



# SCIENCES - Table of Contents

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# SUMMARY OF COURSE CHANGES

Department Name	No. of full courses deleted	No. of full courses added	No. of half courses deleted	No. of half courses added	No. of full courses changed	No. of half courses changed
Anthropology	1	0	1	1	1	4
Astronomy	0	0	0	0	0	2
Biology	0	0	1	4	1	20
Chemistry	1	0	0	3	1	11
Communication, Culture and Information Technology	0	0	1	0	0	5
Computer Science	0	0	4	1	0	7
Earth Science	0	0	0	0	0	0
Economics	0	0	0	0	0	0
Environment	0	0	0	0	1	1
Forensic Science	0	0	0	0	1	2
Geography	0	0	0	2	0	1
Mathematics	0	0	0	0	0	1
Physics	1	0	5	9	1	6
Psychology	0	0	0	0	3	11
Science	0	0	0	0	0	0
Sociology	0	0	0	0	0	0
Statistics	0	0	1	0	0	3

# New Programs

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## Program #1 ERMIN1688 Computer Science - Minor

First Year	CSC108H5, 148H5; MAT102H5
Second Year	CSC207H5, 236H5; one of (CSC209H5, 258H5, 263H5)
Third and Fourth Years	Two half courses from any 300/400 level UofT Mississauga CSC courses, except for CSC492H5 and CSC493H5.

### Notes:

1. In order to complete this program, you must have completed Grade 12 Advanced Functions (MHF4U) or equivalent, which is a prerequisite for MAT102H5.

**Rationale for creation:** The minor was originally envisioned to give CTEP students and students wishing to attend teachers college, an opportunity to earn a second teachable in computer science while making progress toward a degree. CTEP students must take a major in math, chemistry, or French and the equivalent of a minor in education. That leaves them free to either complete a specialist (rather than a major) or to pick up a second minor. Currently new teachers must have taken four credits of computer science to be qualified to teach the tenth grade computer science course, so a minor in computer science would provide most of the coursework necessary.

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# Programs - Resource Implications

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## **Program #1 ERMAJ0105 Anthropology (Science)**

Resource implications: None

## **Program #2 ERMAJ0205 Forensic Science (Science)**

Resource implications: N/A --

## **Program #3 ERMAJ1149 Biology for Health Sciences (Science)**

Resource implications: None.

## **Program #4 ERMAJ1376 Chemistry (Science)**

Resource implications: None

## **Program #5 ERMAJ2364 Biology (Science)**

Resource implications: None.

## **Program #6 ERMIN0840 Biomedical Communications (Science)**

Resource implications: Resource implications related to new proposed course, HSC200H5 (see new course proposal).

## **Program #7 ERMIN1376 Chemistry (Science)**

Resource implications: None

## **Program #8 ERMIN1688 Computer Science**

Resource implications: The proposed minor does not introduce any new courses. We hope that enrollment in our existing courses will increase, but we do not expect that new lecture sections will be required. Most of the impact of increased enrollment will be felt in the first and second years where additional students can be handled by increasing the number of available tutorial sections.

## **Program #9 ERMIN2364 Biology (Science)**

Resource implications: None.

## **Program #10 ERSPE0105 Anthropology (Science)**

Resource implications: None

## **Program #11 ERSPE0482 Comparative Physiology (Science)**

Resource implications: None.

## **Program #12 ERSPE1009 Forensic Chemistry (Science)**

Resource implications: N/A --addition/deletion of courses made in consultation with Department; currently courses taught by department faculty.

## **Program #13 ERSPE1020 Ecology and Evolution (Science)**

Resource implications: None.

**Program #14 ERSPE1038 Information Security (Science)**

Resource implications: None

**Program #15 ERSPE1118 Biotechnology (Science)**

Resource implications: None.

**Program #16 ERSPE1237 Molecular Biology (Science)**

Resource implications: None for Biology.

**Program #17 ERSPE1338 Forensic Anthropology (Science)**

Resource implications: N/A --course additions/changes have been made in consultation with the applicable Departments; courses are offered by department faculty members.

**Program #18 ERSPE1376 Chemistry (Science)**

Resource implications: None

**Program #19 ERSPE1410 Forensic Biology (Science)**

Resource implications: N/A --course additions/changes to this program were made in consultation with the Department; courses are currently instructed by department faculty members.

