the application of the various management principles required for service delivery. A field trip fee estimated at \$125 per student may be required.

No Special Consent Required

Requisites : Prereq: Department of Recreation and Leisure Studies students. Antireq: REC 220

Effective 01-SEP-2023

Title Change:

Experience Design and Delivery

Description Change:

This course emphasizes the application of design thinking principles to develop, implement, and evaluate recreation experiences as solutions to the needs of targeted users. Students will gain relevant and practical skills through hands-on design of outcome-driven experiences in project teams.
[Note: A field trip fee estimated at \$125 per student may be required.]

Rationale :

To revise the course title and description. The new REC 120 course title provides a more accurate description of the focus of the course and link to a recent move. The revised course description provides a more accurate and compelling outline for the course to include a stronger focus on experience design. Short course title: Experience Design & Delivery

Current Catalog Information

REC 371 (0.50) LAB, LEC Quantitative Approaches to Leisure Research

An exploration of quantitative methodologies used in the fields of leisure. Philosophies, theoretical orientations, and ethical considerations will be emphasized as students discuss and participate in various approaches to research design, data collection, statistical analysis, and representation.

No Special Consent Required

Requisites : Prereq: Level at least 3A Department of Recreation and Leisure Studies students

Effective 01-SEP-2023

Title Change:

Quantitative Data Analysis and Mobilization

Description Change:

This course provides students with skills to collect, organize, visualize, analyze, interpret, and communicate quantitative data. Students will develop their analytic and problem-solving skills and develop solutions with the use of statistical analysis. Students will learn to use data management software tools.

Rationale :

To revise the course title and description. The revised REC 371 course description aligns with a focus on key steps in the process of conducting quantitative research in applied and academic settings and emphasizes an exploration of the use of various analytical and communication tools. Short course title: Qnt Data Anal & Mobilization

Current Catalog Information

REC 471A (0.50) PRJ Honours Thesis

An independent research project on an approved topic supervised by a faculty member. REC 471A includes an approved design and completion of the first segment of the paper. REC 471A requires the completion of REC 471B. REC 471B requires the completion of the project begun in REC 471A. This course will be offered on a credit/no credit basis.

Department Consent Required

Requisites : Prereq: REC 371, REC 373; Fourth year Honours students in the Department of Recreation and Leisure Studies

Effective 01-SEP-2023

Title Change: Honours Thesis Proposal

Description Change: The honours recreation and leisure studies undergraduate thesis is an independent research project on an approved topic supervised by a faculty member. To complete the honours thesis, students are expected to complete both REC 471A and REC 471B. REC 471A includes an approved design and completion of the research proposal.

Rationale : To revise the course title, description, and grading basis. The new REC 471A course title provides a more accurate description of the course. The revised course description provides a student with a numeric grade for their achievement in the first phase of the Recreation and Leisure Undergraduate Thesis. The numeric grade will reflect the student performance in REC 471A and will allow students the ability to use this credit in their average calculation on their transcript. The numeric grade may be advantageous for students applying to graduate studies which often require numeric grades rather than credit/no credit grading schemes. Short course title: Honours Thesis Proposal

Current Catalog Information

REC 471B (0.50) PRJ Honours Thesis

An independent research project on an approved topic supervised by a faculty member. REC 471A includes an approved design and completion of the first segment of the paper. REC 471B requires the completion of the project begun in REC 471A.

Department Consent Required

Requisites : Prereq: REC 471A

Effective 01-SEP-2023

Description Change: The honours recreation and leisure studies undergraduate thesis is an independent research project on an approved topic supervised by a faculty member. The thesis is comprised of REC 471A and REC 471B. Enrolment in REC 471B requires the approval of the academic supervisor.

Requisite Change : Prereq: REC 471A (minimum grade of 80% required)

Rationale : To revise the course description and prerequisite. The revised REC 471B course description aligns with the changes proposed to REC 471A. A minimum grade of 80% in REC 471A will be required in order to ensure students have adequately demonstrated their research competency to succeed in REC 471B.

Current Catalog Information

REC 475 (0.50) RDG Directed Study in Special Topics

For the student who desires to pursue a particular topic in depth through guided independent research. A faculty member must approve a student's project prior to enrolment.

Department Consent Required

Effective 01-SEP-2023

Title Change: Independent Study: Translating Research for Practice

Description Change: This course allows students to pursue a particular topic in depth through guided independent study. Students will be encouraged to synthesize evidence and/or scholarship from a number of sources to mobilize knowledge in a way that makes information accessible, relevant, and actionable for the needs of a particular audience, including academia, community, organization, or sector.

[Note: A faculty member must approve a student's project prior to enrolment.]

Requisite Change : Prereq: Level at least 3A Department of Recreation and Leisure Studies students

Rationale : To revise the course title, description, and prerequisites. The REC 475 course title is being updated to reflect the learning outcomes of the course. The revised course description provides students with an opportunity to develop their skills related to the communication of research and knowledge mobilization. The prerequisite is being changed to require level at least 3A students to ensure that students have appropriate foundations for a senior level research course. Short course title: Ind Study: Tr Res for Pract

3. COURSE INACTIVATIONS (for approval)

Co-operative Education & Career Action

Effective 01-SEP-2023

WKRPT 200H (0.13) Health Work-term Report 2

Rationale : Reflective work reports are now embedded in all PD courses. As such, the work report courses are no longer required and should be removed from the academic calendar.

Effective 01-SEP-2023

WKRPT 300H (0.13) Health Work-term Report 3

Rationale : Reflective work reports are now embedded in all PD courses. As such, the work report courses are no longer required and should be removed from the academic calendar.

Effective 01-SEP-2023

WKRPT 400H (0.13) Health Work-term Report 4

Rationale : Reflective work reports are now embedded in all PD courses. As such, the work report courses are no longer required and should be removed from the academic calendar.

Effective 01-SEP-2023

WKRPT 500H (0.13) Health Work-term Report 5

Rationale : Reflective work reports are now embedded in all PD courses. As such, the work report courses are no longer required and should be removed from the academic calendar.

4. ACADEMIC PLANS (MINOR MODIFICATIONS)

4.1. Bachelor of Science, Honours Health Sciences

Effective September 1, 2023

Background and rationale:

To revise the Health Sciences degree requirements. HLTH 341, Principles of Pathobiology, is appropriate to be a required course for all Health Sciences students, rather than allowing a choice between HLTH 341 or HLTH 340, Environmental Toxicology and Public Health. Requiring all Health Sciences students to take HLTH 341 will ensure that students understand various disease mechanisms in the body, as well as risk factors and pathological mechanisms for diseases that are a major burden in society. Students may still choose to take HLTH 340 as one of their choices for the biohealth core content cluster. Since HLTH 341 will be required for all Health Sciences students, it has been removed from the list of biohealth core content cluster courses. The note that refers to HLTH 340 and 341 has been removed since it is no longer relevant. HLTH 350 is being revised and will focus on methods used in occupational health and safety. Since the focus of the course is on methods and application, it is appropriate to add HLTH 350 as an option to the methods/application cluster. HLTH 403, Global Health Innovation, is a new course that is appropriate to include as one of the choices in the health systems and policy core content cluster. HLTH 407 is being removed as one of the courses in the biohealth core content cluster as this cross-listing of HLTH 407 is being inactivated as discussed with the Department of Kinesiology and Health Sciences.

Calendar text:

Students may apply for admission directly into the Bachelor of Science, Honours Health Sciences regular or co-operative system of study.

In order to receive the Bachelor of Science, Honours Health Sciences degree, the student must successfully complete 20.0 units of which at least 10.0 total units are at or above the 200-level and including the following requirements:

1. Required Public Health Sciences courses (6.75 units): HLTH 101, HLTH 102, HLTH 201, HLTH 204, HLTH 205, HLTH 230, HLTH 245, HLTH 260, HLTH 310, HLTH 333, **HLTH 341**, HLTH 370, HLTH 380, HLTH 480 (0.25 unit); ~~HLTH 340 or HLTH 341~~
2. Required Faculty of Health course (0.5 unit): HEALTH 107
3. Required statistics course (0.5 unit): One of: HLTH 335, STAT 316
4. Methods/application cluster (0.5 unit, see Note 2): One of: HLTH 303, HLTH 344, **HLTH 350**, HLTH 433, HLTH 435, HLTH 442, HLTH 443, HLTH 451, HLTH 453, HLTH 455, HLTH 458, HLTH 475
5. Core content clusters (1.5 units, see Notes 1, 2):
 - One course in the area of health systems and policy: HLTH 392, HLTH 401, **HLTH 403**, HLTH 410, HLTH 412
 - One course in the area of social behavioural sciences: HLTH 301, HLTH 304, HLTH 320, HLTH 352, HLTH 448, HLTH 449, HLTH 450
 - One course in the area of biohealth: HLTH 290, HLTH 340, ~~HLTH 341~~, HLTH 358, ~~HLTH 407~~, HLTH 421, HLTH 458, HLTH 461, HLTH 465, HLTH 471
6. Required courses from other departments (4.75 units):
 - BIOL 130 and BIOL 130L, BIOL 239, BIOL 273, BIOL 373
 - CHEM 120 and CHEM 120L, CHEM 123 and CHEM 123L
 - KIN 217
 - PSYCH 101
7. Free elective courses: 5.5 units
8. Minimum cumulative major average of 67%; minimum cumulative overall average of 63%.

Notes

1. Certain topics courses (e.g., HLTH 373, HLTH 473) or independent studies (HLTH 472) may be substituted for the core content cluster requirements at the discretion of the School of Public Health Sciences associate director, undergraduate studies.
2. One course may not fulfil more than one requirement in the academic plan:
 - HLTH 458 cannot be used for both the methods/application cluster and the biohealth core content cluster.
 - ~~HLTH 340 and HLTH 341 cannot be used for both the required public health sciences courses and the biohealth core content cluster.~~

4.2. Bachelor of Public Health, Honours

Effective September 1, 2023

Background and rationale:

To revise the Bachelor of Public Health (BPH) degree requirements. HLTH 350 is being revised and will focus on methods used in occupational health and safety. Since the focus of the course is on methods and application, it is appropriate to add HLTH 350 as an option to the methods/application cluster. HLTH 403, Global Health Innovation, is a new seminar course on that is appropriate to include as one of the choices in the health systems and policy core content cluster. Since HLTH 403 is also a seminar course, it is being added to the list of seminar course options for the capstone requirement. HLTH 461 and HLTH 465 are biohealth courses with prerequisites that most BPH students do not take. Since it would be very difficult for BPH students to take HLTH 461 or 465, they are being removed from the list of seminar courses for the capstone requirement. There are still many other options for seminar courses for BPH students, including the newly-added HLTH 403 course.

Calendar text:

Students may apply for admission directly into Bachelor of Public Health, regular or co-operative system of study.

In order to receive the Bachelor of Public Health degree, the student must successfully complete 20.0 units of which at least 10.0 total units are at or above the 200-level and including the following requirements:

1. Required Public Health Sciences courses (8.0 units): HLTH 101, HLTH 102, HLTH 103, HLTH 201, HLTH 202, HLTH 204, HLTH 205, HLTH 230, HLTH 245, HLTH 260, HLTH 303, HLTH 320, HLTH 333, HLTH 355, HLTH 370, HLTH 380
2. Required Faculty of Health courses (1.0 unit): HEALTH 107, HEALTH 150
3. Methods/application cluster (1.0 unit): Two of: (HLTH 335 or STAT 316), HLTH 344, **HLTH 350**, HLTH 433, HLTH 435, HLTH 442, HLTH 443, HLTH 451, HLTH 453, HLTH 455, HLTH 458, HLTH 475
4. Core content clusters (1.0 unit, see Note 1):
One course in the area of health systems and policy: HLTH 392, HLTH 401, **HLTH 403**, HLTH 410, HLTH 412
One course in the area of social behavioural sciences: HLTH 301, HLTH 304, HLTH 352, HLTH 448, HLTH 449, HLTH 450
5. One additional Public Health Sciences (HLTH) course at the 300- or 400-level (0.5 unit).
6. Capstone course (0.5 unit, see Note 2): One of: HLTH 432A, HLTH 432B, HLTH 472, HLTH 474, HLTH 481, or any fourth-year seminar course from: **HLTH 403**, HLTH 421, HLTH 427, HLTH 430, HLTH 448, HLTH 449, HLTH 450, HLTH 454, **HLTH 465**, **HLTH 471**, HLTH 479
7. Required course from another department (0.5 unit): PSYCH 101
8. Restricted elective courses (1.5 units):
One of: ENGL 109, ENGL 140R, ENGL 210C, ENGL 210E, ENGL 210F, ENGL 210G, ENGL 210H, ENGL 210I, ENGL 210J
One of: ANTH, ECON, PSCI, PSYCH, SDS, SMF, SOC
One of: CLAS, ENGL, HIST, MEDVL, PACS, PHIL, RS
9. Free elective courses: 6.0 units
10. Minimum cumulative major average of 75%; minimum cumulative overall average of 70%.

Notes

1. Certain topics courses (e.g., HLTH 373, HLTH 473) or independent studies (HLTH 472) may be substituted for the core content cluster requirements at the discretion of the School of Public Health Sciences associate director, undergraduate studies.
2. No one course may fulfil more than one requirement within the plan. For example, HLTH 448, HLTH 449, and HLTH 450 cannot be used for both the social behavioural sciences core content cluster and the capstone course requirement.

4.3. Pre-clinical Specialization

Effective September 1, 2023

Background and rationale:

To revise the Pre-clinical Specialization requirements. HLTH 403, Global Health Innovation, is a new seminar course that is being added to the list of fourth-year seminar course options. HLTH 407 is being removed from the list of electives as this cross-listing of HLTH 407 is being inactivated as discussed with the Department of Kinesiology and Health Sciences. Students can still take KIN 407, which will have KIN 308 added as a prerequisite.

Calendar text:

In order to graduate with this Specialization, the following requirements must be met:

1. A cumulative overall average of 75% and cumulative major average of 75%.
2. Declare this Specialization before the beginning of 3A academic term.
3. Successful completion of 21.0 units, including all requirements of the Bachelor of Science, Honours Health Sciences degree.

4. Successful completion of 1.0 unit from the following list:
 - (0.5 unit) fourth-year research methods course: HLTH 432A, HLTH 432B, HLTH 433, HLTH 435, HLTH 442, HLTH 443, HLTH 451, HLTH 453, HLTH 455, HLTH 458, HLTH 461, HLTH 475
 - (0.5 unit) fourth-year seminar course: **HLTH 403**, HLTH 421, HLTH 427, HLTH 430, HLTH 448, HLTH 449, HLTH 450, HLTH 454, HLTH 465, HLTH 471, HLTH 479, HLTH 481
5. Successful completion of 3.5 total units from the following list:
 BIOL 201, BIOL 211, BIOL 240, BIOL 240L, BIOL 241, BIOL 302, BIOL 303, BIOL 308, BIOL 309, BIOL 331, BIOL 341, BIOL 354, BIOL 355, BIOL 373L, BIOL 376, BIOL 441, BIOL 442, BIOL 444, BIOL 449, BIOL 455, BIOL 469, BIOL 472, BIOL 473
 CHEM 237, CHEM 237L, CHEM 266, CHEM 266L, CHEM 267, CHEM 267L
 KIN 100 and KIN 100L, KIN 146, KIN 301, KIN 308, KIN 312, KIN 340, KIN 404, KIN 406, ~~HLTH 407~~/KIN 407
 MATH 127, MATH 128
 PHYS 111, PHYS 111L, PHYS 112, PHYS 112L

Notes

1. Students must complete one additional unit beyond the 20.0 units required for their Health Sciences degree and should plan carefully, in consultation with an academic advisor, for when they will fit in the extra courses.
2. Other fourth-year research methods or seminar courses may be approved by the School of Public Health Sciences associate director, undergraduate studies.
3. Students may declare only one specialization.

4.4. Health Research Specialization

Effective September 1, 2023

Background and rationale:

To revise the Health Research Specialization requirements. HLTH 403, Global Health Innovation, is a new seminar course that is being added to the list of fourth-year seminar course options. Note #3 is being edited to remove unhelpful information since students can take any option or minor along with the specialization, not just those offered in the School of Public Health Sciences. The pertinent information is that students can only declare one specialization.

Calendar Text:

This Specialization is designed for School of Public Health Sciences students who are considering graduate studies and/or professional health research careers.

Admission to the Specialization requires a minimum cumulative overall average of 75% and a minimum cumulative major average of 75%.

In order to graduate with this Specialization, the following requirements must be met:

1. A minimum cumulative overall average of 75% and a minimum cumulative major average of 75%.
2. Declare this Specialization before the beginning of 3B academic term.
3. Successful completion of 21.0 units, including all requirements of the Bachelor of Science, Honours Health Sciences degree or the Bachelor of Public Health, Honours degree.
4. Successful completion of 2.5 total units including the following:
 - (1.0 unit) fourth-year research methods from: HLTH 433, HLTH 435, HLTH 442, HLTH 443, HLTH 451, HLTH 453, HLTH 455, HLTH 458, HLTH 461, HLTH 475
 - (1.0 unit) HLTH 432A and HLTH 432B
 - (0.5 unit) fourth-year seminar course from: **HLTH 403**, HLTH 421, HLTH 427, HLTH 430, HLTH 448, HLTH 449, HLTH 450, HLTH 454, HLTH 465, HLTH 471, HLTH 479, HLTH 481

Notes

1. Students must complete one additional unit beyond the 20.0 units required for their Health Sciences or Bachelor of Public Health degree and should plan carefully, in consultation with an academic advisor, for when they will fit in the extra courses.
2. Other fourth-year research methods or seminar courses may be approved by the School of Public Health Sciences associate director, undergraduate studies.
3. Students may only declare one specialization. ~~Students may declare the Health Informatics Option, Gerontology Minor, or Aging Studies Option concurrent with the Specialization.~~

4.5. Gerontology Minor

Effective September 1, 2023

Background and rationale:

To add a course and remove a cross-listing in the list of restricted elective courses, as well as add a note. RS 387, Aging and the Spiritual Life, is an appropriate course to add to the list electives in the Gerontology Minor. Permission to add the course has been granted by the Department of Religious and Theological Studies at Conrad Grebel University College. HLTH 407 is being removed from the list of electives as this cross-listing of HLTH 407 is being inactivated as discussed with the Department of Kinesiology and Health Sciences. Students can still take KIN 407, which will have KIN 308 added as a prerequisite.

Academic regulations associated with new plan: The Gerontology Minor will not be awarded together with the Aging Studies Option or Diploma in Gerontology due to the common themes and courses in the plans.

