



UNIVERSITY OF TORONTO

University of Toronto Mississauga

SCIENCES

Curriculum Proposals Report

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6 Minor Program Modifications:

Environmental Science - Major (Science)

Completion Requirements:

8.0 credits are required, of which at least 2.0 must be at the 300-400 level.

First Year: 3.0 credits:

1.

Environment Foundation : ENV100Y5 ;

2.

Quantitative and Basic Science Foundation : 2.0 credits ~~chosen~~ from ~~this list~~: ANT101H5 or ; BIO152H5 or ; BIO153H5 or ; CHM110H5 or ; CHM120H5 or ; ERS101H5 or ; GGR112H5 or **ISP130H5** or ; MAT132H5 or ; MAT134H5 or ; MAT135H5 or ; MAT136H5 or ; MAT137Y5 or ; PHY136H5 or ; PHY137H5 or ; PHY146H5 or ; PHY147H5.

Be sure to look ahead and plan to complete the prerequisites for any upper-level courses that are of interest to you.

Second Year: 2.5 credits:

1.

Environmental Management Core : ENV201H5 ;

2.

Life Sciences Core : 0.5 credit ~~chosen~~ from ~~this list~~: BIO201H5 or ; BIO205H5 or ; BIO211H5 or ; GGR227H5 ;

3.

Physical Geographical and Earth Sciences Core : 1.0 credit ~~chosen~~ from ~~this list~~: CHM211H5 or ; CHM231H5 or ; CHM242H5 or ; ERS201H5 or ; ERS202H5 or ; ERS203H5 or ; GGR201H5 or ; GGR214H5 or ; GGR217H5 or ; JCP221H5 ;

4.

Quantitative, Digital, and Analytical Methods Core : 0.5 credit ~~chosen~~ from ~~this list~~: BIO360H5 or ; BIO361H5 or ; CHM211H5 or ; GGR276H5 or ; GGR278H5 or ; STA215H5 or ; STA220H5 or ; STA221H5.

Upper Years: 2.5 credits:

1.

Environmental Science Perspectives : ENV330H5 ;

2.

Field, Project-Based, Experiential, and Research Perspectives : 0.5 credit ~~chosen~~ from ~~this list~~: BIO416H5 or ; CPS401Y5 or ; ENV299Y5 or ; ENV399Y5 or ; ENV496H5 or ; ENV497H5 or ; ERS325H5 or ; GGR335H5 or ; GGR379H5 or ; JEG400Y5 or ; JEG417Y5 ;

3.

Biogeochemical Perspectives : 1.0 credit ~~chosen~~ from ~~this list~~: BIO311H5 or ; BIO331H5 or ; BIO333H5 or ; ENV495H5 or ; ENV496H5 or ; ERS312H5 or ; ERS315H5 or ; ERS412H5 or ; GGR304H5 or ; GGR305H5 or ; GGR307H5 or ; GGR309H5 or ; GGR311H5 or ; GGR315H5 or ; GGR316H5 or ; GGR317H5 or ; GGR337H5 or ; GGR338H5 or ; GGR372H5 or ; GGR374H5 or ; GGR375H5 or ; GGR376H5 or ; GGR377H5 or ; GGR383H5 or ; GGR384H5 or ; GGR404H5 or ; GGR406H5 or ; GGR407H5 or ; GGR440H5 or ; GGR479H5 or ; GGR484H5 ;

4.

Social, Economic & Policy Perspectives : 0.5 credit ~~chosen~~ from ~~this list~~: ANT357H5 or; ANT368H5 or; ANT370H5 or; BIO464H5 or; ECO373Y5 or; ENV310H5 or; ENV311H5 or; ENV320H5 or; ENV393H5 or; ENV425H5 or; ENV430H5 or; GGR322H5 or; GGR325H5 or; GGR329H5 or; GGR333H5 or; GGR348H5 or; GGR349H5 or; GGR353H5 or; GGR361H5 or; GGR362H5 or; GGR365H5 or; GGR370H5 or; GGR415H5 or; GGR419H5 or; GGR420H5 or; JEP351H5 or; JEP356H5 or; JEP452H5 or; JGE378H5 or; JPE251H5 or; JPE252H5 or; POL343Y5 or; POL346Y5 or; POL475H5 or; SOC349H5 or; SOC356H5 or; SOC465H5 or; WRI375H5.

Note: ENV490H5, ENV491H5 can substitute for #1, #2, #3, or #4 as course requirements, where appropriate, and with permission of the Program Advisor or Academic Counsellor.

~~Note: This is intended to be an interdisciplinary program. At least four different disciplines must be represented among the courses that are counted as program requirements. For example, a course list selected from ENV + GGR + CHM + ERS is acceptable, but a course list selected only from ENV + GGR + ERS is not. Please contact the Program Advisors or Academic Counsellor if you have any questions about the validity of your course selections.~~

Rationale:

- 1) providing students with additional options by adding the new numeracy course being proposed through ISUP (ISP130H5) as an option towards our first year foundation credit requirement.
- 2) formatting changes have also been made to replace commas and slashes with "and"/"or"

Resource Implications:

none

Environmental Science - Specialist (Science)

Completion Requirements:

12.0 credits are required, of which at least 4.0 **credits** must be at the 300-400 level, including at least 1.0 **credit** at the 400 level.

First Year: 4.0 credits:

1. **Environment Foundation** : ENV100Y5 ;
2. **Quantitative and Basic Scientific Foundation** : 3.0 credits ~~chosen~~ from ~~this list~~: ANT101H5 or; BIO152H5 or; BIO153H5 or; CHM110H5 or; CHM120H5 or; CSC108H5 or; CSC148H5 or; ERS101H5 or; GGR112H5 or; **ISP130H5** or; MAT132H5 or; MAT134H5 or; MAT135H5 or; MAT136H5 or; MAT137Y5 or; PHY136H5 or; PHY137H5 or; PHY146H5 or; PHY147H5.

Be sure to look ahead and plan to complete the prerequisites for any upper-level courses that are of interest to you.

Second Year: 4.0 credits:

1. **Environmental Management Core** : ENV201H5 ;
2. **Life Science Core** : 1.0 credit ~~chosen~~ from ~~this list~~: BIO201H5 or; BIO205H5 or; BIO211H5 or; GGR227H5 ;
3. **Physical Geographical and Earth Science Core** : 1.5 **credits** ~~credit~~ from ~~the following~~: CHM211H5 or; CHM231H5 or; CHM242H5 or; GGR201H5 or; GGR214H5 or; GGR217H5 or; ERS201H5 or; ERS202H5 or; ERS203H5 or; JCP221H5 ;
4. **Quantitative or; Digital or; and Analytical Methods Core** : 1.0 credit ~~from~~: BIO360H5 or; BIO361H5 or; CHM211H5 or; GGR276H5 or; GGR278H5 or; STA215H5 or; STA220H5 or; STA221H5.

Upper Years: 4.0 credits:

1.

Environmental Science Perspective : ENV330H5 ;

2.

Field or, Project-based or, Experiential or, and Research Perspectives : 1.5 credits ~~credit chosen~~ from ~~this list~~: BIO416H5 or ; CPS401Y5 or ; ENV299Y5 or ; ENV399Y5 or ; ENV496H5 or ; ENV497H5 or ; ERS325H5 or ; GGR335H5 or ; GGR379H5 or ; JEG400Y5 or ; JEG417Y5 ;

3.

Biogeochemical Perspectives : 1.0 credit ~~credits chosen~~ from ~~this list~~: BIO311H5 or ; BIO331H5 or ; BIO333H5 or ; BIO373H5 or ; BIO406H5 or ; ENV495H5 or ; ENV496H5 or ; ERS312H5 or ; ERS315H5 or ; ERS412H5 or ; GGR304H5 or ; GGR305H5 or ; GGR307H5 or ; GGR309H5 or ; GGR311H5 or ; GGR315H5 or ; GGR316H5 or ; GGR317H5 or ; GGR337H5 or ; GGR338H5 or ; GGR372H5 or ; GGR374H5 or ; GGR375H5 or ; GGR376H5 or ; GGR377H5 or ; GGR383H5 or ; GGR384H5 or ; GGR404H5 or ; GGR406H5 or ; GGR407H5 or ; GGR440H5 or ; GGR479H5 or ; GGR484H5 ;

4.

Environmental Management Perspectives : 0.5 credit ~~chosen~~ from ~~this list~~: BIO464H5 or ; ENV205H5 or ; ENV310H5 or ; ENV311H5 or ; ENV320H5 or ; ENV393H5 or ; ENV425H5 or ; ENV430H5 or ; JEP452H5 ;

5.