**Program #20 ERSPE1505 Forensic Psychology (Science)**

Resource implications: N/A -- courses additions/changes within this program were made in consultation with the department;courses are currently taught by department faculty.

**Program #21 ERSPE1688 Computer Science (Science)**

Resource implications: None

**Program #22 ERSPE2171 Geocomputational Science (Science)**

Resource implications: None

**Program #23 ERSPE2364 Biology (Science)**

Resource implications: None for Biology.

# Deleted Programs

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## Program #1 ERMIN0307 Science Education (Science)

**Science Education (Science):** The Science Education Minor program was designed back in 2001-2002 by a now-retired professor within the department. The aim of the program was to provide courses designed to teach background skills necessary for a career in education for the sciences, including formal science teaching, journalism and outreach. During the first five years, there was heavy emphasis on marketing the Science Education Minor and, as such, enrollments in science education courses steadily increased. Following the retirement of the creator of the Science Education program and with the institution of the Concurrent Teacher Education Program (CTEP), enrollments in the Science Education Minor and science education courses decreased. Given the lack of viable student interest in the Science Education Minor and the development of CTEP, it is no longer sustainable to operate this program and as such we are asking for the discontinuation of the Science Education Minor (ERMIN0307). There are presently 15 active students registered in ERMIN0307 all of whom will be grandparented into the program following its discontinuation.

# Programs - Other Changes

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## Program #1 ERMAJ0105 Anthropology (Science)

**Rationale for change:** The revised requirements are more streamlined and reflect the department's decision to introduce several 200 level courses in sociocultural and linguistic anthropology that will give students more exposure and therefore enhancing the student experience in these two sub-fields. At the present moment, Anthropology is well staffed in these sub-fields and is in a position to restructure its program to incorporate flexibility in its course offerings and to attract students to its programs. By streamlining the Arts program the department has also revised the program criteria in the Science Specialist and Major programs. The Department considers it important that all students enrolled in Anthropology are introduced to its 4 sub-fields: sociocultural, linguistics, archaeology and biological anthropology. Within the science programs, student will have some flexibility to choose from a range of sociocultural and linguistic anthropology 200 level courses but will be required to enroll in second year archaeology and biological anthropology courses that are the foundation for upper level Anthropology science courses.

**Before:** Limited Enrolment: Enrolment in this program is limited. To qualify, students must have completed 4.0 credits (including ANT101H5 and ANT102H5), achieved at least 65% in both ANT101H5 and ANT102H5, and achieved a cumulative grade point average of at least 2.00. Students applying to enrol after second year must have completed 8.0 credits, achieved at least 65% in each of ANT200Y5, 203Y5, **204Y5/206Y5**, and achieved a CGPA of at least 2.00.  
Second Year **ANT200Y5, 203Y5, 204Y5/206Y5**

**After:** Limited Enrolment: Enrolment in this program is limited. To qualify, students must have completed 4.0 credits (including ANT101H5 and ANT102H5), achieved at least 65% in both ANT101H5 and ANT102H5, and achieved a cumulative grade point average of at least 2.00. Students applying to enrol after second year must have completed 8.0 credits, achieved at least 65% in each of ANT200Y5, 203Y5, **204H5/206H5/207H5/208H5/209H5** and achieved a CGPA of at least 2.00.  
Second Year **1. ANT200Y5, 203Y5**  
**2. ANT204H5 and 0.5 from ANT206H5/207H5/208H5/209H5**

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## Program #2 ERMAJ0205 Forensic Science (Science)

