1 Course Modification:

ANT208H1: Medical Anthropology: an Evolutionary Perspective on Human Health

<table>
<thead>
<tr>
<th>Contact Hours:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous: Lecture: 36 / Tutorial: 10</td>
</tr>
<tr>
<td>New: Lecture: 24 / Tutorial: 10</td>
</tr>
</tbody>
</table>

Rationale:

Consultation:

Resources:
2 Minor Program Modifications:

**Chemical Physics Specialist**

**Completion Requirements:**

(14 full courses or their equivalent, including at least 1.5 400-series courses)

First Year: (CHM151Y1 strongly recommended)/(CHM135H1/CHM139H1, CHM136H1/CHM138H1), (MAT135H1, MAT136H1)/MAT137Y1/MAT157Y1; (PHY131H1, PHY132H1)/(PHY151H1, PHY152H1)

Higher Years:

1. APM346H1; (CHM222H1, CHM223H1)/CHM225Y1, CHM226H1/PHY356H1, CHM327H1, CHM328H1; MAT223H1/MAT240H1, MAT235Y1/MAT237Y1, MAT244H1, MAT334H1; PHY250H1, PHY254H1, PHY354H1, PHY350H1; CHM423H1
2. Two full course equivalents from CHM210H1, CHM217H1, CHM238Y1, (CHM249H1 strongly recommended)/CHM247H1, CHM310H1, CHM317H1, CHM338H1, CHM348H1, CHM415H1
3. Further 400-series half-courses in CHM/PHY to make a total of 14 full courses

**Description of Proposed Changes:**

Minor housekeeping changes.

- Adding CHM210H to the list of course options that can be taken.
- Removing CHM225Y1 from the list. The course has not been active since 2007-2008.

**Rationale:**

**Impact:**

**Consultation:**

**Resource Implications:**

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**Chemistry Major**

**Completion Requirements:**

(8 full courses or their equivalent, including at least one CHM half course equivalent at the 400-level)

First Year: (CHM151Y1 strongly recommended)/(CHM135H1/CHM139H, CHM136H1/CHM138H); (MAT135H1, MAT136H1)/MAT137Y1/MAT157Y1

Second Year: At least two of CHM217H1, CHM220H1/CHM222H1/CHM225Y1, CHM238Y1, (CHM249H1 strongly recommended)/CHM247H1

Third Year: At least two of CHM317H1, CHM327H1, CHM338H1, CHM343H1, CHM348H1, CHM379H1

Fourth Year: Further 200/300/400-level CHM courses to make a total of seven CHM full course equivalents (CHM299Y1, CHM396Y0, CHM397H0, CHM398H0, CHM398Y0, CHM399Y1 excluded)
### Description of Proposed Changes:
- Removal of CHM225Y1. This course hasn't been offered since 2007-2008.

### Rationale:

### Impact:

### Consultation:

### Resource Implications:

---

### 1 Course Modification:

**CHM417H1: Laboratory Instrumentation**

#### Description:

This course provides an introduction to building and using optics- and electronics-based instrumentation for laboratory research, as well as for implementing custom software control. Lecture topics include passive electronic components, diodes and transistors, operational amplifiers, analogue-to-digital conversion, light sources and detectors, reflectors, refractors, polarizers, and diffractors, LabView programming and many others. Lectures are supplemented by laboratories in which students work in teams to build fluorescent detection systems for chromatography over the course of several weeks. (Lab Materials Fee:$25).

#### Rationale:
- Just a minor change/cleanup of course description.

#### Consultation:

#### Resources:
2 Course Modifications:

CSC207H1: Software Design

Prerequisites:
60% or higher in CSC148H1 (Please note: The minimum prerequisite grade in CSC148H1 is lower than the minimum grade for program admission in Computer Science. If you take this course when your grade in CSC148H1 is lower than the requirement for program admission, you will be unable to enrol in a Computer Science program. If you hope to enrol in a Computer Science program in future, please ensure that you satisfy the program admission grade requirements in CSC148H1 and CSC165H1/CSC240H1 before completing CSC207H1 any 200-level course.)

Exclusions:
Previous: CSC209H1
New:

Rationale:
Up until 2018, CSC207H1 could be used in place of CSC148H1 for admission to Computer Science POSets. This led many students to forge ahead with 200-level CSC courses even when their grades in CSC148H1 was not sufficient for admission, rather than repeating CSC148H1, and a number of these students would get overconfident and go on to take later courses (CSC209H1 in particular) before knowing for certain whether their grade in CSC207H1 would be sufficient for POSet admission. The exclusion from CSC209H1 to CSC207H1 was meant to “slow down” these students and ensure they did not waste their time completing too many of the requirements of a program they could not get into, before ensuring their admission.
Since CSC207H1 is no longer admissible for program admission, there is no longer a need for the explicit exclusion to CSC209H1.

Consultation:
Discussion at the department's Undergraduate Committee, which includes both graduate and undergraduate students.

Resources:

CSC236H1: Introduction to the Theory of Computation

Prerequisites:
60% or higher in CSC148H1, 60% or higher in CSC165H1 (Please note: The minimum prerequisite grade in CSC148H1 and CSC165H1/CSC240H1 is lower than the minimum grade for program admission in Computer Science. If you take this course when your grade in CSC148H1 or CSC165H1/CSC240H1 is lower than the requirement for program admission, you will be unable to enrol in a Computer Science program. If you hope to enrol in a Computer Science program in future, please ensure that you satisfy the program admission grade requirements in CSC148H1 and CSC165H1/CSC240H1 before completing CSC236H1. Students will not be permitted to retake CSC165H1 after completing CSC236H1 any 200-level course.)