Social or, Economic and Policy Perspectives : 0.5 credit ~~chosen~~ from ~~this list~~: ANT357H5 or ; ANT368H5 or ; ANT370H5 or ; ECO373Y5 or ; ENV310H5 or ; ENV311H5 or ; ENV320H5 or ; ENV393H5 or ; ENV425H5 or ; ENV430H5 or ; GGR322H5 or ; GGR325H5 or ; GGR329H5 or ; GGR333H5 or ; GGR348H5 or ; GGR349H5 or ; GGR353H5 or ; GGR361H5 or ; GGR362H5 or ; GGR365H5 or ; GGR370H5 or ; GGR419H5 or ; JEP351H5 or ; JEP356H5 or ; JEP452H5 or ; JGE378H5 or ; JPE251H5 or ; JPE252H5 or ; POL343Y5 or ; POL346Y5 or ; POL475H5 or ; SOC349H5 or ; SOC356H5 or ; SOC465H5 or ; WRI375H5.

Note: ENV490H5 or ; ENV491H5 can substitute for #1 or ; #2 or ; #3 or ; or #4 as course requirements, where appropriate, and with permission of the Program Advisor or Academic Counsellor.

Note: This is intended to be an interdisciplinary program. At least four different disciplines must be represented among the courses that are counted as program requirements. For example, a course list selected from ENV + GGR + CHM + ERS is acceptable, but a course list selected only from ENV + GGR + ERS is not. Please contact the Program Advisors or Academic Counsellor if you have any questions about the validity of your course selections.

Rationale:

- 1) providing students with additional options by adding the new numeracy course being proposed through ISUP (ISP130H5) as an option towards our first year foundation credit requirement.
- 2) formatting changes have also been made to replace commas and slashes with "and"/"or"

Resource Implications:

None

Geographical Information Systems - Major (Science)

Enrolment Requirements:

Previous:

7.5 credits are required .

New:

Completion Requirements:

7.5 credits are required.

First Year (1.0 credit):

- 1.0 credit at the ~~credits: any~~ 100-level.

Second Year (~~÷ 2.0 credits ÷ 1.0 credits~~):

1. (GGR276H5 or ~~STA256H5~~) or ~~;~~ GGR278H5 ;
2. 1.0 credit ~~credits~~ from any other 200-level GGR/ENV courses.

Third/Fourth Year (~~÷ 4.5 credits 1.5 credits~~):

1. GGR321H5 and ~~;~~ GGR337H5 and ~~;~~ GGR382H5 ;
2. 2.5 credits from the following (limited to 1.0 credits from ERS and ~~CSC~~ courses): ~~CSC311H5 or CSC343H5 or CSC413H5 or CSC477H5 or ERS304H5 or GGR311H5 or ~~;~~ GGR322H5 or ~~;~~ GGR335H5 or ~~;~~ GGR370H5 or ~~;~~ GGR372H5 or ~~;~~ GGR376H5 or ~~;~~ GGR437H5 or ~~;~~ GGR440H5 or GGR442H5 or GGR444H5 or ~~;~~ GGR463H5 or ~~;~~ GGR494H5 ;~~ ~~;~~ ~~ERS304H5~~ ~~;~~ ~~CSC311H5~~ ~~;~~ ~~CSC343H5~~ ~~;~~ ~~CSC413H5~~ ~~;~~ ~~CSC477H5~~ 0.5 credit from any other ~~300 ÷~~ 400-level GGR or ~~;~~ ENV courses.
- 3.

Rationale:

- 1) new courses for 2022 added to the suite of courses for students to choose from.
- 2) formatting changes have also been made to replace commas and slashes with "and"/"or"

Resource Implications:

reviewed with new course proposal

Geographical Information Systems - Minor (Science)

Completion Requirements:

4.0 credits are required.

Second Year: 1.0 credit ~~credits~~:

1. ~~1.0 credits~~: GGR276H5 and ~~;~~ GGR278H5.

Third/Fourth Year: 3.0 credits

1. ~~0.5 credit~~: GGR382H5 ;
2. 2.5 credits from the following (limited to 0.5 credits from ERS or ~~CSC~~ courses): ~~CSC311H5 or CSC343H5 or CSC413H5 or CSC477H5 or ERS304H5 or GGR311H5 or ~~;~~ GGR321H5 or ~~;~~ GGR322H5 or ~~;~~ GGR335H5 or ~~;~~ GGR337H5 or ~~;~~ GGR370H5 or ~~;~~ GGR372H5 or ~~;~~ GGR376H5 or ~~;~~ GGR437H5 or ~~;~~ GGR440H5 or GGR442H5 or GGR444H5 or ~~;~~ GGR463H5 or ~~;~~ GGR494H5.~~ ~~;~~ ~~ERS304H5~~ ~~;~~ ~~CSC311H5~~ ~~;~~ ~~CSC343H5~~ ~~;~~ ~~CSC413H5~~ ~~;~~ ~~CSC477H5~~

Rationale:

- 1) new courses for 2022 added to the suite of courses for students to choose from.
- 2) formatting changes have also been made to replace commas and slashes with "and"/"or"

Resource Implications:

reviewed with new course proposal

Geography - Major (Science)**Completion Requirements:**

8.0 credits and 8 Field Days are required.

First Year: 2.0 credits:

-
- ~~1.0 from~~ GGR111H5 and & GGR112H5 ; ~~(formerly GGR117Y5)~~
-
- 1.0 credit ~~foundational credits~~ from BIO152H5 or BIO153H5 or CHM110H5 or CHM120H5 or ERS101H5 or ISP130H5 or MAT132H5 or MAT134H5 or MAT135H5 or MAT136H5 or MAT137Y5 or ~~BIO152H5, BIO153H5, CHM110H5, CHM120H5,~~ PHY100H5 or PHY136H5 or PHY137H5. ~~ERS101H5~~

Second Year: 2.5 credits:

1. GGR276H5 ;
-
- 1.5 credits ~~credit~~ from GGR201H5 or GGR214H5 or GGR217H5 or GGR227H5 ;
-
- 0.5 credit from GGR202H5 or GGR207H5 or GGR208H5 or GGR209H5 or GGR210H5 or GGR265H5.
-
- ~~0.5 credit: GGR276H5~~

Third Year: 3.0 credits:

-
- 2.5 credits from ~~the following:~~ GGR304H5 or GGR305H5 or GGR307H5 or GGR309H5 or GGR315H5 or GGR316H5 or GGR317H5 or GGR338H5 or GGR374H5 or GGR377H5 or GGR379H5 or GGR383H5 or GGR384H5 or JGE378H5 ;
-
- 0.5 additional credit from the list above or from the following: GGR311H5 or GGR312H5 or GGR321H5 or GGR322H5 or GGR335H5 or GGR337H5 or GGR372H5 or GGR375H5 or GGR376H5.

Fourth Year: 0.5 credit from:

-
- 0.5 credit from GGR404H5 or GGR406H5 or GGR407H5 or GGR417H5 or GGR479H5 or GGR484H5 or JEG400Y5.

Field Days: 8 days:

Eight days accumulated either through a geography field course and/or through geography courses with field day components as indicated in course descriptions.

ROP/Project courses: Maximum 2.0 credits:

Students may take no more than 2.0 credits combined in ROP, individual project courses, or thesis courses at the 300/400 level for credit toward a Geography Major program.

Rationale:

- 1) providing students with additional options by adding the new numeracy course being proposed through ISUP (ISP130H5) as an option towards our first year foundation credit requirement.
- 2) GGR117Y5 is being removed as an option under the first year requirement since this course has not been offered in 10+ years.
- 3) formatting changes have also been made to replace commas and slashes with "and"/"or"

Resource Implications:

Geography - Specialist (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in this program is limited to students who have completed GGR111H5 and GGR112H5 (~~formally GGR117Y5~~) and a Cumulative Grade Point of 2.7(B-) in 2nd year program courses.

Completion Requirements:

~~Within an Honours degree,~~ 12.0 credits and 8 Field Days are required.

First Year: 3.0 credits:

- ~~1.0 from~~ GGR111H5 and ~~&~~ GGR112H5 ; (~~formerly GGR117Y5~~)
- 2.0 ~~foundational~~ credits from ISP130H5 or; MAT132H5 or; MAT134H5 or; MAT135H5 or; MAT136H5 or; MAT137Y5 or; BIO152H5 or; BIO153H5 or; CHM110H5 or; CHM120H5 or; PHY100H5 or; PHY136H5 or; PHY137H5 or; ERS101H5.

Second Year: 3.0 credits:

1. GGR276H5 ;
- 1.5 ~~credits~~ ~~credit~~ from GGR201H5 or; GGR214H5 or; GGR217H5 or; GGR227H5 ;
- ~~0.5 credit: GGR276H5~~
- 0.5 credit ~~from~~ GGR272H5 or; GGR278H5 ;
- 0.5 credit from GGR202H5 or; GGR207H5 or; GGR208H5 or; GGR209H5 or; GGR210H5 or; GGR265H5 or; GGR288H5.