Calendar Text:

The Gerontology Minor is open to University of Waterloo students who wish to obtain some specialization in gerontology.

Requirements

1. A minimum cumulative minor average of 67% is required for courses presented for the Minor.
2. Successful completion of 5.0 units from the following requirements:
 - Required courses (1.0 unit):
 - GERON 201/HLTH 201
 - GERON 400/HLTH 400
 - Restricted elective courses (4.0 units):
 - GERON 218/HLTH 218/PSYCH 218, GERON 245/HLTH 245, GERON 310/HLTH 310/KIN 310, GERON 320/HLTH 320, GERON 352/HLTH 352/KIN 352/REC 362/SOC 352, GERON 355/BIOL 355, GERON 401A and GERON 401B
 - HLTH 253/SOC 253, HLTH 380, ~~HLTH 407/KIN 407~~, HLTH 420/GEOG 432/PLAN 432, HLTH 427, HLTH 430, HLTH 451
 - KIN 342, KIN 343, KIN 359, KIN 406, **KIN 407**, KIN 418, KIN 422, KIN 429
 - PHIL 226, PHIL 319J, PHIL 321J
 - PSYCH 398
 - REC 361
 - RS 266, **RS 387**
 - SDS 367R
 - SOC 248
 - SOCWK 240R
 - A statistics course (0.5 unit) from: HLTH 204, ARTS 280, KIN 232, PSYCH 292, REC 371, SDS 250R, SOC 280, STAT 202, STAT 221, STAT 231

Notes

1. Courses obtained on a Letter of Permission or in transfer credit must be equivalent to courses listed in the course requirements as assessed by the school/department offering the replaced course.
2. Students are encouraged to make note of course prerequisites and antirequisites and discuss their plan and course progression with an academic advisor in the School of Public Health Sciences.
3. Certain topics courses or independent studies on the topic of gerontology may be substituted for the restricted elective requirements at the discretion of the School of Public Health Sciences associate director, undergraduate studies.

4.6. Aging Studies Option

Effective September 1, 2023

Background and rationale:

To add a course and remove a cross-listing in the list of restricted elective courses, as well as add a note. RS 387, Aging and the Spiritual Life, is an appropriate course to add to the list electives in the Aging Studies Option. Permission to add the course has been granted by the Department of Religious and Theological Studies at Conrad Grebel University College. HLTH 407 is being removed from the list of electives as this cross-listing of HLTH 407 is being inactivated as discussed with the Department of Kinesiology and Health Sciences. Students can still take KIN 407, which will have KIN 308 added as a prerequisite.

Academic regulations associated with new plan: The Aging Studies Option will not be awarded together with the Gerontology Minor or Diploma in Gerontology due to the common themes and courses in the plans.

Calendar Text:

The Aging Studies Option is open to Faculty of Health students who wish to obtain some interdisciplinary knowledge in issues related to aging, but do not wish to complete the Gerontology Minor.

Requirements

1. A minimum cumulative option average of 67% is required for the courses presented for the Option.
2. Successful completion of 3.0 units from the following requirements:
 - Required courses (0.5 unit): GERON 201/HLTH 201
 - Restricted elective courses (2.5 units):
 - GERON 218/HLTH 218/PSYCH 218, GERON 245/HLTH 245, GERON 310/HLTH 310/KIN 310, GERON 320/HLTH 320, GERON 352/HLTH 352/KIN 352/REC 362/SOC 352, GERON 355/BIOL 355, GERON 401A and GERON 401B
 - HLTH 253/SOC 253, HLTH 380, ~~HLTH 407/KIN 407~~, HLTH 420/GEOG 432/PLAN 432, HLTH 427, HLTH 430, HLTH 451
 - KIN 342, KIN 343, KIN 359, KIN 406, **KIN 407**, KIN 418, KIN 422, KIN 429
 - PHIL 226, PHIL 319J, PHIL 321J
 - PSYCH 398
 - REC 361
 - RS 266, **RS 387**
 - SDS 367R
 - SOC 248
 - SOCWK 240R
 - A statistics course (0.5 unit) from: HLTH 204, ARTS 280, KIN 232, PSYCH 292, REC 371, SDS 250R, SOC 280, STAT 202, STAT 221, STAT 231

Notes

1. Students are encouraged to make note of course prerequisites and antirequisites and discuss their plan and course progression with an academic advisor in the School of Public Health Sciences.
2. Courses obtained on a Letter of Permission or in transfer credit must be equivalent to courses listed in the course requirements as assessed by the school/department offering the replaced course.
3. Certain topics courses or independent studies on the topic of aging may be substituted for the restricted elective requirements at the discretion of the School of Public Health Sciences associate director, undergraduate studies.

4.7. Diploma in Gerontology

Effective September 1, 2023

Background and rationale:

To add two courses and remove a cross-listing in the list of restricted elective courses, as well as add a note. RS 266, Death and Dying, and RS 387, Aging and the Spiritual Life, are appropriate courses to add to the list electives in the Diploma in Gerontology. Permission to add these courses has been granted by the Department of Religious and Theological Studies at Conrad Grebel University College. HLTH 407 is being removed from the list of electives as this cross-listing of HLTH 407 is being inactivated as discussed with the Department of Kinesiology and Health Sciences. Students can still take KIN 407, which will have KIN 308 added as a prerequisite. Academic regulations associated with new plan: The Diploma in Gerontology will not be awarded together with the Gerontology Minor or Aging Studies Option due to the common themes and courses in the plans.

Calendar Text:

The Diploma in Gerontology plan offered by the School of Public Health Sciences is available to all students: students currently enrolled in a degree program at the University of Waterloo, and non- or post-degree students. The Diploma may be of particular interest to students who would like to understand issues faced by older adults, strategies to promote successful aging, or individuals who are interested in working with older adults. Students with a university degree will be admitted and registered as post-degree students. Students without a university degree who satisfy the admissions requirements described below will be admitted as non-degree students.

Admission Requirements for Non-degree Students

The following are considered minimum admission requirements for students without a university degree or who are not currently in an undergraduate degree program. Students will be considered on an individual basis to determine admissibility to the plan.

1. Completion of a minimum of two years (four terms, total of 10.0 units) or equivalent of post-secondary study prior to beginning the diploma program.
2. BIOL 130, HLTH 103, or their equivalents, within the past five years.

Diploma Requirements

1. A minimum cumulative diploma average of 67% in the course requirements.
2. Successful completion of 3.5 units from the following requirements:

- Required courses (1.0 unit)
GERON 201/HLTH 201
GERON 400/HLTH 400
- Restricted elective courses (2.5 units):
 - GERON 218/HLTH 218/PSYCH 218, GERON 245/HLTH 245, GERON 310/HLTH 310/KIN 310, GERON 320/HLTH 320, GERON 352/HLTH 352/KIN 352/REC 362/SOC 352, GERON 355/BIOL 355, GERON 401A and GERON 401B
 - HLTH 253/SOC 253, HLTH 380, ~~HLTH 407/KIN 407~~, HLTH 420/GEOG 432/PLAN 432, HLTH 451
 - KIN 342, KIN 343, KIN 359, KIN 406, **KIN 407**, KIN 418, KIN 422, KIN 429
 - PHIL 226, PHIL 319J, PHIL 321J
 - PSYCH 398
 - REC 361
 - **RS 266, RS 387**
 - SDS 367R
 - SOC 248
 - SOCWK 240R
 - A statistics course (0.5 unit) from: HLTH 204, ARTS 280, KIN 232, PSYCH 292, REC 371, SDS 250R, SOC 280, STAT 202, STAT 221, STAT 231

Notes

1. A maximum of five years to successfully complete the program from the time the student first enters the program.
2. Students are encouraged to make note of course prerequisites and antirequisites and discuss their Diploma plan and course progression with an academic advisor in the School of Public Health Sciences.
3. Certain topics courses or independent studies on the topic of aging may be substituted for the restricted elective requirements at the discretion of the School of Public Health Sciences associate director, undergraduate studies.

5. REGULATIONS

5.1. Undergraduate Communication Requirement

Effective September 1, 2023

Background and rationale:

The additional text will ensure consistency in the Faculty of Health transfer credit process, along with adhering to the University's communication requirement.

Calendar Text:

Students, including transfer students entering the Faculty Health, should fulfil the Undergraduate Communication Requirement (see Note 1) by the end of their 3A term. The Faculty offers a communication course that is required for all degree programs. Successful completion of HEALTH 107 fulfils the Undergraduate Communication Requirement.

Notes

1. Students enrolled in the Faculty of Health before September 2017 should consult the English Language Proficiency Requirement described in the Calendar of their entry year.
2. Successful completion of the Undergraduate Communication Requirement will be recorded on a student's transcript as completion of the Undergraduate Communication Requirement.
3. Students transferring to another faculty should note that additional courses may be required to satisfy the other faculty's Undergraduate Communication Requirement.
4. Students transferring into the Faculty of Health who have completed their Undergraduate Communication Requirement in another faculty **at the University of Waterloo** will be eligible to have it count for their Faculty of Health Undergraduate Communication Requirement.
5. **The Faculty of Health does not permit external transfer credits for HEALTH 107 from students transferring from another institution. HEALTH 107 must be taken at the University of Waterloo to satisfy the Faculty of Health, Undergraduate Communication Requirement.**

SCIENCE UNDERGRADUATE STUDIES COMMITTEE REPORT
FOR SUBMISSION TO SEPTEMBER 2022 SENATE UNDERGRADUATE COUNCIL (SUC)

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1 NEW COURSES (for approval)

1.1 Biology

Effective 01-SEP-2023

BIOL 251 (0.50) LAB, LEC Fundamentals of Ecology

This course provides students with an introduction to the breadth of the ecology discipline. It covers hypothesis testing and the nature of scientific inquiry, organismal, population, community, and ecosystem levels of ecology. [Offered: F]

Requisites :

Prereq: BIOL 110 or 2A Faculty of ENV students. Antireq: BIOL 150

Rationale :

This new course provides an in-depth introductory ecology course geared towards second year students interested in Ecology, and is being developed as part of a significant curriculum revision to Honours Biology plans. The course provides the scientific foundations for ecology and teaches practical skills for field ecology through experiential learning. It will bridge a gap in the current ecology curriculum, providing an overview to the different scales of ecology (organismal, population, community, and ecosystem). It includes a lab to ensure that students achieve experiential learning in Ecology prior to 3rd year and to ground theory taught in lectures in application. It should appeal to Science Faculty students in Honours Biology and Honours Science interested in upper-year ecology courses, and will be included as a 200-level Biology electives option, required within the Honours Biology plans. Discussion between the Faculty of Environment and the Department of Biology concluded that ENV students will be permitted to take this course without the BIOL 110 prerequisite. The lecture content of BIOL 150 and BIOL 251 are similar so these two courses will be designated as anti-requisites. BIOL 150 will be retained in the Biology curriculum as it provides an introductory ecology course without the laboratory component for students outside of Honours Biology. BIOL 150 is also a required course other programs including Honours

2 COURSE CHANGES (for approval)

2.1 BIOLOGY

Current Catalog Information

BIOL 110 (0.50) LAB, LEC, TST

Introductory Zoology

A study of the functional morphology of selected animals with special emphasis on the various grades of organization and development in the different phyla. [Offered: F]

No Special Consent Required

Effective 01-SEP-2023

Title Change:

Biodiversity, Biomes, and Evolution

Description Change:

A survey of organisms that inhabit a range of aquatic and terrestrial

ecosystems (e.g., coral reefs, lakes, forests). Through a lens of evolution this course focuses on how life has adapted to physical conditions, interactions with neighbouring organisms, and the influence of flora and fauna on the world we inhabit. Evolutionary and ecological frameworks will be used to explore how organisms diversify and are considered distinct species. Developing hypotheses, collecting and analyzing data, and determining how to best communicate results will be carried out. [Offered: F]

Requisite Change :

Prereq: Not open to Faculty of ENV students

Rationale :

The proposed description and title change for BIOL 110 represent the extensive updates being made to this course as part of a significant curriculum revision of the Honours Biology plans. This introductory organismal biology course provides a survey of biological phyla in different contexts and introduces key concepts in ecology and evolution. It covers scales from organism to ecosystem, complementing BIOL 130 which covers molecular to cellular scales as part of the curriculum revision. The new short title (Biodiversity, Biomes & Evol) reflects the guide lines for short titles, and the added prerequisite was requested by the Faculty of Environment and agreed upon by the Department of Biology.

Current Catalog Information

BIOL 150 (0.50) LEC

Organismal and Evolutionary Ecology

This course provides students with an introduction to the basic principles of Scientific Reasoning, Ecology and Evolution. Coverage includes hypothesis testing and the nature of scientific inquiry, basic population genetics, physiological ecology, life histories, dispersal, basic population and community ecology, macroevolution, systematics and classification, as well as functional morphology.

[Formerly BIOL 250. Offered: F]

No Special Consent Required

Effective 01-SEP-2023

Description Change:

This course provides students with an introduction to the basic principles of scientific reasoning, ecology, and evolution. Coverage includes hypothesis testing and the nature of scientific inquiry, basic population genetics, physiological ecology, life histories, dispersal, basic population and community ecology, macroevolution, systematics and classification, as well as functional morphology. [Offered: F]

Requisite Change :

Antireq: BIOL 251

Rationale :

As part of a significant curriculum revision to the Honours Biology plans, BIOL 251, a new in-depth introductory ecology course geared toward second year students interested in Ecology, will become effective September 1, 2023. The content of BIOL 251 makes it an antirequisite course to BIOL 150, therefore, it is added as an antirequisite. In addition, the note regarding the former number of BIOL 150 is removed as it has not been offered as BIOL 250 in over 10 years.

Current Catalog Information

BIOL 120 (0.50) LAB, LEC, TST Introduction to Plant Structure and Function

A brief introduction to plant diversity, and the anatomy and physiology of vascular plants. The course will include a description of major cell and tissue types, and their organization in roots, stems, and leaves. Topics such as the processes of water and ion uptake, photosynthesis, long distance transport, and growth regulation will also be covered. [Offered: W,S]

No Special Consent Required

Effective 01-SEP-2023

Subject/Catalog Nbr Change:

BIOL 220

Description Change:

An introduction to plant diversity, and the anatomy and physiology of vascular plants. The course will include a description of major cell and tissue types, and their organization in roots, stems, and leaves. Topics such as the processes of water and ion uptake, photosynthesis, long distance transport, and growth regulation will also be covered. [Note: Formerly BIOL 120; Offered: W]

Requisite Change :

Antireq: BIOL 120

Rationale :

BIOL 120 is renumbered so that it can be included as one of the 200-level Biology electives options as part of the significant curriculum revisions to the Honours Biology plans. BIOL 220 better reflects its recommended sequencing in second year. The description remains the same, but the word "brief", in reference to this introduction course, is removed, a note is added to specify the former course number, and the former course number is added as the antirequisite for BIOL 220, which will only be offered in the winter terms moving forward.

Current Catalog Information

BIOL 310 (0.50) LAB, LEC Invertebrate Zoology

The diversity of invertebrate animals will be explored in this class. Topics covered will include reproduction, development, life history, feeding, locomotion, and behaviour. [Offered: F]

No Special Consent Required

Requisites :

Prereq: BIOL 110, 165

Effective 01-SEP-2023

Requisite Change :

Prereq: BIOL 110 or 165

Rationale :

Updates to BIOL 110 content as part of a significant curriculum revision to the Honours Biology plans, makes it a suitable stand-alone prerequisite for BIOL 310. As part of the same curriculum update, BIOL 165 will no longer be a required course for Honours Biology plans. Prerequisites for BIOL 310 are updated to allow students to have either BIOL 110 or BIOL 165, as both courses will discuss the diversity of animal species, providing a suitable background for success.

Current Catalog Information

BIOL 312 (0.50) LAB, LEC The Natural History of Aquatic Organisms

This course will introduce students to the diversity of freshwater organisms and

their habitats. Emphasis will be placed on sampling techniques, taxonomic identification, life histories, and adaptations to aquatic environments. The course will introduce students to the use of aquatic organisms in environmental impact and biodiversity assessments. Students must be prepared to work outdoors in potentially inclement weather. [Note: A field trip fee of \$60 is required toward the cost of transportation; Offered: S]

No Special Consent Required

Requisites :

Prereq: BIOL 150, 165

Effective 01-SEP-2023

Requisite Change :

Prereq: BIOL 110 or 165; BIOL 150 or 251

Rationale :

BIOL 251 is a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans. BIOL 251 is geared towards students interested in Ecology, providing experiential learning and a good basis for upper year Ecology courses. Content of this new course makes it an antirequisite for BIOL 150, which together with BIOL 165 will no longer be requirements for the Honours Biology plans. As part of the same curriculum revision, content of BIOL 110 will undergo extensive updates, which will make it a suitable alternative for the BIOL 165 prerequisite. Both BIOL 251 and BIOL 110 are added as alternative prerequisites for BIOL 312.

Current Catalog Information

BIOL 323 (0.50) LAB, LEC Plant Physiology

A study of plant physiological processes with an emphasis on the role of key metabolic pathways in plant growth and development. Topics such as photosynthesis, nitrogen assimilation, growth regulators, mineral nutrition, water relations, and stress physiology will be covered. [Offered in Fall of odd years]

No Special Consent Required

Requisites :

Prereq: BIOL 120, 130

Effective 01-SEP-2023

Description Change:

A study of plant physiological processes with an emphasis on the role of key metabolic pathways in plant growth and development. Topics such as photosynthesis, nitrogen assimilation, growth regulators, mineral nutrition, water relations, and stress physiology will be covered. [Offered: F]

Requisite Change :

Prereq: BIOL 120/220, BIOL 130

Rationale :

As part of the significant curriculum revisions to Honours Biology plans, BIOL 323 will replace the alternative yearly offerings of BIOL 321 and BIOL 323, the former of which will become inactive. The renumbered BIOL 120 as BIOL 220, is represented in the prerequisite.

Current Catalog Information

BIOL 350 (0.50) LEC, TUT Ecosystem Ecology

This course provides an overview of the dynamic interactions among microbes, plants, animals and their physical environment with emphasis on ecosystem structure and function. Topics include the hydrological cycle, biogeochemical cycling, ecological

energetics, roles of population and community interactions, paleoecology and current topics in ecosystem science. [Offered: F]

No Special Consent Required

Requisites : Prereq: BIOL 150/250 or ENVS 200

Effective 01-SEP-2023

Requisite Change : Prereq: One of BIOL 150, 251, ENVS 200

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable optional prerequisite. BIOL 150 has not been offered as BIOL 250 for over 10 years, so this old number is removed from the prerequisite list.