Exclusions:
Previous: CSC240H1, CSC263H1 / CSC265H1
New: CSC240H1

Rationale:
Up until 2018, CSC236H1 could be used in place of CSC165H1 for admission to Computer Science POSets. This led many students to forge ahead with 200-level CSC courses even when their grades in CSC165H1 was not sufficient for admission, rather than repeating CSC165H1, and a number of these students would get overconfident and go on to take later courses (CSC263H1/CSC265H1 in particular) before knowing for certain whether their grade in CSC236H1 would be sufficient for POSet admission. The exclusion from CSC263H1/CSC265H1 to CSC236H1 was meant to “slow down” these students and ensure they did not waste their time completing too many of the requirements of a program they could not get into, before ensuring their admission.
Since CSC236H1 is no longer admissible for program admission, there is no longer a need for the explicit exclusion to CSC263H1/CSC265H1.
**Consultation:**

Discussion at the department's Undergraduate Committee, which includes both graduate and undergraduate students.

**Resources:**
2 Course Modifications:

**ESS361H1: Atmosphere-Biosphere Interact**

<table>
<thead>
<tr>
<th>Prerequisites:</th>
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<tbody>
<tr>
<td>8.0 FCE’s, including 1.5 FCE from PHY131H1/PHY132H1/CHM135H1/CHM136H1/CHM138H1/CHM139H1/MAT135H1/MAT136H1</td>
</tr>
</tbody>
</table>

| Rationale: |
| Consultation: |
| Resources: |

**ESS464H1: Biological Perspectives on Earth System Evolution**

<table>
<thead>
<tr>
<th>Prerequisites:</th>
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</thead>
<tbody>
<tr>
<td>ESS261H1/ESS262H1, ESS361H1/ESS362H1/GGR305H1 or permission of the instructor</td>
</tr>
</tbody>
</table>

| Rationale: |
| Consultation: |
| Resources: |
5 Minor Program Modifications:

**Biodiversity and Conservation Biology Major**

<table>
<thead>
<tr>
<th>Description:</th>
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<tr>
<td><strong>Previous:</strong></td>
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<tr>
<td><strong>New:</strong></td>
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</table>

In today’s era of unprecedented global change, natural ecosystems are under attack and thousands of species are threatened with extinction and many more have experienced unprecedented declines. Students in the *Biodiversity & Conservation Biology Major* program (8 FCEs) will be equipped to aid in the response to what is perhaps humanity’s most pressing challenge, the conservation of biological diversity. Students in this program take courses in their first and second years that provide foundations in ecology, evolutionary biology, biodiversity and conservation biology, environmental biology, mathematics, and statistics. In their upper years students will obtain in-depth knowledge about the diversity of living organisms and take advanced courses in ecology, evolution, and biodiversity and conservation biology, including a capstone course at the 400-level.

**Description of Proposed Changes:**

Associate Chair, Undergraduate wanted to add the description before the completion requirements.

**Rationale:**

**Impact:**

**Consultation:**

**Resource Implications:**

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**Ecology & Evolutionary Biology Major**

<table>
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<tr>
<th>Description:</th>
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<tr>
<td><strong>Previous:</strong></td>
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<td><strong>New:</strong></td>
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</tbody>
</table>

The *Ecology & Evolutionary Biology Major* program (8 FCEs) provides a comprehensive understanding of ecological and evolutionary patterns and processes, as well as the diversity of life forms (microbes, fungi, plants, animals). Concepts are taught using a broad array of approaches, including molecular studies, laboratory experiments, computer and mathematical modeling, and field studies. An integral part of the experience is to conduct independent research projects in the laboratory and/or field. There is a strong emphasis within the program on hands-on laboratory and fieldwork that complement the conceptual framework developed in lectures.

**Description of Proposed Changes:**

Associate Chair, Undergraduate wanted to add the description before the completion requirements.

**Rationale:**

**Impact:**

**Consultation:**
Ecology and Evolutionary Biology Specialist

Description:

Previous:
New:

The Ecology & Evolutionary Biology Specialist program (12 FCEs) provides an in-depth understanding of ecological and evolutionary patterns and processes, as well as the diversity of life forms (microbes, fungi, plants, animals). Concepts are taught using a broad array of approaches, including molecular studies, laboratory experiments, computer and mathematical modeling, and field studies. An integral part of the experience is to conduct independent research projects in the laboratory and/or field. There is a strong emphasis within the program on hands-on laboratory and fieldwork that complement the conceptual framework developed in lectures. Students in this program have the opportunity to concentrate in ecology, evolutionary biology, or behaviour.

Completion Requirements:

(12 FCEs including at least 4.0 FCEs at the 300+ series level, 1.0 of which must be at the 400 series level)

First Year (3.0 FCEs): BIO120H1; BIO130H1; (CHM135H1, CHM136H1)/CHM151Y1; (MAT135H1, MAT136H1)/MAT137Y1/MAT157Y1

1. 2.0 FCEs: BIO220H1 (ecology and evolutionary biology); BIO230H1 (molecular and cell biology); BIO260H1/HMB265H1 (genetics); BIO251H1/BIO270H1/PSL300H1/ENV234H1 (plant or animal form and function/environmental biology); Please note: ENV234H1 environmental biology cannot be substituted with EEB375H1.