Third Year: 4.5 credits:

- 3.5 credits from ~~the following~~: GGR304H5 or; GGR305H5 or; GGR307H5 or; GGR309H5 or; GGR315H5 or; GGR316H5 or; GGR317H5 or; GGR338H5 or; GGR374H5 or; GGR377H5 or; GGR379H5 or; GGR383H5 or; GGR384H5 or; JGE378H5 ;
- 1.0 credit from the list above or from the following: GGR311H5 or; GGR312H5 or; GGR321H5 or; GGR322H5 or; GGR335H5 or; GGR337H5 or; GGR372H5 or; GGR375H5 or; GGR376H5.

Fourth Year: 1.5 credit:

- ~~1.0 credit from~~ GGR417Y5 or; JEG400Y5 ;
- 0.5 credit from: GGR404H5 or; GGR406H5 or; GGR407H5 or; GGR479H5 or; GGR484H5.

Field Days:

8 days

Eight days accumulated either through a geography field course or through geography courses with field day components as indicated in course descriptions.

ROP/Project courses: Maximum 2.0 credits

Students may take no more than 2.0 credits combined in ROP, individual project courses, or thesis courses at the 300/400 level for credit toward a Geography Specialist program.

Rationale:

- 1) providing students with additional options by adding the new numeracy course being proposed through ISUP (ISP130H5) as an option towards our first year foundation credit requirement.
- 2) GGR117Y5 is being removed as an option under the Enrolment Requirement and first year requirement since this course has not been offered in 10+ years.
- 3) formatting changes have also been made to replace commas and slashes with "and"/"or"

Resource Implications:

None

2 New Courses:

GGR442H5: GIS Capstone Project

Contact Hours:

Lecture: 36

Description:

Students apply prerequisite knowledge and techniques to real-world GIS projects requested by external clients. Through background research, proposal, data management, and implementation, students develop GIS professional competencies, which will be demonstrated through collaboration, presentations and reports.

Prerequisites:

[12.0 credits and GGR276H5 and GGR278 and (1.0 credit from GGR321H5 or GGR335H5 or GGR337H5 or GGR376H5 or GGR382H5 or GGR463H5) and (1.0 credit from GGR311H5 or GGR370H5 or GGR372H5 or GGR384H5 or GGR437H5 or GGR440H5)] or permission of instructor.

Corequisites:**Exclusions:****Recommended Preparation:****Rationale:**

This course will complement the existing technical courses and practical laboratory in the GIS program in accomplishing the goals identified by the Implementation of the Academic Plan at UTM.

The newly proposed course fills the gap to meet the objectives and complements existing courses. The course is designed to hone students' interpersonal and project management skills that prepare them as future leaders.

Resources:

None

GGR444H5: Space Time Data Analysis

Contact Hours:

Lecture: 12 / *Practical:* 24

Description:

This course is designed for senior undergraduate students in a workshop format with a specific focus on application. Topics include space-time data collection, processing, analysis, and visualization. Widely used space-time analysis tools and newly developed data mining techniques will be introduced and discussed with examples and hands-on practices in the class. With practical experience on real-world space-time datasets, students will learn the basic knowledge and various tools for analyzing spatiotemporal datasets. The course encompasses practical instruction and training in ArcGIS Pro to use multiple public available space-time datasets. The primary outcome for students taking this course will be an independent analysis of a substantial space-time dataset, a formal report of the analysis, and a professional oral presentation.

Prerequisites:

13.5 credits and GGR321H5

Corequisites:**Exclusions:****Recommended Preparation:**

Rationale:

This course will complement the existing GIS data analysis and quantitative methods currently being taught in the department. It will strengthen and broaden both the theoretical basis and skill training available to undergraduate students in GIS major and minor for advanced space time data analysis. This course will fill a significant gap in our curriculum by introducing both the theory and application of up-to-date space time data analysis techniques and the state of art of GIS data processing.

Resources:

TA support and a computer lab equipped with high performance PC and ArcGIS Pro

5 Course Modifications:

GGR321H5: Geographic Information Processing

Prerequisites:

8.5 ~~9.0~~ credits and ~~including~~ GGR278H5

Recommended Preparation:**Previous:**

New: GGR276H5

Rationale:

GGR321H5 is an advanced GIS courses that involves high-level spatial data analysis and real-world GIS problem-solving. GGR276 can help to prepare students since it covers introductory spatial analysis and fundamentals of geographic data processing & statistical problem-solving.

Resources:

None

GGR322H5: GIS and Population Health

Prerequisites:

(8.5 ~~9.0~~ credits and ~~including~~ GGR278H5) or permission of instructor

Recommended Preparation:**Previous:**

New: GGR276H5

Rationale:

GGR322H5 is an advanced GIS courses that involves high-level spatial data analysis and real-world GIS problem-solving. GGR276 can help to prepare students since it covers introductory spatial analysis and fundamentals of geographic data processing & statistical problem-solving.

Resources:

None

GGR335H5: GIS and Remote Sensing Integration

Title:

~~GIS and~~ Remote Sensing ~~Applications~~ ~~Integration~~

Description:

~~The integration of GIS and remote sensing is at the center of a larger trend toward the fusion of different kinds of geospatial data and technologies.~~ The purpose of this course is to familiarize students with the various ways in which ~~GIS and~~ remote sensing images have been ~~integrated and~~ used for environmental applications ~~among the sectors at a range of government, industry, spatial and academia temporal scales.~~ A part of the course will be devoted to application projects employing remote sensing and ~~spatial/or GIS~~ data analysis in natural resources and environmental assessments.

~~{24L, 24P}~~

Prerequisites:

8.5 ~~9.0~~ credits and (~~including~~ GGR272H5 or GGR276H5 or GGR278H5 or GGR337H5)

Rationale:

The new title and description more accurately represents the course and how it is being taught.

Resources:

None

GGR383H5: Contaminants in the Environment

Contact Hours:

Previous: *Lecture:* 24

New: *Lecture:* 12 / *Practical:* 12

Prerequisites:

[8.0 ~~9.0~~ credits and (~~including~~ 1.0 credit from GGR201H5 or GGR214H5 or GGR217H5 or GGR227H5)] or permission of instructor

Rationale:

Require smaller groups of students in order to promote discussions and group activities as well as step things up in terms of skill development from what we expect in 1st/2nd year courses. Some of the learning outcomes in the course are to begin developing presentation skills, learn how to read and discuss primary literature and develop writing skills through written assignments that complement class discussions.

Resources:

none

JEG400Y5: Geography / Environment Science Internship

Prerequisites:

15.0-18.0 ~~Minimum 14 credits, Maximum 18~~ credits and permission of instructor

Rationale:

Through this prerequisite change, the intent is to capture students entering their final year given the time commitment required in an internship course (student typically off campus at the workplace for one day a week). This will impact their ability to take more than 5.0 credits in a year. It is also intended to ensure that students would commit to a full year internship.

Resources:

4 Program Modifications:

Biology - Specialist (Science)

Completion Requirements:

13.5 credits are required, including at least 6.0 **credits** at the 300/400 level, of which 1.0 **credit** must be at the 400 level.

First Year:

1.
BIO152H5 **and**; BIO153H5;
2.
CHM110H5 **and**; CHM120H5;
3.
(MAT132H5 **and**; MAT134H5) **or**; MAT134Y5 **or**; ~~*/~~(MAT135H5 **and**; MAT136H5) **or**; MAT135Y5 **or**; MAT137Y5 ;
4.
1.0 from **the following**: CLA201H5 **or** ; ENV100Y5 **or** ; ERS101H5 **or**; ERS120H5) **or** ; PHY136H5 **or**; PHY137H5 **or**; PSY100Y5 **or** WRI173H5 **or** ; ~~WRI203H5~~; WRI307H5.

Note - ~~*~~ (MAT132H5 **and**; MAT134H5) - Calculus for Life Sciences is highly recommended.

Second Year:

1.
BIO202H5 **and**; BIO203H5 **and**; BIO205H5 **and**; BIO206H5 **and**; BIO207H5;
2.
STA215H5

Third and Fourth Years:

1.
BIO313H5 **or**; BIO314H5 **or**; BIO409H5
2.
BIO360H5
3.
5.5 additional UTM BIO credits. At least 5.0 of these credits must be at the 300 level or above, of which at least 1.0 must be at the 400 level.