Current Catalog Information

BIOL 351 (0.50) LEC Aquatic Ecology

Study of the structure and function of lake and stream ecosystems. The course emphasizes biological components and processes, but includes the origin and nature of lake and stream systems and the fundamentals of surface water chemistry and physics.

Human influences, management options and current issues will be examined with readings and project work. [Note: Offered: W]

No Special Consent Required

Requisites : Prereq: BIOL 150; One of BIOL 110, 120, 165

Effective 01-SEP-2023

Requisite Change : Prereq: BIOL 150 or 251; One of BIOL 110, 120/220, 165

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative for the BIOL 150 prerequisite. As part of the curriculum revision, BIOL 120 is renumbered as BIOL 220, and this change is also reflected in the prerequisite.

Current Catalog Information

BIOL 383 (0.50) LEC Tropical Ecosystems

This course examines the fundamental concepts of terrestrial ecosystems in tropical climates. The course has three sections: (1) biophysical aspects (climate, location, landforms, soil, vegetation), (2) tropical resource systems (forest- and agroecosystems) within the framework of conventional and sustainable resource extraction, and (3) current conservation issues. Case studies are presented.

No Special Consent Required

Requisites : Prereq: One of BIOL 150/250, ENVS 200, ERS 218

Cross-listed as: ERS 383

Effective 01-SEP-2023

Requisite Change : Prereq: One of BIOL 150, 251, ENVS 200, ERS 218

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as suitable alternative prerequisite for BIOL 150, for BIOL 383. The Faculty of Environment is aware of and approves of this requisite change for this course, which is cross-linked with their ERS 383

course. The requisites for the ERS 383 offering will not change. In addition, BIOL 150 has not been offered as BIOL 250 for over 10 years, so this old number is removed from the prerequisite list.

Current Catalog Information

BIOL 414 (0.50) LEC, TUT Parasitology

This course will explore how parasites affect their host(s) and interact with other parasites. Attention will be given to eukaryotic parasites impacting human and domestic animal health. Public measures of parasite control will be covered.

[Offered: W]

No Special Consent Required

Requisites :

Prereq: BIOL 110, 165, 359

Effective 01-SEP-2023

Requisite Change :

Prereq: BIOL 110, 359

Rationale :

Updates to BIOL 110 content as part of the significant curriculum revision to Honours Biology plans, as well as the removal the BIOL 165 requirement as part of the same revisions, results in BIOL 165 no longer being required as one of the prerequisites for BIOL 414.

Current Catalog Information

BIOL 428 (0.50) LAB, LEC, TUT Plant Molecular Genetics

An examination of the current molecular techniques used to study plant development physiology. Topics include mutant isolation, transcript and metabolite profiling, gene silencing and protein localization. [Note: BIOL 120 is recommended; Offered: W]

No Special Consent Required

Requisites :

Prereq: BIOL 309

Effective 01-SEP-2023

Description Change :

An examination of the current molecular techniques used to study plant development physiology. Topics include mutant isolation, transcript and metabolite profiling, gene silencing and protein localization. [Note: BIOL 120/220 is recommended; Offered: W]

Rationale :

As part of a significant curriculum revision for Honours Biology plans, BIOL 120 will be renumbered to BIOL 220. This is reflected in the recommendation note within the course description for BIOL 428.

Current Catalog Information

BIOL 433 (0.50) LEC Plant Biotechnology

Biotechnological approaches and their applications in plant genetic manipulation, transformation and cell culture for plant improvement, propagation, and biochemical production. [Offered: F]

No Special Consent Required

Requisites :

Prereq: BIOL 120, 130, 239; Level at least 3A

Effective 01-SEP-2023

Requisite Change :

Prereq: BIOL 120/220, 130, 239; Level at least 3A

Rationale :

As part of a significant curriculum revision for Honours Biology plans, BIOL 120 will be renumbered to BIOL 220. This is reflected in the updated

prerequisites for BIOL 433.

Current Catalog Information

BIOL 450 (0.50) LEC, SEM Marine Biology
Ecological processes and evolutionary adaptation are explored in the world's largest and most diverse ecosystems. The major ocean habitats will be characterized, stressing their importance as resources, moderators of climate and reservoirs of biodiversity. [Notes: Offered: W]

No Special Consent Required

Requisites :

Prereq: BIOL 150/250, 165

Effective 01-SEP-2023

Requisite Change :

Prereq: BIOL 150 or 251

Rationale :

BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added a suitable alternative prerequisite for BIOL 150. The BIOL 165 requirement is being removed as part of the same curriculum revisions, resulting in BIOL 165 no longer being required as one of the prerequisites for BIOL 450. Lastly, BIOL 150 has not been offered as BIOL 250 for over 10 years, so this old number is removed from the prerequisite list.

Current Catalog Information

BIOL 451 (0.50) LEC, SEM Advanced Ecology and Evolution
Students will use scientific literature to explore and analyze a range of advanced topics in ecology and evolution at the individual, population, community, and ecosystem scales. Recent advances in understanding of fundamental concepts as well as current frontiers in the field will be examined through written reports, essays, and oral presentations. [Note: BIOL 165 is recommended; Offered: F]

No Special Consent Required

Requisites :

Prereq: BIOL 150, 359, 361

Effective 01-SEP-2023

Description Change:

Students will use scientific literature to explore and analyze a range of advanced topics in ecology and evolution at the individual, population, community, and ecosystem scales. Recent advances in understanding of fundamental concepts as well as current frontiers in the field will be examined through written reports, essays, and oral presentations. [Offered: F]

Requisite Change :

Prereq: BIOL 150 or 251; BIOL 359, 361

Rationale :

BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative prerequisite for BIOL 150. The BIOL 165 requirement is being removed as part of the same curriculum revisions, therefore the description note recommending BIOL 165 is no longer appropriate.

Current Catalog Information

BIOL 452 (0.50) LEC Quantitative Fisheries Biology

The practices of fisheries science including the effects of industrial fisheries on fish stocks; methods of capture, obtaining, using, and interpretation of vital statistics of fish stocks; population estimation; stock-recruitment; growth; mortality; and fecundity. Emphasis is placed on the use of statistical information for making ecological inferences about the status of fish populations. [Note: Familiarity with linear regression is essential. Offered: F]

No Special Consent Required

Requisites : Prereq: BIOL 150/250, STAT 202

Effective 01-SEP-2023

Requisite Change : Prereq: BIOL 150 or 251; STAT 202

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative prerequisite for BIOL 150. BIOL 150 has not been offered as BIOL 250 for over 10 years, so this old number is removed from the prerequisite list.

Current Catalog Information

BIOL 455 (0.50) LEC, TUT Ecological Risk Assessment and Management

Examination of the use of scientific information characterizing the risks posed to the environment by anthropogenic stresses. Discussions will take place in the context of aquatic ecology and presume a background of standard aquatic toxicology methods. Methods for assessing risks, including environmental impact assessment, risk quotients, national, and international risk assessment paradigms, and cumulative effects assessment will be examined. Critical connections between assessment and management will also be discussed. [Offered: F of even years]

No Special Consent Required

Requisites : Prereq: BIOL 150/250, 354, STAT 202

Effective 01-SEP-2023

Requisite Change : Prereq: BIOL 150 or 251; BIOL 354, STAT 202

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative prerequisite for BIOL 150. BIOL 150 has not been offered as BIOL 250 for over 10 years, so this old number is removed from the prerequisite list.

Current Catalog Information

BIOL 457 (0.50) LEC, TUT Analysis of Communities

A study of the organization, structure and development of communities with emphasis on vegetation change. Topics include: diversity, stability; succession; sampling procedures and multivariate analysis. [Offered: W]

No Special Consent Required

Requisites : Prereq: BIOL 150/250 or ENVS 200; One of STAT 202, ECON 221, ENVS 278

Effective 01-SEP-2023

Requisite Change : Prereq: One of BIOL 150, 251, ENVS 200; One of STAT 202, ECON 221, ENVS 278

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative for the BIOL 150 prerequisite. BIOL 150 has not been offered as BIOL 250 for over 10 years, so this old number is removed from the prerequisite list.

Current Catalog Information

BIOL 458 (0.50) LAB, LEC Quantitative Ecology

The course addresses the integration of mathematical and statistical tools to solve problems in ecology, using examples from individual, population, community, and ecosystem scales. Coursework will explore the relationships between models, hypotheses, experiments and data.

No Special Consent Required

Requisites : Prereq: BIOL 150/250 or ENVS 200; One of STAT 202, ECON 221, ENVS 278.
Antireq: BIOL 358

Effective 01-SEP-2023

Requisite Change : Prereq: One of BIOL 150, 251, ENVS 200; One of STAT 202, ECON 221, ENVS 278.

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative for the BIOL 150 prerequisite. BIOL 150 has not been offered as BIOL 250 for over 10 years, so this old number is removed from the prerequisite list. BIOL 358 became BIOL 458 in 2014, so the antirequisite is also removed.

Current Catalog Information

BIOL 485 (0.50) LEC Conservation Biology

An introduction to conservation biology and the ongoing biodiversity crisis. Topics will include the history of conservation biology and impacts on populations, communities, and ecosystems. [Offered: W]

No Special Consent Required

Requisites : Prereq: BIOL 150, 359

Effective 01-SEP-2023

Requisite Change : Prereq: BIOL 150 or 251; BIOL 359

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative to the BIOL 150 prerequisite.

Current Catalog Information

BIOL 489 (0.50) LEC Arctic Ecology

This course explores the unique ecology of Arctic and sub-Arctic ecosystems. Topics addressed will include postglacial history, climate, permafrost, nutrient cycling and food web structure of terrestrial, marine, and freshwater systems, plant and animal adaptations to cold, human ecology, traditional ecological knowledge, climate change,

resource extraction, and other human impacts. [Note: BIOL 350 recommended. Offered:
W]

No Special Consent Required

Requisites : Prereq: BIOL 150 or ENVS 200; Level at least 3B

Effective 01-SEP-2023

Requisite Change : Prereq: One of BIOL 150, 251, ENVS 200; Level at least 3B

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative for the BIOL 150 prerequisite.

Current Catalog Information

BIOL 490A (0.50) LAB, LEC Biology Field Course 1

A two-week field study of terrestrial, aquatic, and/or marine biology offered by the Ontario Universities Program in Field Biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information. [Note: Field course fee: \$400-\$4500. A Biology Department field course information session is held in early January of each year]

Department Consent Required

Requisites : Prereq: BIOL 110, 120; BIOL 150/250 or ENVS 200; STAT 202 or ENVS 278

Effective 01-SEP-2023

Requisite Change : Prereq: BIOL 110, 120/220; One of BIOL 150, 251, ENVS 200; STAT 202 or ENVS 278

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative for the BIOL 150 prerequisite. BIOL 120 is renumbered as BIOL 220 as part of the same curriculum revision; as such, this change is reflected in the prerequisites. Lastly, BIOL 150 has not been offered as BIOL 250 in over 10 years, therefore the old number is removed.

Current Catalog Information

BIOL 490B (0.50) LAB, LEC Biology Field Course 2

A two-week field study of terrestrial, aquatic, and/or marine biology offered by the Ontario Universities Program in Field Biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information. [Note: Field course fee: \$400-4500. A Biology Department field course information session is held in early January of each year]

Department Consent Required

Requisites : Prereq: BIOL 110, 120; BIOL 150/250 or ENVS 200; STAT 202 or ENVS 278

Effective 01-SEP-2023

Requisite Change : Prereq: BIOL 110, 120/220; One of BIOL 150, 251, ENVS 200; STAT 202 or ENVS

Rationale : 278
BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative to the BIOL 150 prerequisite. BIOL 120 is renumbered as BIOL 220 as part of the same curriculum revision; as such, this change is reflected in the prerequisites. Lastly, BIOL 150 has not been offered as BIOL 250 in over 10 years, therefore the old number is removed.

Current Catalog Information

BIOL 490C (0.50) LAB, LEC Biology Field Course 3

A two-week field study of terrestrial, aquatic, and/or marine biology offered by the Ontario Universities Program in Field Biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information. [Note: Field course fee: \$400- \$4500. A Biology Department field course information session is held in early January of each year]

Department Consent Required

Requisites : Prereq: BIOL 110, 120; BIOL 150/250 or ENVS 200; STAT 202 or ENVS 278.
Antireq: BIOL 491A

Effective 01-SEP-2023

Requisite Change : Prereq: BIOL 110, 120/220; One of BIOL 150, 251, ENVS 200; STAT 202 or ENVS 278

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative to the BIOL 150 prerequisite. BIOL 120 is renumbered as BIOL 220 as part of the same curriculum revision; as such, this change is reflected in the prerequisites. Lastly, BIOL 150 has not been offered as BIOL 250 in over 10 years, therefore the old number is removed. BIOL 491A became BIOL 490C in 2014, so the antirequisite is also removed.

Current Catalog Information

BIOL 490D (0.50) LAB, LEC Biology Field Course 4

A two-week field study of terrestrial, aquatic, and/or marine biology offered by the Ontario universities program in field biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information. [Note: Field course fee: \$400- \$4500. A Biology Department field course information session is held in early January of each year]

Department Consent Required

Requisites : Prereq: BIOL 110, 120; BIOL 150/250 or ENVS 200; STAT 202 or ENVS 278.
Antireq: BIOL 490D/491B

Effective 01-SEP-2023

Requisite Change : Prereq: BIOL 110, 120/220; One of BIOL 150, 251, ENVS 200; STAT 202 or ENVS 278

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative for the BIOL 150 prerequisite. BIOL 120 is renumbered as BIOL 220 as part of the same curriculum revision; as such, this change is reflected in the prerequisites. Lastly, BIOL 150 has not been offered as BIOL 250 in over 10 years, therefore the old number is removed. BIOL 491B became BIOL 490D in 2014, so the antirequisite is also removed.

Current Catalog Information

BIOL 498A (0.25) LAB, LEC Short Biology Field Course 1

A one-week field study of terrestrial, aquatic and/or marine biology offered by the Ontario Universities Program in Field Biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information.

[Note: Field trip fee: \$400 - \$2500. A Biology Department field course information session is held in early January of each year]

Department Consent Required

Requisites :

Prereq: BIOL 110, 120; BIOL 150/250 or ENVS 200; STAT 202 or ENVS 278

Effective 01-SEP-2023

Requisite Change : Prereq: BIOL 110, 120/220; One of BIOL 150, 251, ENVS 200; STAT 202 or ENVS 278

Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative for the BIOL 150 prerequisite. BIOL 120 is renumbered as BIOL 220 as part of the same curriculum revision; as such, this change is reflected in the prerequisites. Lastly, BIOL 150 has not been offered as BIOL 250 in over 10 years, therefore the old number is removed.

Current Catalog Information

BIOL 498B (0.25) LAB, LEC Short Biology Field Course 2

A one-week field study of terrestrial, aquatic and/or marine biology offered by the Ontario Universities Program in Field Biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information.

[Note: Field trip fee: \$400- \$2500 A Biology Department field course information session is held in early January of each year]

Department Consent Required

Requisites : Prereq: BIOL 110, 120; BIOL 150/250 or ENVS 200; STAT 202 or ENVS 278
Effective 01-SEP-2023
Requisite Change : Prereq: BIOL 110, 120/220; One of BIOL 150, 251, ENVS 200; STAT 202 or ENVS 278
Rationale : BIOL 251, a new in-depth introductory ecology course that will be introduced as part of a significant curriculum revision of the Honours Biology plans, is added as a suitable alternative for the BIOL 150 prerequisite. BIOL 120 is renumbered as BIOL 220 as part of the same curriculum revision; as such, this change is reflected in the prerequisites. Lastly, BIOL 150 has not been offered as BIOL 250 in over 10 years, therefore the old number is removed.

2.2 Chemistry

Current Catalog Information

CHEM 350 (0.50) LEC, TUT Chemical Kinetics
Basic chemical kinetics; treatment of kinetic data; complex reaction mechanisms; fast reactions; the canonical ensemble and the canonical partition function; statistical mechanics applied to chemistry; statistical theory of reaction rates. [Offered: W]
No Special Consent Required
Requisites : Prereq: CHEM 254; One of CHEM 240, MATH 227, MATH 228; Honours students only

Effective 01-SEP-2023

Title Change: Chemical Kinetics and Statistical Mechanics
Rationale : This course currently delivers content that is approximately 1/3 chemical kinetics and 2/3 statistical mechanics. Although the course description is accurate and reflects this, the title does not and is therefore updated to better reflect course content. The short title (Chem Kinetics & Stat Mechanics) reflects short title guidelines.

2.3 Earth and Environmental Sciences

Current Catalog Information

EARTH 121 (0.50) LEC Introductory Earth Sciences
This course will provide students with the foundational knowledge to become earth science literate, understanding Earth's influence on humans and human influence on the Earth. Students will learn to think like a geoscientist by adopting four ways of thinking that take into account a systems approach, a variety of spatial and temporal scales, and field thinking. Systematically learning about rocks, geological time, natural resources, natural hazards, and water in this course will prepare students to address many challenges currently facing society and to identify future potential opportunities. [Note: EARTH 121L is recommended. Offered: F]
No Special Consent Required
Requisites : Antireq: CIVE 153, ENVE 153, GEOE 153

Effective 01-SEP-2023

Component Change: LEC, TUT
Description Change: This course will provide students with the foundational knowledge to become earth science literate, understanding Earth's influence on humans and human influence on the Earth. Students will learn to think like a geoscientist by adopting four ways of thinking that take into account a systems approach, a variety of spatial and temporal scales, and field thinking. Systematically learning about rocks, geological time, natural resources, natural hazards, and water in this course will prepare students to address many challenges currently facing society and to identify future potential opportunities. [Note: EARTH 121L is recommended. Offered: F; also offered online S]
Rationale : Earth 121 will remain fully online for spring terms, but will follow a blended model in fall terms, to provide in-person and active learning opportunities, which will promote deeper learning and increase opportunities for students to connect with instructors and teaching assistants. This will be accomplished with two versus three hours of lectures per week, that will be move to online, while adding a new one hour in-person, on campus, tutorial component. The "also offered online" attribute listed in the UG Calendar will be complimented by a description note updated to include the term in which the online option is offered.