**Rationale for change:** First Year: CHM140Y5, FSC239Y5; MAT134Y5/135Y5/137Y5; PHY135Y5/(PHY136H5, 137H5) Second Year: CHM242H5, 243H5; FSC271H5 **DELETE:** /PHL271H5 MOVED TO 1st Year: PHY135Y5/(PHY136H5, 137H5) **RATIONALE FOR DELETING PHL271H5:** PHL271H5 -Ethics and the Law: this course does not meet the accreditation standard requirement of an ethics & professionalism course in forensic science, a requirement in all streams of Forensic Science; this course is too general and does not cover the discipline; FSC271H5 better enhances the student's learning experience in the discipline. **Third Year:** FSC360H5; (STA220H5, 221H5)/(BIO360H5, 361H5) **DELETE:** BIO 338H5 **RATIONALE:** although an appropriate and discipline specific course, it was removed as a required course and moved/added to the FSC list of possible courses students can take in 4th year; change was necessary to make room for the law course required for forensic science accreditation; students can still take it as part of their 2.0 additional FSC credits. **ADD:** FSC360H5 -Evidence, Law and Forensic Science in Canada **RATIONALE:** a forensic law component is required in the program to meet forensic science accreditation standards; providing Majors in Forensic Science with a more enhanced learning experience with in the discipline. **Fourth Year:** 2.0 from the following list: FSC300H5, 302H5, 306H5, 310H5, 350H5, 360H5, 361H5, 401H5, 402H5, 489H5; BIO 338H5 **DELETE:** FSC360H5 **RATIONALE:** now a required course in 3rd year.

**Before:** Limited Enrolment: Admission into the Forensic Science Major program is by special application ONLY and MUST be completed in conjunction with a second approved Major (see Notes 'Second Major' below). To be considered for admission into the program, ALL students, including students admitted into the 1st year Forensic Science category, MUST submit a direct online FSC Application, upon completing the 1st year minimum requirements. Meeting the minimum requirements does not guarantee admission into the program. Minimum Requirements:

- Completion of 4.0 credits; including 3.0 science credits.
- Completion of CHM140Y5 with 65% or better.
- Completion of MAT134Y5/135Y5/137Y.
- A minimum Cumulative Grade Point Average of at least 2.7 The actual CGPA requirement in any particular year may exceed this value, in order to achieve a proper balance between enrolments and teaching

resources.

- Enrolment in an Approved Second Major (See Second Major Notes: 1). Application for admission into the program for ALL students can be found at: [www.utm.utoronto.ca/forensic](http://www.utm.utoronto.ca/forensic) Forensic Science Applications

Open: March 1 of each year Forensic Science Application Deadline: May 1 of each **year** **NOTE:**

**RE - Transfer Students who have attended another post-secondary institution, or another faculty within the University of Toronto (including St. George and UTSC), who wish to gain admission into the program MUST also apply through the Ontario Universities Application Centre: [www.ouac.on.ca](http://www.ouac.on.ca) (OUAC 105 application form), in addition to submitting the Forensic Science Program application.**

First Year **CHM140Y5**, FSC239Y5; **MAT134Y5/135Y5/137Y5**

Second Year CHM242H5, 243H5; **FSC271H5/PHL271H5; PHY135Y5**

Third Year **BIO338H5**; (STA220H5, **221H5**)/ (**BIO360H5**, 361H5)

**After:**

Limited Enrolment: Admission into the Forensic Science Major program is by special application ONLY and MUST be completed in conjunction with a second approved Major (see Notes 'Second Major' below). To be considered for admission into the program, ALL students, including students admitted into the 1st year Forensic Science category, MUST submit a direct online FSC Application, upon completing the 1st year minimum requirements. Meeting the minimum requirements does not guarantee admission into the program. Minimum Requirements:

- Completion of 4.0 credits; including 3.0 science credits.
- Completion of CHM140Y5 with 65% or better.
- Completion of MAT134Y5/135Y5/137Y.
- A minimum Cumulative Grade Point Average of at least 2.7 The actual CGPA requirement in any particular year may exceed this value, in order to achieve a proper balance between enrolments and teaching resources.
- Enrolment in an Approved Second Major (See Second Major Notes: 1). Application for admission into the program for ALL students can be found at: [www.utm.utoronto.ca/forensic](http://www.utm.utoronto.ca/forensic) Forensic Science Applications

Open: March 1 of each year Forensic Science Application Deadline: May 1 of each **year**

First Year **CHM140Y5/(CHM110H5, 120H5)**, FSC239Y5;

**MAT134Y5/135Y5/137Y5; PHY135Y5/(PHY136H5, 137H5)**

Second Year CHM242H5, 243H5; **FSC271H5**

Third Year **FSC360H5**; (STA220H5, **221H5**)/(**BIO360H5**, 361H5)

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### Program #3 ERMAJ0305 Geographical Information Systems (Science)

**Rationale for change:**

Addition of advanced remote sensing course increases flexibility with which students can complete the major program. Course also completes remote sensing education and training required to work with the technology in practice.