2. 0.5 FCE in statistics from: EEB225H1 (recommended)/STA220H1/STA257H1/STA288H1/GGR270H1/PSY201H1

3. 0.5 FCE in core evolution from: EEB318H1, EEB323H1, EEB362H1

4. 0.5 FCE in core ecology from: EEB319H1, EEB321H1 (both are recommended), EEB328H1

5. 0.5 FCE in organismal biology from: EEB263H1, EEB266H1, EEB267H1, EEB268H1, EEB330H1, EEB331H1, EEB340H1, EEB380H1, EEB382H1, EEB384H1, EEB386H1, EEB388H1

6. 1.0 FCE at 300+ series, from: EEB313H1, EEB318H1, EEB319H1, EEB321H1, EEB322H1, EEB323H1, EEB324H1, EEB325H1, EEB328H1, EEB330H1, EEB331H1, EEB340H1, EEB356H1, EEB362H1, EEB365H1, EEB380H1, EEB382H1, EEB384H1, EEB386H1, EEB388H1, EEB390H1, EEB398H0, EEB399Y0, EEB428H1, EEB430H1, EEB433H1, EEB440H1, EEB455H1, EEB459H1, EEB460H1, EEB465H1, EEB466H1, EEB492H1/EEB492Y1, EEB495H1, EEB496H1; EJ352H1; ENV334H1, ENV432H1; ENV395Y1; NUS301H0, NUS302H0, NUS303H0, NUS304H0, NUS401H0*

*More information about NUS courses and programs can be found on the Biology Calendar section

Sub-total = 8.0 FCEs

7. 1.0 to 1.5 FCEs in at least two of the three following categories: (1) one field course (0.5 FCE) from EEB403H0, EEB403H1, EEB405H0, EEB405H1, EEB406H0, EEB406H1, EEB407H0, EEB407H1, EEB410H0, EEB410H1; (2) one seminar (0.5 FCE) from EEB495H1; EEB496H1; and/or (3) one independent research project course (0.5 FCE) from EEB497H1/EEB498Y1 and concurrent research issues course EEB488H1 (1.0 0.5 FCE) from EEB498Y1.

Sub-total = 9.0 or 9.5 FCEs (depending on options chosen in #7)
8. Select the remaining FCEs for a total of 12.0 FCEs (at least 1.0 must be 300+ series if 1.0 FCE is completed in #7 above) from: BIO251H1, BIO270H1/PSL300H1, BIO271H1/PSL301H1; all EEB courses (excluding EEB202H1, EEB208H1, EEB214H1, EEB215H1); EHH352H1; ENV234H1, ENV334H1, ENV432H1; JHE353H1, JHE355H1; and no more than 1.0 FCE from the following (note that some courses may require prerequisites that are not listed within this program): ANT336H1, ANT333Y1, ANT335Y1, ANT338H1, ANT430H1, ANT436H1; CSB328H1, CSB340H1, CSB349H1, CSB350H1, CSB352H1, CSB353H1, CSB430H1, CSB431H1, CSB452H1, CSB458H1, CSB472H1, CSB474H1; ENV346H1; FOR200H1, FOR201H1, FOR301H, FOR306H1, FOR307H1, FOR413H1, FOR416H1, FOR417H1, FOR418H1; GGR201H1, GGR203H1, GGR205H1, GGR206H1, GGR272H1, GGR273H1, GGR305H1, GGR307H1, GGR308H1; MAT221H1; MGY340H1; NUS201H0, NUS301H0, NUS302H0, NUS303H0, NUS304H0, NUS401H0*; PSY100H1, PSY260H1, PSY270H1, PSY280H1, PSY290H1, PSY305H1, PSY307H1, PSY397H1, PSY474H1, PSY492H1, PSY497H1 (note that many PSY courses have limited enrolment) 

*More information about NUS courses and programs can be found on the Biology Calendar section

Total = 12 FCEs

NOTE: Students may wish to concentrate in ecology, evolutionary biology, or behaviour. Recommended EEB, EHJ and JHE courses for these concentrations are as follows:

Ecology: EEB255H1, EEB319H1, EEB321H1, EEB328H1, EEB365H1, EEB428H1, EEB433H1, EEB440H1, EEB465H1, EEB495H1; ENV432H1

Evolutionary Biology: EEB323H1, EEB324H1, EEB325H1, EEB362H1, EEB390H1, EEB440H1, EEB459H1, EEB460H1; EHJ352H1; JHE353H1, JHE355H1

Behaviour: EEB322H1, EEB455H1, EEB496H1

**Environmental Biology Major**

**Description:**

Previous:

New:

Environmental science is an interdisciplinary field that integrates biological, chemical, and physical sciences to study human interactions with their environment. The **Environmental Biology Major** program (8 FCEs) provides a broad background in biology that is essential to understand the impact of humans on other organisms and their environments. It provides students with an understanding of ecology, the diversity and function of living organisms, the physical and chemical environment, and the ways organisms interact with, and affect, ecosystem processes. Students are exposed to ecosystem management, issues related to environmental change, and the consequences of interactions between humans and the environment.

**Description of Proposed Changes:**

Associate Chair, Undergraduate wanted to add the description before the completion requirements.
Environmental Biology Minor

Description:

Previous: 
New: 

Environmental science is an interdisciplinary field that integrates biological, chemical, and physical sciences to study human interactions with their environment. The **Environmental Biology Minor** program (4 FCEs) provides students an introduction to biology that is essential to understand the impact of humans on other organisms and their environments. It provides students with an understanding of ecology, the diversity and function of living organisms, the physical and chemical environment, and the ways organisms interact with, and affect, ecosystem processes. Students are exposed to ecosystem management, issues related to environmental change, and the consequences of interactions between humans and the environment.