2.4 Dean of Science Office- Science and Business

Current Catalog Information

SCBUS 123 (0.50) DIS, LAB, LEC Workshop 1: Science and Business

This workshop addresses concepts of technology development and related marketing aspects that undertake an analysis of a firm's existence, its physical and/or social media presence, and customer feedback. Students work in collaborative teams to tackle case studies and class exercises. A major deliverable is the development of a team marketing plan, where market segments are identified based on revenue and market potential. This involves conducting a PESTLE and SWOT analysis, market planning, information retrieval strategies, scientific business forecasting, competitive intelligence, and product development. Results are presented orally and in writing.

[Offered: F]

No Special Consent Required

Requisites : Prereq: First year Science and Business and Biotechnology/Economics students

Effective 01-SEP-2023

Requisite Change :

Prereq: First-year Science and Business students

Rationale :

The Biotechnology/Economics plan is inactive, with the last cohort of students admitted fall 2020, and no student transfer into the program permitted beyond 2020. The prerequisite is updated to remove the inactive program. SCBUS 123 is a first year requirement of the plan. No other students would be move into this program in 2023, and no student in the program would require this first year course beyond fall 2023.

Current Catalog Information

SCBUS 225 (0.50) DIS, LEC Organizational Behaviour in Scientific and Technical Workplaces

This workshop uses case studies, lectures, and discussions to explore a basic understanding of how organizations work, and how people interact within organizations in order to achieve ethical human, organizational, and social objectives. This course considers organizational structure and models, ethics, organizational theory, organizational culture, motivation, diversity, negotiation, communication, leadership, and management, and how these principles are applied in start ups or scientific and technical environments. There is a major project that focuses on an aspect of organizational behavior in a scientific or technical firm or application, and is presented in writing and orally. [Offered: W]

No Special Consent Required

Requisites :

Prereq: Honours Science and Business, Biotechnology/Chartered Accountancy and Biotechnology/Economics students only. Antireq: MSCI 211, PSYCH 238/338, BUS 288W

Effective 01-SEP-2023

Requisite Change :

Prereq: Honours Science and Business and Biotechnology/Chartered Accountancy only.

Rationale :

This is a required course that must be taken by students in the Science and Business and Biotechnology/Chartered Accountancy plans. Students must take this workshop regardless even if they have taken MSCI 211, PSYCH 238/338, or BUS 288W prior to taking SCBUS 225, therefore the antirequisite is removed. Departments which list SCBUS 225 as the antirequisite for their MSCI 211, PSYCH 238/338 and BUS 288W courses, have been notified of this change. The Biotechnology/Economics plan is inactive, with the last cohort of students admitted fall 2020, and no student transfer into the program was permitted beyond 2020. This second year course would not be required for any students currently enrolled in Biotechnology/Economic beyond fall 2023, therefore, the program is removed from the prerequisite.

3 COURSE INACTIVATIONS (for approval)

3.1 Biology

Effective 01-SEP-2023

BIOL 321 (0.50)

Plant Anatomy and Morphogenesis

Rationale :

Plant courses in Biology are being streamline to remove courses offered in alternate years, as part of a significant curriculum revision to Honours Biology plans. The content of BIOL 321 is related to other plant courses including BIOL 323, BIOL 325, and the newly renumbered BIOL 220. Some course content previously covered in BIOL 321 will be included in BIOL 220, BIOL 323, or BIOL 325.

Effective 01-SEP-2023
BIOL 426 (0.50)

Rationale :

Phycology

Phycology has not been offered for several years. Future course offerings may integrate phycology content into a course on eukaryotic diversity. BIOL 426 is one BIOL program elective option in a large list of program electives for both the Honours Environmental Sciences, Ecology program, as well as the Honours Knowledge Integration (KI) program, the latter of which it's listed as a breadth course in a Natural/Physical Sciences list. The Associate chair, UG studies for KI has been made aware of the inactivation plan.

3.2 Chemistry

Effective 01-SEP-2023
CHEM 201 (0.50)

Rationale :

Environmental Impact and Management of Resources 1

This course was based in Bordeaux, as part of the Biobased Specialization plan which is no longer offered, and as such, the course will no longer be offered.

Effective 01-SEP-2023
CHEM 301 (0.50)

Rationale :

Environmental Impact and Management of Resources 2

This course was based in Bordeaux, as part of the Biobased Specialization plan which is no longer offered, and as such, the course will no longer be offered.

4 ACADEMIC PLAN CHANGES (Minor)

4.1 Honours Biology (Regular and Co-operative)

Motion: To restructure the Honours Biology programs to provide Biology and Science fundamentals in first and second year followed by diversification in second through fourth year.

Effective Date: September 1, 2023

Background and Rationale: A significant revision of the Honours Biology program is currently in progress. The proposed structure of Honours Biology provides Biology and Science fundamentals in first and second year followed by diversification in second through fourth year. Courses are broadly placed into four theme groups (cell and molecular biology, microbiology, organismal biology, and ecology and evolution), plus courses in human biology.

This set of proposed revisions includes changes to the program at the 100- and 200-level. In particular, the number of 100-level Biology courses is reduced from 2.75 units to 1.25 units, and 1.5 units of Biology electives are added at the 200-level, to provide a framework for second year students to select fundamental Biology courses within the four theme groups. In parallel, proposed revisions build on Science and Math fundamentals in first year by replacing the current option of a 100-level MATH *or* PHYS course with a requirement for 0.5-unit MATH and 0.5-unit PHYS. The list of proposed program and course changes are summarized as follows:

- Reduce the required 100-level Biology courses by 1.5 units, from 2.75 to 1.25 units
- Add 1.5 units of 200-level Biology electives
- Offer BIOL 130L in an alternate week format, consistent with first year science courses in other departments within the Faculty of Science, with no changes required to the BIOL 130L course
- Renumber BIOL 120 (Introduction to Plant Structure and Function) as BIOL 220, consistent with being taken in second year or later; also, remove the spring term offering
- Remove the BIOL 150 (Organismal and Evolutionary Ecology) requirement from Honours Biology, as part of the reduction in 100-level BIOL courses but retain the course as it is a required course for Environmental Science Ecology Specialization, Environmental Science Water Specialization, and Honours Climate and Environmental Change plans.
- Update and rename BIOL 110 (Biodiversity, Biomes, and Evolution, formerly Introductory Zoology) to include a broader scope of organisms and additional context for describing biodiversity.
- Add a 0.5-unit MATH (fall term) and 0.5-unit PHYS (winter term) requirement (previously 0.5-unit MATH *or* PHYS option sequenced in the winter term)
- Remove 0.5-unit Science elective requirement
- Introduce a new 200-level course, BIOL 251 (Fundamentals of Ecology), which will provide an in-depth introductory ecology course geared towards second year students interested in Ecology. The course will include a lab/field component which is currently lacking in second year.

The Department of Physics and Astronomy can expect an increase in the number of students requiring PHYS 111, or, to a lesser extent, PHYS 121, in the winter term based on recommended sequencing and the requirement for Biology students to take PHYS 111 or PHYS 121. The Faculty of Mathematics should not expect a much larger volume in MATH 127 as this is the most common program elective choice made by students in Biology, however, that volume will now be for the fall term based on recommended sequencing and the requirement for Biology students to take MATH 127. These changes have been made in consultation with the Department of Physics and Astronomy, and the Faculty of Mathematics, and both are on board/have no objections. Discussions were also held with the Faculty of Environment with respect to the introduction of the new BIOL 251, Fundamentals of Ecology course, and the outcomes are reflected in the requisites for BIOL 251, and the requisite changes for BIOL 110.

A future set of revisions will include changes to 300- and 400-level BIOL course offerings but will not require changes to program requirements. These will be implemented for the 2024-2025 academic calendar.

Calendar text changes:

Successful completion requires:

1. 21.5 units distributed as follows:
 - ~~4.0-5.5~~ BIOL units: BIOL 110, ~~BIOL 120~~, BIOL 130, BIOL 130L, ~~BIOL 150, BIOL 165~~, BIOL 239, BIOL 240, BIOL 240L, BIOL 273, BIOL 308, BIOL 359
 - 1.5 BIOL units 200-level
 - 5.5 BIOL units 300-level or higher; 2.5 units must be 400-level
 - 3.0 CHEM units: CHEM 120, CHEM 120L, CHEM 123, CHEM 123L, CHEM 237, CHEM 237L, CHEM 266, CHEM 266L
 - ~~0.5 Science elective unit chosen from: BIOL, CHEM, EARTH, PHYS, SCI~~
 - ~~0.5 unit program elective chosen from: MATH 114, MATH 127, PHYS 111~~
 - 0.5 PHYS unit: PHYS 111 or PHYS 121
 - 0.5 MATH unit: MATH 127
 - 0.5 STAT unit: STAT 202
 - 0.5 ENGL unit: ENGL 193/SPCOM 193
 - 5.5 elective units
2. Co-operative program requirements (where applicable).

4.2 Honours Biomedical Sciences

Motion: To update the Biomedical Sciences program: 1) to better align the program with entrance requirements for professional human health programs in Canada, including Waterloo Pharmacy and Optometry programs, 2) to increase Biology elective requirements and provide guidance on courses relevant to Biomedical Sciences, 3) to expand program elective options outside of the Faculty of Science, and 4) to reduce total plan units.

Effective Date: September 1, 2023

Background and Rationale: The proposed changes to the Honours Biomedical Sciences program changes will better align the program with entrance requirements for professional human health programs in Canada, including Waterloo Pharmacy and Waterloo Optometry. Changes to electives will provide guidance on Biology courses relevant to biomedical sciences and will provide a broader based of electives relevant to human health. Suggested science electives, which will include the list of Biology elective options, will be provided and available with the recommended course sequence (outside the Calendar requirements). Suggested optional program electives, are incorporated into the requirements as discussed with the Departments outside of Science.

These proposed changes will reduce overall program units to 22.0, in line with other programs within the Faculty of Science, including Biochemistry, Chemistry and Physics.

The proposed program changes are summarized as follows:

- Add Calculus (MATH 127) and Statistics for Scientists (STAT 202), previously in the program elective list, as program requirements, both being requirements for admission to Optometry and Pharmacy.
- Sequence MATH 127 in the fall and STAT 202 in the winter term
- Remove Organic Chemistry 2 (CHEM 267/267L) and Physics 2 (PHYS 112/112L) as required courses in the program.
- Re-sequence CHEM 237/237L (Introductory Biochemistry) to second year versus third year
- Retain the 11.0 total units of program electives but increase the BIOL elective requirement from 1.0 to 2.5 units, decrease the program elective requirement from 2.0 to 1.5 units, and decrease the unrestricted electives from 6.0 to 5.0 units
- Provide guidance on courses relevant to Biomedical Sciences with a list of Biology program electives to choose from
- Expand the list of program elective courses outside of the Faculty of Science to include course options in Anthropology, English, History, Kinesiology, and Social Development Studies, to provide a broader base of electives relevant to human health.
- Decrease total number of program units in Biomedical Sciences from 22.5 to 22.0 units.

Suggested Science Electives (to be listed on the recommended sequence web page): BIOL 110, BIOL 165, BIOL 211, or any course from BIOL elective list; CHEM 140, CHEM 220, CHEM 254, CHEM 267, CHEM 267L, CHEM 333, CHEM 357, CHEM 430, CHEM 433; EARTH 121, EARTH 122, EARTH 281, EARTH 336; PHYS 112, PHYS 112L, PHYS 225, PHYS 280, PHYS 380, PHYS 383, PHYS 395, PHYS 396, PHYS 491.

The Faculty of Mathematics was consulted and are on board/have no objection to the added requirements of MATH 127 and STAT 202 for Biomedical Sciences plans, and the added demand on the MATH 127 course in the fall term and STAT 202 course in the winter term. MATH 127 has been a common elective chosen by students in Biomedical Sciences, typically in the fall term, but now it will be a requirement for all students in this plan.

Calendar Text Changes

Successful completion requires:

22.0-22.5 units distributed as follows:

- 5.75 BIOL units: BIOL 130, BIOL 130L, BIOL 201, BIOL 239, BIOL 240, BIOL 240L, BIOL 241, BIOL 273, BIOL 302, BIOL 303, BIOL 308, BIOL 373, BIOL 373L
- 3.00-3.75 CHEM units: CHEM 120, CHEM 120L, CHEM 123, CHEM 123L, CHEM 237, CHEM 237L, CHEM 266, CHEM 266L, ~~CHEM 267, CHEM 267L~~
- 0.75-1.5 PHYS units: PHYS 111 and PHYS 111L, or PHYS 121 and PHYS 121L; ~~PHYS 112 and PHYS 112L, or PHYS 122 and PHYS 122L~~
- 0.5 MATH unit: MATH 127
- 0.5 STAT unit: STAT 202
- 11.0 elective units distributed as follows:
 - 2.5-4.0 BIOL elective units, ~~400-level~~ from: BIOL 309, BIOL 331, BIOL 335L, BIOL 341, BIOL 348L, BIOL 354, BIOL 355, BIOL 359, BIOL 361, BIOL 365, BIOL 414, BIOL 434, BIOL 439, BIOL 441, BIOL 442, BIOL 444, BIOL 449, BIOL 465, BIOL 469, BIOL 472, BIOL 473, BIOL 476, BIOL 499, with the following conditions:
 - 2.0 units, 400-level
 - 2.0 Science elective units from: BIOL, CHEM, EARTH, PHYS, SCI, with the following conditions:
 - 1.5 units, 300-level or higher
 - 1.5-2.0 program elective units from: ANTH 204, ANTH 222, CS 200, ENGL 209, HIST 209, HLTH 101, HLTH 102, HLTH 320, HLTH 340, HLTH 341, HLTH 407/KIN 407, KIN 301, KIN 308, KIN 312, KIN 343, MATH 127, MATH 128, PSYCH 101, PSYCH 261, SDS 150R, SOC 101, SOC 248, SOC 249/LS 226, STAT 202, one of (PHIL 121, PHIL 215, PHIL 218J, PHIL 219J, PHIL 221, PHIL 224, PHIL 226, PHIL 227, PHIL 319J, PHIL 321J)
 - 5.0-6.0 elective units chosen from any subject
- 0.5 ENGL unit: ENGL 193/SPCOM 193

Additional conditions:

1. A minimum of 2.5 elective units must be 400-level, ~~of which 1.0 unit must be a BIOL unit,~~ including 2.0 BIOL elective units.
2. A maximum of 3.0 SCI units may be counted.
3. A failed second attempt of a required course will result in removal from this plan (see Faculty of Science's repeating courses). Readmission requires a successful petition.

Note

PSYCH 261 cannot count towards the ~~2.0~~ 1.5 units of required program electives if ~~they are pursuing~~ both a Medical Physiology Minor and a Psychology Minor are added to this plan.

4.3 Honours Environmental Sciences, Ecology Specialization (Regular and Co-operative)

Motion: To make minor changes to the program requirements based on the renumbering of BIOL 120 (to 220) and the inactivation of BIOL 321.

Effective Date: September 1, 2023

Background and Rationale: A revision of Biology courses is currently in progress and minor changes in the program requirements for Honours Environmental Sciences, Ecology Specialization plans, are needed as a result. BIOL 120 (Introduction to Plant Structure and Function) is being renumbered to Biol 220, and BIOL 321 (Plant Anatomy and Morphogenesis) will become inactive and therefore needs to be removed as a BIOL elective option.

Calendar Text Changes

Successful completion requires:

1. 21.25 units distributed as follows:
 - 6.75 BIOL units: BIOL 110, ~~BIOL 120~~, BIOL 150, BIOL 165, BIOL 220, BIOL 239, BIOL 240, BIOL 240L, BIOL 350, BIOL 351, BIOL 354, BIOL 359, BIOL 361, BIOL 451, BIOL 457
 - 0.5 BIOL unit: BIOL 456 or BIOL 458
 - 2.0 CHEM units: CHEM 120, CHEM 120L, CHEM 123, CHEM 123L, CHEM 266
 - 0.5 CHEM unit: CHEM 233 or CHEM 237
 - 3.0 EARTH units: EARTH 121, EARTH 121L, EARTH 122, EARTH 122L, EARTH 123, EARTH 223, EARTH 342
 - 0.5 PHYS unit: PHYS 111
 - 1.5 BIOL units, 0.5 must be at 400-level, from: BIOL 309, BIOL 310, BIOL 312, ~~BIOL 321~~, BIOL 323, BIOL 325, BIOL 335L, BIOL 346, BIOL 370, BIOL 371, BIOL 383, BIOL 414, BIOL 426, BIOL 439, BIOL 447, BIOL 448, BIOL 450, BIOL 452, BIOL 455, BIOL 461, BIOL 462, BIOL 470, BIOL 479, BIOL 485, BIOL 489, BIOL 490A, BIOL 490B, BIOL 490C, or BIOL 499A and BIOL 499B
 - 0.5 EARTH unit from: EARTH 321, EARTH 333, EARTH 358, EARTH 421, EARTH 440, EARTH 458, EARTH 459
 - 0.5 BIOL or EARTH elective unit from: BIOL 211, BIOL 241, BIOL 309, BIOL 310, BIOL 312, ~~BIOL 321~~, BIOL 323, BIOL 325, BIOL 335L, BIOL 346, BIOL 370, BIOL 371, BIOL 383, BIOL 414, BIOL 426, BIOL 439, BIOL 447, BIOL 448, BIOL 450, BIOL 452, BIOL 455, BIOL 461, BIOL 462, BIOL 470, BIOL 479, BIOL 485, BIOL 489, BIOL 490A, BIOL 490B, BIOL 490C, (BIOL 499A and BIOL 499B), EARTH 221, EARTH 232, EARTH 235, EARTH 238, EARTH 281, EARTH 321, EARTH 333, EARTH 358, EARTH 421, EARTH 440, EARTH 458, EARTH 459
 - 0.5 ERS unit: ERS 215
 - 0.5 MATH unit: MATH 127
 - 0.5 STAT unit: STAT 202
 - 0.5 ENGL unit: ENGL 193/SPCOM 193
 - 3.5 elective lecture course units
2. Co-operative program requirements (when applicable).

4.4 Honours Material and Nanosciences (Regular and Co-operative)

Motion: To remove PHYS 359 (Statistical Mechanics) requirement from the Material and Nanosciences (MNS) plans and allow an option to take either PHYS 359 or CHEM 350 (Chemical Kinetics and Statistical Mechanics), as the 0.5-unit requirement. CHEM 350 would therefore be removed as a program elective option. Also, to remove the requirement that at least 0.5 unit of any-level program electives must be from Chemistry to provide better balance between the total number of required Chemistry and Physics courses, as students will be advised to take CHEM 350 unless they are wishing to pursue graduate studies in Physics.