**Before:**

Second Year 3.0 credits :

1.0 **credit from** GGR276H5, 278H5

2.0 credits from any other 200-level GGR courses

Fourth Year 0.5 credit from the following:

GGR463H5, 488H5, 494H5

**After:**

Second Year 3.0 credits :

1.0 **credit:** GGR276H5, 278H5

2.0 credits from any other 200-level GGR courses

Fourth Year 0.5 credit from the following:

GGR463H5, **464H5**, 488H5, 494H5

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## Program #4 ERMAJ1061 Environmental Science (Science)

**Rationale for change:** Addition of ENV490H5 and 491H5 will provide students with more choices in the related field courses. JBG312H5 is changed to GGR312H5. Minor housecleaning (for example, CHM140Y5 changes to CHM110H5 and 120H5; PHY135Y5 changes to PHY136H5, 137H5; etc.)

### Before:

First Year: 3.0 credits

- Introduction: ENV100Y5

- Quantitative Foundation: 1.0 credit chosen from this list: **(CSC108H5, 148H5)**, MAT134Y5, 135Y5, 137Y5

- Basic Scientific Foundation: 1.0 credit chosen from this list: BIO152H5, 153H5; ERS103H5, 120H5;

**CHM140Y5; PHY135Y5**

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

- Environmental Management Perspectives: ENV201H5

- Biological & Ecological Perspectives: 0.5 credit chosen from this list: BIO200H5, 204H5, 205H5, 206H5, 215H5

- Geographical Perspectives: 0.5 credit chosen from this list: GGR214H5, 217H5, 227H5

- Physical & Chemical Perspectives: 0.5 credit chosen from this list: CHM221H5, 231H5, 242H5;

ERS201H5, 202H5, 203H5; PHY237H5

- Analytical & Research Methods: 0.5 credit chosen from this list: CHM211H5; BIO360H5; GGR276H5, **278H5**; STA220H5; or another program-relevant 200/300-level Research Methods course (SCI), with permission of the Program Advisor

Upper Years: 2.5 credits

- Field, Experiential & Research Perspectives: 0.5 credit chosen from this list: ANT318H5; BIO301H5, 302H5, 313H5, 316H5, 329H5; ERS325H5; ENV232H5, 299Y5, 331H5, 399Y5, 400Y5; GGR317H5 (with field-trip option), 379H5; SCI398H5, 498H5, 499H5; or another program-relevant Field, Experiential, or Research course (SCI), with permission of the Program Advisor

- Biogeochemical Perspectives: 1.5 credit chosen from this list: BIO311H5, 312H5, 318Y5, 328H5, 330H5, 333H5, 373H5, 405H5, 406H5, 436H5, 464H5; GGR305H5, 307H5, 309H5, 311H5, 315H5, 316H5, 317H5, 321H5, 337H5, 338H5, 372H5, 375H5, 377H5, 378H5, 403H1, 406H5, 407H5, 409H1, 413H1, 463H5, 479H5; **JBG312H5**; CHM310H1, 311H5, 333H5, 347H5, 361H5, 362H5, 391H5, 393H5; ENV315H1; ERS315H5, 321H5; PHY331H5, 332H5

- Social, Economic & Policy Perspectives: 0.5 credit chosen from this list: **ANT368H5**; ECO373Y5; ENG259H5; ENV393H5; GGR329H5, 333H5, 345H5, 348H5, 349H5, 361H5, 365H5, 367H5, 369H5, 370H5, 378H5, 380H5; HIS318H5, 319H5; MGT394H5; PHL255H5, 273H5, 373H1; POL250Y5, 343Y5; SOC226H5, 319Y5, 339H5, 349H5, 355H5, 356H5; WRI375H5

### After:

First Year: 3.0 credits

- Introduction: ENV100Y5

- Quantitative Foundation: 1.0 credit chosen from this list: **CSC108H5, 148H5**; MAT134Y5, 135Y5, 137Y5

- Basic Scientific Foundation: 1.0 credit chosen from this list: **ANT101H5**; BIO152H5, 153H5;