Description of Proposed Changes:

Associate Chair, Undergraduate wanted to add the description before the completion requirements.

Rationale:

Impact:

Consultation:

Resource Implications:

2 Course Modifications:

**EEB397Y1: Research Project in Ecology and Evolutionary Biology**

Description:

An intermediate research project requiring the prior consent of a member of the Department to supervise the project. The topic is to be one mutually agreed on by the student and supervisor. They must arrange the time, place, and provision of any materials and submit to the Undergraduate Office a signed form of agreement outlining details prior to being enrolled. This course is open to highly self-motivated students who are in their Third Year and have a strong interest in ecology and/or evolutionary biology. Students are required to write up the results of their research in a formal paper, often in the format of a research article, and may be required to present the results at a poster session and/or participate in an oral presentation. Students should contact their potential supervisors over the summer before classes begin in September. Information regarding how to register for the course is available on the EEB website. Not eligible for CR/NCR option. **Note: cannot**
enrol if already taken the fourth year research project course EEB498Y1/EEB499Y1.

**Rationale:**

**Consultation:**

**Resources:**

### ENV432H1: Urban Ecology

**Prerequisites:**
- BIO220H1 and at least one of EEB319H1/EEB321H1/EEB365H1/ENV334H1

**Rationale:**

**Consultation:**

**Resources:**
3 Minor Program Modifications:

Environment & Behaviour Minor

Completion Requirements:

(4 full courses or their equivalent; must include at least one full course equivalent at the 300+-level.

Enrolment in the Minor program is limited to students also enrolled in the Psychology Minor/Major/Specialist.

For more information, please email the School of the Environment’s Undergraduate Student Advisor, David Powell, at ug.office.env@utoronto.ca.

Higher Years:
1. ENV221H1, ENV222H1, PSY220H1, PSY335H1/PSY435H1
2. One FCE from ENV333H1, ENV335H1; ENV361H1/ENV381H1 (if ENV381H1 taken in 2015-16 or 2016-17); JGE321H1; JGE331H1; SOC385H1
3. One FCE from PSY320H1, PSY321H1, PSY327H1/PSY427H1, PSY336H1

Description of Proposed Changes:
Removing SOC385H1, a course that has been discontinued for quite some time.

Rationale:

Impact:

Consultation:

Resource Implications:

Environmental Science Major

Enrolment Requirements:

This is a limited enrolment program. Enrolment is limited and selection will be based on marks in 1.0 FCE of the required first-year courses: BIO120H1 and 0.5 FCE from CHM136H1/CHM138H/CHM135H1/CHM139H/CHM151Y1 with an overall average of at least 65% and a final mark of at least 60% in each course. The precise mark thresholds outlined above are an estimate of what will be required in the coming POSr admission cycle. Achieving those mark(s) does not necessarily guarantee admission to the POSr in any given year. For more information, please email consult the School of the Environment’s School’s Undergraduate Student Advisor, David Powell, at ug.office.env@utoronto.ca (see above).

Completion Requirements:

(8.0 full courses or their equivalent)

First Year (1.5 FCEs): BIO120H1; 0.5 FCE from CHM136H1/CHM138H/CHM135H1 (recommended)/CHM139H/CHM151Y1; 0.5 FCE from MAT135H1/MAT137Y1/MAT157Y1/JMB170Y1
Second Year (2.5 FCEs):
1. ENV221H1
2. ENV234H1
3. One of CHM210H1 or ESS262H1
4. ENV237H1/ENV238H1*

*ENV238H1 is for students who have previously taken PHY131H1/PHY132H1/PHY151H1/PHY152H1
5. STA220H1/STA288H1/EEB225H1/GGR270H1 or other science courses providing training in statistics as approved by the Academic Associate Director.

NOTE: students interested in taking EEB Field Courses (Group B) in third/fourth year are encouraged to take BIO220H in second/third year.

Third Year (1.5 FCE):
1. The other of CHM210H1 or ESS262H1 not taken in second year
2. ENV337H1/JEE337H1
3. ENV316H1

Third/Fourth Year (2.0 FCEs):
1. 2.0 FCE from among the courses in Group A, B, and C, with no more than 0.5 FCE from Group C. At least 0.5 FCE must be at the 300+ level.

Group A: Environmental Science
BIO220H1 */CHM310H1/CHM410H1/CHM415H1/EEB319H1/EEB321H1/EEB328H1/EEB365H1/EEB428H1/
EEB430H1/EEB433H1/EEB440H1/EEB465H1/ENV334H1/ENV341H1/ENV346H1/ENV430H1/ENV432H1/
ESS261H1/ESS311H1/ESS312H1/ESS461H1/ESS463H1/GGR301H1/GGR308H1/GGR341H1/GGR347H1/GGR348H1/
GGR409H1/JGA305H1/PCL362H1/PHY392H1**/PHY492H1**

Notes:*BIO220H1 is required for all upper-year 300+ EEB series courses, with no exceptions.** PHY392H1 and PHY492H1 include relevant environmental content, but prerequisites for these courses cannot be used towards Group A requirements.

Group B: Environmental Science-related Field Courses
ANT330Y1/ARH306Y1/EEB403H1/EEB405H1/EEB406H1/EEB407H1/EEB410H1/ENV336H1/ENV395Y0/
ENV396Y0/ESS330H1/ESS410H1/ESS450H1/GGR301H/GGR308H1/GGR341H1/GGR347H1/GGR348H1/

Note:*BIO220H1 is required for all upper-year 300+ EEB series courses, with no exceptions.

