



FACULTY OF SCIENCE

COUNCIL OF THE FACULTY OF SCIENCE

Notice of Meeting
Tuesday, February 11, 2020
at 3:00pm – 4:30pm
306 Lumbers

Agenda

1. Call to Order and Approval of Agenda
2. Chair's Remarks
3. Approval of Minutes of December 10, 2019
4. Business Arising
5. Inquiries and Communications
 - Senate Synopses of meetings held on December 12, 2019 & January 23, 2020.
6. Dean's Report to Council
7. Associate Deans' and Head of Bethune College Remarks
8. Reports from Science Representatives on Senate Committees
9. Reports from Standing Committees of Council
 - 9.1 Executive Committee
 - Ratification of nominations and Call for nominations on the Standing Committee of Council (item for action)
 - 9.2 Curriculum Committee (Consent agenda items)
10. Other Business
 - Student Committee Membership - Standing Committees of Council



FACULTY OF SCIENCE

COUNCIL OF THE FACULTY OF SCIENCE

Minutes

Tuesday, December 10, 2019

at 3:00pm – 4:30pm

306 Lumbers

Attendance: M. H. Armour (Chair), E. Janse van Rensburg, G. Audette, T. Baumgartner, C. Caputo, J. Clark, S. Connor, P. Delaney, S. Domenikos, T. Kelly, T. Kirchner, M. McCall, R. Metcalfe, A. Mills, A. Mun, P. Lakin-Thomas, P. Potvin, B. Schwarz, Y. Sheng, N. Troje, R. Tsushima, R. Wang, M. Xu, T. McFarlane (Assistant Secretary).

Guests: Ruth Koleszar-Green, H. McLellan & B. Sheeller

1. Call to Order and Approval of Agenda

The Chair of Council, M. H. Armour called the meeting to order and the Agenda was adopted with one slight change to item 8; Presentation by Professor Robert Tsushima on Faculty consultations for York University's next University Academic Plan (UAP).

2. Chair's Remarks

The chair informed the Council that January's Faculty Council meeting will be a meet and greet with the new Dean, Rui Wang.

3. Approval of Minutes of October 8, 2019

A motion was moved, seconded and carried to approve the Minutes.

4. Business Arising

There was none

5. Inquiries and Communications

• Senate Synopsis of meetings held on November 28, 2019

There were no comments or issues.

6. Dean's Report to Council

The Dean, EJ Janse van Rensburg reported Agreement between Iristel and the Faculty of Science in the amount of approximately half a million for:

- upgrade of a teaching lab in Physics,
- internships for Physics undergraduate students,
- graduate student awards.

Congratulations;

- Laurence Packer (Biology) received the Nature Inspiration Award (adult category) from the Museum of Nature.
- Sapna Sharma (Biology) received the Science Promotion Award from the Canadian Council of University Biology Chairs
- Azizia Wahedi (MSc, Biology) received the Faculty of Graduate Studies Thesis & Dissertation Prize for her

thesis.

- Kimberly Badal (BSc '12 in Biomedical Science) Co-Founder, Caribbean Cancer Research Initiative, is one of Bryden Alumni Awards recipients, One to Watch category.

In the Media;

- Laurence Packer (Biology), Nature Inspiration Award winner, in the Globe & Mail.
- The latest article by Dan Falk for Scientific American talks about Eric Hessels' team precise measurement of the size of the proton.
- Amro Zayed (Biology) spoke to the Weather Network about the \$10 million project supported by Ontario Genomics and Genome Canada to develop a health diagnosis tool for bees.
- Paul Delaney (Physics & Astronomy) spoke to CTV News, Your Morning, about Mercury's retrograde motion

Upcoming events;

- December 17 2pm – 4pm: Holiday Reception
- Honours and Awards Ceremony to be held on January 29, 2020.

7. Associate Deans' and Head of Bethune College Remarks

Associate Dean Gerald Audette reminded Council to submit their CV.

Associate Dean Alex Mills informed Council that the Neuroscience program is now live with over 100 applications.

8. Reports from Science Representatives on Senate Committees

8.1 Presentation by Professor Robert Tsushima on Faculty consultations for York University's next University Academic Plan (UAP).

Robert Tsushima gave a presentation on York University's next University Academic Plan (UAP).

Council strongly encouraged to answer the 9 specific questions from the UAP package on their own and provide feedback to Provost Office via the website or email.

9. Reports from Standing Committees of Council

9.1 Executive Committee

9.1.1 Call for nominations - vacancies report on the Standing Committees of FSc Council (items for action)

Council noted the vacancies report in the Standing Committees of FSc Council

9.2 Curriculum Committee (consent agenda items)

The consent agenda items were deemed approved.

10. Other Business

10.1 Proposed Changes to the FSc Rules of Council – to add Graduate Program Committee

A motion was moved, seconded and carried. The motion was previously sent out in the agenda package and there was no discussion to the motion before approval.

10.2 Discussion and vote on the Graduate Program Committee

A motion was moved, seconded and carried. The document had been previously sent out in the agenda package and there was a discussion and the vote was postponed to this Council meeting.

10.3 Presentation by Ruth Koleszar-Green, PhD: presentation on the Indigenous Framework for York: A Guide to Action which is a strategic document that is overseen by Provost Philipps

Ruth Koleszar-Green presented on the Indigenous Framework for York: A Guide to Action and handed out booklets to Council members.

Meeting adjourned.

M. H. Armour, Chair of Council

T. McFarlane, Assistant Secretary of Council

The Senate of York University Synopsis

The 663rd Meeting of Senate held on Thursday, January 23, 2020

Remarks

The Chair, Professor Alison Macpherson of the Faculty of Health, welcomed Senators to the meeting and gave a special welcome to Professor Mario Roy and Pascal Robichaud, joining Senate for the first time in their respective roles as Vice-Chair and Secretary. The Chair expressed sorrow at the recent passing of Professor Emeritus John Caldwell, a professor of astronomy in the Faculty of Science, and at the lives lost in the Ukrainian International plane crash near Tehran, including three York students who were lost in the tragedy.

President Rhonda Lenton expressed sadness at the passing of three York students in the plane crash and acknowledged the efforts of York International and the Iranian Student Association to organize a vigil and the University's participation in the nationwide moment of silence to pay respects to the students and others who lost their lives. President Lenton advised Senators that the University will set up a new scholarship in honour of the victims and will match donations up to \$100k.

Other comments made by President Lenton included the following:

- encouragement for Senators to review and provide input on the draft Strategic Mandate Agreement (SMA3) which can be accessed through the link on the Senate agenda
- an update on the planning and ongoing discussions with all levels of government on Markham Centre Campus
- the ongoing efforts to respond to the November 20 event in Vari Hall, with Thomas A. Cromwell leading an independent external review of the planning and preparations for the event and relevant University policies, procedures and practices
- an expression of sympathy for the York student who was the victim of a stabbing incident that occurred near campus and a reminder to community members to be aware of their surroundings
- the shortlisting of Assistant Professor Jesse Thistle's memoir *From the Ashes* in the CBC Canada Reads competition

The monthly "Kudos" report on the achievements of members of the York community can be accessed with other documentation for the meeting.

Approvals

On the recommendation of its Academic Standards, Curriculum and Pedagogy Committee, Senate approved:

The Senate of York University

Synopsis

- the establishment of a new Specialized Honours option in Speech and Language Sciences within the Linguistics Section, Department of Languages, Literatures and Linguistics, Faculty of Liberal Arts & Professional Studies, effective FW2021-2022
- the establishment of a part-time option and changes to admission and degree requirements for the Master of Finance program, Schulich School of Business / Faculty of Graduate Studies, effective FW2020-2021
- the deletion of MRP and thesis options and changes to degree requirements for the MA program in Dance, Graduate Program in Dance, School of the Arts Media, Performance and Design / Faculty of Graduate Studies, effective FW2020-2021
- a reduction in coursework requirements for the Historical, Theoretical and Critical Studies in Psychology specialization within the PhD program in Psychology, Graduate Program in Psychology, Faculty of Health / Faculty of Graduate Studies, effective FW2020-2021

Committee Information Reports

Executive (Professor Mario Roy, Vice-Chair)

The Executive Committee's information items included the following:

- the next steps for the review of the *Principles Governing a Presidential Search*, in follow-up to the Senate discussion and results of the online survey
- a reminder that the call for expressions of interest in membership on Senate committees and other positions elected by Senate has been issued, with the upcoming vacancies on Senate committees and the form to submit nominations available on the Senate webpage under the title [Senate Elections](#)
- its review of progress on 2019-2020 priorities
- its approval of an individual nominated by Glendon Faculty Council to serve on the Sub-Committee on Honorary Degrees and Ceremonials

Academic Policy, Planning and Research (Professor Carl Ehrlich, Chair)

APPRC updated Senators on the status and planned next steps in the University Academic Plan (UAP) renewal process. With community consultations coming to a close at the end of January, APPRC's Technical Sub-Committee will soon begin the preparation of a draft UAP. Community members will be invited to provide input on the draft document at an Open Forum planned for the morning of Thursday, March 5.

Appeals (Professor Suprakash Datta, Chair)

The Appeals Committee presented its annual report on Faculty- and Senate-level petitions and appeals decisions. In the absence of the Appeals Committee Chair,

The Senate of York University

Synopsis

Senators were encouraged to send any questions arising from the report to the Secretariat for follow-up.

Additional Information about this Meeting

Please refer to the full Senate agenda and supplementary material posted online with the Thursday, January 23, 2020 meeting for details about these items.

<http://secretariat.info.yorku.ca/senate/meeting-agendas-and-synopses/>

February Meeting of Senate

Senate's next meeting will be held at 3:00 p.m. on Thursday, February 27, 2020.

The Senate of York University Synopsis

The 662nd Meeting of Senate held on Thursday, December 12, 2019

Remarks

The Chair, Professor Franck van Breugel of the Lassonde School of Engineering, welcomed Senators to the meeting. This being the final Senate meeting for the Chair, Vice-Chair, Professor Alison Macpherson of the Faculty of Health, expressed thanks and appreciation for his leadership, meticulous preparation and care for fairness and collegial processes. Senator Macpherson and Professor Mario Roy of Glendon will assume the Chair and Vice-Chair roles, respectively, as of January 1.

President Rhonda Lenton commented on the ongoing efforts to respond to the November 20 event in Vari Hall, being led by the Vice-President Equity, People and Culture and the Vice-Provost Students. An investigation of the incidence is being conducted, and will be guided by four principles: 1) safety is the priority, 2) no tolerance for discrimination on the University's campuses, 3) respecting the right to free speech and the free exchange of ideas; and 4) all community members are responsible for upholding the principles. Noting concerns about a recent motion passed by the York Federation of Students (YFS), President Lenton advised Senators that conversations are continuing with YFS about the importance of upholding the four principles.