ERS103H5, 120H5; **CHM140Y5, 110H5, 120H5; PHY135Y5, 136H5, 137H5**

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

- Environmental Management Perspectives: ENV201H5

- Biological & Ecological Perspectives: 0.5 credit chosen from this list: BIO200H5, 204H5, 205H5, 206H5, 215H5

- Geographical Perspectives: 0.5 credit chosen from this list: GGR214H5, 217H5, 227H5

- Physical & Chemical Perspectives: 0.5 credit chosen from this list: CHM221H5, 231H5, 242H5;

ERS201H5, 202H5, 203H5; PHY237H5

- Analytical & Research Methods: 0.5 credit chosen from this list: CHM211H5; BIO360H5; GGR276H5,

**278H5, 337H5**; STA220H5; or another program-relevant 200/300-level Research Methods course (SCI), with permission of the Program Advisor

Upper Years: 2.5 credits

- Field, Experiential & Research Perspectives: 0.5 credit chosen from this list: ANT318H5; BIO301H5,

302H5, 313H5, 316H5, 329H5; ERS325H5; ENV232H5, 299Y5, 331H5, 399Y5, 400Y5; GGR317H5 (with field-trip option), 379H5; SCI398H5, 498H5, 499H5; or another program-relevant Field, Experiential, or Research course (SCI), with permission of the Program Advisor

- Biogeochemical Perspectives: 1.5 credit chosen from this list: BIO311H5, 312H5, 318Y5, 328H5, 330H5, 333H5, 373H5, 405H5, 406H5, 436H5, 464H5; GGR305H5, 307H5, 309H5, 311H5, **312H5**, 315H5, 316H5, 317H5, 321H5, 337H5, 338H5, 372H5, 375H5, 377H5, 378H5, 403H1, 406H5, 407H5, 409H1, 413H1, 463H5, **464H5**, 479H5; CHM310H1, 311H5, 333H5, 347H5, 361H5, 362H5, 391H5, 393H5; ENV315H1; ERS315H5, 321H5; PHY331H5, 332H5

- Social, Economic & Policy Perspectives: 0.5 credit chosen from this list: **ANT357H5, 368H5, 370H5, 457H5**; ECO373Y5; ENG259H5; ENV393H5; GGR329H5, 333H5, 345H5, 348H5, 349H5, 361H5, 365H5, 367H5, 369H5, 370H5, 378H5, 380H5; HIS318H5, 319H5; MGT394H5; PHL255H5, 273H5, 373H1; POL250Y5, 343Y5; SOC226H5, 319Y5, 339H5, 349H5, 355H5, 356H5; WRI375H5

**Note: ENV490H5, 491H5 can substitute for #1, #2, #3, or #4 as course requirements, where appropriate, and with permission of the Program Advisor or Academic Counsellor.**