Effective Date: September 1, 2023

Background and Rationale: CHEM 254: Introductory Chemical Thermodynamics and PHYS 358: Thermal Physics, can each serve as a prerequisite for PHYS 359. Although CHEM 254 and PHYS 358 are antirequisite courses, there are differences between the courses. PHYS 358 introduces concepts related to statistical mechanics, whereas CHEM 254 does not. PHYS 359 is designed to build on the knowledge gained in PHYS 358; therefore, PHYS 358 is a better suited prerequisite course for PHYS 359. CHEM 350 is designed to build on knowledge gained from CHEM 254 and CHEM 350 offers a strong introduction to statistical mechanics.

It's important that all MNS students gain introductory knowledge of statistical mechanics. Since CHEM 254 is a required course for MNS plans, it is proposed that MNS students are recommended to take CHEM 350, because the course still offers a strong introduction to statistical mechanics, but it is designed to build on the knowledge gained in CHEM 254.

For MNS students interested in a more advanced introduction to statistical mechanics, specifically those who wish to pursue graduate studies in physics, they are recommended to take PHYS 359 instead of CHEM 350.

Since CHEM 350 is recommended over PHYS 359, the requirement to ensure 0.5 an elective unit be chosen from Chemistry, is no longer required to ensure better balance between the total number of required Chemistry and Physics Courses.

The recommended sequence web page will be updated to show the choice between PHYS 359 or CHEM 350 in the winter term of year three for the regular sequence and in the winter following the double work term for the co-op sequence and CHEM 350 will be removed from the Program Elective listing.

Calendar Text Changes

Successful completion requires:

1. 21.25 units distributed as follows:
 - 5.0 MNS units: MNS 101, MNS 102, MNS 201L, MNS 211, MNS 221, MNS 321, MNS 322, MNS 331, MNS 410, MNS 431
 - 3.5 CHEM units: CHEM 121, CHEM 121L, CHEM 125, CHEM 125L, CHEM 140, CHEM 209, CHEM 250L, CHEM 254, CHEM 266L
 - 0.5 CHEM unit: CHEM 264 or CHEM 266 (see Note 1)
 - 0.5 unit from CHEM 350 or PHYS 359
 - ~~4.25~~ ~~4.75~~ PHYS units: PHYS 121, PHYS 121L, PHYS 122, PHYS 122L, PHYS 232L, PHYS 234, PHYS 242, PHYS 249, PHYS 334, and PHYS 342, ~~PHYS 359~~
 - 2.0 MATH units: MATH 127, MATH 128, MATH 227, MATH 228
 - 0.5 CS unit: CS 114
 - 4.5 elective units, distributed as follows:
 - 1.0 program elective unit, 300-level or higher
 - 1.0 program elective unit, 400-level
 - 1.0 program elective unit at any level, ~~at least 0.5 unit from Chemistry~~
 - 1.5 units of any 0.25 or 0.5 unit courses
 - 0.5 ENGL unit: ENGL 193/SPCOM 193
2. Enrolment in MNS 10 when offered.
3. Co-operative program requirements (when applicable).

Note

1. Students wishing to take CHEM 264 instead of CHEM 266 must obtain permission from the instructor of CHEM 266L to override the prerequisite of CHEM 266.

List of Program Electives

CHEM 212 Structure and Bonding
CHEM 220 Intro Analytical Chemistry
CHEM 220L Quantitative Chemical Analysis Laboratory
CHEM 221 Multi-Component Analysis
CHEM 237 Introductory Biochemistry
CHEM 237L Introductory Biochemistry Laboratory
CHEM 267 Basic Organic Chemistry 2
CHEM 267L Organic Chemistry Laboratory
CHEM 310 Transition Element Compounds and Inorganic Materials
CHEM 333 Metabolism 1
CHEM 340 Introductory Computational Chemistry
~~CHEM 350 Chemical Kinetics~~
CHEM 357 Physical Biochemistry
CHEM 400 Special Topics in Chemistry
CHEM 430 Special Topics in Biochemistry
CHEM 494A Research Project and CHEM 494B Research Project

PHYS 225 Modelling Life Physics
PHYS 242L Electricity and Magnetism Laboratory
PHYS 256 Geometrical and Physical Optics
PHYS 256L Optics Laboratory
PHYS 260L Intermediate Physics Laboratory
PHYS 267 Probability, Statistics, and Data Analysis for Physics and Astronomy
PHYS 280 Introduction to Biophysics
PHYS 335 Condensed Matter Physics
PHYS 360A Modern Physics Laboratory 1
PHYS 360B Modern Physics Laboratory 2
PHYS 364 Mathematical Physics 1
PHYS 365 Mathematical Physics 2
PHYS 380 Molecular and Cellular Biophysics
PHYS 391 Electronics
PHYS 391L Electronics Laboratory
PHYS 396 Biophysics of Imaging
PHYS 437A Research Project and PHYS 437B Research Project (Continued)
PHYS 434 Quantum Physics 3
PHYS 435 Current Topics in Condensed Matter Physics
PHYS 461 Nanophysics

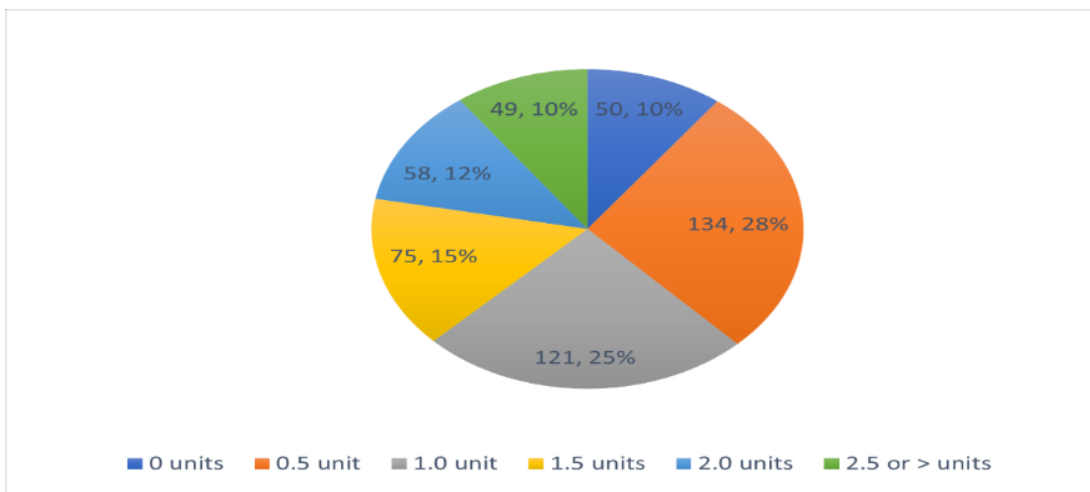
4.5 **Addition of 400-level requirement minimums for Science and Business programs**

Motion: To increase 400-level science requirements in all science and business plans to 2.5 units.

Effective Date: September 1, 2023

Background and Rationale: Observation of student records and associated science course enrolment choices, lead to a review of Science and Business plan requirements and revealed there was only one 0.5 unit of 400-level science required by all plans except the Biotechnology specialization, which requires two 400-level BIOL courses as well as another required 1.0 unit of 400-level BIOL selected among a list of Biology program electives. Although students can take more upper year science courses within the plans, it is not a requirement, and therefore, there is not a consistency in the level of science competency. Increasing the number of required science course units to minimum of 2.5 units at the 400-level for all Science and Business plans, will achieve this consistency in science competency expected of Science and Business graduates. The proposed change will bring the level of competency achieved on graduation close to similar programs in the Faculty of Science.

A total of 487 academic records for Science and Business graduates from 2015 and 2021 were analyzed to look for total numbers of 400-level science course taken before graduation. It was found that 10% of students graduated without any 400-level science courses, while 10% graduated on the other extreme with 2.5 units or more, 400-level science courses. The majority of students graduated with between 0.5 or 1.0 unit of 400-level science.



The graduating data is one support that 2.5 units of upper year science is achievable within the Science and Business plans. Another larger factor is the feasibility of having sufficient science requirements within each plan to meet prerequisites needed for sufficient 400-level sciences, primarily Biology courses, for the three specializations. Feasibility studies were done for each of the plans, to ensure several 400-level options were possible, for which prerequisite courses were either already included as requirements, or, that there were sufficient science electives to take the necessary prerequisites in advance.

These feasibility studies helped narrow down some key prerequisite courses that are vital in allowing proper/enough preparation for required 400-level sciences. The results of this work will be used in an extensive web update that will help guide Science and Business students with prerequisite course choices, help them plan for 400-level sciences, as one advisement tool. The requirements in the Undergraduate Calendar, associated with sequencing, will further guide careful science elective choices.

The proposed change to increase the minimum science units at 400-level will require the following specific plan changes to Science and Business plans:

1. The Science and Business plans (without specialization) will redistribute the 6.0 Science elective units from 3.0 units at 200-level, 2.5 units at 300-level and 0.5 unit at 400-level, to 1.5 units at 200-level, 2.0 units at 300-level and 2.5 units at 400-level. The first year Science requirements are simply reworded to be clear as to what is expected.
2. Similarly, the Biology Specialization plans, will redistribute the 7.0 BIOL elective units from 3.0 units at 100- or 200-level, 3.5 units at 300-level and 0.5 units at 400-level, to 2.5 units at 100 or 200-level, 2.0 units at 300-level and 2.5 units at 400-level. This specialization will retain the 1.0 elective unit option of either BIOL elective(s) at 300-level or program elective(s).

3. The Biochemistry Specialization plans will remove the 1.0 unit of either a BIOL or CHEM or program elective, replacing it with a 1.0 unit of BIOL elective chosen from a list of 300-level BIOL courses that were part of a list of 300- and 400-level BIOL and CHEM electives, from which students were to take 2.5 units. The 2.5 units of BIOL or CHEM elective will remain, with only 400-level options, forcing 2.5 units at the 400-level. The 0.5 CHEM elective unit will be replaced with a 0.5 CHEM or BIOL elective unit as more BIOL units may be required to line up prerequisites for upper year BIOL choices. CHEM 464 is added as an additional optional CHEM elective at the 400-level, which has a prerequisite of CHEM 264, that is core to this specialization.
4. The only change to the Biotechnology Specialization plans is to add a requirement that 1.5 units of BIOL or CHEM electives must be at the 400-level, as there is 1.0 unit of BIOL courses already required by these plans. The additional condition will assure that BIOL and CHEM electives are used to obtain the remaining 1.5 science units at the 400-level.
5. The additional program condition that normally permits 3.0 units of SCBUS total to count toward all Science and Business plans, is removed since all the plans require 3.0 units of SCBUS units, and have only 0.5 or no elective unit, with an option to substitute a program elective, but only with permission of the program advisor. Taking an additional SCBUS unit is acceptable for this program and taking more than one would require permission as a program elective substitute.

Sequence change impact

1. Science and Business (without specialization) – The required Science electives at each level are redistributed, but the total number of electives remains the same, as does the total number of program electives and a single free elective. The current sequence does not identify the level of science elective, therefore, a change to sequence is necessary.
2. Biology Specialization- The required BIOL program electives at each level are redistributed, therefore some sequence changes will be needed to rename the BIOL electives as well as position lower-level ones ahead of 400-level electives to help students with planning.
3. Biochemistry Specialization- The 1.0 unit of “BIOL or CHEM or program” elective is replaced by 1.0-unit BIOL 300-level elective, the 2.5 BIOL electives are now all 400-level, and the 0.5 CHEM elective is replaced by a 0.5 CHEM or BIOL elective, therefore some sequence changes will be needed to rename the electives as well as to position the lower-level ones ahead of the 400-level electives to help students with planning.

4. Biotechnology Specialization- There were no changes to the program elective requirements other than an added requirement to note that 1.5 total BIOL or CHEM electives must be 400-level. However, some sequence changes for the “BIOL or program” elective, the CHEM elective, and the BIOL elective, would be helpful in years 4 and 5, so that the “BIOL or program” electives are sequence ahead of the 400-level BIOL electives such that they can be used to take any prerequisites required for chosen 400-level BIOL electives.

The proposed increase to 400-level science, which will primarily impact Biology based on the specializations and required program electives, has been discussed with the department of Biology.

Calendar Text Changes (Regular and Co-operative):

i. Honours Science and Business

Successful completion requires:

1. 21.0 units distributed as follows:
 - 1.5 CHEM units: CHEM 120, CHEM 120L, CHEM 123, CHEM 123L
 - 8.0 Science elective units (BIOL, CHEM, EARTH, or PHYS) which must ~~that~~ include:
 - ~~One of the following:~~
 - ~~1.0 unit of 100- or 200-level BIOL courses, exclusive of BIOL 225 and BIOL 280~~
 - ~~EARTH 121, EARTH 121L, EARTH 122, EARTH 122L~~
 - ~~PHYS 111, PHYS 111L, PHYS 112, PHYS 112L~~
 - 1.0 complete Year One Science lecture unit chosen from BIOL, EARTH or PHYS courses:
 - Two 100- or 200-level BIOL courses, exclusive of BIOL 225 and BIOL 280
 - EARTH 121 and EARTH 122
 - PHYS 111 or PHYS 121 and PHYS 112 or PHYS 122
 - 1.0 Science lab or lecture unit, inclusive of lab units associated with the chosen Year One Science lecture unit
 - ~~A minimum of 3.0~~ 1.5 units at the 200-level
 - ~~A minimum of 2.5~~ 2.0 units at the 300-level
 - ~~A minimum of 0.5~~ 2.5 units at the 400-level
 - ~~A maximum of 1.0 lab unit~~
 - 0.5 program elective unit chosen from: ACTSC 231, ECON 211, ECON 361, ECON 372, HRM 200, HRM 301, MSCI 311, MSCI 432, STAT 231, STAT 333
 - 1.0 Science elective or program elective unit
 - 1.5 AFM units: AFM 123, AFM 131, AFM 231
 - 0.5 CS unit: CS 100
 - 2.5 ECON units: ECON 101, ECON 102, ECON 201, ECON 221, ECON 371
 - 1.0 MATH unit: MATH 127, MATH 128
 - 0.5 MGMT unit: MGMT 220

- 3.0 SCBUS units: SCBUS 122, SCBUS 123, SCBUS 223, SCBUS 225, SCBUS 323, SCBUS 423
 - 0.5 ENGL unit: ENGL 193 or SPCOM 193
 - 0.5 elective unit, any subject
2. Co-operative program requirements (when applicable).

Additional conditions:

- ~~1. Students who select BIOL, EARTH, or PHYS with two associated labs to meet their Year One Science requirements will need one less 0.5 unit Science elective in order to fulfil the 8.0 unit Science elective requirement.~~
- ~~2. Students who select BIOL with one or less associated labs to meet their Year One Science requirements must take an additional 0.5 unit of Science to fulfil the 8.0 unit Science elective requirement.~~
3. If either BIOL 130 or BIOL 240 are the biology courses chosen to meet the 1.0 Year One Science unit, then BIOL 130L or BIOL 240L are required.
4. EARTH 121L and EARTH 122L are required if earth sciences is chosen to meet the 1.0 Year One Science unit.
5. PHYS 111L or PHYS 121L and PHYS 112L or PHYS 122L are required if physics is chosen to meet the 1.0 Year One Science unit.
6. A maximum of 1.0 science lab unit, exclusive of CHEM 121L and CHEM 123L, is permitted.
7. A maximum of 2.0 failed units is permitted.
- ~~8. Normally, a maximum of 3.0 SCBUS units is permitted.~~

Notes

1. Alternate program electives may be substituted with permission from the academic advisor.
- ~~2. Science elective courses include BIOL, CHEM, EARTH, and PHYS courses.~~
- ~~3. PHYS 121 and PHYS 121L can substitute PHYS 111 and PHYS 111L.~~
- ~~4. PHYS 122 and PHYS 122L can substitute PHYS 112 and PHYS 112L.~~
5. Students can choose to emphasize one of the following business areas by selecting or substituting appropriate program electives. Students should note that this may require an additional term(s) of study:
 - International business: AFM 333 and INDEV 100
 - Entrepreneurism: BET 300 and MSCI 311
 - Technical development: MSCI 311
 - Strategic operations: ECON 311 and MSCI 311

ii. Honours Science and Business, Biology Specialization

Successful completion requires:

1. 21.0 units distributed as follows:
 - 3.0 CHEM units: CHEM 120, CHEM 120L, CHEM 123, CHEM 123L, CHEM 237, CHEM 237L, CHEM 266, CHEM 266L
 - 7.0 BIOL elective units with the following conditions:
 - ~~2.5~~ 3.0 units at the 100- or 200-level
 - ~~2.0~~ 3.5 units at the 300- or 400-level
 - ~~2.5~~ 0.5 unit at the 400-level
 - 1.0 program elective unit chosen from: ACTSC 231, ECON 211, ECON 361, ECON 372, HRM 200, HRM 301, MSCI 311, MSCI 432, STAT 231, STAT 333
 - 1.0 BIOL elective (300-level or higher) or ~~any~~ program elective unit
 - 1.5 AFM units: AFM 123, AFM 131, AFM 231
 - 0.5 CS unit: CS 100
 - 2.0 ECON units: ECON 101, ECON 102, ECON 221, ECON 371
 - 0.5 MATH unit: MATH 127
 - 0.5 MGMT unit: MGMT 220
 - 3.0 SCBUS units: SCBUS 122, SCBUS 123, SCBUS 223, SCBUS 225, SCBUS 323, SCBUS 423
 - 0.5 ENGL unit: ENGL 193/SPCOM 193
 - 0.5 elective unit, any subject
2. Co-operative program requirements (when applicable).