It is recommended that students in the specialist program include at least 0.5 credit from each of four of the following groups:

•

Ecology and Field Biology : BIO311H5 **or**; BIO312H5 **or**; BIO313H5 **or**; ~~BIO416H5~~; BIO330H5 **or**; BIO331H5 **or**; BIO333H5 **or**; BIO373H5 **or**; BIO376H5 **or**; BIO378H5 **or**; BIO412H5 **or** BIO416H5 **or**; BIO464H5

•

Biology of Whole Organisms : BIO325H5 or BIO326H5 or BIO335H5 or BIO338H5 or BIO354H5 or BIO356H5 or BIO376H5 or BIO378H5

•

Genetics and Evolution: BIO341H5 or BIO342H5 or BIO347H5 or BIO407H5 or BIO422H5 or BIO443H5 or BIO445H5 or BIO464H5

•

Cell, Molecular and Developmental Biology : BIO314H5 or BIO315H5 or BIO324H5 or BIO362H5 or (BIO370Y5 or BIO371H5) or BIO372H5 or BIO374H5 or BIO375H5 or BIO380H5 or BIO404H5 or BIO407H5 or BIO408H5 or BIO417H5 or BIO419H5 or BIO422H5 or BIO458H5 or BIO475H5 or BIO476H5 or BIO477H5

•

Physiology and Behaviour : (BIO208H5 or BIO209H5) or BIO304H5 or BIO310H5 or BIO312H5 or (BIO318Y5 or BIO328H5) or BIO320H5 or BIO368H5 or BIO405H5 or BIO408H5 or BIO409H5 or BIO410H5 or BIO411H5 or BIO414H5 or BIO434H5

Up to 1.0 credit may be taken from the following biology-related courses: GGR227H5 or GGR305H5 or GGR307H5 or GGR309H5 or GGR311H5 or GGR312H5 or CHM347H5 or CHM361H5 or CHM362H5 or CHM372H5 or CHM373H5 or PHY332H5 or PHY333H5 or PSY290H5 or PSY355H5 or PSY357H5 or PSY392H5 or PSY395H5 or PSY397H5 or ANT334H5 or ANT336H5 or ANT340H5.

Additional courses: BIO361H5 or BIO400Y5 or BIO481Y5 or JCB487Y5

Notes :

1.

Students wishing to emphasize cell biology, molecular biology, microbiology, physiology or genetics, should take CHM242H5 and CHM243H5 in second year. Such students should take (MAT132H5, MAT134H5)/MAT134Y5/(MAT135H5, MAT136H5)/MAT135Y5/MAT137Y5, a prerequisite, in their first year.

2.

No substitute statistics course will be allowed for BIO360H5.

3.

Students may take no more than 2.0 credits combined in ROP, Internship Program, or Individual Project/Thesis courses at the 300/400-level for credit toward their Biology program.

4.

Students must consult with the Undergraduate Advisor before enrolling in any St. George course that they wish to use for credit toward any Biology program.

Description of Proposed Changes:

WRI203H5 course code has been changed to WRI173H5. Therefore we would like to remove WRI203H5 and list WRI173H5 as one of the course options in first year. CCIT has assured us the content of WRI173H5 is the same as WRI203H5.

Rationale:

WRI203 course code was changed to WRI173H5 in 2019 and we missed updating this in our specialist programs. Therefore we would like to remove WRI203H5 and list WRI173H5 as one of the course options in first year. CCIT has assured us the content of WRI173H5 is the same as WRI203H5.

Formatting changes have also been made to replace commas and slashes with "and"/"or".

Notes have been moved to new Notes field.

Consultation:

Have consulted with Tracey Bowen (CCIT), BIO Curriculum Committee

Resource Implications:

None

Comparative Physiology - Specialist (Science)

Completion Requirements:

14.5 credits are required, including at least 5.0 at the 300/400 level, of which 1.0 credit must be at the 400 level.

First Year:

1.
BIO152H5 and BIO153H5
2.
÷ CHM110H5 and CHM120H5
3.
÷ (MAT132H5 and MAT134H5)*or/MAT134Y5 or/(MAT135H5 and MAT136H5) or/MAT135Y5 or/MAT137Y5
4.
1.0 credit from ~~the following~~: CLA201H5 or ÷ ENV100Y5 or ÷ ERS101H5 or ÷ PHY136H5 or PHY137H5 or PSY100Y5 or WRI173H5 or ÷ ~~WRI203H5~~, WRI307H5

Note*(MAT132H5 and MAT134H5) - Calculus for Life Sciences is highly recommended.

Second Year:

1.
BIO202H5 and BIO203H5 and BIO205H5 and BIO206H5 and BIO207H5 and (BIO208H5 and BIO209H5)
2.
÷ STA215H5

Third and Fourth Years:

1.
BIO304H5 and BIO310H5 and BIO312H5 and BIO360H5 and BIO409H5;
2.
CHM242H5 and CHM243H5
3.
At least 2.0 credits from: BIO320H5 or BIO347H5 or BIO354H5 or BIO361H5 or BIO372H5 or BIO404H5 or BIO408H5 or BIO410H5 or BIO411H5 or BIO412H5 or BIO414H5 or BIO417H5 or BIO419H5 or BIO422H5 or BIO481Y5 or ÷ CHM361H5 or CHM362H5 or ÷ JCB487Y5 or ÷ PHY332H5 or PHY333H5 or ÷ PSY290H5 or PSY395H5
4.
1.0 additional BIO credit taken at U of T Mississauga campus

No substitute statistics course will be allowed for BIO360H5. Students may take no more than 2.0 credits combined in ROP, Internship Program, or Individual Project/Thesis courses at the 300/400-level for credit toward their Biology program. Students must consult with the Undergraduate Advisor before enrolling in any St. George course that they wish to use for credit toward any Biology program.

Description of Proposed Changes:

WRI203H5 course code has been changed to WRI173H5. Therefore we would like to remove WRI203H5 and list WRI173H5 as one of the course options in first year. CCIT has assured us the content of WRI173H5 is the same as WRI203H5.

Rationale:

WRI203 course code was changed to WRI173H5 in 2019 and we missed updating this in our specialist programs. Therefore we would like to remove WRI203H5 and list WRI173H5 as one of the course options in first year. CCIT has assured us the content of WRI173H5 is the same as WRI203H5.

Formatting changes have also been made to replace commas and slashes with "and"/"or".

Consultation:

Have consulted with Tracey Bowen (CCIT), BIO Curriculum Committee

Resource Implications:

Ecology and Evolution - Specialist (Science)

Completion Requirements:

14.5 credits are required, including at least 6.0 **credits** at the 300/400 level, of which 1.5 credits must be at the 400 level.

First Year:

1.
BIO152H5 **and** BIO153H5;
2.
CHM110H5 **and** CHM120H5;
3.
(MAT132H5 **and** MAT134H5) **or** MAT134Y5 **or** (MAT135H5 **and** MAT136H5) **or** MAT135Y5 **or** MAT137Y5
4.
1.0 credit from ~~the following~~: CLA201H5 **or** ENV100Y5 **or** ERS101H5 **or** PHY136H5 **or** PHY137H5 **or** PSY100Y5 **or** WRI173H5 **or** ~~WRI203H5~~, WRI307H5

Note*(MAT132H5 **and** MAT134H5) - Calculus for Life Sciences is highly recommended.

Second Year:

1.
BIO202H5 **and** BIO203H5 **and** BIO205H5 **and** BIO206H5 **and** BIO207H5

Third and Fourth Years:

1.
BIO313H5 and BIO342H5 and BIO443H5 **and** BIO360H5
2.
STA215H5 **and** ~~BIO360H5~~
3.
1.0 credit from courses in organismal biology: BIO325H5 **or** BIO326H **or** ~~BIO326H5~~, BIO335H5 **or** BIO338H5 **or** BIO339H5 **or** BIO354H5 **or** BIO356H5 **or** (~~BIO370Y5~~ **or** BIO371H5)
4.
0.5 credit from field courses: BIO416H5 **or** other 2-week Ontario Universities Program in ~~OUPFB~~ * * Field Biology (OUPFB) Courses
5.
2.0 credits from core ecology/evolutionary biology courses: BIO311H5 **or** BIO330H5 **or** BIO331H5 **or** BIO333H5 **or** BIO341H5 **or** BIO361H5 **or** BIO373H5 **or** BIO376H5 **or** BIO378H5 **or** BIO406H5 **or** BIO445H5 **or** BIO464H5 **or** GGR312H5 **or** JBH471H5
6.
1.0 **credit** ~~credits~~ from other UTM biology courses at the 300/400 level.

7.

1.0 credit from related courses from other departments: MAT212H5 or; MAT222H5 or; MAT232H5 or; STA302H5 or; STA322H5 or; GGR227H5 or; GGR278H5 or; GGR305H5 or; GGR307H5 or; GGR309H5 or; GGR311H5; or from courses listed in #4, #5 and #6

~~** Ontario Universities Program in Field Biology~~

~~No substitute statistics course will be allowed for BIO360H5.~~

~~Students may take no more than 2.0 credits combined in ROP, Internship Program, or Individual Project/Thesis courses at the 300/400-level for credit toward their Biology program.~~

~~Students must consult with the Undergraduate Advisor before enrolling in any St. George course that they wish to use for credit toward any Biology program.~~

Description of Proposed Changes:

WRI203H5 course code has been changed to WRI173H5. Therefore we would like to remove WRI203H5 and list WRI173H5 as one of the course options in first year. CCIT has assured us the content of WRI173H5 is the same as WRI203H5.