Other comments made by President Lenton included the following:

- best wishes for the holiday season
- an expression of thanks to the Senate Chair for his guidance and even-handedness in the role

Provost and Vice-President Academic Lisa Philipps presented for discussion the strategy for the development of the University's Strategic Mandate Agreement (SMA3) submission to the provincial government. Aligning the weighting of the performance metrics with the University's academic priorities (as set out in the University Academic Plan), together with the goal of preserving the University's funding, was the core SMA3 strategy. Provost Philipps reviewed the definitions of the 10 performance metrics, and gathered input from Senators on the proposed weighting and rationale for each one.

The monthly "Kudos" report on the achievements of members of the York community can be accessed with other documentation for the meeting.

Approvals

On the recommendation of its Executive Committee, Senate approved changes to the York University Rules of Senate regarding the membership of the Academic Standards, Curriculum and Pedagogy Committee, and the nominations guidelines and criteria (sub-section 1.6).

On the recommendation of its Academic Policy, Planning and Research Committee, Senate approved:

The Senate of York University

Synopsis

- the establishment of a School of Global Health as a new academic unit within the Faculty of Health, effective July 1, 2020; and
- the transfer of the BA and BSc degree programs in Global Health from the Dean's Office, Faculty of Health, to the School of Global Health, Faculty of Health, effective July 1, 2020

Executive (Professor Alison Macpherson, Vice-Chair)

The Executive Committee's information items included the following:

- its plan to review the e-survey results and a summary of the discussion at the November 28 Senate meeting on the question of whether there is a need to review the *Principles Governing a Presidential Search*
- its approval of Senate committee members designated by the Alumni Association
- its approval of a student nominated by student Senators to serve on the Senate Appeals Committee
- an overview of the autumn meeting of Senate committee chairs and secretaries

Academic Policy, Planning and Research (Professor Carl Ehrlich, Chair)

APPRC facilitated a consultation on the University Academic Plan 2020-2025, gathering input from Senators through real-time audience polling and feedback technology

Academic Standards, Curriculum and Pedagogy (Professor Kim Michasiw, Chair)

ASCP reported on its ongoing work to prepare the policy and academic regulations framework to implement the transition from the 9-point to 4-point undergraduate grading scheme, approved in principle by Senate in November 2017.

Awards (Professor Jonathan Obar, Chair)

Professor Obar encouraged Senators to submit nominations for the President's University-Wide Teaching Awards and promote the submission of nominations among their colleagues. The criteria and nomination form are available on the [Awards Committee website](#).

Additional Information about this Meeting

Please refer to the full Senate agenda and supplementary material posted online with the Thursday, December 12, 2019 meeting for details about these items.

<http://secretariat.info.yorku.ca/senate/meeting-agendas-and-synopses/>

January Meeting of Senate

Senate's next meeting will be held at 3:00 p.m. on Thursday, January 23, 2019.

2019-2020 FSc Report on outstanding vacancies for Senate and FSc Standing Committees

Ratification

Senate

M. H. Armour - 6 month period, starting July 1st – December 31, 2020 (to cover P. Lakin-Thomas sabbatical leave)

Committee on Research and Awards

R. Cheung, Student Representative

Petitions Committee

Tanya Rajwani, Student Representative

Vacancies

Senate

1 vacancy – member at large (E. Hessels on sabbatical leave starting July 1, 2019 – June 30, 2020)

Curriculum Committee

2 vacancies – Undergraduate Students

2 vacancies – Members at large

CEAS

2 vacancies – Undergraduate students

Senate Review Committee T&P

1 vacancy – Student representatives

York University

COUNCIL OF THE FACULTY OF SCIENCE

Report of the Science Curriculum Committee

January 2020

The Faculty of Science Curriculum Committee has reviewed proposals for changes to course information and degree requirements and recommends to the Executive Committee that the following changes be submitted to Council for approval.

Details regarding these proposals (and regarding other minor changes to Calendar/Repository course descriptions and prerequisites which were approved by the Committee but are not reported here) are included in the working papers of January 28, 2020, meeting of the Curriculum Committee, which are on file for your inspection in the Office of the Dean, with all members of the Curriculum Committee or by contacting the Secretary of the Committee at tinar@yorku.ca

Agenda

1. Neuroscience Program

Change in cross-listings: SC/NRSC 1001 1.0, SC/NSRC 2000 3.0, SC/NRSC 2100 3.0, SC/NRSC 2200 3.0, SC/NRSC 3000 3.0, SC/NRSC 4000 6.0 and SC/NRSC 4002 6.0

2. General Science Program

Change in calendar description: BSc. in Science Honours - Updating "Physics 3-credit version"

3. Environmental Science Program

Change in calendar description: BSc. Specialized Honours, Physical Science Stream – Updating "Physics 3 credit version"

4. Geography

Change in calendar description: BSc. Program, Geography, Specialized Honours, Honours Double Major, Honours Major/Minor, Bachelor and Minor –Updating "Physics 3-credit version"

Faculty of Science - Changes to Existing Course Summary

Faculty of Science Undergraduate Curriculum Committee

Course changes academic rationale statement:

The neuroscience courses (NRSC) are offered by the Faculties of Health and Science. When the Course Proposals were presented for review and approval, through oversight, the Course Proposal forms did not indicate they were to be cross-listed with both Health and Science (SC). Instead, they were created as Health (HH) courses. This document is to give effect to the cross-listing to the two Faculties. Seven NRSC courses need to be cross-listed.

1. Existing Course Description

HH/NRSC 1001 1.00 Frontiers of Neuroscience

Introduces the breadth of research directions of faculty members at York University within the field of neuroscience. Familiarizes students with professionalism, research ethics, and explores neuroscience related facilities and organizations in the wider community.

Open to: Honours and Specialized Honours BSc students

Note: This course is expected to be completed within the first 30 credits of study but if needed students can be given the opportunity to enroll in this course if they have not yet completed 60 credits.

Proposed Change and Effective Date

Add cross-list for Fall 2019

Proposed Course Description

HH/NRSC 1001 1.00 Frontiers of Neuroscience

Introduces the breadth of research directions of faculty members at York University within the field of neuroscience. Familiarizes students with professionalism, research ethics, and explores neuroscience related facilities and organizations in the wider community.

Open to: Honours and Specialized Honours BSc students

Note: This course is expected to be completed within the first 30 credits of study but if needed students can be given the opportunity to enroll in this course if they have not yet completed 60 credits.

Cross-listed to: SC/NRSC 1001 1.00

2. Existing Course Description

HH/NRSC 2000 3.00 Fundamental Molecular and Cellular Neuroscience

Survey of the key areas of neuroscience including a historic perspective, gross anatomy and histology of the nervous system, development of the nervous system, molecular and cellular neuroscience, and neurological disorders. Introduces methodologies of research and experimentation in neuroscience.

Prerequisites: SC/BIOL 1000 3.00; SC/BIOL 1001 3.00; HH/PSYC 1010 6.00

Open to: Honours and Specialized Honours BSc students

Proposed Change and Effective Date

Add cross-list for Fall 2019

Proposed Course Description

HH/NRSC 2000 3.00 Fundamental Molecular and Cellular Neuroscience

Survey of the key areas of neuroscience including a historic perspective, gross anatomy and histology of the nervous system, development of the nervous system, molecular and cellular neuroscience, and neurological disorders. Introduces methodologies of research and experimentation in neuroscience.

Prerequisites: SC/BIOL 1000 3.00; SC/BIOL 1001 3.00; HH/PSYC 1010 6.00

Open to: Honours and Specialized Honours BSc students

Cross-listed to: SC/NRSC 2000 3.00

3. Existing Course Description

HH/NRSC 2100 3.00 Systems, Behavioral, and Cognitive Neuroscience

Explores the structure and function of the human brain. Topics include the organization of the central nervous system, the function and neural basis of sensory and movement systems, consciousness, language, thought and memory.

Prerequisites: HH/NRSC 2000 3.00

Open to: Honours and Specialized Honours BSc students

Proposed Change and Effective Date

Add cross-list for Fall 2019

Proposed Course Description**HH/NRSC 2100 3.00 Systems, Behavioral, and Cognitive Neuroscience**

Explores the structure and function of the human brain. Topics include the organization of the central nervous system, the function and neural basis of sensory and movement systems, consciousness, language, thought and memory.

Prerequisites: HH/NRSC 2000 3.00 or SC/NRSC 2000 3.00

Open to: Honours and Specialized Honours BSc students

Cross-listed to: SC/NRSC 2100 3.00

4. Existing Course Description**HH/NRSC 2200 3.00 Neuroscience Techniques**

Provides students with an overview of and exposure to experimentation techniques and methodologies in the fields of systems and cognitive, cellular and molecular, and computational and theoretical neuroscience. These could include any of the following: EEG, fMRI, behavioural methods such as psychophysics and eye/body tracking, electrophysiology, patch and dynamic clamp, transgenic mouse technology, molecular imaging, neuronal coding and communication, neuronal networks, and brain-machine interfaces.

Prerequisites: HH/NRSC 2000 3.00; HH/NRSC 2100 3.00

Corequisites: HH/NRSC 2100 3.00

Open to: Honours and Specialized Honours BSc students

Proposed Change and Effective Date

Add cross-list for Fall 2019

Proposed Course Description**HH/NRSC 2200 3.00 Neuroscience Techniques**

Provides students with an overview of and exposure to experimentation techniques and methodologies in the fields of systems and cognitive, cellular and molecular, and computational and theoretical neuroscience. These could include any of the following: EEG, fMRI, behavioural methods such as psychophysics and eye/body tracking, electrophysiology, patch and dynamic clamp, transgenic mouse technology, molecular imaging, neuronal coding and communication, neuronal networks, and brain-machine interfaces.

Prerequisites: HH/NRSC 2000 3.00 or SC/NRSC 2000 3.00; HH/NRSC 2100 3.00 or SC/NRSC 2100 3.00

Corequisites: HH/NRSC 2100 3.00 or SC/NRSC 2100 3.00

Open to: Honours and Specialized Honours BSc students

Cross-listed to: [SC/NRSC 2200 3.00](#)

5. *Existing Course Description*

HH/NRSC 3000 3.00 Molecular and Cellular Basis of Perception and Cognition

Explores the molecular, structural and cellular basis of complex brain functions focussing on perception, learning and memory. Discuss technological advances in areas of genome engineering, optogenetics, imaging and animal models used in the field. Examples of human neurological disease conditions are used whenever appropriate to exemplify the consequences of sensory deficiencies in the nervous system.