Additional conditions:

1. A maximum of 2.0 failed units is permitted.
- ~~2. Normally, a maximum of 3.0 SCBUS units is permitted.~~

Notes

1. Alternative program electives may be substituted with permission from the academic advisor.
2. Students can choose to emphasize one of the following business areas by selecting or substituting appropriate program electives. Students should note that this may require an additional term(s) of study:
 - International business: AFM 333 and INDEV 100
 - Entrepreneurism: BET 300 and MSCI 311
 - Technical development: MSCI 311
 - Strategic operations: ECON 311 and MSCI 311

iii. Honours Science and Business, Biochemistry Specialization

Successful completion requires:

1. 21.0 units distributed as follows:
 - 2.75 CHEM units: CHEM 120, CHEM 120L, CHEM 123, CHEM 123L, CHEM 237, CHEM 237L, CHEM 333
 - 1.25 CHEM units: CHEM 264, CHEM 265, and CHEM 265L; or CHEM 266, CHEM 266L, and CHEM 267
 - 2.0 BIOL units: BIOL 130, BIOL 239, BIOL 309, BIOL 331
 - 1.0 BIOL elective unit at the 100- or 200-level
 - 1.0 BIOL unit from: BIOL 303, BIOL 308, BIOL 341, BIOL 342, BIOL 345, BIOL 365, BIOL 370, BIOL 371
 - 2.5 BIOL or CHEM electives chosen from: ~~BIOL 303, BIOL 308, BIOL 341, BIOL 342, BIOL 345, BIOL 365, BIOL 370, BIOL 371~~, BIOL 431, BIOL 432, BIOL 433, BIOL 434, BIOL 438, BIOL 439, BIOL 441, BIOL 442, BIOL 447, CHEM 430, CHEM 432, CHEM 433, and CHEM 464
 - ~~1.0 additional elective unit from BIOL, CHEM, and/or program elective lists~~
 - 0.5 BIOL or CHEM elective unit at the (200-level)
 - 1.0 program elective unit chosen from: ACTSC 231, ECON 211, ECON 361, ECON 372, HRM 200, HRM 301, MSCI 311, MSCI 432, STAT 231, STAT 333
 - 1.5 AFM units: AFM 123, AFM 131, AFM 231
 - 0.5 CS unit: CS 100
 - 2.0 ECON units: ECON 101, ECON 102, ECON 221, ECON 371
 - 0.5 MATH unit: MATH 127
 - 0.5 MGMT unit: MGMT 220
 - 3.0 SCBUS units: SCBUS 122, SCBUS 123, SCBUS 223, SCBUS 225, SCBUS 323, SCBUS 423
 - 0.5 ENGL unit: ENGL 193/SPCOM 193
 - 0.5 elective unit, any subject
2. Co-operative program requirements (when applicable).

Additional conditions:

- ~~1. A minimum of 0.5 unit BIOL or CHEM elective must be at the 400 level.~~
2. A maximum of 2.0 failed units is permitted.
- ~~3. Normally, a maximum of 3.0 SCBUS units is permitted.~~

Notes

1. Alternative program electives may be substituted with permission from the academic advisor.

2. Students can choose to emphasize one of the following business areas by selecting or substituting appropriate program electives. Students should note that this may require an additional term(s) of study:
 - International business: AFM 333 and INDEV 100
 - Entrepreneurism: BET 300 and MSCI 311
 - Technical development: MSCI 311
 - Strategic operations: ECON 311 and MSCI 311

iv. Honours Science and Business, Biotechnology Specialization

Successful completion requires:

1. 21.0 units distributed as follows:
 - 2.75 CHEM units: CHEM 120, CHEM 120L, CHEM 123, CHEM 123L, CHEM 237, CHEM 266, CHEM 266L
 - 0.5 CHEM elective unit at the 200-level or higher
 - 5.25 BIOL units: BIOL 130, BIOL 239, BIOL 240, BIOL 240L, BIOL 241, BIOL 308, BIOL 309, BIOL 331, BIOL 342, BIOL 432, BIOL 443
 - 2.0 BIOL electives chosen from: BIOL 341, BIOL 345, BIOL 431, BIOL 433, BIOL 441, BIOL 442, BIOL 444, BIOL 483
 - 1.0 additional elective unit from the BIOL and/or program elective lists
 - 1.0 program elective unit chosen from: ACTSC 231, ECON 211, ECON 361, ECON 372, HRM 200, HRM 301, MSCI 311, MSCI 432, STAT 231, STAT 333
 - 1.5 AFM units: AFM 123, AFM 131, AFM 231
 - 0.5 CS unit: CS 100
 - 2.0 ECON units: ECON 101, ECON 102, ECON 221, ECON 371
 - 0.5 MATH unit: MATH 127
 - 0.5 MGMT unit: MGMT 220
 - 3.0 SCBUS units: SCBUS 122, SCBUS 123, SCBUS 223, SCBUS 225, SCBUS 323, SCBUS 423
 - 0.5 ENGL unit: ENGL 193/SPCOM 193
2. Co-operative program requirements (if applicable).

Additional conditions:

1. A minimum of 1.5 BIOL or CHEM elective units must be 400-level
2. A maximum of 2.0 failed units is permitted.
3. ~~Normally, a maximum of 3.0 SCBUS units is permitted.~~

Notes

1. Alternative program electives may be substituted with permission from the academic advisor.
2. Students can choose to emphasize one of the following business areas by selecting or substituting appropriate program electives. Students should note that this may require an additional term(s) of study:
 - International business: AFM 333 and INDEV 100
 - Entrepreneurism: BET 300 and MSCI 311
 - Technical development: MSCI 311
 - Strategic operations: ECON 311 and MSCI 311

5 ACADEMIC PLAN CHANGES (Major)

5.1 Inconsistent Names for Environmental Sciences plans (Regular and Co-operative)

Motion: To correct the official name of the Environmental Sciences plans, both Honours and Honours Co-operative, to be pluralized (Environmental Sciences versus Environmental Science).

Effective Date: September 1, 2023

Background/Rationale: While the June 2021 convocation program drafts were being reviewed, an oddity regarding Honours Environmental Science(s) was uncovered: some plans were singular (Geoscience Specialization and Water Science Specialization), others were plural (Ecology Specialization). In the UG Calendar, all plans are listed as "Science" (singular). However, in the plan description in Quest, the Ecology Specialization is listed as "Sciences" (plural), while the other Specializations are listed as "Science" (singular). Thus, the Ecology Specialization appears on diplomas, transcripts, and convocation programs in the plural form, while the other Specializations appear in the singular form.

Effective September 1, 2023, all existing Honours and Honours Co-operative Environmental Sciences plans will be renamed (pluralized) but will retain the same plan code. Students graduating after September 1, 2023, regardless of their requirement term, will graduate with the new pluralized plan name.

6 CHANGES ASSOCIATED WITH COVID-19 PANDEMIC

6.1 Fall 2021, Winter 2022 and Spring 2022 Report

Subject	Changes associated with Pandemic	Term
CHEM 360L	Scheduled one section of the lab, normally scheduled in the winter term, to help keep Honours Co-operative Medicinal Chemistry students on track for their program.	Fall 2021

**OFFICE OF THE REGISTRAR REPORT TO
SENATE UNDERGRADUATE COUNCIL**
September 2022

1. ACADEMIC REGULATIONS

1.1. Invalid Plan Combinations
Effective date: September 1, 2023

Background and rationale:

For the 2022-2023 Undergraduate Studies Academic Calendar, existing invalid plan combinations listed throughout the Calendar were centralized on a single page: <https://ugradcalendar.uwaterloo.ca/page/Acad-Regs-Invalid-Credential-Combinations>. The goal of centralizing the content was to assist students and academic advisors by providing one location to review what type of credential combination is acceptable or not, especially as students combine academic plans across faculty lines.

Once centralized, it became apparent that not all combinations were previously listed as reciprocal in the Calendar. For example, the Faculty of Arts listed that their Management Studies Minor could not be combined with Recreation and Sport business (major offered by Faculty of Health) or Environment and Business (major offered by Faculty of Environment); however, those majors did not previously list they could not be combined with the Minor.

To make the list truly reciprocal, the Office of the Registrar is seeking approval from the faculties, and SUC, to ensure all parties are aware of the invalid combinations. This is essentially a “clean up” exercise.

1. All specific invalid combinations falling outside the main guidelines are listed, except those recently approved during the 2021-22 academic year (no clean up needed for those).
2. Combinations that were not previously stated as reciprocal are highlighted in green.
3. A new general guideline is being created (highlighted in yellow) regarding academic plan name changes so that academic plans falling into those scenarios can be removed from the large table.
4. A new operational guideline (highlighted in blue) regarding how long to list inactive academic plans is being created so that plans no longer appearing in the 2019 Calendar and beyond can be removed, but highlighting to students that those invalid combinations still apply.
5. Clarity is being added where vagueness existed.

Academic Calendar text:

The University of Waterloo offers many types of credentials, with a variety of intended audiences. For example:

- Minors are normally open to all undergraduate students.
- Options are normally open to all students registered in a major in the same faculty as the option.
- Specializations are normally open to all students majoring in the affiliated field.

Certain credential combinations are not permitted.

- No student may enrol in or graduate from two credentials with significant overlapping content, including, but not limited to:
 - a minor, option, or diploma/certificate in the same subject as their major (e.g., Honours Anthropology and Anthropology Minor; Honours Software Engineering and Software Engineering Option);
 - a minor and a diploma in the same subject (e.g., Applied Language Studies Minor and Diploma in Applied Language Studies);
 - a certificate and a diploma in the same language (e.g., Certificate in French Language I and Diploma in French Language I);
 - more than one language certificate or diploma in the same language (e.g., Diploma in Japanese Language I and Diploma in Japanese Language II);
 - **the same credential that has been renamed (e.g., Communication Studies, formerly Speech Communication).**

To facilitate the application to graduate process, students should declare all minors, options, and specializations as early as possible, but no later than the start of their last academic term.

Additional Constraints

Faculty of Arts

- No student may enrol in or graduate from:
 - Two majors from the same group in the following list:
 - Department of Classical Studies: Classical Studies, Classics
 - Department of Economics: Economics, Mathematical Economics
 - Department of English Language and Literature: Literature; Literature and Rhetoric; Rhetoric, Media, and Professional Communication
 - Two intensive specializations offered by the same major.
 - Multiple “topic” specializations offered by the same major in the following departments:
 - Economics (maximum of one topic specialization)
 - History (maximum of one topic specialization)
 - Political Science (maximum of one topic specialization)
 - Two financial management degrees in the following list:
 - Accounting and Financial Management, Bachelor of
 - Computing and Financial Management, Bachelor of
 - Sustainability and Financial Management, Bachelor of
- When pursuing a Bachelor of Arts, students may combine two honours major academic plans only (i.e., not an honours major plan with a general major academic plan).

Faculty of Mathematics

- No student may enrol in or graduate from:
 - A stand-alone Bachelor of Computer Science (BCS) academic plan with any Bachelor of Mathematics (BMath) academic plan (including Joint Honours academic plans).
 - A stand-alone BMath Joint Honours academic plan with any non-Mathematics Joint Honours academic plan.

- Data Science (BMath or BCS) with any other Faculty of Mathematics Honours or Joint Honours academic plan, except that the BCS (Data Science) can make up the BCS component of the Business Administration and Computer Science double degree program.
- Two academic plans from the same group in the following list:
 - All academic plans offered in Actuarial Science
 - All academic plans offered in Applied Mathematics
 - All academic plans offered in Combinatorics and Optimization (including all Mathematical Optimization academic plans)
 - All academic plans offered in Computational Mathematics
 - All academic plans offered in Computer Science
 - All academic plans offered in Pure Mathematics
 - All academic plans offered in Statistics
 - All Mathematics/Business academic plans other than Mathematical Economics
 - Exception: Mathematical Finance can be combined with another Actuarial Science and/or Pure Mathematics academic plan.
- A stand-alone BCS Honours co-operative academic plan or BMath Honours co-operative academic plan with any stand-alone regular Honours academic plan (including Joint Honours academic plans).

Specific Invalid Credential Combinations

The University will amend the list of invalid credential combinations when new academic programs or plans (i.e., majors, minors, options, diplomas, certificates, and specializations) are created. The University has done its best to include all specific invalid credential combinations in the table below; however, students should confirm any plan combination with their academic advisor.

Legend

* Indicates an inactivated academic program or plan. **When credentials are inactivated, they will remain in this table for three years; once removed, the combination remains invalid and students should refer to historical versions of the academic calendar.**

Table - List of Invalid Credential Combinations

...

List of reciprocal invalid plan combinations (not as it appears in the academic calendar):

How to read the following table:

- Invalid combinations only appear once.
- Ordered alphabetically by majors, then minors, then options.
- Invalid combinations meeting high-level rules listed above are not included (e.g., Computer Engineering and Computer Engineering Option; or Anthropology major and Anthropology Minor).

Plan/program #1	Faculty #1	Plan/program #2	Faculty #2	Change being applied
Accounting and Financial Management, Bachelor of	Arts	Arts and Business	Arts	
Accounting and Financial Management, Bachelor of	Arts	Management Studies Minor or Diploma*	Arts	Removing old inactive plan
Applied Mathematics with Scientific Computing	Mathematics	Computational Mathematics (major and minor)	Mathematics	
Arts and Business	Arts	Honours Arts Co-op	Arts	Not previously listed as reciprocal
Arts and Business	Arts	French Teaching Specialization (French major)	Arts	
Arts and Business	Arts	Global Business and Digital Arts, Bachelor of	Arts	
Arts and Business	Arts	Management Studies Minor	Arts	
Arts and Business	Arts	Mathematical Economics major (BA and BMath)	Arts and Math	(BMath) not previously listed as reciprocal
Arts and Business	Arts	Sociology/Legal Studies—Criminology Specialization*	Arts	Removing old inactive plan – June SUC
Arts and Business	Arts	Sustainability and Financial Management, Bachelor of	Arts and Env	Added June SUC
Biomedical Sciences major	Science	Biology Minor	Science	Not previously listed as reciprocal
Biochemistry major	Science	Biology Minor	Science	Not previously listed as reciprocal
Bioinformatics Specialization (Computer Science major, BCS or BMath)	Mathematics	Any plan offered by the Biology Department Biochemistry major	Science	Not previously listed as reciprocal Adding clarity

		Biochemistry Minor; Bioinformatics Option; Biology major; Biology Minor; Biomedical Sciences major; Biophysics Minor; Environmental Sciences major (all specializations); Science and Business – Biochemistry Specialization; Science and Business – Biology Specialization; Science and Business – Biotechnology Specialization		
Biology Specialization (Applied Mathematics major)	Mathematics	Any plan offered by the Biology Department Biochemistry major; Biochemistry Minor; Biology major; Biology Minor; Biomedical Sciences major; Biophysics Minor; Environmental Sciences major (all specializations); Science and Business – Biochemistry Specialization; Science and Business – Biology Specialization; Science and Business – Biotechnology Specialization	Science	Not previously listed as reciprocal Adding clarity
Biophysics Specialization (Life Physics major)	Science	Biology Minor	Science	Not previously listed as reciprocal
Biotechnology/Chartered Professional Accountancy major	Science	Biology Minor	Science	Not previously listed as reciprocal

Business Administration and BCS/BMath double degree plans	Mathematics	Any plan similar to one appearing on the student's Laurier academic record transcript	N/A	
Business Administration and Mathematics double degree plans	Mathematics	Management Studies Minor	Arts	Not previously listed as reciprocal
Business Specialization (Computer Science major, BCS or Math, Software Engineering)	Mathematics	Economics Minor	Arts	Not previously listed as reciprocal
Business Specialization (Computer Science major, BCS or Math, Software Engineering)	Mathematics	Human Resources Management Minor or Diploma	Arts	Not previously listed as reciprocal
Business Specialization (Computer Science major, BCS or Math, Software Engineering)	Mathematics	Management Studies Minor	Arts	Not previously listed as reciprocal
Business Specialization (Computer Science major, BCS or Math, Software Engineering)	Mathematics	Mathematics/Financial Analysis and Risk Management major	Mathematics	
Business Specialization (Mathematical Studies major)	Mathematics	Management Studies Minor or-Option?	Arts	Not previously listed as reciprocal; Removing old inactive plan
Classics major	Arts	Classical Studies Minor	Arts	
Communication Arts and Design Practice major	Arts	Communications Studies plans Communications Studies Minor and major	Arts	Adding clarity
Communication Arts and Design Practice major	Arts	Digital Arts Communication Minor	Arts	
Communication Arts and Design Practice major	Arts	Speech Communication * plans Speech Communication Minor* and major*	Arts	Adding clarity
Communication Arts and Design Practice major	Arts	Theatre and Performance plans Theatre and Performance Minor and major	Arts	Adding clarity

Communication Arts and Design Practice major	Arts	Performance Creation Minor	Arts	
Communication Studies plans	Arts	Any Speech Communication* plan	Arts	Replace by new guideline about renamed plans
Computational Fine Art Specialization or Option* (Computer Science major, BCS or BMath, Software Engineering)	Mathematics	Any plan offered by the Fine Arts Department; Fine Arts major; Fine Arts Studio Minor; Visual Culture in a Global Context Minor; Visual Culture major	Arts	Not previously listed as reciprocal; Adding clarity
Computer Engineering major	Engineering	Computing Option	Engineering	Not previously listed as reciprocal
Computing and Financial Management, Bachelor of	Arts and Math	Computer Science, Bachelor of	Mathematics	Added June SUC
Data Science (BCS)	Mathematics	Artificial Intelligence Specialization or Option*	Mathematics	Removing old inactive plan
Decision Support and Geographic Information Systems Specialization (Planning major)	Environment	Excellence in Geographic Information Systems, Diploma in	Environment	
Digital Media Studies Specialization (English majors)	Arts	Digital Arts Communication Minor	Arts	
Digital Media Studies Specialization (English major)	Arts	Digital Arts Communication Specialization* (Arts and Business)	Arts	Removing old inactive plan
Diversity and Equity Specialization (Social Development Studies major)	Arts	Cultural Diversity Specialization* (Social Development Studies major)	Arts	Replace by new guideline about renamed plans
Earth Sciences major	Science	Earth Sciences Minor	Science	Existing guidelines cover this scenario
Ecology Specialization (Environmental Science major)	Science	Biology Minor	Science	Not previously listed as reciprocal
Economics plans Economics major; Mathematical Economics major (BA and BMath)	Arts	Biotechnology/Economics major*	Science	Not previously listed as reciprocal Adding clarity

Economics plans Economics major; Economics Minor	Arts	Economic Theory Minor	Arts	Adding clarity
Economics plans	Arts-	Environmental Economics Minor*	Environment-	Removing old inactive plan
Economics Specialization (Applied Mathematics major)	Mathematics	Economics Minor	Arts	
Economics Specialization (Applied Mathematics major)	Mathematics	Economics plans Economics major; Mathematical Economics major (BA and BMath)	Arts	Adding clarity
Economics Specialization (Applied Mathematics major)	Mathematics	Economic Theory Minor	Arts	
English majors	Arts	Creative Writing, Diploma in	Arts	
English majors	Arts	Technical Writing Minor	Arts	Not previously listed as reciprocal
Entrepreneurial Mindset Specialization (Accounting and Financial Management, Bachelor of)	Arts	Entrepreneurship Minor	Engineering	
Environment and Business major	Environment	Business Option	Environment	Not previously listed as reciprocal
Environment and Business major	Environment	Management Studies Minor	Arts	Not previously listed as reciprocal
French Teaching Specialization (French major)	Arts	Any other stand-alone major		
Geological Engineering	Engineering	Joint Honours X with Earth Sciences	Science	Not previously listed as reciprocal
Geoscience Specialization (Environmental Science major)	Science	Earth Sciences Minor	Science	Not previously listed as reciprocal
Global Business and Digital Arts, Bachelor of	Arts	Digital Arts Communication Minor	Arts	
Global Business and Digital Arts, Bachelor of	Arts	Management Studies Minor or Diploma*	Arts	Removing old inactive plan