Rationale:

WRI203 course code was changed to WRI173H5 in 2019 and we missed updating this in our specialist programs. Therefore we would like to remove WRI203H5 and list WRI173H5 as one of the course options in first year. CCIT has assured us the content of WRI173H5 is the same as WRI203H5.

Formatting changes have also been made to replace commas and slashes with "and"/"or".

Notes have been moved to new Notes field.

Consultation:

Have consulted with Tracey Bowen (CCIT), BIO Curriculum Committee

Resource Implications:

None

Molecular Biology - Specialist (Science)

Completion Requirements:

15.0 credits are required.

First Year:

1.

BIO152H5 and; BIO153H5

2.

; CHM110H5 and; CHM120H5

3.

; (MAT132H5 and; MAT134H5)*or; MAT134Y5 or; (MAT135H5 and; MAT136H5) or; MAT135Y5 or; MAT137Y5

4.

; plus 1.0 credit from: of CLA201H5 or; ENV100Y5 or; (ERS101H5 or; ERS120H5) or; PHY136H5 or; PHY137H5 or; PSY100Y5 or WRI173H5 or; ~~WRI203H5~~; WRI307H5

Note*(MAT132H5 and; MAT134H5) - Calculus for Life Sciences is highly recommended.

Second Year:

1.
BIO206H5 and BIO207H5
2.
÷ CHM242H5 and CHM243H5
3.
÷ STA215H5
4.
÷ plus 1.0 credit from BIO202H5 or BIO203H5 or BIO205H5

Third Year:

1.
BIO314H5 and BIO315H5 and BIO342H5 and BIO360H5 and BIO370Y5 and BIO372H5
2.
÷ CHM361H5 and CHM362H5 and CHM372H5 and CHM373H5
3.
÷ plus 0.5 credit from BIO304H5 or BIO310H5 or BIO341H5 or BIO347H5 or BIO362H5 or BIO368H5 or BIO374H5 or BIO375H5 or BIO380H5 or CHM347H5 or PHY332H5 or PHY333H5 or BCH335H1 or BCH340H1

Fourth Year:

1.
BIO477H5 or BIO419H5**
2.
1.0 plus 1.0 additional credit from BIO403H5 or BIO407H5 or BIO408H5 or BIO411H5 or BIO417H5 or BIO419H5 or BIO422H5 or BIO443H5 or BIO458H5 or BIO476H5 or BIO477H5 or BIO481Y5 or BCH441H1 or CHM444H5 or CHM462H5 or CHM489Y5 or JBC472H5 or JCB487Y5 or JCP463H5 or CSB435H1 or CSB450H1 or CSB459H1 or CSB472H1 or CSB473H1 or CSB474H1 or CSB475H1 or MGY425H1 or MGY428H1 or MGY440H1 or MGY445H1 or MGY451H1 or MGY452H1 or MGY470H1 or MIJ485H1

** Please note that both BIO477H5 and BIO419H5 can be taken, but each will be counted only once in the total 1.5 credits required in this section.

Notes ÷

1.
~~Students intending to continue into Graduate Studies should consider including a course in independent research in Year 4.~~
2.
~~Students may take no more than 2.0 credits combined in ROP, Internship Program, Individual Project/Thesis courses at the 300/400-level for credit toward their Biology program.~~
3.
~~No substitute statistics course will be allowed for BIO360H5.~~

Description of Proposed Changes:

WRI203H5 course code has been changed to WRI173H5. Therefore we would like to remove WRI203H5 and list WRI173H5 as one of the course options in first year. CCIT has assured us the content of WRI173H5 is the same as WRI203H5.

Rationale:

WRI203 course code was changed to WRI173H5 in 2019 and we missed updating this in our specialist programs. Therefore we would like to remove WRI203H5 and list WRI173H5 as one of the course options in first year. CCIT has assured us the content of WRI173H5 is the same as WRI203H5.

Formatting changes have also been made to replace commas and slashes with "and"/"or".

Notes have been moved to new Notes field.

Consultation:

Have consulted with Tracey Bowen (CCIT), BIO Curriculum Committee

Resource Implications:

None

2 Course Modifications:

BIO320H5: Sensory and Cognitive Biology

Title:

Sensory and Cognitive ~~Biology~~ Ecology

Abbreviated Title:

Previous: Sensory Biology

New: Sensory& Cognitive Ecology

Description:

The acquisition ~~Properties, acquisitions,~~ and transduction of environmental information will be explored in the context of ~~decision making and behavioural output determining behaviour.~~ This course ~~will focus~~ ~~foeuses~~ on the form and function of visual, auditory, tactile, and chemical senses ~~and signals, and information transfer between sources and receivers.~~ Post-acquisition, cognitive processes concerned with learning, ~~memory,~~ and ~~memory decision-making~~ will also be discussed. A comparative approach will be taken ~~throughout~~ to examine ~~the ways that~~ ~~how~~ different animals ~~and animal groups~~ rely on different sources of information ~~and as well as~~ a diverse ~~variety array~~ of sensory and cognitive mechanisms. ~~All Fields considered will include sensory physiology, ecology, comparative cognition, and neuroethology, and all~~ topics will be covered in the context of ~~species-specific ecology and evolution~~ ~~evolution~~". [24L, 10T]

Rationale:

The course title and course description is being updated to reflect what is currently being taught in the course.

Consultation:

Biology Curriculum Committee

Resources:

BIO360H5: Biometrics I

Contact Hours:

Previous: *Lecture:* 24 / *Practical:* 24 / *Tutorial:* 12

New: *Lecture:* 36 / *Practical:* 24

Rationale:

Instructor currently teaches the tutorial section directly after the lecture, but has found that some students do not remain in class for the tutorial section. She would like to change 24L, 12T to 36L hours so that students remain for the full duration of her teaching. PRA hours will remain the same.

Consultation:

Biology Curriculum Committee

Resources:

No change

7 Minor Program Modifications:

Computer Science - Major (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in this program is limited.

For students applying in 2020-2021 for program entry in the 2021-2022 Academic Year, 4.0 credits are required, including the following:

1. CSC148H5 (see minimum grade note below);
2. MAT102H5 (see minimum grade note below);
3. MAT134H5 or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5; and
4. A cumulative grade point average (CGPA), determined annually. It is never lower than 2.0.

For students applying in 2021-2022 (and beyond) for program entry in the 2022-2023 Academic Year (and beyond), 4.0 credits are required, including the following:

1. CSC148H5 (see minimum grade note below);
2. MAT102H5 (see minimum grade note below);
3. MAT134H5 or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5;
4. ISP100H5; and
5. A cumulative grade point average (CGPA), determined annually. It is never lower than 2.5.

6. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry ~~2.0~~.

NOTE: The minimum grade required in CSC148H5 and MAT102H5 is determined annually. It is never lower than 60%. Only CSC148H5 and MAT102H5, taken at the UTM campus, will be accepted.

The Computer Science Specialist is a deregulated fees program and as such, tuition fees for students enrolled in this program are higher than for other regulated fee programs. Fees are charged on a program and not a per-course basis. See www.fees.utoronto.ca for more information on the fee structures.

Rationale:

1. “Only CSC148H5 and MAT102H5, taken at the UTM campus, will be accepted” --This has been enforced for a few years.

2. CGPA requirement is at 3.0 for a few years. 2.0 might be a bit miss leading.
3. We don't want CR/NCR courses to be counted as part of the 4.0 credits required for program entry.

Resource Implications:

None.

Applied Statistics - Major (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in the Major program is limited to students with a minimum of 4.0 credits, including:

1. STA107H5 or STA256H5 or STA257H5(with a minimum grade of 60%);
2. MAT134H5 or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5; and
3. A minimum cumulative grade point average, to be determined annually.
4. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry.

Rationale:

We don't want CR/NCR to be counted as part of the 4.0 credits required for program entry.

Resource Implications:

None.

Applied Statistics - Specialist (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in the Specialist program is limited to students with a minimum of 4.0 credits, including:

1. STA107H5 or STA256H5 or STA257H5(with a minimum grade of 60%);
2. MAT137Y5 or MAT157Y5 or MAT134H5 (minimum 60%) or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT233H5 (minimum 55%) ; and
3. A minimum cumulative grade point average, to be determined annually.
4. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry.

Rationale:

We don't want CR/NCR courses to be counted as part of the 4.0 credits required for program entry.

Resource Implications:

None.