## Program #5 ERMAJ1149 Biology for Health Sciences (Science)

- Rationale for change:** With the introduction of the Biology for Health Sciences Major program, confusion has arisen with respect to the two-major program degree requirement. Students have mistakenly enrolled in both this program and the Biology Major believing this will satisfy degree requirements. The two major programs are designed to be completed separately and not in conjunction. Students cannot should not be active in both subject posts. This note should help to alleviate any confusion. BIO476H5 is a new course the Department is introducing in the Cell, Molecular and Biotechnology area. It is open to all students with the required background and can be used toward fulfilling the Biology for Health Sciences program requirements. The senior research credit limit will ensure that students complete a well-rounded biology program (i.e. lecture-based courses, individual project courses, lab courses, etc.). As space is often limited in these courses, it will also help to give all students interested in research project courses a better chance at securing a project.
- Before:** Program Name: Biology for Health **Sciences8.0** credits are required including at least 2.0 at the 300/400 level.
- BIO152H5, 153H5; CHM140Y5; **MAT132Y5/134Y5\*/135Y5/137Y5**
  - BIO206H5, 207H5, 210Y5, 310H5, 380H5, (BIO360H5/STA220H5/PSY201H5)
  - 1.5 credits from one of the following lists: Cell, Molecular, and Biotechnology Stream: BIO200H5, 215H5, 314H5, 315H5, 370Y5, 372H5, 374H5, 477H5; JBC472H5 Neuroscience Stream: BIO215H5, 304H5, 315H5, 403H5, 409H5, 411H5, 434H5 Genes and Behaviour Stream: BIO215H5, 315H5, 318Y5, 341H5, 361H5, 407H5, 434H5, 442H5, 443H5 \*MAT134Y5 - Calculus for Life Sciences is highly recommended.
- NOTE:** As part of your degree requirement the 'Biology for Health Sciences' Major would be academically complemented by a Major in Psychology, Anthropology, Exceptionality in Human Learning, Forensic Science, and Chemistry, as well as other disciplines such as the Major in Management. This major program would also be complemented by a Minor in Biomedical Communications (Science).
- After:** Program Name: Biology for Health **Sciences (Science)8.0** credits are required including at least 2.0 at the 300/400 level.
- BIO152H5, 153H5; **(CHM110H5, 120H5)/**CHM140Y5; **MAT134Y5\*/135Y5/137Y5**
  - BIO206H5, 207H5, 210Y5, 310H5, 380H5, (BIO360H5/STA220H5/PSY201H5)
  - 1.5 credits from one of the following lists: Cell, Molecular, and Biotechnology Stream: BIO200H5, 215H5, 314H5, 315H5, 370Y5, 372H5, 374H5, **476H5**, 477H5; JBC472H5 Neuroscience Stream: BIO215H5, 304H5, 315H5, 403H5, 409H5, 411H5, 434H5 Genes and Behaviour Stream: BIO215H5, 315H5, 318Y5, 341H5, 361H5, 407H5, 434H5, 442H5, 443H5 \*MAT134Y5 - Calculus for Life Sciences is highly recommended. **NOTES: 1. Students should be aware of the distinct credit requirement for their degree (see section 8.6 - HBS Sc Degree Requirements for full details). Completion of this program with another non-specialist Biology program will not satisfy the min.**

**12.0 distinct credit requirement for a degree. Please choose programs and courses accordingly. 2. Students may take no more than 2.0 credits combined in ROP, Individual Projects or Thesis courses at the 300/400-level for credit toward their Biology program. 3.** As part of your degree requirement the 'Biology for Health Sciences' Major would be academically complemented by a Major in Psychology, Anthropology, Exceptionality in Human Learning, Forensic Science, and Chemistry, as well as other disciplines such as the Major in Management. This major program would also be complemented by a Minor in Biomedical Communications (Science).

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## Program #6 ERMAJ1160 Psychology (Science)

**Rationale for change:** - Removal of STA219H5 - correction of error. Course is unrelated to PSY201H5 or to STA220H5. - PSY no longer offers the Human Communication and Technology program and does not teach any CCT courses. The removed courses were either transferred to psychology last year or cancelled. The one that remains with CCT designation is now taught as a Social Science course by non-PSY faculty and as such cannot fulfil a key program requirement in PSY.

**Before:**

Higher Years

- PSY201H5/ BIO360H5/ ECO220Y5/227Y5/ SOC350H5/ **STA218H5/219H5/220H5**  
- 2.5 credits from the following courses: 0.5 credit must be taken from each group.

- Biological Bases of Behaviour:

PSY252H5, 290H5, 295H5

- Perception/Cognition/Communication:

PSY270H5, 274H5, 280H5

- Social/Personality/Abnormal:

PSY220H5, 230H5, 240H5

- Developmental:

PSY210H5, 213H5

- 1.5 credits from the following courses: 0.5 credit must be taken from each group:

- Biological Bases of Behaviour:

PSY318H5, 346H5, 351H5, 353H5, 354H5, 355H5, 362H5, 372H5, 393H5, 395H5, 397H5, 398H5;  
BIO304H5, 310H5, 318Y5, 328H5

- Perception/Cognition/Communication: PSY312H5, 315H5, 316H5, 331H5, 351H5, 360H5, 362H5, 371H5,  
372H5, 374H5, 376H5, 384H5, 385H5, 387H5, 393H5, **397H5; CCT316H5, 326H5,**

**373H5**

- Developmental/Abnormal/Social/Personality: PSY310H5, 311H5, 312H5, 315H5, 316H5, 318H5, 320H5,  
321H5, 324H5, 325H5, 327H5, 328H5, 331H5, 333H5, 340H5, 341H5, 343H5, 344H5, 345H5, 346H5,

**353H5; CCT316H5, 326H5**

- 1.0 additional credit in Psychology. At least 0.5 must be at the 300/400 level

**After:**

Higher Years

- PSY201H5/ BIO360H5/ ECO220Y5/227Y5/ SOC350H5/ **STA218H5/220H5**  
- 2.5 credits from the following courses: 0.5 credit must be taken from each group.