Prerequisites: HH/NRSC 2000 3.00 and HH/NRSC 2100 3.0

Corequisites: HH/NRSC 2200 3.00

Open to: Honours and Specialized Honours BSc students

Proposed Change and Effective Date

Add cross-list for Fall 2019

Proposed Course Description

HH/NRSC 3000 3.00 Molecular and Cellular Basis of Perception and Cognition

Explores the molecular, structural and cellular basis of complex brain functions focussing on perception, learning and memory. Discuss technological advances in areas of genome engineering, optogenetics, imaging and animal models used in the field. Examples of human neurological disease conditions are used whenever appropriate to exemplify the consequences of sensory deficiencies in the nervous system.

Prerequisites: HH/NRSC 2000 3.00 [or SC/NRSC 2000 3.00](#) and HH/NRSC 2100 3.00 [or SC/NRSC 2100 3.00](#)

Corequisites: HH/NRSC 2200 3.00 [or SC/NRSC 2200 3.00](#)

Open to: Honours and Specialized Honours BSc students

Cross-listed to: [SC/NRSC 3000 3.00](#)

6. Existing Course Description

HH/NRSC 4000 6.00 Neuroscience Individual Research Project

A Capstone neuroscience research project under the supervision of a neuroscience core/affiliated faculty member. An individual intensive research project engaged in a laboratory, or in the community (industry, hospital), leading to the creation of an original piece of research, final written paper, as well as an oral presentation to the neuroscience community at York.

Prerequisites: HH/NRSC 3000 3.00; HH/NRSC 2200 3.00

Open to: Only to students majoring in Neuroscience. Students must have honours standing, completed at least 84 credits in total, with an additional (on top of NRSC 3000) 18 credits from the 3000/4000-level Neuroscience alternative streams.

Notes: The student will need to contact individual faculty members and find one that is taking on students (this may be facilitated by the Neuroscience Program Coordinator). The student and faculty member must sign a form in which they agree on the type and amount of work to be done.

Proposed Change and Effective Date

Add cross-list for Fall 2019

Proposed Course Description

HH/NRSC 4000 6.00 Neuroscience Individual Research Project

A Capstone neuroscience research project under the supervision of a neuroscience core/affiliated faculty member. An individual intensive research project engaged in a laboratory, or in the community (industry, hospital), leading to the creation of an original piece of research, final written paper, as well as an oral presentation to the neuroscience community at York.

Prerequisites: HH/NRSC 3000 3.00 or SC/NRSC 3000 3.00; HH/NRSC 2200 3.00 or SC/NRSC 2200 3.00

Open to: Only to students majoring in Neuroscience. Students must have honours standing, completed at least 84 credits in total, with an additional (on top of NRSC 3000) 18 credits from the 3000/4000-level Neuroscience alternative streams.

Note 1: The student will need to contact individual faculty members and find one that is taking on students (this may be facilitated by the Neuroscience Program Coordinator).

Note 2: The student and faculty member must sign a form in which they agree on the type and amount of work to be done.

Cross-listed to: SC/NRSC 4000 3.00

7. Existing Course Description

HH/NRSC 4002 6.00 Team Research Project

A Capstone neuroscience team-based research project under the supervision of a neuroscience core/affiliated faculty member and usually an advisor from the community (industry or hospital). An intensive team-based research project leading to the creation of an original piece of research, final written paper, as well as an oral presentation to the neuroscience community at York.

Prerequisites: HH/NRSC 3000 3.00; HH/NRSC 2200 3.00

Open to: Only to students majoring in Neuroscience. Students must have honours standing, completed at least 84 credits in total, with an additional (on top of NRSC 3000) 18 credits from the 3000/4000-level Neuroscience alternative streams.

Notes: The student will need to contact individual faculty members and find one that is taking on students (this may be facilitated by the Neuroscience Program Coordinator). The student and faculty member must sign a form in which they agree on the type and amount of work to be done.

Proposed Change and Effective Date

Add cross-list for Fall 2019

Proposed Course Description

HH/NRSC 4002 6.00 Team Research Project

A Capstone neuroscience team-based research project under the supervision of a neuroscience core/affiliated faculty member and usually an advisor from the community (industry or hospital). An intensive team-based research project leading to the creation of an original piece of research, final written paper, as well as an oral presentation to the neuroscience community at York.

Prerequisites: HH/NRSC 3000 3.00 or SC/NRSC 3000 3.00; HH/NRSC 2200 3.00 or SCNRSC 2200 3.00

Open to: Only to students majoring in Neuroscience. Students must have honours standing, completed at least 84 credits in total, with an additional (on top of NRSC 3000) 18 credits from the 3000/4000-level Neuroscience alternative streams.

Note 1: The student will need to contact individual faculty members and find one that is taking on students (this may be facilitated by the Neuroscience Program Coordinator).

Note 2: The student and faculty member must sign a form in which they agree on the type and amount of work to be done.

Cross-listed to: SC/NRSC 4000 3.00

From: Susan J. E. Murtha
Sent: Monday, December 16, 2019 9:57:50 AM
To: Michael Scheid <mscheid@yorku.ca>
Subject: FW: CC Approval NRSC Course Changes

Dear Associate Dean Scheid,

Please find attached the request to approve the cross-listing of the newly launched NRSC courses between Science and Health. This was something that should have been part of the original proposal but just was missed when it went through the normal approval processes. The rationale is in the attached document including the supporting email from Alex Mills. As you can see from our secretary for the Faculty curriculum committee in Health the members of the Faculty curriculum committee approved these changes.

If you could kindly ensure this goes through your curricular approval process early in the new year so that they can make their way into the calendar copy, we would greatly appreciate it.

Kindest regards,

Susan Murtha Ph.D.
AD Learning, Teaching, Academic Programs
Faculty of Health

Program Proposal

1. Program:
Science (Faculty of Science)
 2. Degree Designation:
BSc in Science
Honours BSc in Science
 3. Type of Modification:
Changes to program requirements.
 4. Effective Date:
Fall 2020
-
5. Provide a general description of the proposed changes to the program.
Update to Physics requirement to specifically include newer and equivalent course versions.
 6. Provide the rationale for the proposed changes that is rooted in the program learning outcomes.
No change to learning outcomes.
 7. Provide an updated mapping of the program requirements to the program learning outcomes to illustrate how the proposed requirements will support the achievement of program learning objectives. If changes to the admission requirements are being proposed, comment on the appropriateness of the revised requirements to the achievement of the program learning outcomes.
No change in mapping of program requirements to program learning outcomes.
 8. If relevant, summarize the consultation undertaken with relevant academic units, including commentary on the impact of the proposed changes on other programs. Provide individual statements from the relevant program(s) confirming consultation and their support.
These changes are the result of consultation with the Physics and Astronomy Department.
 9. Describe any resource implications and how they are being addressed (e.g., through a reallocation of existing resources). If new/additional resources are required, provide a

statement from the relevant Dean(s)/Principal¹² confirming resources will be in place to implement the changes.

No resource implications.

10. Provide a summary of how students currently enrolled in the program will be accommodated.

The course requirements specifically still allow the current 6-credit first-year PHYS courses to be used to satisfy requirements.

11. Provide as an appendix a side-by-side comparison of the existing and proposed program requirements as they will appear in the Undergraduate or Graduate Calendar.

See attached.

Proposed Changes to the Program-Specific Degree Requirements of the Science Program, Faculty of Science, in the Academic Calendar

Rationale:

- Update to Physics requirement to specifically include newer and equivalent course versions.

Change from	Changes	Change to
<p>The Honours BSc Science and the bachelor BSc Science programs have no declared major. These programs are appropriate for a student who wishes to enrol in a broader range of courses at the 3000 and 4000 levels than can normally be undertaken in Honours or bachelor programs.</p> <p>To declare Honours science or bachelor science requires successful completion of at least 24 credits and permission of the science program adviser. The candidate is expected to provide a rationale for this choice of program and a study plan. The study plan must comply with general regulations specified in the Lassonde School of Engineering <i>Regulations Governing Undergraduate Degree Requirements</i> section of the <i>Faculty Rules</i>.</p> <p>All bachelor and Honours BSc degree candidates must complete the following:</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from: SC/MATH 1505 6.00, SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1300 3.00, SC/MATH 1310 3.00 (Note: SC/MATH 1300)</p>	<p>The Honours BSc Science and the bachelor BSc Science programs have no declared major. These programs are appropriate for a student who wishes to enrol in a broader range of courses at the 3000 and 4000 levels than can normally be undertaken in Honours or bachelor programs.</p> <p>To declare Honours science or bachelor science requires successful completion of at least 24 credits and permission of the science program adviser. The candidate is expected to provide a rationale for this choice of program and a study plan. The study plan must comply with general regulations specified in the Lassonde School of Engineering <i>Regulations Governing Undergraduate Degree Requirements</i> section of the <i>Faculty Rules</i>.</p> <p>All bachelor and Honours BSc degree candidates must complete the following:</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from: SC/MATH 1505 6.00, SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1300 3.00, SC/MATH 1310 3.00 (Note: SC/MATH 1300)</p>	<p>The Honours BSc Science and the bachelor BSc Science programs have no declared major. These programs are appropriate for a student who wishes to enrol in a broader range of courses at the 3000 and 4000 levels than can normally be undertaken in Honours or bachelor programs.</p> <p>To declare Honours science or bachelor science requires successful completion of at least 24 credits and permission of the science program adviser. The candidate is expected to provide a rationale for this choice of program and a study plan. The study plan must comply with general regulations specified in the Lassonde School of Engineering <i>Regulations Governing Undergraduate Degree Requirements</i> section of the <i>Faculty Rules</i>.</p> <p>All bachelor and Honours BSc degree candidates must complete the following:</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from: SC/MATH 1505 6.00, SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1300 3.00, SC/MATH 1310 3.00 (Note: SC/MATH 1300)</p>