Group C: Environmental Policy & Society (no more than 0.5 FCE from Group C)
ENV222H1/ENV261H1/ENV281H1/ENV282H1/ENV287H1/ENV320H1/ENV322H1/ENV323H1/ENV333H1/
ENV335H1/ENV347H1/ENV350H1/ENV361H1/ENV362H1/ENV381H1/ENV382H1/ENV422H1/ENV461H1/
ENV462H1/FOR302H1

Fourth Year (0.5 FCE):
1. 0.5 FCE from the following: ENV432H1 */ENV440H1/ENV452H1*

*Note that ENV432H1 requires one of EEB319H1/EEB321H1/EEB365H1/ENV334H1 as a prerequisite, and ENV452H1 requires one of ENV316H1/ENV334H1/ENV337H1 as a prerequisite.

Notes:

- Students combining the Environmental Science Major with a second BSc or BA Major, and who are also interested in obtaining a basic understanding of the social/political/policy aspects of environment, can add the Environmental Studies Minor. Some of the courses taken for the Environmental Science Major may be double counted for this Minor. Please contact the Undergraduate Student Advisor (see above) to learn more about this option.
Daniels Students enrolled in this program may be able to fulfil up to 1.5 FCE in requirement 3 from ARC courses. Consult the School of the Environment for more information.

Environmental Science Minor

Enrolment Requirements:

This is a limited enrolment program. Enrolment is limited and selection will be based on marks in BIO120H1 and CHM136H1/CHM138H/CHM135H1/CHM139H/CHM151Y1 with an overall average of at least 65% and a final mark of at least 60% in each course. The precise mark thresholds outlined above are an estimate of what will be required in the coming POSI admission cycle. Achieving those mark(s) does not necessarily guarantee admission to the POSI in any given year.

For more information, please email consult the School of the Environment’s Undergraduate Student Advisor, David Powell, at ug.office.env@utoronto.ca.

Description of Proposed Changes:

Minor update to departmental contact information.

Rationale:

Impact:

Consultation:

Resource Implications:

5 Course Modifications:

ENV200H1: Assessing Global Change: Science and the Environment

Exclusions:

Previous: BIO120H1, BIO150Y1 (applies only to students in Arts & Science); ENV200Y1; EEB208H1

New: BIO120H1, EEB208H1

Rationale:

Removing long-retired exclusion courses. Both BIO150Y1 and ENV200Y1 were retired in 2010.
ENV337H1: Human Interactions with the Environment

**Prerequisites:**
(two of ENV233H1, ENV234H1, ENV237H1/ENV238H1) or (two of CHM210H1, ENV234H1, ENV237H1/ENV238H1, ESS262H1) or (GGR201H1 + GGR203H1) or (ENV233H1 + ESS261H1) or (ESS261H1 + ESS262H1) or (CHM210H1 + CHM217H1) or (ENV221H1/ENV222H1/ENV234H1 + BIO220H1 + BIO230H1/BIO255H1) or permission of Undergraduate Associate Director

**Exclusions:**
JGE236H1/JEE337H1

**Rationale:**
Consultation:

**Resources:**

ENV346H1: Terrestrial Energy Systems

**Prerequisites:**
(MAT135H1, MAT136H1)/MAT135Y1/MAT137Y1/JMB170Y1; BIO120H1/BIO150Y1/CHM136H1/CHM138H1/CHM135H1/CHM135H1/CHM139H1/CHM151Y1/PHY131H1/PHY132H1/PHY151H1/PHY152H1

**Rationale:**
Removing long-retired courses from and correcting typo for a first-year chemistry course listed in the prerequisite field. MAT135Y1 was retired in 2011. BIO150Y1 was retired in 2010.

**Consultation:**

**Resources:**

ENV431H1: Urban Sustainability & Ecological Technology

**Prerequisites:**
ENV221H1; ENV222H1, or permission of the Undergraduate Academic Associate Director

**Rationale:**

**Consultation:**

**Resources:**

ENV461H1: The U of T Campus as a Living Lab of Sustainability

**Prerequisites:**
Completion ENV221H1 and completion of 10.0 FCE including ENV221H1; or courses; or permission of the Undergraduate Academic Associate Director

**Rationale:**

**Consultation:**

**Resources:**
| Consultation: |  |
| Resources:    |  |
2 Course Modifications:

GGR203H1: Introduction to Climatology

Contact Hours:
- Previous: Lecture: 34
- New: Lecture: 36

Rationale:

Consultation:

Resources:

GGR390H1: Field Methods

Description:

Introduction to field methods in geomorphology, vegetation mapping/analysis, soils, hydrology, and climatology. The course includes exercises and a group project during a one-week field camp, a little preparation during the preceding summer, and complementary practical work and/or seminars during the Fall Term. Each student is required to pay the costs of their transportation and accommodation (field trip costs: $300-$750). This course meets the field requirement for Physical & Environmental Geography programs. The field camp normally runs for one week at the end of August/early September. Students must register with the Department by April. Consult with the department in case of conflict or concerns. Course may be limited by size. Not eligible for CR/NCR option.

Prerequisites:

1.0 from JEG100H1/GGR100H1, GGR201H1, GGR203H1, GGR205H1, GGR206H1, GGR305H1, ESS102H1, ENV234H1, or permission of the instructor

Rationale:

The instructors wanted to add the permission of instructor that I know you are trying to move away from. As a special field course we think it's a valid add in.