Computer Science - Specialist (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in this program is limited to:

For students with a minimum of applying in 2020-2021 for program entry in the 2021-2022 Academic Year ; 4.0 credits are required, including the following:

1. CSC148H5(see minimum grade note below);
2. MAT102H5 (see minimum grade note below) ;
3. MAT134H5 or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5;
4. ISP100H5; and
5. A cumulative grade point average (CGPA), determined annually. It is never lower than 2.5 2.0.
6. All

For students must complete 4.0 U of T credits before requesting this applying in 2021-2022 (and beyond) for program. Courses with a grade of CR/NCR will not count as a part of entry in the 2022-2023 Academic Year (and beyond) ; 4.0 credits are required for program entry; including the following:

1. CSC148H5 (see minimum grade note below) ;
2. MAT102H5 (see minimum grade note below) ;
3. MAT134H5 or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5;
4. ISP100H5; and
5. A cumulative grade point average (CGPA), determined annually. It is never lower than 2.0.

NOTE: The minimum grade required in CSC148H5 and MAT102H5 is determined annually. It is never lower than 65%. Only CSC148H5 and MAT102H5, taken at the UTM campus, will be accepted.

The Computer Science Specialist is a deregulated fees program and as such, tuition fees for students enrolled in this program are higher than for other regulated fee programs. Fees are charged on a program and not a per-course basis. See www.fees.utoronto.ca for more information on the fee structures.

Completion Requirements:

11.5-12.5 12.0-12.5 credits are required.

First Year:

1. CSC108H5 and CSC148H5 and ISP100H5
2. MAT102H5
3. (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5
4. For students entering the program in 2022-2023 (and beyond): ISP100H5

Second Year:

1. CSC207H5 and CSC209H5 and CSC236H5 and CSC258H5 and CSC263H5
2. MAT223H5 or MAT240H5
3. MAT232H5 or MAT233H5 or MAT257Y5
4. STA246H5 or STA256H5
5. For students entering the program in 2020-2021: CSC290H5

Higher Years:

1. CSC343H5 and CSC363H5 and CSC369H5 and CSC373H5
2. CSC358H5 or CSC458H5
3. 2.5 credits from the following: any 300/400 level CSC course (offered at UTM) or GGR335H5 or GGR337H5 or GGR437H5. At least 1.0 credit must come from 400-level courses, and no more than 1.0 credit of GGR courses may count to this requirement.

NOTES:

1. In addition to the course requirements above, students must complete an integrative learning experience. This requirement may be met by participating in the PEY (Professional Experience Year) program. It can also be met by taking at least one of the following half-courses: CSC318H5 or CSC367H5 or CSC375H5 or CSC409H5 or CSC420H5 or CSC427H5 or CSC477H5 or CSC490H5.
2. Students in the Computer Science Specialist program are advised to arrange their program so as to complete the requirement for the Major in Computer Science by the end of the third year.

Rationale:

1. We are adding STA246H5 as an equivalent course to STA256H5, taught by a CS faculty. Additional changes made reflect second phase of ISP100H5 implementation.
For Changes in May:
2. "Only CSC148H5 and MAT102H5, taken at the UTM campus, will be accepted" --This has been enforced for a few years.
3. CGPA requirement is at 3.0 for a few years. 2.0 might be a bit miss leading.
4. We don't want CR/NCR courses to be counted as part of the 4.0 credits required for program entry.
5. Notes have been moved to the newly added 'Notes' field

Resource Implications:

None.

Information Security - Specialist (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in this program is limited to:

For students with a minimum of applying in 2020-2021 for program entry in the 2021-2022 Academic Year ; 4.0 credits are required, including the following:

1. CSC148H5(see minimum grade note below);
2. MAT102H5 (see minimum grade note below) ;
3. MAT134H5 or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5;
4. ISP100H5; and
5. A cumulative grade point average (CGPA), determined annually. It is never lower than 2.5 2.0.
6. All

For students must complete 4.0 U of T credits before requesting this applying in 2021-2022 (and beyond) for program. Courses with a grade of CR/NCR will not count as a part of entry in the 2022-2023 Academic Year (and beyond) ; 4.0 credits are required for program entry; including the following:

1. CSC148H5 (see minimum grade note below) ;
2. MAT102H5 (see minimum grade note below) ;
3. MAT134H5 or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5;
4. ISP100H5; and
5. A cumulative grade point average (CGPA), determined annually. It is never lower than 2.0.

NOTE: The minimum grade required in CSC148H5 and MAT102H5 is determined annually. It is never lower than 65%. Only CSC148H5 and MAT102H5, taken at the UTM campus, will be accepted.

The Information Security Specialist is a deregulated fees program and as such, tuition fees for students enrolled in this program are higher than for other regulated fee programs. Fees are charged on a program and not a per course basis. See www.fees.utoronto.ca for more information on the fee structures.

Completion Requirements:

12.5-13.0 credits are required.

First Year:

1.
CSC108H5 and CSC148H5 and ISP100H5
2.
MAT102H5
3.
(MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5
4.
MAT223H5 or MAT240H5
5.
~~For students entering the program in 2022-2023 (and beyond): ISP100H5~~

Second Year:

1.
CSC207H5 and CSC209H5 and CSC236H5 and CSC258H5 and CSC263H5
2.
MAT224H5 or MAT240H5
3.
MAT232H5 ~~or MAT233H5~~ or MAT257Y
4.
STA246H5 or STA256H5
5.
~~For students entering the program in 2020-2021: CSC290H5~~

Third Year:

1.
CSC343H5 and CSC347H5 and CSC363H5 and CSC369H5 and CSC373H5
2.
MAT301H5 and MAT302H5

Fourth Year:

1.
CSC358H5 or CSC458H5
2.
1.0 credit from the following: CSC422H5 or CSC423H5 or CSC427H5 or CSC490H5

NOTES: In addition to the course requirements above, students must complete an integrative learning experience. This requirement may be met by participating in the PEY (Professional Experience Year) program. It can also be met by taking at least one of the following half-courses: CSC318H5 or CSC367H5 or CSC375H5 or CSC409H5 or CSC420H5 or CSC427H5 or CSC477H5 or CSC490H5.

Rationale:

1. We are adding STA246H5 as an equivalent course to STA256H5, taught by a CS faculty. Additional changes made reflect second phase of ISP100H5 implementation.
2. “Only CSC148H5 and MAT102H5, taken at the UTM campus, will be accepted” --This has been enforced for a few years.
3. CGPA requirement is at 3.0 for a few years. 2.0 might be a bit miss leading.
4. We don’t want CR/NCR courses to be counted as part of the 4.0 credits required for program entry.

Resource Implications:

None.

Mathematical Sciences - Major (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in the Major program is limited to students with a minimum of 4.0 credits, including:

1. MAT102H5(minimum 60%);
2. A minimum 60% grade in MAT134H5 or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT233H5 or a minimum 50% in MAT157Y5; and
3. A minimum cumulative grade point average (CGPA), to be determined annually.

4. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry.

Rationale:

We don't want CR/NCR courses to be counted as part of the 4.0 credits required for program entry.

Resource Implications:

None.

Mathematical Sciences - Specialist (Science)

Description:

Previous:

New:

The Specialist Program in Mathematical Sciences is primarily directed toward students who hope to pursue graduate studies in, or related to mathematics .

Enrolment Requirements:

~~The Specialist Program in Mathematical Sciences is primarily directed toward students who hope to pursue graduate studies in, or related to mathematics.~~

Limited Enrolment — Enrolment in the Specialist program is limited to students with a minimum of 4.0 credits, including:

1. MAT102H5(minimum 65%);
2. MAT137Y5 (minimum 60%) or MAT157Y5; and
3. A minimum cumulative grade point average (CGPA), to be determined annually.

4. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry."

Rationale:

We don't want CR/NCR courses to be counted as part of the 4.0 credits required for program entry.

Resource Implications:

None.

2 Course Modifications:

STA107H5: An Introduction to Probability and Modelling

Contact Hours:

Previous: *Lecture:* 36 / *Tutorial:* 12

New: *Lecture:* 39 / *Tutorial:* 12

Corequisites:

Previous: (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5

New:

Rationale:

The corequisites are being removed because this is a basic statistics course that does not require any Calculus background. This course has multiple sections with about 800 students enrolled yearly. Having extra three hours enables instructors to schedule common tests, which maintain consistency.

Resources:

No.

STA215H5: Introduction to Applied Statistics

Contact Hours:

Previous: *Lecture:* 36 / *Tutorial:* 12

New: *Lecture:* 39 / *Tutorial:* 12

Exclusions:

STA218H5 or STA220H5 or **STA220H1** or STA256H5 or STA257H5 or STAB22H3 or ECO220Y5 or ECO227Y5 or PSY201H5 or PSYB07H3 or SOC350H5

Rationale:

STA220H1 is equivalent to STA220H5 and STAB22H3. Thus, it is needed to be added to the exclusion list.

This course has multiple sections with about 800 students enrolled yearly. Having three extra hours enables instructors to schedule common tests, which maintain consistency.

Resources:

No.