<p>3.00 is a course credit exclusion for SC/MATH 1013 3.00; SC/MATH 1310 3.00 is a course credit exclusion for SC/MATH 1014 3.00); computer science: three credits chosen from LE/EECS 1011 3.00, LE/EECS 1012 3.00, LE/EECS 1520 3.00, LE/EECS 1530 3.00, LE/EECS 1540 3.00, LE/EECS 1710 3.00); foundational science: six credits chosen from SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1010 6.00, SC/PHYS 1410 6.00, SC/PHYS 1420 6.00.</p> <p>B. Major requirements: courses must be approved by the science program advisor.</p> <p>C. Science breadth: satisfied by major requirements.</p> <p>D. Upper level requirements: for the bachelor program, a minimum of 18 credits in science courses at the 3000 level or above. For the Honours program, a minimum of 42 credits in science courses at the 3000 level or above, of which at least 12 credits must be at the 4000 level.</p> <p>E. Additional elective credits as required for a total of 90 credits for the bachelor program, 120 for the Honours program.</p> <p>F. Standing requirements: a minimum overall grade point average of 4.00 (C) is required to be eligible to graduate with a bachelor degree, and a minimum overall grade point average of 5.00 (C+) for the Honours BSc degree.</p>	<p>3.00 is a course credit exclusion for SC/MATH 1013 3.00; SC/MATH 1310 3.00 is a course credit exclusion for SC/MATH 1014 3.00); computer science: three credits chosen from LE/EECS 1011 3.00, LE/EECS 1012 3.00, LE/EECS 1520 3.00, LE/EECS 1530 3.00, LE/EECS 1540 3.00, LE/EECS 1710 3.00); foundational science: six credits chosen from SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1010 6.00, SC/PHYS 1410 6.00, SC/PHYS 1420 6.00.</p> <p>B. Major requirements: courses must be approved by the science program advisor.</p> <p>C. Science breadth: satisfied by major requirements.</p> <p>D. Upper level requirements: for the bachelor program, a minimum of 18 credits in science courses at the 3000 level or above. For the Honours program, a minimum of 42 credits in science courses at the 3000 level or above, of which at least 12 credits must be at the 4000 level.</p> <p>E. Additional elective credits as required for a total of 90 credits for the bachelor program, 120 for the Honours program.</p> <p>F. Standing requirements: a minimum overall grade point average of 4.00 (C) is required to be eligible to graduate with a bachelor degree, and a minimum overall grade point average of 5.00 (C+) for the Honours BSc degree.</p>	<p>3.00 is a course credit exclusion for SC/MATH 1013 3.00; SC/MATH 1310 3.00 is a course credit exclusion for SC/MATH 1014 3.00); computer science: three credits chosen from LE/EECS 1011 3.00, LE/EECS 1012 3.00, LE/EECS 1520 3.00, LE/EECS 1530 3.00, LE/EECS 1540 3.00, LE/EECS 1710 3.00); foundational science: six credits chosen from SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1011 3.00 or SC/PHYS 1411 3.00 or SC/PHYS 1800 3.00, SC/PHYS 1012 3.00 or SC/PHYS 1412 3.00 or SC/PHYS 1422 3.00 or SC/PHYS 1801 3.00, SC/PHYS 1010 6.00, SC/PHYS 1410 6.00, SC/PHYS 1420 6.00.</p> <p>B. Major requirements: courses must be approved by the science program advisor.</p> <p>C. Science breadth: satisfied by major requirements.</p> <p>D. Upper level requirements: for the bachelor program, a minimum of 18 credits in science courses at the 3000 level or above. For the Honours program, a minimum of 42 credits in science courses at the 3000 level or above, of which at least 12 credits must be at the 4000 level.</p> <p>E. Additional elective credits as required for a total of 90 credits for the bachelor program, 120 for the Honours program.</p> <p>F. Standing requirements: a minimum overall grade point average of 4.00 (C) is required to</p>
--	---	--

		be eligible to graduate with a bachelor degree, and a minimum overall grade point average of 5.00 (C+) for the Honours BSc degree.
--	--	--

Program Proposal

1. Program:

Environmental Science (Faculty of Science)

2. Degree Designation:

Specialized Honours Major BSc Program, Environmental Science, Physical Science Stream

3. Type of Modification:

Changes to program requirements.

4. Effective Date:

Fall 2020

5. Provide a general description of the proposed changes to the program.

Update to Physics requirement to specifically include newer and equivalent course versions. First-year Physics will now be offered as two 3-credit courses rather than one 6-credit course. Four sequences are offered: PHYS 1011+1012 (physics majors), PHYS 1800+1801 (engineering majors), PHYS 1421+1422 (biological sciences majors), and PHYS 1411+1412 (all other majors). Any first-semester course can in principle serve as a prerequisite for any second-semester course.

6. Provide the rationale for the proposed changes that is rooted in the program learning outcomes.

No change to learning outcomes.

7. Provide an updated mapping of the program requirements to the program learning outcomes to illustrate how the proposed requirements will support the achievement of program learning objectives. If changes to the admission requirements are being proposed, comment on the appropriateness of the revised requirements to the achievement of the program learning outcomes.

No change in mapping of program requirements to program learning outcomes.

8. If relevant, summarize the consultation undertaken with relevant academic units, including commentary on the impact of the proposed changes on other programs. Provide individual statements from the relevant program(s) confirming consultation and their support.

These changes are the result of consultation¹⁷ with the Physics and Astronomy Department.

9. Describe any resource implications and how they are being addressed (e.g., through a reallocation of existing resources). If new/additional resources are required, provide a statement from the relevant Dean(s)/Principal confirming resources will be in place to implement the changes.

No resource implications.

10. Provide a summary of how students currently enrolled in the program will be accommodated.

The course requirements specifically still allow the current 6-credit first-year PHYS courses to be used to satisfy requirements.

11. Provide as an appendix a side-by-side comparison of the existing and proposed program requirements as they will appear in the Undergraduate or Graduate Calendar.

See attached.

Proposed Changes to the Program-Specific Degree Requirements of the Environmental Science, Faculty of Science, Program in the Academic Calendar

Rationale:

- Update to Physics requirement to specifically include newer and equivalent course versions.

Change from	Changes	Change to
<p>This is a Specialized Honours program offered with two streams – Life Sciences or Physical Sciences.</p> <p>The program core is defined as (39 credits):</p> <p>SC/GEOG 1400 6.00 (cross-listed to: AP/GEOG 1400 6.00); SC/GEOG 2400 6.00 (cross-listed to: AP/GEOG 2400 6.00); SC/GEOG 2500 3.00 (cross-listed to: AP/GEOG 2500 3.00) or SC/GEOG 2600 3.00 (cross-listed to: AP/GEOG 2600 3.00); six credits from:</p> <ul style="list-style-type: none"> ○ SC/GEOG 2610 3.00 (cross-listed to: AP/GEOG 2610 3.00), ○ SC/GEOG 3200 3.00 (cross-listed to: AP/GEOG 3200 3.00), ○ SC/GEOG 3500 3.00 (cross-listed to: AP/GEOG 3500 3.00, SC/BIOL 3500 3.00), ○ SC/GEOG 4180 4.00 (cross-listed to: AP/GEOG 4180 4.00), ○ SC/GEOG 4200 3.00 (cross-listed to: AP/GEOG 4200 3.00), ○ SC/GEOG 4500 3.00 (cross-listed to: AP/GEOG 4500 3.00); <p>six credits from:</p> <ul style="list-style-type: none"> ○ SC/GEOG 4205 3.00 (cross-listed to: AP/GEOG 4205 3.00), 	<p>This is a Specialized Honours program offered with two streams – Life Sciences or Physical Sciences.</p> <p>The program core is defined as (39 credits):</p> <p>SC/GEOG 1400 6.00 (cross-listed to: AP/GEOG 1400 6.00); SC/GEOG 2400 6.00 (cross-listed to: AP/GEOG 2400 6.00); SC/GEOG 2500 3.00 (cross-listed to: AP/GEOG 2500 3.00) or SC/GEOG 2600 3.00 (cross-listed to: AP/GEOG 2600 3.00); six credits from:</p> <ul style="list-style-type: none"> ○ SC/GEOG 2610 3.00 (cross-listed to: AP/GEOG 2610 3.00), ○ SC/GEOG 3200 3.00 (cross-listed to: AP/GEOG 3200 3.00), ○ SC/GEOG 3500 3.00 (cross-listed to: AP/GEOG 3500 3.00, SC/BIOL 3500 3.00), ○ SC/GEOG 4180 4.00 (cross-listed to: AP/GEOG 4180 4.00), ○ SC/GEOG 4200 3.00 (cross-listed to: AP/GEOG 4200 3.00), ○ SC/GEOG 4500 3.00 (cross-listed to: AP/GEOG 4500 3.00); <p>six credits from:</p> <ul style="list-style-type: none"> ○ SC/GEOG 4205 3.00 (cross-listed to: AP/GEOG 4205 3.00), 	<p>This is a Specialized Honours program offered with two streams – Life Sciences or Physical Sciences.</p> <p>The program core is defined as (39 credits):</p> <p>SC/GEOG 1400 6.00 (cross-listed to: AP/GEOG 1400 6.00); SC/GEOG 2400 6.00 (cross-listed to: AP/GEOG 2400 6.00); SC/GEOG 2500 3.00 (cross-listed to: AP/GEOG 2500 3.00) or SC/GEOG 2600 3.00 (cross-listed to: AP/GEOG 2600 3.00); six credits from:</p> <ul style="list-style-type: none"> ○ SC/GEOG 2610 3.00 (cross-listed to: AP/GEOG 2610 3.00), ○ SC/GEOG 3200 3.00 (cross-listed to: AP/GEOG 3200 3.00), ○ SC/GEOG 3500 3.00 (cross-listed to: AP/GEOG 3500 3.00, SC/BIOL 3500 3.00), ○ SC/GEOG 4180 4.00 (cross-listed to: AP/GEOG 4180 4.00), ○ SC/GEOG 4200 3.00 (cross-listed to: AP/GEOG 4200 3.00), ○ SC/GEOG 4500 3.00 (cross-listed to: AP/GEOG 4500 3.00); <p>six credits from:</p> <ul style="list-style-type: none"> ○ SC/GEOG 4205 3.00 (cross-listed to: AP/GEOG 4205 3.00),