Consultation:

Resources:
1 Course Modification:

APM441H1: Asymptotic and Perturbation Methods

<table>
<thead>
<tr>
<th>Prerequisites:</th>
<th>APM346H1/MAT351Y1, MAT334H1/MAT354H1</th>
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<tbody>
<tr>
<td>Rationale:</td>
<td>MAT354 is the &quot;hard&quot; version of MAT334; anybody who has MAT354 can take courses that depend on MAT334. The only reason to make this change is to simplify prerequisite checks.</td>
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<tr>
<td>Consultation:</td>
<td>With the current course instructor, Prof. C. Sulem. No further consultation should be required.</td>
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<tr>
<td>Resources:</td>
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</table>
# 1 Minor Program Modification:

**Molecular Genetics And Microbiology Specialist: Genetics Stream**

### Enrolment Requirements:

This is a limited enrolment program that can only accommodate a limited number of students. Eligibility will be competitive and based on a student’s marks in the 3.0 required first-year courses:

BIO120H1, BIO130H1, (CHM135H1, CHM136H1)/CHM151Y1, and (MAT135H1, MAT136H1)/MAT135Y1/MAT137Y1 with an average of at least 80% on these 3.0 full-course equivalents (FCEs) and a final mark of at least 75% in each course.

While it is difficult to predict what will constitute "competitive" course marks in a given year, based on previous years the estimate is: course marks = mid 80s; average = mid 80s.

Achieving these estimated marks does not guarantee admission to the program in any given year.

Note: Students must apply to this program on the Arts & Science Faculty Registrar’s Office website (see the Arts & Science Program Enrolment web site for application procedures). At later times, contact the Undergraduate Coordinator.

### Completion Requirements:

(14 full courses or their equivalent)

First Year:
BIO120H1, BIO130H1; (CHM135H1, CHM136H1)/CHM151Y1; (MAT135H1, MAT136H1)/MAT135Y1/MAT137Y1

First or Second Year:
(PHY131H1, PHY132H1)/(PHY151H1, PHY152H1)

Second Year:
BCH242Y1; BIO230H1/BIO255H1, HMB265H1; MGY280H1, CHM247H1, STA220H1

Third Year (Genetics Stream):
1. MGY340H1, MGY350H1, MGY311Y1, MGY314H1, MGY315H1
2. One (0.5 full-course equivalent) from BCH340H1, BCH377H1, MGY360H1, MGY377H1, MGY378H1

Fourth Year (Genetics Stream):
1. MGY420H1,
   plus 2.5 credits from Genetics Lists 1 and 2, distributed as follows:
   2. At least 1.5 full-course equivalent must be taken from list 1: MGY425H1, MGY428H1, MGY460H1, MGY470H1
   3. Up to 1.0 full-course equivalent may be taken from list 2:
      MGY434H1, MGY440H1, MGY480Y1, BCH428H1, BCH440H1, BCH441H1/CSB472H1, BCH447H1, BCH448H1, EEB460H1

### Description of Proposed Changes:

Removing a long-retired course (MAT135Y1) from enrolment requirements and completion requirements.

### Rationale:

### Impact:
<table>
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<th>Consultation:</th>
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<tbody>
<tr>
<td>Resource Implications:</td>
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</tbody>
</table>
### 1 Minor Program Modification:

#### Physiology Major

**Completion Requirements:**

(8 full courses or their equivalent, including 0.5 FCE at the 400-level)

**First Year:**
1. 2 full course equivalents from (BIO120H1, BIO130H1)/BIO150Y; (CHM135H1, CHM136H1)/CHM151Y1
2. 1 full course equivalent from any of the following: MAT135H1, MAT136H1, MAT137Y1, MAT157Y1, PHY131H1, PHY132H1, PHY151H1, PHY152H1

**Second Year:**
2 full course equivalents from BCH210H1; BIO230H1/BIO255H1; PSL300H1, PSL301H1

**Higher Years:**
1. 1 full course equivalent from PSL372H1, PSL350H1/BCH311H1/CSB349H1
2. 1 full course equivalent from ANA300Y1, ANA301H1; CSB325H1, CSB330H1, CSB332H/CJH332H1, CSB343H1, CSB345H1/CSB445H1, CSB346H1, CSB347H1; IMM340H1/IMM341H1, IMM350H1/IMM351H1; JPM300H1; NFS284H1; PCL201H1, PCL285H, PCL302H1; PSY201H1; PSY397H1; STA220H1
3. 1 full course equivalent from HMB430H1/HMB470H1/HMB472H1; JPM400Y1; PSL304H1, PSL305H1, PSL310H1, PSL374H1, PSL378H1/PSL379H1/PSL379H0/PSL398H0, PSL399Y1, PSL400-series courses

**Description of Proposed Changes:**
2 new courses added: JPM300H1 and JPM400Y1

**Rationale:**

**Impact:**

**Consultation:**

**Resource Implications:**
2 Course Modifications:

**PSY309H1: Research Specialization: Practicum**

**Description:**

Research Specialists learn about the research opportunities within our department, and develop skills in the areas of critical thinking, writing, and oral presentation. Students also conduct a pre-thesis research project under the supervision of a faculty member. Students ideally should complete a PSY lab course (PSY3*9H1) prior to taking this course; however, taking the lab course concurrently will be considered in consultation with the instructor is acceptable as well. Enrolment is restricted to PSY Research Specialists.

**Rationale:**

**Consultation:**

**Resources:**

**PSY380H1: Vision Science**

**Description:**

Integrates psychology, neuroscience, and computer science approaches to the study of vision science. Topics include: history and philosophy, spatial vision, perception of vision science objects, low-level vision function, and category; motion perception, visual attention, spatial vision memory, perception of objects and scenes, colour perception, attention imagery, and consciousness, and multisensory integration. Demonstrations/in-class experiments supplement lectures and readings. Emphasis on reading and writing scientific articles in vision science.