Global Business and Digital Arts, Bachelor of	Arts	Any stand-alone major	Arts	
Information Technology Management major	Mathematics	Computing Minor or Option* (Mathematics)	Mathematics	
International Relations Specialization (History major)	Arts	International Relations Specialization (Political Science major)	Arts	
Joint Computer Science (BCS or BMath)	Mathematics	Joint Statistics	Mathematics	
Joint Honours X with Physics	Science	Physics Specialization (Applied Mathematics)	Mathematics	
Joint programs in Mathematics or Computer Science	Mathematics	Bioinformatics Option	Science	Not previously listed as reciprocal
Liberal Studies major	Arts	Any other stand-alone major	Arts	
Life Physics major	Science	Biophysics Minor	Science	Not previously listed as reciprocal
Life Physics major	Science	Physics Minor	Science	Not previously listed as reciprocal
Materials and Nanosciences major	Science	Physics Minor	Science	Not previously listed as reciprocal
Mathematical Economics major (BA or BMath)	Arts and Mathematics	Economics Minor	Arts	
Mathematical Economics major (BA or BMath)	Arts and Mathematics	Economics plans Economics major	Arts	Adding clarity
Mathematical Economics major (BA or BMath)	Arts and Mathematics	Economic Theory Minor	Arts	
Mathematical Economics major (BA or BMath)	Arts and Mathematics	Any other stand-alone major		Adding clarity
Mathematical Physics major (Bachelor of Mathematics)	Mathematics	Any plan offered by the Physics and Astronomy Department, including Joint Honours X with Physics Astrophysics Minor; Biophysics Minor; Life Physics major; Joint Honours X with Physics;	Science	Not previously listed as reciprocal Adding clarity

		Mathematical Physics major (Bachelor of Science); Physics major; Physics Minor; Physics and Astronomy major		
Mathematical Physics major (Bachelor of Science)	Science	Life Physics major; Joint Honours X with Physics; Mathematical Physics major (Bachelor of Mathematics); Physics major; Physics Minor Physics and Astronomy major	Science	Not previously listed as reciprocal Adding clarity
Mathematical Studies major (with or without a Business Specialization)	Mathematics	Any other stand-alone or Mathematics Joint plan	Mathematics	
Mathematics/Business Administration major	Mathematics	Management Studies Minor	Arts	Not previously listed as reciprocal
Mathematics/Financial Analysis and Risk Management major	Mathematics	Business Specialization or Option* (Computer Science major, BCS or BMath, Software Engineering)	Mathematics	Removing old inactive plan
Music and Peace Specialization (Music major)	Arts	Music in a Global Context Specialization (Music major)	Arts	
Music major	Arts	Church Music and Worship Minor, or Diploma in	Arts	
Physics and Astronomy major	Science	Astrophysics Minor	Science	Not previously listed as reciprocal
Physics and Astronomy major	Science	Physics Minor	Science	Not previously listed as reciprocal
Physics Specialization (Applied Mathematics major)	Mathematics	Any plan offered by the Physics and Astronomy Department; Astrophysics Minor; Biophysics Minor; Life Physics major; Joint Honours X with Physics; Mathematical Physics major (SCI); Physics major;	Science	Not previously listed as reciprocal Adding clarity

		Physics Minor; Physics and Astronomy major		
Political Science major	Arts	Canadian Politics and Public Policy Minor	Arts	
Political Science major	Arts	Politics and Business Minor	Arts	
Public Policy Specialization (Economics major)	Arts	Public Policy and Administration Minor*	Arts	
Recreation and Sport Business major	Health	Management Studies Minor	Arts	Not previously listed as reciprocal
Science and Business major (all specializations)	Science	Biology Minor	Science	Not previously listed as reciprocal
Science and Business major (all specializations)	Science	Management Studies Minor	Arts	Not previously listed as reciprocal
Software Engineering, Bachelor of	Engineering and Mathematics	Computing Option (Engineering)	Engineering	Not previously listed as reciprocal
Spanish plans Spanish major; Spanish Minor; Spanish Language, Diploma in	Arts	Latin American Studies, Diploma in	Arts	Adding clarity
Spanish plans	Arts-	Spanish/English Translation Minor*-	Arts-	Removing old inactive plan
Sustainability and Financial Management	Arts and Env	Management Studies Minor	Arts	Added June 2022 SUC
Sustainability and Financial Management	Arts and Env	Any stand-alone major		Added June 2022 SUC
Water Science Specialization (Environmental Science major)	Science	Biology Minor	Science	Not previously listed as reciprocal
Water Science Specialization (Environmental Science major)	Science	Earth Sciences Minor	Science	Not previously listed as reciprocal
Astrophysics Minor	Science	Physics Minor	Science	Added May 2022 SUC
Biochemistry Minor	Science	Biology Minor	Science	Not previously listed as reciprocal
Biochemistry Minor	Science	Chemistry Minor	Science	
Biology Minor	Science	Biophysics Minor	Science	Not previously listed as reciprocal

Biology Minor	Science	Medical Physiology Minor	Science/Health	Not previously listed as reciprocal (Health version)
Biology Minor	Science	Biotechnology/Economics major*	Science	
Biophysics Minor	Science	Physics Minor	Science	Not previously listed as reciprocal
Canadian Politics and Public Policy Minor	Arts	Public Policy and Public Administration Minor*	Arts	
Classical Studies Minor	Arts	Greek Minor*	Arts	
Classical Studies Minor	Arts	Latin Minor*	Arts	
Computer Science Minor	Mathematics	Bioinformatics Option	Science	Not previously listed as reciprocal
Computer Science Minor	Mathematics	Computing Minor or Computing Option* (Mathematics)	Mathematics	
Digital Arts Communication Minor	Arts	Digital Arts Communication Specialization (Arts and Business)*	Arts	Removing old inactive plan
Economics Minor	Arts	Biotechnology/Economics major*	Science	
Economic Theory Minor	Arts	Biotechnology/Economics major*	Science	
Geography and Environmental Management Minor	Environment	Any plan offered by the Geography and Environmental Management Department Climate and Environmental Change major; Geography and Aviation major; Geomatics major	Environment	Not previously listed as reciprocal Adding clarity
Computing Minor	Mathematics	Bioinformatics Option	Science	Not previously listed as reciprocal
Human Resources Management Minor	Arts	Business Option	Environment	Not previously listed as reciprocal
Human Resources Management (HRM) Minor, or Diploma in	Arts	Students who have completed a Diploma in HRM or the course requirements for the Certified Human Resources Professional (CHRP) designation, or who have graduated from a college or university HR or business program	N/A	

International Trade Minor	Arts-	International Trade Specialization (Arts and Business)*	Arts-	Removing old inactive plan
Legal Studies Minor	Arts-	Crime and Deviance Specialization (Sociology major)*	Arts-	Removing old inactive plan – June SUC
Legal Studies Minor	Arts-	Sociology/Legal Studies – Criminology Specialization*	Arts-	Removing old inactive plan – June SUC
Management Studies Minor	Arts	Business Option	Environment	Not previously listed as reciprocal
Mathematics Minor	Mathematics	Bioinformatics Option	Science	Not previously listed as reciprocal
Performance Creation Minor	Arts-	Theatre and Performance Minor*	Arts-	Replace by new guideline about renamed plans
Politics and Business Minor	Arts	Politics and Business Specialization* (Political Science major)	Arts	
Physics Minor	Science	Chemical Physics major*	Science	Needs to be listed as inactive
Computer Engineering Option	Engineering	Computing Option	Engineering	
Computer Engineering Option	Engineering	Software Engineering Option	Engineering	
Computing Option	Engineering	Software Engineering Option	Engineering	

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for September 13, 2022 meeting of Senate Undergraduate Council -

ENTRANCE AWARDS

Romesh and Manju Batra Award for Black and Indigenous Students

One award, valued at up to \$1,200, will be provided annually to a Black or Indigenous undergraduate student enrolled in Year One of any program in the Faculty of Engineering, with preference to students in Mechanical Engineering. For the purpose of this award, an Indigenous person is a person who self-identifies as First Nations (Status/Non-Status), Métis, and/or Inuit, as defined in the Canadian Constitution Act 1982. Selection will be based on a combination of academic achievement, the Admission Information Form (AIF), the online video interview, as well as an application statement wherein students are asked to describe the impact this award will have on their pursuit of postsecondary studies. Interested students should submit an online application by April 15. This fund is made possible by a donation from Romesh and Manju Batra as a tribute to Romesh's parents, Amir Chand and Dewki Bai Batra, who ensured that their two children received a post-secondary education.

Method of Financing: endowment

Class of 1970 Chemical Engineering Scholarship

One scholarship, valued at up to \$2,000, will be provided annually to an outstanding full-time undergraduate student enrolling in Year One of the Chemical Engineering program. This fund is made possible by a group donation from the Class of 1970 Chemical Engineering who, in gratitude for the educational foundation received from Waterloo Engineering, would like to invest in future engineers.

Method of Financing: endowment

Class of 1986 Women in Mechanical Engineering Scholarship

One scholarship, valued at up to \$1,200, will be awarded annually to a female student entering Year One of the Mechanical Engineering program, wherein women are underrepresented. This fund is made possible by donations from the Mechanical Engineering Class of 1986.

Method of Financing: endowment

Roger Dorton Memorial Scholarship for Women in Engineering

One scholarship, valued up to \$1,200, will be provided annually to a full-time female undergraduate student enrolled in Year One of any program in the Faculty of Engineering, wherein women are underrepresented, with preference to Civil Engineering. This fund is made possible by donations from friends and family in memory of Roger Dorton, a renowned engineer in the field of structural engineering, to inspire women to pursue studies in Engineering.

Method of Financing: endowment

Jenkins Family Memorial Entrance Bursary

One bursary, valued at up to \$7,500, will be awarded annually to a deserving undergraduate student enrolled in Year One of the Mechanical Engineering program who has demonstrated financial need, as determined by the University of Waterloo. To be considered, students must complete the entrance bursary application by April 15. This fund is made possible by a donation from Joan Jenkins, in memory of her son, Mark Jenkins (BASc '84, Mechanical Engineering).

Method of Financing: endowment

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for September 13, 2022 meeting of Senate Undergraduate Council -

O'Malley-Hikel Accounting Award for Black and Indigenous Students

One award, valued at \$5,000, will be provided annually to a Black or Indigenous undergraduate student entering Year One of any program in the School of Accounting and Finance. For the purpose of this award, an Indigenous person is a person who self-identifies as First Nations (Status/Non-Status), Métis, and/or Inuit, as defined in the Canadian Constitution Act 1982. Selection will be based on extracurricular involvement and/or participation in volunteer leadership activities. Interested students should submit an application by April 15. This fund is made possible by a donation from Patricia O'Malley (LLD '16) and Ron Hikel. Both Ronald and Patricia believe that increasing the capacity of Black and Indigenous students to become leaders in the financial management of their communities will provide long-term benefit to those communities and to society as a whole.

Method of Financing: annual donation (five-year pledge)

Omura-Morrison Family Award for Indigenous Students

One award, valued at \$5,000, will be provided annually to a deserving Indigenous student entering Year One of any program within the Faculty of Mathematics (excluding Software Engineering). For the purpose of this scholarship, an Indigenous person is a person who self identifies as First Nations (Status/Non-Status), Métis, and/or Inuit as defined in the Canadian Constitution Act 1982. Selection is based on an application statement wherein students are asked to describe the impact this award will have on their pursuit of post-secondary studies. Interested students should submit an application by April 15. This fund was made possible by Dan Morrison (BMath'84) and Sharon Omura. Their hope is to help reduce financial stress for first-year Indigenous students, giving them a more equitable playing field.

Method of Financing: annual donation (five-year pledge)

Patel Family Scholarship in Accounting and Finance

One scholarship, valued at \$2,500, may be awarded to a full-time undergraduate student entering Year One of any program in the School of Accounting and Finance who is living in the Province of Quebec. Selection is based on academic excellence (minimum 80% cumulative average) combined with extracurricular and leadership involvement as assessed through the School of Accounting and Finance Admissions Assessment (SAFAA). This fund is made possible by Ripal Patel (PDACC '00), an alumnus who was based in Quebec before enrolling in the School of Accounting and Finance. He hopes this scholarship will encourage more students from Quebec to pursue an education at the University of Waterloo.

Method of Financing: annual donation (four-year pledge)

Vitaly Pecherskiy Entrance Award for Black and Indigenous Students

One award valued at \$20,000, or two awards valued at \$10,000 each, will be provided to Black and/or Indigenous undergraduate students entering Year One of Computer, Management, Mechatronics, Software or Systems Design Engineering. For the purpose of this scholarship, an Indigenous person is a person who self identifies as First Nations (Status/Non-Status), Métis and/or Inuit. Candidates must be Canadian citizens, permanent residents, or protected persons in Canada. Selection will be based on a combination of academic achievement, the Admission Information Form (AIF), the online video interview, as well as an application statement wherein students are asked to describe the impact this award will have on their pursuit of post-secondary studies. Interested students should submit an application by April 15. This award is made possible by a donation from Vitaly Pecherskiy to increase accessibility to education and create opportunities for underrepresented groups.

Method of Financing: annual donation (one-year pledge)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for September 13, 2022 meeting of Senate Undergraduate Council -

Steve Plaipe Memorial Scholarship

One scholarship, valued at \$2,500, will be awarded annually to a full-time undergraduate student enrolled in Year One of the School of Planning. Selection will be based on academic excellence combined with extracurricular and leadership involvement assessed through the Admission Information Form. This fund is made possible by donations from classmates, family, and friends in memory of Steve Plaipe.

Method of Financing: one-time donation (to support scholarship for five years)

PureFacts PureScholars Award in Engineering

One award, valued at \$5,000, will be provided to a deserving undergraduate student entering Year One of Biomedical, Computer, Management, Software, or Systems Design Engineering. Selection will be based on a combination of academic excellence, the Admission Information Form, online interview and demonstrated financial need as determined by Waterloo. To be considered, students must complete the entrance bursary application by April 15. This award is made possible by a donation from PureFacts Financial Solutions, a growing wealthtech company that provides global enterprise wealth management and asset management solutions for the financial services industry, founded by Robert Madej (BMath '92, MMath '94). Alongside this award comes the opportunity to participate in the PureScholars program at PureFacts. Program involvement may extend beyond the term of the financial award, and may include mentorship opportunities, internship information, and chances to connect with company leaders throughout the student's time at Waterloo. Scholarship winners are encouraged but not obligated to participate in the PureScholars program.

Method of Financing: annual donation (four-year pledge)

PureFacts PureScholars Award in Mathematics

One award, valued at \$5,000, will be provided to a deserving undergraduate student entering Year One of any co-op program in the Faculty of Mathematics. Preference will be given to students in Computer Science, Business Administration and Mathematics Double Degree, Business Administration and Computer Science Double Degree, and Computing and Financial Management. Selection will be based on a combination of academic excellence, community involvement as assessed through the Admission Information Form (AIF), contest scores as assessed through the Centre for Education in Mathematics and Computing (CEMC), and on demonstrated financial need as determined by Waterloo. To be considered, students must complete the entrance bursary application by April 15. This award is made possible by a donation from PureFacts Financial Solutions, a growing wealthtech company that provides global enterprise wealth management and asset management solutions for the financial services industry, founded by Robert Madej (BMath '92, MMath '94). Alongside this award comes the opportunity to participate in the PureScholars program at PureFacts. Program involvement may extend beyond the term of the financial award, and may include mentorship opportunities, internship information, and chances to connect with company leaders throughout the student's time at Waterloo. Scholarship winners are encouraged but not obligated to participate in the PureScholars program.

Method of Financing: annual donation (four-year pledge)

Aziz Shallwani Memorial Award for Black and Indigenous Students

One award, valued at up to \$1,650, will be provided annually to a Black or Indigenous undergraduate student entering Year One of any program in the Faculty of Engineering. For the purpose of this scholarship, an Indigenous person is a person who self identifies as First Nations (Status/Non-Status), Métis and/or Inuit. Selection will be based on a combination of academic achievement, the Admission Information Form (AIF), the online video interview, as well as an application statement wherein students are asked to describe the impact this award will have on their pursuit of post-secondary studies. Interested students should submit an application by April 15. This fund was established by family and friends of Aziz Shallwani (BASC '00) to honour his memory and to support diversity and inclusion among the next generation of Waterloo engineering students.

Method of Financing: endowment

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for September 13, 2022 meeting of Senate Undergraduate Council -

Cam and Nancy Wood Entrance Bursary

Five bursaries, valued at \$20,000 each, will be awarded annually to deserving undergraduate students enrolling in Year One of any program in the Faculty of Engineering on the basis of demonstrated financial need, as determined by Waterloo. To be considered, students must complete the entrance bursary application by April 15. This bursary is made possible by a donation from Cam (BASc '63, Civil Engineering) and Nancy Wood. The Wood family has a strong association with the University of Waterloo and the Faculty of Engineering, with ten degrees over three generations.

- **Cameron Wood**, BASc '63, Civil
 - **David Wood**, BASc '89, Mechanical *m.* **Cynthia Truong**, BMath '88 Computer Science
 - **Michael Wood**, BASc '22, Nanotechnology
 - **Katherine Mutti** (nee Wood), BASc '90, Chemical *m.* **Dennis Mutti**, BASc '90, Chemical, MAsc '95, Civil
 - **Samantha Hiseler** (nee Mutti), BASc '14, Civil
 - **Robert Wood**, BASc '01, Systems Design *m.* **Christina Wood** (nee Padamadan), BASc '01, Systems Design

They have established this fund in celebration of this relationship and to make a difference in the lives of future generations of engineers.

Method of Financing: annual donation (ten-year pledge)

AWARDS FOR CURRENT STUDENTS

Jonathan Ainley Memorial Bursary

One bursary, valued at up to \$1,800, will be awarded annually to a full-time undergraduate student enrolled in Year Two of the Civil Engineering program who has demonstrated financial need. To be considered, students must complete a bursary application by the fall term deadline. This fund is made possible by a gift from the family of Jonathan Ainley (BASc '88).