<ul style="list-style-type: none"> ○ SC/GEOG 4210 3.00 (cross-listed to: AP/GEOG 4210 3.00), ○ SC/GEOG 4310 3.00 (cross-listed to: AP/GEOG 4310 3.00), ○ SC/GEOG 4400 3.00 (cross-listed to: AP/GEOG 4400 3.00), ○ SC/GEOG 4600 3.00 (cross-listed to: AP/GEOG 4600 3.00); <p>12 additional credits from geography courses (including three credits in statistics and three credits in a geography field course for students in the physical sciences stream).</p> <p>Specialized Honours – Life Sciences stream</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: SC/MATH 1505 6.00, or both SC/MATH 1013 3.00 and SC/MATH 1014 3.00; computer science: LE/EECS 1520 3.00 or LE/EECS 1540 3.00; foundational science: SC/BIOL 1000 3.00 and SC/BIOL 1001 3.00; SC/CHEM 1000 3.00 and SC/CHEM 1001 3.00</p> <p>B. Major requirements:</p> <p>The program core above (39 credits); SC/BIOL 2010 4.00; SC/BIOL 2030 4.00; SC/BIOL 2050 4.00; SC/BIOL 2060 3.00; one ecology field course (SC/BIOL 3001 3.00 or SC/BIOL 3001 2.00); 15 additional credits chosen from the following:</p> <ul style="list-style-type: none"> ○ a second ecology field course (SC/BIOL 3002 3.00 or SC/BIOL 3002 2.00), 	<ul style="list-style-type: none"> ○ SC/GEOG 4210 3.00 (cross-listed to: AP/GEOG 4210 3.00), ○ SC/GEOG 4310 3.00 (cross-listed to: AP/GEOG 4310 3.00), ○ SC/GEOG 4400 3.00 (cross-listed to: AP/GEOG 4400 3.00), ○ SC/GEOG 4600 3.00 (cross-listed to: AP/GEOG 4600 3.00); <p>12 additional credits from geography courses (including three credits in statistics and three credits in a geography field course for students in the physical sciences stream).</p> <p>Specialized Honours – Life Sciences stream</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: SC/MATH 1505 6.00, or both SC/MATH 1013 3.00 and SC/MATH 1014 3.00; computer science: LE/EECS 1520 3.00 or LE/EECS 1540 3.00; foundational science: SC/BIOL 1000 3.00 and SC/BIOL 1001 3.00; SC/CHEM 1000 3.00 and SC/CHEM 1001 3.00</p> <p>B. Major requirements:</p> <p>The program core above (39 credits); SC/BIOL 2010 4.00; SC/BIOL 2030 4.00; SC/BIOL 2050 4.00; SC/BIOL 2060 3.00; one ecology field course (SC/BIOL 3001 3.00 or SC/BIOL 3001 2.00); 15 additional credits chosen from the following:</p> <ul style="list-style-type: none"> ○ a second ecology field course (SC/BIOL 3002 3.00 or SC/BIOL 3002 2.00), 	<ul style="list-style-type: none"> ○ SC/GEOG 4210 3.00 (cross-listed to: AP/GEOG 4210 3.00), ○ SC/GEOG 4310 3.00 (cross-listed to: AP/GEOG 4310 3.00), ○ SC/GEOG 4400 3.00 (cross-listed to: AP/GEOG 4400 3.00), ○ SC/GEOG 4600 3.00 (cross-listed to: AP/GEOG 4600 3.00); <p>12 additional credits from geography courses (including three credits in statistics and three credits in a geography field course for students in the physical sciences stream).</p> <p>Specialized Honours – Life Sciences stream</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: SC/MATH 1505 6.00, or both SC/MATH 1013 3.00 and SC/MATH 1014 3.00; computer science: LE/EECS 1520 3.00 or LE/EECS 1540 3.00; foundational science: SC/BIOL 1000 3.00 and SC/BIOL 1001 3.00; SC/CHEM 1000 3.00 and SC/CHEM 1001 3.00</p> <p>B. Major requirements:</p> <p>The program core above (39 credits); SC/BIOL 2010 4.00; SC/BIOL 2030 4.00; SC/BIOL 2050 4.00; SC/BIOL 2060 3.00; one ecology field course (SC/BIOL 3001 3.00 or SC/BIOL 3001 2.00); 15 additional credits chosen from the following:</p> <ul style="list-style-type: none"> ○ a second ecology field course (SC/BIOL 3002 3.00 or SC/BIOL 3002 2.00),
--	--	--

<ul style="list-style-type: none"> ○ SC/BIOL 3170 3.00, ○ SC/BIOL 4000 8.00, ○ SC/BIOL 4020 3.00, ○ SC/BIOL 4070 3.00, ○ SC/BIOL 4080 3.00, ○ SC/BIOL 4090 4.00, ○ SC/BIOL 4095 3.00, ○ SC/BIOL 4100 3.00, ○ SC/BIOL 4120 3.00, ○ SC/BIOL 4130 3.00, ○ SC/BIOL 4230 4.00, ○ SC/BIOL 4240 4.00, ○ SC/BIOL 4245 3.00, ○ SC/BIOL 4250 3.00, ○ SC/BIOL 4255 3.00, ○ SC/BIOL 4260 3.00, ○ SC/BIOL 4265 3.00, ○ SC/BIOL 4340 3.00, ○ SC/BIOL 4400 3.00, ○ SC/BIOL 4420 3.00; 	<ul style="list-style-type: none"> ○ SC/BIOL 3170 3.00, ○ SC/BIOL 4000 8.00, ○ SC/BIOL 4020 3.00, ○ SC/BIOL 4070 3.00, ○ SC/BIOL 4080 3.00, ○ SC/BIOL 4090 4.00, ○ SC/BIOL 4095 3.00, ○ SC/BIOL 4100 3.00, ○ SC/BIOL 4120 3.00, ○ SC/BIOL 4130 3.00, ○ SC/BIOL 4230 4.00, ○ SC/BIOL 4240 4.00, ○ SC/BIOL 4245 3.00, ○ SC/BIOL 4250 3.00, ○ SC/BIOL 4255 3.00, ○ SC/BIOL 4260 3.00, ○ SC/BIOL 4265 3.00, ○ SC/BIOL 4340 3.00, ○ SC/BIOL 4400 3.00, ○ SC/BIOL 4420 3.00; 	<ul style="list-style-type: none"> ○ SC/BIOL 3170 3.00, ○ SC/BIOL 4000 8.00, ○ SC/BIOL 4020 3.00, ○ SC/BIOL 4070 3.00, ○ SC/BIOL 4080 3.00, ○ SC/BIOL 4090 4.00, ○ SC/BIOL 4095 3.00, ○ SC/BIOL 4100 3.00, ○ SC/BIOL 4120 3.00, ○ SC/BIOL 4130 3.00, ○ SC/BIOL 4230 4.00, ○ SC/BIOL 4240 4.00, ○ SC/BIOL 4245 3.00, ○ SC/BIOL 4250 3.00, ○ SC/BIOL 4255 3.00, ○ SC/BIOL 4260 3.00, ○ SC/BIOL 4265 3.00, ○ SC/BIOL 4340 3.00, ○ SC/BIOL 4400 3.00, ○ SC/BIOL 4420 3.00;
<p>Note: at least 12 credits from the major courses (BIOL or GEOG) must be at the 4000 level.</p>	<p>Note: at least 12 credits from the major courses (BIOL or GEOG) must be at the 4000 level.</p>	<p>Note: at least 12 credits from the major courses (BIOL or GEOG) must be at the 4000 level.</p>
<p>C. Science breadth: satisfied by above requirements.</p>	<p>C. Science breadth: satisfied by above requirements.</p>	<p>C. Science breadth: satisfied by above requirements.</p>
<p>D. Upper level requirement: a minimum of 42 credits at the 3000 or higher level.</p>	<p>D. Upper level requirement: a minimum of 42 credits at the 3000 or higher level.</p>	<p>D. Upper level requirement: a minimum of 42 credits at the 3000 or higher level.</p>
<p>E. Additional elective credits, as required for an overall total of at least 120 credits.</p>	<p>E. Additional elective credits, as required for an overall total of at least 120 credits.</p>	<p>E. Additional elective credits, as required for an overall total of at least 120 credits.</p>
<p>F. Standing requirement: to graduate in an Honours program requires successful completion of all Faculty requirements and program required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p>	<p>F. Standing requirement: to graduate in an Honours program requires successful completion of all Faculty requirements and program required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p>	<p>F. Standing requirement: to graduate in an Honours program requires successful completion of all Faculty requirements and program required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p>
<p>Specialized Honours – Physical Sciences stream</p>	<p>Specialized Honours – Physical Sciences stream</p>	<p>Specialized Honours – Physical Sciences stream</p>
<p>A. General education:</p>	<p>A. General education:</p>	<p>A. General education:</p>