**Rationale:**

**Consultation:**

**Resources:**
24 Course Modifications:

**STA130H1: An Introduction to Statistical Reasoning and Data Science**

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**STA201H1: Why Numbers Matter**

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<tr>
<td>MAT133Y1/MAT135H1/MAT136H1/MAT137Y1/MAT157Y1/(MATA32H3, MATA33H3)/(MATA30H3, MATA36H3)/(MATA31H3, MATA37H3)/MAT133Y5/MAT135Y5/MAT137Y5/MAT157Y5. This course is not open to first-year students, nor to students enrolled in any science Major or Specialist program.</td>
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**STA220H1: The Practice of Statistics I**

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**STA221H1: The Practice of Statistics II**

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<td>STA220H1/STA288H1/PSY201H1/GGR270H1/EEB225H1/STAB22H3/STA220H5</td>
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</table>
Statistical Sciences (FAS), Department of

Consultation:

Resources:

STA237H1: Probability, Statistics and Data Analysis I

Prerequisites:
(MAT135H1, MAT136H1)/MAT137Y1/MAT157Y1/(MATA30H3, MATA36H3)/(MATA31H3, MATA37H3)/MAT135Y5/MAT137Y5/MAT157Y5

Exclusions:
STA247H1, STA255H1, STA257H1, ECO227Y1, STAB52H3, STA256H5, ECO227Y5

Rationale:

Consultation:

Resources:

STA247H1: Probability with Computer Applications

Prerequisites:
(MAT135H1, MAT136H1)/MAT137Y1/MAT157Y1/(MATA30H3, MATA36H3)/(MATA31H3, MATA37H3)/MAT135Y5/MAT137Y5/MAT157Y5; MAT157Y1; CSC108H1/CSC148H1/CSCA08H3/CSCA48H3/CSC108H5/CSC148H5

Exclusions:
ECO227Y1/STA255H1/STA257H1/STAB52H3/STA256H5/ECO227Y5

Rationale:

Consultation:

Resources:

STA248H1: Statistics for Computer Scientists

Prerequisites:
STA247H1/STA257H1/STA256H5/STAB52H3; STA257H1; CSC108H1/CSC148H1/CSCA08H3/CSCA48H3/CSC108H5/CSC148H5

Exclusions:

Rationale:

Consultation:

Resources:
**STA255H1: Statistical Theory**

**Prerequisites:**
- STA220H1/STA221H1/ECO220Y1 (note: ECO220Y1 may be taken as a co-requisite)/ STAB22H3/STA220H5/ECO220Y5;
- MAT133Y1 (70%)/(MAT135H1, MAT136H1)/MAT137Y1/MAT157Y1/(MATA32H3 (70%), MATA33H3 (70%))/MAT133Y5/MAT137Y5

**Exclusions:**

**Rationale:**

**Consultation:**

**Resources:**

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**STA257H1: Probability and Statistics I**

**Prerequisites:**
- (MAT135H1(70%), MAT136H1 (70%))/MAT137Y1/MAT157Y1 (MAT137Y1/MAT157Y1 is strongly recommended)/MATA36H3 (70%)/MATA37H3/MAT135Y5/MAT137Y5/MAT135Y5/MAT157Y5

**Corequisites:**
- MAT235Y1/MAT237Y1/MAT257Y1 (MAT237Y1/MAT257Y1 is strongly recommended)/MATB41H3/MAT232H5/MAT233H5;
- MAT223H1/MAT240H1/MATA23H3/MAT223H5/MAT240H5

**Exclusions:**
- ECO227Y1, STA247H1, MAT377H1, STAB52H3, STA256H5, ECO227Y5

**Rationale:**

**Consultation:**

**Resources:**

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**STA261H1: Probability and Statistics II**

**Prerequisites:**
- STA257H1/STAB52H3/STA256H5

**Corequisites:**
- MAT235Y1/MAT237Y1/MAT257Y1/MATB42H3/MAT236H5;
- MAT223H1/MAT240H1/MATA23H3/MAT223H5/MAT240H5

**Exclusions:**

**Rationale:**

**Consultation:**

**Resources:**
STA288H1: Statistics and Scientific Inquiry in the Life Sciences

Exclusions:
- STA220H1, PSY201H1, GGR270H1, ECO220Y1, ECO227Y1, SOC202H1, EEB225H1, HMB325H1, STA248H1, STA261H1, PCL376H1, STA215H5, STA220H5, STAB22H3

Rationale:

Consultation:

Resources:

STA302H1: Methods of Data Analysis I

Prerequisites:
- CSC108H1/CSC120H1/CSC121H1/CSC148H1/CSCA08H3/CSCA48H3/CSC108H5/CSC148H5;
- MAT221H1(70%)/MAT223H1/MAT240H1/MATA23H3/MAT223H5/MAT240H5

Exclusions:
- Previous:
  - New: STAC67H3, STA302H5

Rationale:

Consultation:

Resources:

STA303H1: Methods of Data Analysis II

Prerequisites:
- STA302H1/STAC67H3/STA302H5

Exclusions:
- Previous:
  - New: STAC51H3

Rationale:

Consultation:

Resources:

STA304H1: Surveys, Sampling and Observational Data

Prerequisites:
- ECO220Y1/ECO227Y1/GGR270H1/PSY201H1/SOC300H1/SOC202H1/STA220H1/STA255H1/STA261H1/
  ECO227Y5