2 New Courses:

UTM108H5: utmONE: Special Topics at the Intersection of Science and Social Science

Contact Hours:

Lecture: 24 / **Tutorial:** 12

Description:

This course brings together first-year students to explore a current topic or problem at the intersection of science and social science in a small-group environment. The focus of each section will depend on the instructor's areas of expertise and will provide students with the opportunity to develop foundational learning strategies and sharpen their academic skills to support the transition into university.

Prerequisites:**Corequisites:****Exclusions:**

UTM109H5 or UTM110H5 or UTM111H5 or UTM112H5 or UTM113H5 or UTM114H5 or UTM115H5 or UTM116H5 or UTM117H5 or UTM118H5 or UTM119H5 or UTM190H5 or UTM191H5 or UTM192H5 or UTM193H5 or UTM194H5 or UTM195H5 or UTM196H5 or UTM197H5

Recommended Preparation:**Rationale:**

This course was originally proposed in February 2021 as UTM111H5, along with UTM110H5 and UTM112H5, and we decided to retire the course previously offered as UTM111H5. However, we have decided to offer UTM111H5 in Fall 2021 as its original course. Therefore, we are renumbering the utmONE Special Topics courses to UTM108H5 (Science and Social Science) and UTM109H5 (Science and Humanities), as well as the previously proposed UTM110H5 (Social Science and Humanities).

Resources:

UTM109H5: utmONE: Special Topics at the Intersection of Science and Humanities

Contact Hours:

Lecture: 24 / *Tutorial:* 12

Description:

This course brings together first-year students to explore a current topic or problem at the intersection of science and humanities in a small-group environment. The focus of each section will depend on the instructor's areas of expertise and will provide students with the opportunity to develop foundational learning strategies and sharpen their academic skills to support the transition into university.

Prerequisites:

Corequisites:

Exclusions:

UTM108H5 or UTM110H5 or UTM111H5 or UTM112H5 or UTM113H5 or UTM114H5 or UTM115H5 or UTM116H5 or UTM117H5 or UTM118H5 or UTM119H5 or UTM190H5 or UTM191H5 or UTM192H5 or UTM193H5 or UTM194H5 or UTM195H5 or UTM196H5 or UTM197H5

Recommended Preparation:

Rationale:

This course was originally proposed in February 2021 as UTM112H5, along with UTM110H5 and UTM111H5, and we decided to retire the course previously offered as UTM111H5. However, we have decided to offer UTM111H5 in Fall 2021 as its original course. Therefore, we are renumbering the utmONE Special Topics courses to UTM108H5 (Science and Social Science) and UTM109H5 (Science and Humanities), as well as the previously proposed UTM110H5 (Social Science and Humanities).

Resources:

1 Course Modification:

ISP010H5: Basics of Writing in English (BoWiE)

Contact Hours:

Previous: Seminar: 18

New: Seminar: 20

Description:

This non-credit ~~ten 9-week course, usually beginning in week~~ **course 2 of the term**, is specifically designed to help students build skills that will assist in the completion of their written academic course work. Students in the course will learn to communicate their ideas in written form, applying skills in English mechanics and usage through in-course practice. Students who wish to improve their basic English writing skills, or who do not reach the threshold score on the competency assessment delivered in the first week of ISP100H5 Writing for University and Beyond, should take this course to develop their skills for university work and ensure successful completion of ISP100H5. No credit is awarded for this course, **and it begins in week 2 of the academic term, following the competency assessment for ISP100H5.**

Rationale:

ISP010H is currently being taught as a 10-week course, so we are modifying course description to indicate this. The contact hours have also been updated to reflect this change.

Resources:

Chemical and Physical Sciences (UTM), Department of

5 Minor Program Modifications:

Astronomical Sciences - Specialist (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in this program **limited**.

For students applying in 2021-2022 for program entry in **is based on** the 2022-2023 Academic Year , **completion of** 4.0 credits are required, including the following:

1.
AST110H5
2.
MAT102H5
3.
(MAT135H5 and MAT136H5) or MAT135Y5 or MAT137Y5 or MAT157Y5
4.
(PHY136H5 and PHY137H5) or (PHY146H5 and PHY147H5)

For students applying in 2022-2023 (and beyond) for program entry in the 2023-2024 Academic Year (and beyond) , 4.0 credits are required, including the following **courses**:

1.
AST110H5
2.
MAT102H5
3.
(MAT135H5 and MAT136H5)or MAT135Y5 or MAT137Y5 or MAT157Y5
4.
(PHY136H5 and PHY137H5) or (PHY146H5 and PHY147H5)
5.
ISP100H5

Completion Requirements:

14.0-14.5 ~~14.0~~ credits are required.

First Year:

1.
AST110H5
2.
MAT102H5
3.
(MAT135H5 and MAT136H5) or MAT135Y5 or MAT137Y5 or MAT157Y5
4.
MAT223H5 or MAT240H5
- 5.

(PHY136H5 and PHY137H5) or (PHY146H5 and PHY147H5)

6.

For students entering the program in 2023-2024 (and beyond): ISP100H5

Second ~~Second~~ Year:

1.

AST221H5 and AST222H5

2.

MAT232H5 or MAT233H5

3.

MAT236H5 and MAT244H5

4.

PHY241H5 and PHY245H5

5.

PHY242H5 or JCP221H5

Third Year:

1.

AST320H5

2.

JCP265H5 or CSC108H5 or AST325H1

3.

JCP321H5 and JCP322H5

4.

MAT311H5 and MAT334H5

5.

PHY325H5 and PHY347H5

Fourth Year:

1.

AST399Y5 or AST425Y1

2.

JCP421H5

3.

PHY451H5

4.

STA220H5 or STA256H5

Rationale:

Enrolment Requirements and Completion Requirements have been updated to reflect the implementation of ISP100H5.

Resource Implications:

Astronomy - Major (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in this program limited.

For students applying in 2021-2022 for program entry in ~~is based on~~ the 2022-2023 Academic Year, ~~completion of~~ 4.0 credits are required, including the following ~~courses~~:

1.
AST110H5
2.
MAT102H5
3.
(MAT135H5 and MAT136H5) or MAT135Y5 or MAT137Y5 or MAT157Y5
4.
(PHY136H5 and PHY137H5) or (PHY146H5 and PHY147H5)

For students applying in 2022-2023 (and beyond) for program entry in the 2023-2024 Academic Year (and beyond), 4.0 credits are required, including the following:

1.
AST110H5
2.
MAT102H5
3.
(MAT135H5 MAT135H and MAT136H5)or MAT135Y5 or MAT137Y5 or MAT157Y5
4.
(PHY136H5 and PHY137H5) or (PHY146H5 and PHY147H5)
5. **ISP100H5**

Completion Requirements:

9.0-9.5 ~~9.0~~ credits are required.

First Year:

1.
AST110H5
2.
MAT102H5
3.
(MAT135H5 and MAT136H5) or MAT135Y5 or MAT137Y5 or MAT157Y5
4.
MAT223H5 or MAT240H5
5.
(PHY136H5 and PHY137H5) or (PHY146H5 and PHY147H5)
- 6.

For students entering the program in 2023-2024 (and beyond): **ISP100H5**

Second Year:

1.
AST221H5 and AST222H5
2.
MAT244H5 and MAT236H5
3.
MAT232H5 or MAT233H5
4.
PHY241H5 and PHY245H5
5.
PHY242H5 or JCP221H5

Higher Years:

- 1.

AST320H5

2.

JCP321H5

3.

JCP322H5 or 0.5 credit at the ~~one~~ 300/400-level ~~half-course~~ approved by the faculty advisor.

Rationale:

Enrolment Requirements and Completion Requirements have been updated to reflect the implementation of ISP100H5.

Resource Implications:

Biological Chemistry - Specialist (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in this program is ~~limited~~ ~~restricted~~.

For students applying in 2021-2022 for program entry in the 2022-2023 Academic Year, ~~Selection will be based on completion of~~ 4.0 credits are required, including the following:

1.

CHM110H5 and CHM120H5 (minimum grade of 65% in CHM120H5);

2.

(MAT132H5 and MAT134H5 , minimum grade of 65% in MAT134H5) or (MAT135H5 and MAT136H5 , minimum grade of 65% in MAT136H6) or MAT134Y5 (minimum grade of 65%) or MAT135Y5 (minimum grade of 65%) or MAT137Y5 (minimum grade of 65%) or MAT157Y5 (minimum grade of 65%)

3.

A minimum CGPA of 2.5

For students applying in 2022-2023 (and beyond) for program entry in the 2023-2024 Academic Year (and beyond), 4.0 credits are required, including the following:

1.

CHM110H5 and CHM120H5 (minimum grade of 65% in CHM120H5)

2.

(MAT132H5 and MAT134H5 , minimum grade of 65% in MAT134H5) or (MAT135H5 ÷ and MAT136H5 , minimum grade of 65% in MAT136H6) or MAT134Y5 (minimum grade of 65%) or MAT135Y5 (minimum grade of 65%) or MAT137Y5 (minimum grade of 65%) or MAT157Y5 (minimum grade of 65%)

3.