<p>non-science requirement: 12 credits; mathematics: SC/MATH 1013 3.00; SC/MATH 1014 3.00; computer science: LE/EECS 1540 3.00; foundational science: SC/CHEM 1000 3.00; SC/CHEM 1001 3.00; SC/PHYS 1010 6.00 or SC/PHYS 1410 6.00.</p> <p>B. Major requirements:</p> <p>The program core above (39 credits); LE/ESSE 2010 3.00; LE/ESSE 2470 3.00; SC/CHEM 2030 3.00; SC/PHYS 2020 3.00; SC/MATH 1025 3.00; SC/MATH 2015 3.00; SC/MATH 2270 3.00; LE/ESSE 3030 3.00; LE/ESSE 3130 3.00; LE/ESSE 4220 3.00; six additional credits chosen from:</p> <ul style="list-style-type: none"> o LE/ESSE 3040 3.00, o LE/ESSE 4050 3.00, o LE/ESSE 4051 3.00, o LE/ESSE 4120 3.00, o LE/ESSE 4130 3.00, o LE/ESSE 4140 3.00, o LE/ESSE 4150 3.00, o LE/ESSE 4160 3.00, o LE/ESSE 4230 3.00, o LE/ESSE 4240 3.00, o LE/ESSE 4300 3.00 (atmospheric science topics), o SC/MATH 3241 3.00. <p>Note: at least 12 credits from the major courses (ESSE or GEOG) must be at the 4000 level.</p> <p>C. Science breadth: satisfied by above requirements.</p> <p>D. Upper level requirements: at least 42 credits at the 3000 or higher level.</p>	<p>non-science requirement: 12 credits; mathematics: SC/MATH 1013 3.00; SC/MATH 1014 3.00; computer science: LE/EECS 1540 3.00; foundational science: SC/CHEM 1000 3.00; SC/CHEM 1001 3.00; SC/PHYS 1010 6.00 or SC/PHYS 1410 6.00.</p> <p>B. Major requirements:</p> <p>The program core above (39 credits); LE/ESSE 2010 3.00; LE/ESSE 2470 3.00; SC/CHEM 2030 3.00; SC/PHYS 2020 3.00; SC/MATH 1025 3.00; SC/MATH 2015 3.00; SC/MATH 2270 3.00; LE/ESSE 3030 3.00; LE/ESSE 3130 3.00; LE/ESSE 4220 3.00; six additional credits chosen from:</p> <ul style="list-style-type: none"> o LE/ESSE 3040 3.00, o LE/ESSE 4050 3.00, o LE/ESSE 4051 3.00, o LE/ESSE 4120 3.00, o LE/ESSE 4130 3.00, o LE/ESSE 4140 3.00, o LE/ESSE 4150 3.00, o LE/ESSE 4160 3.00, o LE/ESSE 4230 3.00, o LE/ESSE 4240 3.00, o LE/ESSE 4300 3.00 (atmospheric science topics), o SC/MATH 3241 3.00. <p>Note: at least 12 credits from the major courses (ESSE or GEOG) must be at the 4000 level.</p> <p>C. Science breadth: satisfied by above requirements.</p> <p>D. Upper level requirements: at least 42 credits at the 3000 or higher level.</p>	<p>non-science requirement: 12 credits; mathematics: SC/MATH 1013 3.00; SC/MATH 1014 3.00; computer science: LE/EECS 1540 3.00; foundational science: SC/CHEM 1000 3.00; SC/CHEM 1001 3.00; SC/PHYS 1011 3.00 or SC/PHYS 1411 3.00 or SC/PHYS 1421 3.00 or SC/PHYS 1800 3.00, and SC/PHYS 1012 3.00 or SC/PHYS 1412 3.00 or SC/PHYS 1422 3.00 or SC/PHYS 1801 3.00, or SC/PHYS 1010 6.00 or SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00.</p> <p>B. Major requirements:</p> <p>The program core above (39 credits); LE/ESSE 2010 3.00; LE/ESSE 2470 3.00; SC/CHEM 2030 3.00; SC/PHYS 2020 3.00; SC/MATH 1025 3.00; SC/MATH 2015 3.00; SC/MATH 2270 3.00; LE/ESSE 3030 3.00; LE/ESSE 3130 3.00; LE/ESSE 4220 3.00; six additional credits chosen from:</p> <ul style="list-style-type: none"> o LE/ESSE 3040 3.00, o LE/ESSE 4050 3.00, o LE/ESSE 4051 3.00, o LE/ESSE 4120 3.00, o LE/ESSE 4130 3.00, o LE/ESSE 4140 3.00, o LE/ESSE 4150 3.00, o LE/ESSE 4160 3.00, o LE/ESSE 4230 3.00, o LE/ESSE 4240 3.00, o LE/ESSE 4300 3.00 (atmospheric science topics), o SC/MATH 3241 3.00. <p>Note: at least 12 credits from the major courses (ESSE or GEOG) must be at the 4000 level.</p>
---	---	--

<p>E. Additional elective credits, as required for an overall total of at least 120 credits,</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and program required courses and a minimum credit-weighted grade point average of 5.00 (C+) over all courses completed.</p> <p>Concurrent Certificate in Geographic Information Systems (GIS) and Remote Sensing See the Certificate in Geographic Information Systems (GIS) and Remote Sensing listings within the Programs tab.</p> <p>Environmental Science Courses The following list includes required and elective courses in the Specialized Honours BSc program in Environmental Science.</p> <p><i>GEOGRAPHY</i></p> <p>SC/GEOG 2400 6.00 (cross-listed to: AP/GEOG 2400 6.00) SC/GEOG 2500 3.00 (cross-listed to: AP/GEOG 2500 3.00) SC/GEOG 2600 3.00 (cross-listed to: AP/GEOG 2600 3.00) SC/GEOG 2610 3.00 (cross-listed to: AP/GEOG 2610 3.00) SC/GEOG 3200 3.00 (cross-listed to: AP/GEOG 3200 3.00) SC/GEOG 3500 3.00 (cross-listed to: AP/GEOG 3500 3.00, SC/BIOL 3500 3.00) SC/GEOG 4180 4.00 (cross-listed to: AP/GEOG 4180 4.00) SC/GEOG 4200 3.00 (cross-listed to: AP/GEOG 4200 3.00) SC/GEOG 4205 3.00 (cross-listed to: AP/GEOG 4205 3.00) SC/GEOG 4210 3.00 (cross-listed to: AP/GEOG 4210 3.00)</p>	<p>E. Additional elective credits, as required for an overall total of at least 120 credits,</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and program required courses and a minimum credit-weighted grade point average of 5.00 (C+) over all courses completed.</p> <p>Concurrent Certificate in Geographic Information Systems (GIS) and Remote Sensing See the Certificate in Geographic Information Systems (GIS) and Remote Sensing listings within the Programs tab.</p> <p>Environmental Science Courses The following list includes required and elective courses in the Specialized Honours BSc program in Environmental Science.</p> <p><i>GEOGRAPHY</i></p> <p>SC/GEOG 2400 6.00 (cross-listed to: AP/GEOG 2400 6.00) SC/GEOG 2500 3.00 (cross-listed to: AP/GEOG 2500 3.00) SC/GEOG 2600 3.00 (cross-listed to: AP/GEOG 2600 3.00) SC/GEOG 2610 3.00 (cross-listed to: AP/GEOG 2610 3.00) SC/GEOG 3200 3.00 (cross-listed to: AP/GEOG 3200 3.00) SC/GEOG 3500 3.00 (cross-listed to: AP/GEOG 3500 3.00, SC/BIOL 3500 3.00) SC/GEOG 4180 4.00 (cross-listed to: AP/GEOG 4180 4.00) SC/GEOG 4200 3.00 (cross-listed to: AP/GEOG 4200 3.00) SC/GEOG 4205 3.00 (cross-listed to: AP/GEOG 4205 3.00) SC/GEOG 4210 3.00 (cross-listed to: AP/GEOG 4210 3.00)</p>	<p>C. Science breadth: satisfied by above requirements.</p> <p>D. Upper level requirements: at least 42 credits at the 3000 or higher level.</p> <p>E. Additional elective credits, as required for an overall total of at least 120 credits,</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and program required courses and a minimum credit-weighted grade point average of 5.00 (C+) over all courses completed.</p> <p>Concurrent Certificate in Geographic Information Systems (GIS) and Remote Sensing See the Certificate in Geographic Information Systems (GIS) and Remote Sensing listings within the Programs tab.</p> <p>Environmental Science Courses The following list includes required and elective courses in the Specialized Honours BSc program in Environmental Science.</p> <p><i>GEOGRAPHY</i></p> <p>SC/GEOG 2400 6.00 (cross-listed to: AP/GEOG 2400 6.00) SC/GEOG 2500 3.00 (cross-listed to: AP/GEOG 2500 3.00) SC/GEOG 2600 3.00 (cross-listed to: AP/GEOG 2600 3.00) SC/GEOG 2610 3.00 (cross-listed to: AP/GEOG 2610 3.00) SC/GEOG 3200 3.00 (cross-listed to: AP/GEOG 3200 3.00) SC/GEOG 3500 3.00 (cross-listed to: AP/GEOG 3500 3.00, SC/BIOL 3500 3.00)</p>
--	--	---

<p><i>EARTH AND ATMOSPHERIC SCIENCE</i></p> <p>LE/ESSE 2010 3.00 LE/ESSE 2470 3.00 LE/ESSE 3030 3.00 (cross-listed to: SC/PHYS 3080 3.00) LE/ESSE 3040 3.00 LE/ESSE 3130 3.00 (cross-listed to: SC/CHEM 3060 3.00) LE/ESSE 4050 3.00 LE/ESSE 4051 3.00 LE/ESSE 4120 3.00 LE/ESSE 4130 3.00 LE/ESSE 4140 3.00 LE/ESSE 4160 3.00 LE/ESSE 4220 3.00 LE/ESSE 4230 3.00 LE/ESSE 4240 3.00</p>	<p><i>EARTH AND ATMOSPHERIC SCIENCE</i></p> <p>LE/ESSE 2010 3.00 LE/ESSE 2470 3.00 LE/ESSE 3030 3.00 (cross-listed to: SC/PHYS 3080 3.00) LE/ESSE 3040 3.00 LE/ESSE 3130 3.00 (cross-listed to: SC/CHEM 3060 3.00) LE/ESSE 4050 3.00 LE/ESSE 4051 3.00 LE/ESSE 4120 3.00 LE/ESSE 4130 3.00 LE/ESSE 4140 3.00 LE/ESSE 4160 3.00 LE/ESSE 4220 3.00 LE/ESSE 4230 3.00 LE/ESSE 4240 3.00</p>	<p>SC/BIOL 4255 3.00 (cross-listed to: ES/ENVS 4111 3.00) SC/BIOL 4260 3.00 SC/BIOL 4265 3.00 SC/BIOL 4340 3.00 SC/BIOL 4400 3.00 SC/BIOL 4420 3.00</p> <p><i>EARTH AND ATMOSPHERIC SCIENCE</i></p> <p>LE/ESSE 2010 3.00 LE/ESSE 2470 3.00 LE/ESSE 3030 3.00 (cross-listed to: SC/PHYS 3080 3.00) LE/ESSE 3040 3.00 LE/ESSE 3130 3.00 (cross-listed to: SC/CHEM 3060 3.00) LE/ESSE 4050 3.00 LE/ESSE 4051 3.00 LE/ESSE 4120 3.00 LE/ESSE 4130 3.00 LE/ESSE 4140 3.00 LE/ESSE 4160 3.00 LE/ESSE 4220 3.00 LE/ESSE 4230 3.00 LE/ESSE 4240 3.00</p>
---	---	--

Program Proposal

1. Program:

Geography (Faculty of Science)

2. Degree Designation:

BSc Program, Geography

Specialized Honours BSc Program, Geography

Honours Double Major BSc Program, Geography

Honours Major/Minor BSc Program, Geography

3. Type of Modification:

Changes to program requirements.

4. Effective Date:

Fall 2020

5. Provide a general description of the proposed changes to the program.

Update to Physics requirement to specifically include newer and equivalent course versions. First-year Physics will now be offered as two 3-credit courses rather than one 6-credit course. Four sequences are offered: PHYS 1011+1012 (physics majors), PHYS 1800+1801 (engineering majors), PHYS 1421+1422 (biological sciences majors), and PHYS 1411+1412 (all other majors). Any first-semester course can in principle serve as a prerequisite for any second-semester course.

6. Provide the rationale for the proposed changes that is rooted in the program learning outcomes.

No change to learning outcomes.

7. Provide an updated mapping of the program requirements to the program learning outcomes to illustrate how the proposed requirements will support the achievement of program learning objectives. If changes to the admission requirements are being proposed, comment on the appropriateness of the revised requirements to the achievement of the program learning outcomes.

No change in mapping of program requirements to program learning outcomes.