Exclusions:
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Exclusions</th>
<th>Rationale</th>
<th>Consultation</th>
<th>Resources</th>
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<tr>
<td>STA347H1</td>
<td><strong>STA347H1</strong></td>
<td>STA247H1/STA255H1(70%); STA237H1 (70%); STA257H1/ECO227Y1/STAB52H3/STA256H5; MAT223H1/ MAT240H1/MATA23H3/MAT223H5/MAT240H5; MAT235Y1/MAT237Y1/MAT257Y1/(MATB41H3, MATB42H3)/(MAT232H5, MAT236H5)/(MAT233H5, MAT236H5) (Note: STA257H1, MAT223H1/MAT240H1, MAT237Y1/ MAT257Y1 are very strongly recommended)</td>
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<td>STA355H1</td>
<td><strong>STA355H1</strong></td>
<td>STA255H1(75%: beginning Fall 2019); STA257H1 (75%: beginning Fall 2019); STA238H1 (75%: beginning Fall 2019); STA261H1 (60%: beginning Fall 2019); ECO227Y1 (60%: beginning Fall 2019); STAB52H3/STA256H5 (60%); STA240H1/MATA23H3/MAT223H5/MAT240H5; MAT235Y1/MAT237Y1/MAT257Y1/(MATB41H3, MATB42H3)/(MAT232H5, MAT236H5)/(MAT233H5, MAT236H5) /MAT223H1/MAT240H1/MATA23H3/MAT223H5/MAT240H5</td>
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**STA305H1: Design and Analysis of Experiments**

**Prerequisites:**

- STA302H1/STAC67H3/STA302H5

**Exclusions:**

- STAC50H3, STA332H1, STA52H3, STA305H5, STA402H1

**STA347H1: Probability**

**Prerequisites:**

- STA247H1/STA255H1(70%); STA237H1 (70%); STA257H1/ECO227Y1/STAB52H3/STA256H5; MAT223H1/ MAT240H1/MATA23H3/MAT223H5/MAT240H5; MAT235Y1/MAT237Y1/MAT257Y1/(MATB41H3, MATB42H3)/(MAT232H5, MAT236H5)/(MAT233H5, MAT236H5) (Note: STA257H1, MAT223H1/MAT240H1, MAT237Y1/ MAT257Y1 are very strongly recommended)

**Exclusions:**

- MAT377H1/STAC62H3

**STA355H1: Theory of Statistical Practice**

**Prerequisites:**

- STA255H1(75%: beginning Fall 2019); STA248H1 (75%: beginning Fall 2019); STA238H1 (75%: beginning Fall 2019); STA261H1 (60%: beginning Fall 2019); ECO227Y1 (60%: beginning Fall 2019); STAB52H3/STA256H5 (60%); STA240H1/MATA23H3/MAT223H5/MAT240H5; MAT235Y1/MAT237Y1/MAT257Y1/(MATB41H3, MATB42H3)/(MAT232H5, MAT236H5)/(MAT233H5, MAT236H5); MAT223H1/MAT240H1/MATA23H3/MAT223H5/MAT240H5
### STA365H1: Applied Bayesian Statistics

**Prerequisites:**
- STA302H1/STAC67H3/STA302H5

**Rationale:**

**Consultation:**

**Resources:**

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### STA410H1: Statistical Computation

**Prerequisites:**
- STA302H1/STAC67H3/STA302H5;
- MAT223H1/MAT240H1/MAT223H3/MAT223H5/MAT240H5

**Rationale:**

**Consultation:**

**Resources:**

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### STA437H1: Methods for Multivariate Data

**Prerequisites:**
- STA302H1/STA352Y1/STAC67H3/STA302H5 (MAT224H1/MAT247H1 recommended)

**Exclusions:**
- Previous:
  - STA352Y1
- New:
  - STA302H1

**Recommended Preparation:**
- APM233Y1/MAT223H1/MAT240H1

**Rationale:**

**Consultation:**

**Resources:**

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### STA442H1: Methods of Applied Statistics

**Prerequisites:**
- STA302H1/STAC67H3/STA302H5;
- MAT223H1/MAT240H1/MAT223H3/MAT223H5/MAT240H5

**Rationale:**

**Consultation:**

**Resources:**
<table>
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<tr>
<td><strong>STA452H1: Mathematical Statistics I</strong></td>
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<tr>
<td><strong>Prerequisites:</strong></td>
<td>MAT223H1/MAT240H1/MATA23H3/MAT223H5/MAT240H5; MAT240H1; MAT235Y1/MAT237Y1/MAT257Y1/(MATB41H3, MATB42H3)/(MAT232H5, MAT236H5)/(MAT233H5, MAT236H5); MAT257Y1/(STA257H1, STA355H1)/STA347H1. Note: MAT237Y1/MAT257Y1; (MAT223H1, MAT224H1)/MAT240H1 very strongly recommended.</td>
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<td><strong>Rationale:</strong></td>
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| **STA457H1: Time Series Analysis** |  |
| **Prerequisites:** | STA302H1/STAC67H3/STA302H5; MAT235Y1/MAT237Y1/MAT257Y1/(MATB41H3, MATB42H3)/(MAT232H5, MAT236H5)/(MAT233H5, MAT236H5) |
| **Exclusions:** | Previous: New: STAD57H3, STA457H5 |
| **Rationale:** |  |
| **Consultation:** |  |
| **Resources:** |  |

| **STA465H1: Theory and Methods for Complex Spatial Data** |  |
| **Prerequisites:** | STA302H1/STAC67H3/STA302H5, STA303H1 |
| **Rationale:** |  |
| **Consultation:** |  |
| **Resources:** |  |