- Biological Bases of Behaviour:

PSY252H5, 290H5, 295H5

- Perception/Cognition/Communication:

PSY270H5, 274H5, 280H5

- Social/Personality/Abnormal:

PSY220H5, 230H5, 240H5

- Developmental:

PSY210H5, 213H5

- 1.5 credits from the following courses: 0.5 credit must be taken from each group:

- Biological Bases of Behaviour:

PSY318H5, 346H5, 351H5, 353H5, 354H5, 355H5, 362H5, 372H5, 393H5, 395H5, 397H5, 398H5;  
BIO304H5, 310H5, 318Y5, 328H5

- Perception/Cognition/Communication: PSY312H5, 315H5, 316H5, 331H5, 351H5, 360H5, 362H5, 371H5, 372H5, 374H5, 376H5, 384H5, 385H5, 387H5, 393H5, **397H5**
- Developmental/Abnormal/Social/Personality: PSY310H5, 311H5, 312H5, 315H5, 316H5, 318H5, 320H5, 321H5, 324H5, 325H5, 327H5, 328H5, 331H5, 333H5, 340H5, 341H5, 343H5, 344H5, 345H5, 346H5, **353H5**
- 1.0 additional credit in Psychology. At least 0.5 must be at the 300/400 level

### Program #7 ERMAJ1376 Chemistry (Science)

- Rationale for change:** Updating program for new courses introduced.
- Before:** Limited Enrolment: Enrolment in the Chemistry Major Program is based on completion of 4.0 credits including **CHM140Y5** (minimum grade of 60%) and MAT134Y5/135Y5/137Y5.  
Year 1 **CHM140Y5**; MAT134Y5/135Y5/137Y5
- After:** Limited Enrolment: Enrolment in the Chemistry Major Program is based on completion of 4.0 credits including **CHM140Y5/(110H5,120H5)** (minimum grade of 60%) and MAT134Y5/135Y5/137Y5.  
Year 1 **CHM140Y5/(110H5,120H5)**; MAT134Y5/135Y5/137Y5

### Program #8 ERMAJ1465 Earth Science (Science)

- Rationale for change:** Enrolment limits are introduced to prevent capricious enrolments in this program. Program course requirements are updated to reflect changes to CHM and PHY first year courses.
- Before:** Limited Enrolment:  
First Year ENV100Y5/(ERS103H5, 120H5); **MAT132Y5/134Y5/135Y5/137Y5/138Y5;**  
**CHM140Y5/PHY135Y5/137Y5**
- After:** Limited Enrolment: **Enrolment in this program is based on completion of 4.0 credits including ENV100Y5 / (ERS103H5, 120H5) (minimum grade of 60%).**  
First Year ENV100Y5/(ERS103H5, 120H5); **MAT134Y5/135Y5/137Y5;**  
**CHM140Y5/(110H5,120H5)/PHY135Y5/(136H5,137H5)**

### Program #9 ERMAJ1540 Statistics, Applied (Science)

- Rationale for change:** Clarified substitutions of ECO courses, for double majors.
- Before:** Notes:  
- MAT133Y5 is accepted if the student also completes MAT233H5 (in which case MAT232H5 is not required).  
- ECO220Y5 cannot be substituted for STA257H5 and/or STA258H5 and/or STA261H5.  
- Students enrolled in this program may participate in the PEY program. For more information visit [www.pey.utoronto.ca](http://www.pey.utoronto.ca)
- After:** Notes:  
- MAT133Y5 is accepted if the student also completes MAT233H5 (in which case MAT232H5 is not required).  
- ECO220Y5 cannot be substituted for STA257H5 and/or STA258H5 and/or STA261H5. **ECO227Y5 can be substituted for STA257H5 and 258H5, but not for STA261H5.**  
- Students enrolled in this program may participate in the PEY program. For more information visit [www.pey.utoronto.ca](http://www.pey.utoronto.ca)

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## Program #10 ERMAJ1688 Computer Science

- Rationale for change:**
- MAT137Y5 has been changed to MAT135Y5 or equivalent. MAT135Y5 is sufficient to fulfill the requirements of the program. MAT137Y5 was changed two years ago to be more suitable for Math Specialists.
  - A requirement of 0.5 credit from a 400-level course has been added, as this is required to provide depth in an integrative environment.