8. If relevant, summarize the consultation undertaken with relevant academic units, including commentary on the impact of the proposed changes on other programs. Provide individual statements from the relevant program(s) confirming consultation and their support.

These changes are the result of consultation with the Physics and Astronomy Department.

9. Describe any resource implications and how they are being addressed (e.g., through a reallocation of existing resources). If new/additional resources are required, provide a statement from the relevant Dean(s)/Principal confirming resources will be in place to implement the changes.

No resource implications.

10. Provide a summary of how students currently enrolled in the program will be accommodated.

The course requirements specifically still allow the current 6-credit first-year PHYS courses to be used to satisfy requirements.

11. Provide as an appendix a side-by-side comparison of the existing and proposed program requirements as they will appear in the Undergraduate or Graduate Calendar.

See attached.

Proposed Changes to the Program-Specific Degree Requirements of the Geography Faculty of Science Program in the Academic Calendar

Rationale:

- Update to Physics requirement to specifically include newer and equivalent course versions.

Change from	Changes	Change to
<p>Program Core The program core is defined as (27 credits):</p> <p>SC/GEOG 1400 6.00 (cross-listed to: AP/GEOG 1400 6.00); AP/GEOG 1410 6.00 or AP/GEOG 1000 6.00; SC/GEOG 2400 6.00 (cross-listed to: AP/GEOG 2400 6.00); SC/GEOG 2420 3.00 (cross-listed to: AP/GEOG 2420 3.00); SC/GEOG 2500 3.00 (cross-listed to: AP/GEOG 2500 3.00) or SC/GEOG 2610 3.00 (cross-listed to: AP/GEOG 2610 3.00); SC/GEOG 2600 3.00 (cross-listed to: AP/GEOG 2600 3.00).</p> <p>Bachelor Program A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00; computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00; foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1410 6.00 or SC/PHYS 1010 6.00.</p>	<p>Program Core The program core is defined as (27 credits):</p> <p>SC/GEOG 1400 6.00 (cross-listed to: AP/GEOG 1400 6.00); AP/GEOG 1410 6.00 or AP/GEOG 1000 6.00; SC/GEOG 2400 6.00 (cross-listed to: AP/GEOG 2400 6.00); SC/GEOG 2420 3.00 (cross-listed to: AP/GEOG 2420 3.00); SC/GEOG 2500 3.00 (cross-listed to: AP/GEOG 2500 3.00) or SC/GEOG 2610 3.00 (cross-listed to: AP/GEOG 2610 3.00); SC/GEOG 2600 3.00 (cross-listed to: AP/GEOG 2600 3.00).</p> <p>Bachelor Program A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00; computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00; foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1410 6.00 or SC/PHYS 1010 6.00.</p>	<p>Program Core The program core is defined as (27 credits):</p> <p>SC/GEOG 1400 6.00 (cross-listed to: AP/GEOG 1400 6.00); AP/GEOG 1410 6.00 or AP/GEOG 1000 6.00; SC/GEOG 2400 6.00 (cross-listed to: AP/GEOG 2400 6.00); SC/GEOG 2420 3.00 (cross-listed to: AP/GEOG 2420 3.00); SC/GEOG 2500 3.00 (cross-listed to: AP/GEOG 2500 3.00) or SC/GEOG 2610 3.00 (cross-listed to: AP/GEOG 2610 3.00); SC/GEOG 2600 3.00 (cross-listed to: AP/GEOG 2600 3.00).</p> <p>Bachelor Program A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00; computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00; foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1411 3.00 or SC/PHYS 1421 3.00 or SC/PHYS 1011 3.00 or SC/PHYS 1800 3.00, SC/PHYS 1412 3.00 or SC/PHYS</p>

<p>B. Major requirements:</p> <p>the program core (24-27 credits); at least twelve credits from science geography courses at the 3000 or 4000 level, for an overall total of at least 36 credits from geography courses.</p> <p>C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 15 of these 24 credits are satisfied by the General Education requirement.</p> <p>D. Upper level requirements: a minimum of 18 credits at the 3000 level or above.</p> <p>E. Additional elective credits, as required, for a total of 90 credits.</p> <p>F. Standing requirements: a minimum overall grade point average of 4.00 (C) is required in order to be eligible to graduate with a BSc degree (bachelor program).</p> <p>Honours Programs</p> <p><i>SPECIALIZED HONOURS PROGRAM</i></p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00; computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00; foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000</p>	<p>B. Major requirements:</p> <p>the program core (24-27 credits); at least twelve credits from science geography courses at the 3000 or 4000 level, for an overall total of at least 36 credits from geography courses.</p> <p>C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 15 of these 24 credits are satisfied by the General Education requirement.</p> <p>D. Upper level requirements: a minimum of 18 credits at the 3000 level or above.</p> <p>E. Additional elective credits, as required, for a total of 90 credits.</p> <p>F. Standing requirements: a minimum overall grade point average of 4.00 (C) is required in order to be eligible to graduate with a BSc degree (bachelor program).</p> <p>Honours Programs</p> <p><i>SPECIALIZED HONOURS PROGRAM</i></p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00; computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00; foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000</p>	<p>1422 3.00 or SC/PHYS 1012 3.00 or SC/PHYS 1801 3.00, or SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00 or SC/PHYS 1010 6.00.</p> <p>B. Major requirements:</p> <p>the program core (24-27 credits); at least twelve credits from science geography courses at the 3000 or 4000 level, for an overall total of at least 36 credits from geography courses.</p> <p>C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 15 of these 24 credits are satisfied by the General Education requirement.</p> <p>D. Upper level requirements: a minimum of 18 credits at the 3000 level or above.</p> <p>E. Additional elective credits, as required, for a total of 90 credits.</p> <p>F. Standing requirements: a minimum overall grade point average of 4.00 (C) is required in order to be eligible to graduate with a BSc degree (bachelor program).</p> <p>Honours Programs</p> <p><i>SPECIALIZED HONOURS PROGRAM</i></p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00;</p>
--	--	---

<p>3.00, SC/CHEM 1001 3.00, SC/PHYS 1410 6.00 or SC/PHYS 1010 6.00.</p> <p>B. Major requirements:</p> <p>the program core (24-27 credits); SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least 33 additional credits from science geography courses at the 3000 or 4000 level, for an overall total of at least 54 credits from science geography courses (at least 60 from geography courses); of these a minimum of 18 credits must be at the 3000 level or above, including a minimum of 12 credits at the 4000 level; at least six credits from non-geography science courses at the 2000 level or higher.</p> <p>C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or higher. 21 of these 24 credits, including 3 credits at the 2000 level or higher, are satisfied by the above requirements.</p> <p>D. Upper level requirements: a minimum of 42 credits at the 3000 level or above.</p> <p>E. Additional elective credits, as required for a total of 120 credits.</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p>	<p>3.00, SC/CHEM 1001 3.00, SC/PHYS 1410 6.00 or SC/PHYS 1010 6.00.</p> <p>B. Major requirements:</p> <p>the program core (24-27 credits); SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least 33 additional credits from science geography courses at the 3000 or 4000 level, for an overall total of at least 54 credits from science geography courses (at least 60 from geography courses); of these a minimum of 18 credits must be at the 3000 level or above, including a minimum of 12 credits at the 4000 level; at least six credits from non-geography science courses at the 2000 level or higher.</p> <p>C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or higher. 21 of these 24 credits, including 3 credits at the 2000 level or higher, are satisfied by the above requirements.</p> <p>D. Upper level requirements: a minimum of 42 credits at the 3000 level or above.</p> <p>E. Additional elective credits, as required for a total of 120 credits.</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p>	<p>computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00; foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1411 3.00 or SC/PHYS 1421 3.00 or SC/PHYS 1011 3.00 or SC/PHYS 1800 3.00, SC/PHYS 1412 3.00 or SC/PHYS 1422 3.00 or SC/PHYS 1012 3.00 or SC/PHYS 1801 3.00, or SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00 or SC/PHYS 1010 6.00.</p> <p>B. Major requirements:</p> <p>the program core (24-27 credits); SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least 33 additional credits from science geography courses at the 3000 or 4000 level, for an overall total of at least 54 credits from science geography courses (at least 60 from geography courses); of these a minimum of 18 credits must be at the 3000 level or above, including a minimum of 12 credits at the 4000 level; at least six credits from non-geography science courses at the 2000 level or higher.</p> <p>C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or higher. 21 of these 24 credits, including 3 credits at the 2000 level or higher, are satisfied by the above requirements.</p> <p>D. Upper level requirements: a minimum of 42 credits at the 3000 level or above.</p>
--	---	--

<p><i>HONOURS DOUBLE MAJOR PROGRAMS</i></p> <p>The Honours Double Major BSc program allows the combination of majors in Geography and Earth and Atmospheric Science (in either the atmospheric science stream or the earth science stream).</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00; computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00; foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1410 6.00 or SC/PHYS 1010 6.00.</p> <p>B. Major requirements:</p> <p>For the geography and atmospheric science stream:</p> <p>the program core (27 credits) SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least three credits from the following courses:</p> <ul style="list-style-type: none"> o SC/GEOG 4000 6.00 (cross-listed to: AP/GEOG 4000 6.00), o SC/GEOG 4310 3.00 (cross-listed to: AP/GEOG 4310 3.00); <p>a total of at least 42 credits from geography courses, with a minimum of 18 credits the 3000 or</p>	<p><i>HONOURS DOUBLE MAJOR PROGRAMS</i></p> <p>The Honours Double Major BSc program allows the combination of majors in Geography and Earth and Atmospheric Science (in either the atmospheric science stream or the earth science stream).</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00; computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00; foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1410 6.00 or SC/PHYS 1010 6.00.</p> <p>B. Major requirements:</p> <p>For the geography and atmospheric science stream:</p> <p>the program core (27 credits) SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least three credits from the following courses:</p> <ul style="list-style-type: none"> o SC/GEOG 4000 6.00 (cross-listed to: AP/GEOG 4000 6.00), o SC/GEOG 4310 3.00 (cross-listed to: AP/GEOG 4310 3.00); <p>a total of at least 42 credits from geography courses, with a minimum of 18 credits the 3000 or</p>	<p>E. Additional elective credits, as required for a total of 120 credits.</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p> <p><i>HONOURS DOUBLE MAJOR PROGRAMS</i></p> <p>The Honours Double Major BSc program allows the combination of majors in Geography and Earth and Atmospheric Science (in either the atmospheric science stream or the earth science stream).</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00; computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00; foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1411 3.00 or SC/PHYS 1421 3.00 or SC/PHYS 1011 3.00 or SC/PHYS 1800 3.00, SC/PHYS 1412 3.00 or SC/PHYS 1422 3.00 or SC/PHYS 1012 3.00 or SC/PHYS 1801 3.00, or SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00 or SC/PHYS 1010 6.00.</p> <p>B. Major requirements:</p>
--	--	--