Method of Financing: endowment

Association of Ontario Land Surveyors Educational Foundation Award

Two awards, valued at \$1,250 each, are provided to full-time undergraduate students enrolled in the Geomatics program who achieve the highest grade in GEOG 310 (Geodesy and Surveying): one to a student from the Spring class and one to a student from the Fall class. This fund is made possible by a donation from The Association of Ontario Land Surveyors Educational Foundation.

Method of Financing: renewal of annual donation (five-year pledge)

Association of Ontario Land Surveyors Educational Foundation Academic Excellence in Geomatics Award

Two awards, valued at \$1,250 each, are provided annually to full-time undergraduate students enrolled in the Geomatics program on the basis of academic excellence: one to a student enrolled in Year Three and one to student enrolled in Year Four. This fund is made possible by a donation from The Association of Ontario Land Surveyors Educational Foundation.

Method of Financing: renewal of annual donation (five-year pledge)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for September 13, 2022 meeting of Senate Undergraduate Council -

Peter J. Belshaw Memorial Scholarship

One scholarship, valued at \$2,000, will be awarded annually to a full-time undergraduate student enrolled in Year Three or Four of the Biochemistry program in the Faculty of Science. Selection is based on academic excellence (minimum 80% cumulative average), and co-op placement research. Interested students should apply by October 15. This fund is made possible by a donation from family and friends of Peter J. Belshaw (BSc '90) to help support and sustain the next generation of scientific inquiry.

Method of Financing: pooled donations (supports scholarship for 8 years)

George T.B. Bibby Memorial Bursary

Two bursaries, valued at \$5,000 each, will be provided annually to full-time undergraduate students enrolled in Year Two, Three, or Four: one to a student in any program in the School of Accounting and Finance in the Faculty of Arts (AFM, Math/CPA, CFM, BioTech CPA and SFM) and one to a student in any program in the David R. Cheriton School of Computer Science in the Faculty of Mathematics. Selection is based on demonstrated financial need, as determined by Waterloo. To be considered, students must complete a bursary application by the fall term deadline. This fund is supported by the Lloyd Carr-Harris Foundation and Spencer Bibby (MAcc 1999) in memory of his father.

Method of Financing: annual donation (five-year pledge)

Canadian Association of Optometrists Leadership Award

One award, valued at \$2,500, will be provided annually to a full-time undergraduate student enrolled in Year Four of the Doctor of Optometry program in the School of Optometry and Vision Science. To be eligible, students must be a student member of the Canadian Association of Optometrists (CAO). Selection is based on academic excellence (minimum 75% cumulative average), combined with leadership that is reflective of CAO's values of accountability, collaboration, innovation, and impact. Examples include volunteerism within the School of Optometry, a leadership position in a student group such as CAOS, or fostering collaborative opportunities between Schools of Optometry in Canada and/or the United States. Interested students should apply by April 15. This award is provided by the Canadian Association of Optometrists.

Method of Financing: annual donation (five-year pledge)

Class of 1978 Mechanical Engineering Bursary

One bursary, valued at up to \$1,200, will be awarded annually to a full-time undergraduate student enrolled in any year of the Mechanical Engineering program who has demonstrated financial need. To be considered, students must complete a bursary application by the fall deadline. This fund is made possible by donations from the Mechanical Engineering Class of 1978 to support the next generation of students.

Method of Financing: endowment

Jim and Cindy Colvin Award for Women in Computer Science

One or more awards, valued at up to \$2,500, will be provided annually to full-time female undergraduate students enrolled in Year Three or Four of a Computer Science program wherein women are underrepresented. Selection is based on academic achievement (minimum 70% cumulative average) and financial need as determined by Waterloo. Canadian citizens, permanent residents and study permit/visa students are eligible to apply. To be considered, students must complete a bursary application by October 15. This fund is made possible by a donation from Jim (BMath '84) and Cindy (BMath '83) Colvin. At the heart of their passion is a keen understanding that an investment in top UW-educated women students will result in a more balanced talent pool of men and women in the field of computer science.

Method of Financing: progressive endowment plus annual donation (five-year pledge)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for September 13, 2022 meeting of Senate Undergraduate Council -

Mark and Paula Driedger Electrical Engineering Award

One award, valued at \$2,000, will be provided annually to a full-time undergraduate student enrolled in Year Three or Four of the Electrical Engineering program. Selection will be based on academic excellence (minimum 70% cumulative average) and a demonstrated interest in electrical hardware as evidenced by related extracurricular activities (e.g., design competitions, science fairs, robotics construction etc.). Interested students should submit an application by October 1. This fund is made possible by a donation from Mark Driedger (BASC'87, MASc'89 EE) to support students with a vested interest in the field of electronic hardware.

Method of Financing: annual donation (five-year pledge)

Dumas Women in Engineering Award

One award, valued at \$3,000, will be provided annually to a full-time female undergraduate student entering Year Three of Electrical or Mechanical Engineering. Selection is based on academic achievement (minimum 75% cumulative average) combined with leadership potential as demonstrated through volunteer and extracurricular involvement. Preference will be given to students with an interest in the mining industry. Interested students should submit an application during the 2B term by October 1. This award is made possible by a donation from Dumas, a proud University of Waterloo co-op employer who is committed to supporting women in STEM.

Method of Financing: annual donation (four-year pledge)

Fresenius Kabi Canada Student Leadership Award

One award, valued at \$3,000, is provided annually to a full-time undergraduate student enrolled in Year Four of the Doctor of Pharmacy program in the Faculty of Science. Selection is based on academic achievement (minimum 75% cumulative average), an intent to pursue a career in hospital pharmacy, and significant leadership contributions by participation in the School of Pharmacy and provincial/national organizations. Interested students should submit an application by February 15. This fund is made possible by a donation from Fresenius Kabi Canada.

Method of Financing: annual donation (five-year pledge renewal)

Kroon Family Social Entrepreneurship Scholarship

One scholarship, valued at \$4,000, will be awarded annually to a full-time undergraduate student enrolled in any program in the School of Accounting and Finance. Selection is based on academic excellence (minimum 80% cumulative average), combined with extracurricular involvement, participation in volunteer activities, leadership potential in the area of social impact/service, and/or entrepreneurship. Preference will be given to students who have demonstrated an interest in developing a business idea that helps others, the community, or the world at large. Interested students should submit an application by October 1. This fund is made possible by a donation from Howie Kroon (MAcc '88).

Method of Financing: annual donation (five-year pledge renewal - amendment)

Elliot T. Grasett Award

One award, valued at \$1,000, is provided annually to a full-time undergraduate student enrolled in Year Four, majoring in a History program within the Faculty of Arts. Selection will be based on the highest cumulative average after Year Three. This award is provided by the Canadian Federation of University Women Kitchener-Waterloo (CFUW K-W) Charitable Fund. It is funded by the proceeds of the sale of a rare book collection combined with a bequest from the late Nan Hewsen, a long-time member of the CFUW K-W. The award honours Elliot T. Grasett and his family, who accumulated an impressive collection of rare books over three generations.

Method of Financing: annual donation (on-going pledge)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for September 13, 2022 meeting of Senate Undergraduate Council -

Roger Green Structural Design Award

One award, valued at up to \$1,200, will be provided annually to a full-time undergraduate student enrolled in Year Three or Four of the Civil Engineering program. Selection will be based on academic achievement (minimum 75% cumulative average) combined with a demonstrated interest in structural engineering as evidenced by extracurricular activities, leadership involvement, co-op experiences and course enrolment (minimum three courses in structural engineering). Interested students should submit an application by February 1. This award was established by family and friends in memory of Professor Emeritus Roger Green, who enjoyed a long career with the University of Waterloo and did extensive research in the area of structural engineering.

Method of Financing: endowment

Jenkins Family Memorial Upper-Year Bursary

One or more bursaries, valued at up to \$7,500, will be provided annually to full-time undergraduate students enrolled in Year Two, Three, or Four of the Mechanical Engineering program who have a demonstrated financial need. To be considered, students must complete a bursary application by the fall deadline. This fund is made possible by a donation from Joan Jenkins, in memory of her son, Mark Jenkins (BASc '84, Mechanical Engineering).

Method of Financing: endowment

Professor Igor Ivković Memorial Award

One award, valued at up to \$1,200, will be provided annually to an undergraduate international student enrolled in Year Two of Biomedical, Mechatronics, or Systems Design Engineering. Selection is based on academic achievement (minimum 75% cumulative average) combined with extracurricular and volunteer involvement that demonstrates varied interests towards pursuing an engineering career. Preference will be given to students who are best able to describe the impact this award will have on their ability to overcome financial barriers and pursue their educational goals. Interested students are to submit an application by October 1. This fund is made possible by donations from family, friends, students and colleagues in memory of Professor Igor Ivković, a passionate and caring educator in the Faculty of Engineering.

Method of Financing: endowment

KEMR Accessibility Award

One award, valued at \$3,000, will be provided annually to a full-time undergraduate student enrolled in Year Three or Four of any program in the Faculty of Arts who is committed to reducing/removing accessibility barriers for people with disabilities or chronic illnesses. Selection is based on academic achievement (minimum 75% cumulative average) and involvement in coursework or activities that advance accessibility for people with disabilities or chronic illnesses. This may include work, volunteer, or extracurricular experiences that champion accessibility for the betterment of society (e.g., more inclusive/accessible events, websites, communications, digital apps, social media, etc., or advocacy for disability justice). Interested students should submit an application by February 15. This award is made possible by an anonymous donor to encourage more students to address accessibility issues and to understand how universal design and supports can help people thrive.

Method of Financing: one-time donation (to support award for five years)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for September 13, 2022 meeting of Senate Undergraduate Council -

Danny Lam Memorial Scholarship

One scholarship, valued at up to \$1,200, will be awarded annually to a full-time undergraduate student enrolled in Year Two, Three, or Four majoring in Political Science in the Faculty of Arts. Selection is based on academic excellence (minimum 80% cumulative average) and demonstrated interest in sustainable energy and/or climate change, which may be illustrated by having taken interdisciplinary courses in Environment, Science, or Engineering, membership in related clubs or societies (e.g., Waterloo Institute for Sustainable Energy (W.I.S.E.)) and/or volunteer work. Interested students should apply by February 15. This fund honours alumnus Danny Lam (MAsc '14), who had a great interest in decision making and political systems and understood the benefits of multidisciplinary perspectives. Through personal experience with W.I.S.E., Danny realized how political science students can benefit from a deeper appreciation of engineering and the scientific method as it relates to climate change.

Method of Financing: endowment

Mac Lewis Memorial Award in Classics

Awards, valued at up to \$2,500, will be provided annually to full-time undergraduate or graduate students in the Department of Classical Studies. Selection is based on academic achievement (minimum cumulative average of 75% or equivalent) and the pursuit of an immersive experiential activity to support their interest and academic journey related to archeology and/or material culture. Eligible activities may include an archeological dig, a Classical Studies travel abroad course, or an internship at CIG (Canadian Institute in Greece). Interested students must complete an application that can be found on the Department of Classical Studies website. This award was established by C. McKenzie and Mary Lewis, with Tracey and Georgia Levison, along with friends, students, and colleagues, in memory of Mac Lewis, a hands-on Roman archeologist who taught at the University of Waterloo in the Department of Classical Studies from 2018 until his untimely passing in March 2020.

Method of Financing: five-year pledge (amendment)

Andrea Linhofer Scholarship

One scholarship, valued at up to \$1,200, is awarded annually to a full-time undergraduate student enrolled in Year Two, Three, or Four of any program in the School of Accounting and Finance. Selection will be based on academic excellence (minimum 80% cumulative average) combined with community involvement. Preference will be given to candidates who best demonstrate the impact this award will have on their ability to pursue excellence in the classroom and community. Interested students should submit an application by October 1. This fund was established by family and friends in memory of Andrea Linhofer (BA '91, Chartered Accountancy), who loved mentoring and supporting her peers and ensuring people had the opportunity to grow and learn.

Method of Financing: endowment

Magna E-Mobility Award

Two awards, valued at \$2,000 each, are available annually for student groups undertaking a fourth-year Capstone Design project in any program in the Faculty of Engineering. The awards will go to projects that, in the opinion of the judges, demonstrate potential for significant innovation in the area of electric vehicles, connected vehicles, autonomous vehicles, automatic transmissions, or new mobility infrastructure. Electric vehicles and connected vehicles are considered priority areas. The award funds will be divided equally among the winning team members. Interested students should submit an application through the Engineering Capstone Design [webpage](#). This fund is made possible by a donation from Magna International Inc.

Method of Financing: annual donation (three-year pledge)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for September 13, 2022 meeting of Senate Undergraduate Council -

Mark Moore and Lucia Valerio Award for Systems Design

One award, valued at \$2,000, will be provided annually to a full-time undergraduate student enrolled in Year Four of Systems Design Engineering. Selection is based on academic achievement (minimum 75% cumulative average) combined with leadership potential as demonstrated through volunteer and extracurricular involvement. Interested students should submit an application by October 1. This award is provided by the family of Mark Moore (BASC '85 SYDE) and Lucia Valerio to encourage and support future Systems Design Engineering students.

Method of Financing: annual donation (five-year pledge)

Overbeeke Family Entrepreneurship Excellence Award

One award, valued at up to \$5,000, will be provided each term to full-time undergraduate students enrolled in any year in the Faculty of Engineering who are pursuing an Enterprise Co-op opportunity. Selection will be based on the development of an outstanding presentation, business plan review, clarity of business description, and preparedness to lead a venture or social enterprise. Interested students should apply to the Enterprise Co-op program no later than the start of the co-op term. This fund is made possible by a donation from H. David Overbeeke to support engineering students with their entrepreneurial goals and business education.

Method of Financing: annual donation (three-year pledge)

Science and Business Future Horizons Scholarship

One scholarship, valued at \$2,000, will be provided annually to a full-time undergraduate student enrolled in Year Two, Three, or Four in the Science and Business program in the Faculty of Science. Selection is based on academic excellence (minimum 80% cumulative average). This fund is made possible by donations from alumni and friends.

Method of Financing: pooled donations (Giving Tuesday)

Terrill Leadership Scholarship for Women in Accounting

One scholarship, valued at \$3,000, will be awarded annually to a full-time female undergraduate student enrolled in Year Two, Three, or Four of any program in the School of Accounting and Finance. Selection is based on academic excellence (minimum 80% cumulative average), combined with extracurricular involvement and/or participation in leadership activities. Interested students should submit an application by October 1. This scholarship is made possible by a donation from Stephanie Terrill (BA '92) to encourage the next generation of women to seek senior leadership roles in the fields of accounting and finance in Canada.

Method of Financing: annual donation (five-year pledge)

Zeton Inc. Engineering Award

Two scholarships, valued at \$2,500 each, will be awarded annually to full-time undergraduate students enrolled in Year Two of Chemical, Mechanical, or Mechatronics Engineering. Selection is based on academic achievement (minimum 75% cumulative average) combined with a demonstrated interest in the field of chemical engineering through work-term experiences, extracurricular or volunteer activities. Students will also be required to provide a statement describing the impact this award will have on their ability to pursue their educational goals. Interested students enrolled in 1B, 2A, or 2B should submit an application by October 1. This scholarship is made possible by a donation from Zeton Inc., a proud Canadian company and University of Waterloo co-op and alumni employer.

Method of Financing: annual donation (four-year pledge)

NEW UNDERGRADUATE SCHOLARSHIPS, AWARDS, and BURSARIES

to be added to the Undergraduate Awards Database

- submitted for September 13, 2022 meeting of Senate Undergraduate Council -

STUDENT-ATHLETE AWARDS

Black or Indigenous Heritage Student-Athlete Bursary

Bursaries, valued at up to \$2,000 each, are available to Black and Indigenous student-athletes who are members of any varsity team. Selection is based on demonstrated financial need, as determined by the University of Waterloo. Interested students are to submit a bursary application by the applicable term deadline. This fund is made possible by the Waterloo Warriors.

Method of Financing: general donations to Athletics (on-going commitment)

Gilbert Athletic Award

One award valued at \$2,000 or two awards valued at \$1,000, will be given to student-athletes who are members of any varsity team. Preference will be given to student-athletes enrolled in any program in the Department of Recreation and Leisure Studies in the Faculty of Health. This award recognizes athletic talent and contribution to Warriors Athletics, their team and the school. This fund is supported by University of Waterloo and Warriors football alumnus Chris Gilbert.

Method of Financing: renewal of annual donation + matching funds (five-year pledge)

Leo & Blair McArthur Athletic Excellence Award

Awards, valued at up to \$4,500, are provided annually to student-athletes that are members of the men's varsity hockey team. These awards recognize athletic talent, contribution to Warrior Athletics and Recreation, and contribution to the team and school. This fund is made possible by a donation from Blair McArthur (BASC '85).

Method of Financing: renewal of annual donation + matching funds (five-year pledge)

JS Rancourt Golf Excellence Award

One award valued at \$2,000 or two awards valued at \$1,000, are given to members of the varsity men's or women's golf teams, with preference to student-athletes enrolled in any program in the Faculty of Engineering. This award recognizes athletic talent, academic success, and contribution to Warriors Athletics, their team and the school. This fund is supported by Warriors men's golf alumnus, JS Rancourt, BASc '11, Mechanical Engineering.

Method of Financing: renewal of annual donation + matching funds (five-year pledge)

Richard Rank Golf Award

One award valued at \$2,000 or two awards valued at \$1,000, are given to members of the varsity men's golf team. Preference will be given to first-year student-athletes from Ontario. This award recognizes athletic talent, academic success, and contribution to Warriors Athletics, their team and the school. This fund is supported by Warriors men's golf and Warriors men's hockey alumnus, and current NHL referee, Garrett Rank, in memory of his father, Richard Rank.

Method of Financing: renewal of annual donation + matching funds (five-year pledge)

INTERNATIONAL EXPERIENCE AWARDS

Maria and Walter Grupp International Experience Award

One award, valued at \$2,000, is provided to an undergraduate student enrolled in any year in the Faculty of Arts at the University of Waterloo (excluding the School of Accounting and Finance), who is participating in an eligible exchange/study abroad program, international co-op work term, or internship opportunity outside of Canada during the Fall term. Preference will be given to students with financial need for the term abroad. Interested students should apply by July 15. This fund is made possible by a donation from Markus Grupp, in honour of his parents Maria and Walter Grupp, in support of Waterloo's efforts to educate globally literate and world-ready graduates.

Method of Financing: one-time donation (to support award for five years)