ISP100H5

4.

A minimum CGPA of 2.5÷

NOTE: Completion of BIO152H5 ~~prior to enrolment~~ is recommended.

Completion Requirements:

14.0-14.5 ~~14.0~~ credits are required.

First Year:

1. BIO152H5
 2. CHM110H5 and CHM120H5
 3. (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5
 4. (PHY136H5 and PHY137H5) or (PHY146H5 and PHY147H5)5.
- For students entering the program in 2023-2024 (and beyond): ISP100H5

Second Year:

1. CHM211H5 and CHM231H5 and CHM242H5 and CHM243H5
 2. JCP221H5
 3. BIO206H5 and BIO207H54.
- 0.5 credit of MAT or CSC or STA (at any level)

Third Year:

1. CHM333H5 and (CHM341H5 or CHM345H5) and CHM347H5 and CHM361H5 and CHM362H5 and CHM372H5 and CHM373H5
2. BIO372H5

Fourth Year:

1. CHM399Y5 or CHM489Y5 or CPS489Y5 or CPS400Y5 or JCB487Y5 or (BCH472Y1 or BCH473Y1, with permission of the CHM Program Advisor)
2. 1.5 credits from the following courses: BIO324H5 or CHM412H5 or CHM444H5 or CHM462H5 or JCP410H5 or JCP422H5 or JCP463H5 or JBC472H5 or CHM447H1 or CHM479H1 or any 400 level BCH lecture course.

Rationale:

Enrolment Requirements and Completion Requirements have been updated to reflect the implementation of ISP100H5.

Resource Implications:

Chemistry - Major (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in this program ~~the Chemistry Major Program~~ is limited.

For students applying in 2021-2022 for program entry in the 2022-2023 Academic Year, 4.0 credits are required, including the following:

- 1.

CHM110H5 and CHM120H5 (minimum grade ~~based on completion~~ of 60% in CHM120H5)

2.

(MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5

For students applying in 2022-2023 (and beyond) for program entry in the 2023-2024 Academic Year (and beyond), 4.0 credits are required, including the following:

1.

CHM110H5 and CHM120H5 (minimum grade of 60% in CHM120H5)

2.

(MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y53.

ISP100H5

Completion Requirements:

8.0-8.5 ~~8.0~~ credits are required.

First Year:

1.

CHM110H5 and CHM120H5

2.

(MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y53.

For students entering the program in 2023-2024 (and beyond): ISP100H5

Second Year:

1.

CHM211H5 and CHM231H5 and CHM242H5 and CHM243H5

2.

JCP221H5

Higher Years:

1.

~~1.0 credit from~~ (CHM372H5 and CHM373H5) or (CHM394H5 and CHM395H5) or (CHM396H5 and CHM397H5)

2.

1.5 credits from lecture courses: CHM311H5 or JCP321H5 or JCP322H5 or CHM331H5 or CHM333H5 or CHM341H5 or CHM345H5 or CHM347H5 or CHM361H5 or CHM362H5 or CHM436H5 or CHM412H5 or CHM414H5 or CHM416H5 or CHM442H5 or CHM444H5 or CHM462H5 or JCP321H5 or JCP322H5 or JCP410H5 or JCP421H5 or JCP422H5 or JCP463H5

3.

1.0 credit from: CHM311H5 or CHM331H5 or CHM333H5 or CHM341H5 or CHM345H5 or CHM347H5 or CHM361H5 or CHM362H5 or CHM372H5 or CHM373H5 or CHM394H5 or CHM395H5 or CHM396H5 or CHM397H5 or CHM399Y5 or CHM412H5 or CHM414H5 or CHM416H5 or CHM436H5 or CHM442H5 or CHM444H5 or CHM462H5 or CHM489Y5 or CPS489Y5 or CPS398H5 or CPS400Y5 or FSC311H5 or JCP321H5 or JCP322H5 or JCP410H5 or JCP421H5 or JCP422H5 or JCP463H5 or JBC472H5 or JBC487Y5

Notes ÷

1.

(MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 is required for all 200-level CHM/JCP courses.

2.

For a balanced training in Chemistry, students should take CHM311H5 and (CHM331H5 or CHM333H5) and (CHM341H5 or CHM345H5) and JCP321H5.

Rationale:

Enrolment Requirements and Completion Requirements have been updated to include ISP100H5.

Resource Implications:

Chemistry - Specialist (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in this program is limited ~~restricted~~.

For students applying in 2021-2022 for program entry in the 2022-2023 Academic Year, ~~Selection will be based on completion of~~ 4.0 credits are required, including the following:

1.
CHM110H5 and CHM120H5 (minimum grade of 65% in CHM120H5)
2.
(MAT132H5 and MAT134H5 , with a minimum grade of 65% in MAT134H5) or (MAT135H5 and MAT136H5 , with a minimum grade of 65% in MAT136H5) or MAT134Y5 (minimum grade of 65%) or MAT135Y5 (minimum grade of 65%) or MAT137Y5 (minimum grade of 65%) or MAT157Y5 (minimum grade of 65%)
3.
A minimum CGPA of 2.5

For students applying in 2022-2023 (and beyond) for program entry in the 2023-2024 Academic Year (and beyond), 4.0 credits are required, including the following:

1.
CHM110H5 and CHM120H5 (minimum grade of 65% in CHM120H5)
2.
(MAT132H5 and MAT134H5 , with a minimum grade of 65% in MAT134H5) or (MAT135H5 ~~;~~ and MAT136H5 , with a minimum grade of 65% in MAT136H5) or MAT134Y5 (minimum grade of 65%) or MAT135Y5 (minimum grade of 65%) or MAT137Y5 (minimum grade of 65%) or MAT157Y5 (minimum grade of 65%)
3.
ISP100H5
4.
A minimum CGPA of 2.5~~;~~

Completion Requirements:

13.0-13.5 ~~13.0~~ credits are required.

First Year:

1.
CHM110H5 and CHM120H5
2.
(MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5
3.
(PHY136H5 and PHY137H5) or (PHY146H5 and PHY147H5)
- 4.

Second Year:

1.
CHM211H5 and CHM231H5 and CHM242H5 and CHM243H5
2.
JCP221H5
3.
MAT212H5 or MAT232H5

Third Year:

1.
CHM311H5 and CHM331H5 and CHM361H5 and CHM394H5 and CHM396H5
2.
CHM341H5 or CHM345H5
3.
JCP321H5

Fourth Year:

1.
(CHM395H5 and CHM397H5) or CHM399Y5 or CHM489Y5 or CPS489Y5 or CPS400Y5 or CPS401Y5 or JCB487Y5
2.
1.5 credits lecture courses from: CHM412H5 or CHM414H5 or CHM416H5 or CHM436H5 or CHM442H5 or CHM444H5 or CHM462H5 or JCP421H5 or JCP422H5 or JCP410H5 or JCP463H5
3.
1.0 credit from: CHM311H5 CHM331H5 or CHM333H5 or CHM341H5 or CHM345H5 or CHM347H5 or CHM361H5 or CHM362H5 or CHM372H or CHM373H5 or CHM394H5 or CHM395H or CHM396H5 or CHM397H5 or CHM412H5 or CHM414H5 or CHM416H5 or CHM436H5 or CHM442H5 or CHM444H5 or CHM462H5 or CPS398H5 or FSC311H5 or JCP321H5 or JCP322H5 or JCP410H5 or JCP421H5 or JCP422H5 or JCP463H5

Notes ÷

1.
~~For MAT157H5, permission is required from the CHM Program Advisor~~
2.
~~MAT212H5 has the following requirements: Prerequisite - MAT233H5 or (MAT232H5 or MAT257Y5 as a corequisite) ; and Corequisite - MAT223H5 or MAT240H5~~
3.
~~MAT134Y5/MAT135Y5/MAT137Y5 is required for all 200-level CHM courses.~~
4.
~~Students can not take more than 2.0 credits total in ROP, Internship or Research Project/Thesis courses at the 300/400 level for credit toward this Chemistry program.~~

Rationale:

Enrolment Requirements and Completion Requirements have been updated to reflect the implementation of ISP100H5

Resource Implications:

Anthropology (UTM), Department of

2 Retired Courses:

ANT308H5: Case Studies in Archaeological Botany and Zoology

Rationale:

This course was last taught in 2012 by a faculty who is now retired. We are retiring this course since it will not be offered again.

Consultation:

Consultation with the Anthropology Curriculum Committee members as well as the Chair.

ANT309H5: Southeast Asian Archaeology

Rationale:

Last taught in 2010 by a faculty who is no longer with our department. We do not see any other faculty who might want to teach this course in the future. In consultation with two other ARCH faculty (Prof. Xie and Prof. Miller in our department) they recommended that we retire it.

Consultation:

Consultation with the Anthropology Curriculum Committee members as well as the Chair.