<p>higher level, including at least 12 credits at the 4000 level; the requirements for Earth and Atmospheric Science, atmospheric science stream.</p> <p>For the geography and earth science stream:</p> <p>the program core, as specified above, including SC/GEOG 2610 3.00 (27 credits); SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least nine credits selected from the following courses:</p> <ul style="list-style-type: none"> ○ SC/GEOG 4000 6.00 (cross-listed to: AP/GEOG 4000 6.00), ○ SC/GEOG 4180 4.00 (cross-listed to: AP/GEOG 4180 3.00), ○ SC/GEOG 4200 3.00 (cross-listed to: AP/GEOG 4200 3.00), ○ SC/GEOG 4205 3.00 (cross-listed to: AP/GEOG 4205 3.00), ○ SC/GEOG 4210 3.00 (cross-listed to: AP/GEOG 4210 3.00), ○ SC/GEOG 4310 3.00 (cross-listed to: AP/GEOG 4310 3.00), ○ SC/GEOG 4400 3.00 (cross-listed to: AP/GEOG 4400 3.00), ○ SC/GEOG 4600 3.00 (cross-listed to: AP/GEOG 4600 3.00); <p>a total of at least 42 credits from geography courses, with at least 18 credits at the 3000 or higher level,</p>	<p>higher level, including at least 12 credits at the 4000 level; the requirements for Earth and Atmospheric Science, atmospheric science stream.</p> <p>For the geography and earth science stream:</p> <p>the program core, as specified above, including SC/GEOG 2610 3.00 (27 credits); SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least nine credits selected from the following courses:</p> <ul style="list-style-type: none"> ○ SC/GEOG 4000 6.00 (cross-listed to: AP/GEOG 4000 6.00), ○ SC/GEOG 4180 4.00 (cross-listed to: AP/GEOG 4180 3.00), ○ SC/GEOG 4200 3.00 (cross-listed to: AP/GEOG 4200 3.00), ○ SC/GEOG 4205 3.00 (cross-listed to: AP/GEOG 4205 3.00), ○ SC/GEOG 4210 3.00 (cross-listed to: AP/GEOG 4210 3.00), ○ SC/GEOG 4310 3.00 (cross-listed to: AP/GEOG 4310 3.00), ○ SC/GEOG 4400 3.00 (cross-listed to: AP/GEOG 4400 3.00), ○ SC/GEOG 4600 3.00 (cross-listed to: AP/GEOG 4600 3.00); <p>a total of at least 42 credits from geography courses, with at least 18 credits at the 3000 or higher level,</p>	<p>For the geography and atmospheric science stream:</p> <p>the program core (27 credits) SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least three credits from the following courses:</p> <ul style="list-style-type: none"> ○ SC/GEOG 4000 6.00 (cross-listed to: AP/GEOG 4000 6.00), ○ SC/GEOG 4310 3.00 (cross-listed to: AP/GEOG 4310 3.00); <p>a total of at least 42 credits from geography courses, with a minimum of 18 credits the 3000 or higher level, including at least 12 credits at the 4000 level; the requirements for Earth and Atmospheric Science, atmospheric science stream.</p> <p>For the geography and earth science stream:</p> <p>the program core, as specified above, including SC/GEOG 2610 3.00 (27 credits); SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least nine credits selected from the following courses:</p> <ul style="list-style-type: none"> ○ SC/GEOG 4000 6.00 (cross-listed to: AP/GEOG 4000 6.00), ○ SC/GEOG 4180 4.00 (cross-listed to: AP/GEOG 4180 3.00), ○ SC/GEOG 4200 3.00 (cross-listed to: AP/GEOG 4200 3.00), ○ SC/GEOG 4205 3.00 (cross-listed to: AP/GEOG 4205 3.00),
---	---	---

<p>including at least 12 credits at the 4000 level; the course requirements for Earth and Atmospheric Science, earth science stream.</p> <p>C. Science breadth: satisfied by above requirements.</p> <p>D. Upper level requirements: a minimum of 42 credits at the 3000 level or above.</p> <p>E. Additional elective credits, as required, for a total of 120 credits.</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p> <p><i>HONOURS MAJOR/MINOR PROGRAM</i></p> <p>An Honours Major in geography may be combined with an Honours Minor in another subject area in an Honours Major/Minor BSc degree program. Possible subject combinations are listed under Undergraduate Degree Programs in the Faculty of Science Undergraduate Degree and Certificate Programs section.</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00; computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00;</p>	<p>including at least 12 credits at the 4000 level; the course requirements for Earth and Atmospheric Science, earth science stream.</p> <p>C. Science breadth: satisfied by above requirements.</p> <p>D. Upper level requirements: a minimum of 42 credits at the 3000 level or above.</p> <p>E. Additional elective credits, as required, for a total of 120 credits.</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p> <p><i>HONOURS MAJOR/MINOR PROGRAM</i></p> <p>An Honours Major in geography may be combined with an Honours Minor in another subject area in an Honours Major/Minor BSc degree program. Possible subject combinations are listed under Undergraduate Degree Programs in the Faculty of Science Undergraduate Degree and Certificate Programs section.</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00; computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00;</p>	<ul style="list-style-type: none"> o SC/GEOG 4210 3.00 (cross-listed to: AP/GEOG 4210 3.00), o SC/GEOG 4310 3.00 (cross-listed to: AP/GEOG 4310 3.00), o SC/GEOG 4400 3.00 (cross-listed to: AP/GEOG 4400 3.00), o SC/GEOG 4600 3.00 (cross-listed to: AP/GEOG 4600 3.00); <p>a total of at least 42 credits from geography courses, with at least 18 credits at the 3000 or higher level, including at least 12 credits at the 4000 level; the course requirements for Earth and Atmospheric Science, earth science stream.</p> <p>C. Science breadth: satisfied by above requirements.</p> <p>D. Upper level requirements: a minimum of 42 credits at the 3000 level or above.</p> <p>E. Additional elective credits, as required, for a total of 120 credits.</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p> <p><i>HONOURS MAJOR/MINOR PROGRAM</i></p> <p>An Honours Major in geography may be combined with an Honours Minor in another subject area in an Honours Major/Minor BSc degree</p>
--	--	--

<p>foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1410 6.00 or SC/PHYS 1010 6.00.</p> <p>B. Major requirements:</p> <p>the program core (27 credits); SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least 15 additional credits in science geography courses at the 3000 or 4000 level, for an overall total of at least 42 credits in geography courses, of which at least 18 credits must be at the 3000 level or above, including at least 12 credits at the 4000 level; the course requirements for the minor.</p> <p>C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or higher. 15 of these 24 credits are satisfied by the General Education requirement. Satisfied if the minor is another science discipline.</p> <p>D. Upper level requirements: a minimum of 42 credits at the 3000 level or above.</p> <p>E. Additional elective credits, as required, for a total of 120 credits.</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p>	<p>foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1410 6.00 or SC/PHYS 1010 6.00.</p> <p>B. Major requirements:</p> <p>the program core (27 credits); SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least 15 additional credits in science geography courses at the 3000 or 4000 level, for an overall total of at least 42 credits in geography courses, of which at least 18 credits must be at the 3000 level or above, including at least 12 credits at the 4000 level; the course requirements for the minor.</p> <p>C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or higher. 15 of these 24 credits are satisfied by the General Education requirement. Satisfied if the minor is another science discipline.</p> <p>D. Upper level requirements: a minimum of 42 credits at the 3000 level or above.</p> <p>E. Additional elective credits, as required, for a total of 120 credits.</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p>	<p>program. Possible subject combinations are listed under Undergraduate Degree Programs in the Faculty of Science Undergraduate Degree and Certificate Programs section.</p> <p>A. General education:</p> <p>non-science requirement: 12 credits; mathematics: six credits from SC/MATH 1013 3.00, SC/MATH 1014 3.00, SC/MATH 1025 3.00, SC/MATH 1505 6.00; computer science: one of LE/EECS 1520 3.00, LE/EECS 1530 3.00 or LE/EECS 1540 3.00; foundational science: six credits from: SC/BIOL 1000 3.00, SC/BIOL 1001 3.00, SC/CHEM 1000 3.00, SC/CHEM 1001 3.00, SC/PHYS 1411 3.00 or SC/PHYS 1421 3.00 or SC/PHYS 1011 3.00 or SC/PHYS 1800 3.00, SC/PHYS 1412 3.00 or SC/PHYS 1422 3.00 or SC/PHYS 1012 3.00 or SC/PHYS 1801 3.00, or SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00 or SC/PHYS 1010 6.00.</p> <p>B. Major requirements:</p> <p>the program core (27 credits); SC/GEOG 3540 3.00 (cross-listed to: AP/GEOG 3540 3.00); at least 15 additional credits in science geography courses at the 3000 or 4000 level, for an overall total of at least 42 credits in geography courses, of which at least 18 credits must be at the 3000 level or above, including at least 12 credits at the 4000 level; the course requirements for the minor.</p>
---	---	---

<p><i>HONOURS MINOR</i></p> <p>SC/GEOG 1400 6.00 (cross-listed to: AP/GEOG 1400 6.00); AP/GEOG 1410 6.00; six credits in science geography courses at the 4000 level; at least 12 credits from science geography courses for an overall total of at least 30 credits from geography courses.</p>	<p><i>HONOURS MINOR</i></p> <p>SC/GEOG 1400 6.00 (cross-listed to: AP/GEOG 1400 6.00); AP/GEOG 1410 6.00; six credits in science geography courses at the 4000 level; at least 12 credits from science geography courses for an overall total of at least 30 credits from geography courses.</p>	<p>C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or higher. 15 of these 24 credits are satisfied by the General Education requirement. Satisfied if the minor is another science discipline.</p> <p>D. Upper level requirements: a minimum of 42 credits at the 3000 level or above.</p> <p>E. Additional elective credits, as required, for a total of 120 credits.</p> <p>F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.</p> <p><i>HONOURS MINOR</i></p> <p>SC/GEOG 1400 6.00 (cross-listed to: AP/GEOG 1400 6.00); AP/GEOG 1410 6.00; six credits in science geography courses at the 4000 level; at least 12 credits from science geography courses for an overall total of at least 30 credits from geography courses.</p>
---	---	--