- Before:** Limited Enrolment: Enrolment in this program is limited to students who meet the following criteria:
- Prerequisite courses A minimum of 4.0 courses to include CSC148H5; **MAT102H5; and one of (MAT137Y5, MAT232H5).**
  - Cumulative Grade Point Average (CGPA) The minimum CGPA is determined annually. The Computer Science Major 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](http://www.fees.utoronto.ca) for more information on the fee structures.
- First Year CSC108H5, 148H5, 290H5; MAT102H5, **137Y5;**
- Third and Fourth Years Four half courses from any 300/400 level U of T Mississauga CSC **courses,** except for CSC492H5 and CSC493H5.

- After:** Limited Enrolment: Enrolment in this program is limited to students who meet the following criteria:
- Prerequisite courses A minimum of 4.0 courses to include CSC148H5; **MAT102H5, MAT134Y5/135Y5/137Y5.**
  - Cumulative Grade Point Average (CGPA) The minimum CGPA is determined annually. The Computer Science Major 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](http://www.fees.utoronto.ca) for more information on the fee structures.
- First Year CSC108H5, 148H5, 290H5; MAT102H5, **134Y5/135Y5/137Y5;**
- Third and Fourth Years Four half courses from any 300/400 level U of T Mississauga CSC **courses (including at least 0.5 credit from a 400-level course),** except for CSC492H5 and CSC493H5.

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## Program #11 ERMAJ1883 Exceptionality in Human Learning (Science)

- Rationale for change:** STA219H5 removed - error correction; course unrelated to PSY201H5 or STA220H5. BIO476H5 added - appropriate course for students who are interested in the BIO basis of some disabilities.

- Before:**
- Higher Years
- PSY201H5/ BIO360H5/ ECO220Y5/227Y5/ SOC350H5/ **STA218H5/219H5/220H5/**
  - PSY210H5, 213H5
  - 2.5 credits from the following: PSY310H5, 311H5, 312H5, 315H5, 316H5, 318H5, 319H5, 321H5, 325H5, 331H5, 333H5, 340H5, 341H5, 343H5, 344H5, 345H5, 346H5, 353H5, 374H5, 376H5, 384H5, 385H5, 393H5
  - 1.0 additional credit from the following: BIO204H5, 205H5, 206H5, 207H5, 210Y5, 215H5, 304H5, 315H5, 341H5, 370Y5, 371H5, 372H5, 380H5, 403H5, 407H5, 443H5, 477H5; ANT203Y5, 331H5, 332H5, 334H5, 339Y5; PSL201Y1

- After:**
- Higher Years
- PSY201H5/ BIO360H5/ ECO220Y5/227Y5/ SOC350H5/ **STA218H5/220H5/**
  - PSY210H5, 213H5
  - 2.5 credits from the following: PSY310H5, 311H5, 312H5, 315H5, 316H5, 318H5, 319H5, 321H5, 325H5, 331H5, 333H5, 340H5, 341H5, 343H5, 344H5, 345H5, 346H5, 353H5, 374H5, 376H5, 384H5, 385H5, 393H5
  - 1.0 additional credit from the following: BIO204H5, 205H5, 206H5, 207H5, 210Y5, 215H5, 304H5, 315H5, 341H5, 370Y5, 371H5, 372H5, 380H5, 403H5, 407H5, 443H5, **476H5,** 477H5; ANT203Y5, 331H5, 332H5, 334H5, 339Y5; PSL201Y1

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## Program #12 ERMAJ1944 Physics (Science)

**Rationale for change:** Program course requirements are updated to reflect changes to PHY course offerings. Specifically, in Year 1, CHM140Y will no longer be required in order to permit a greater emphasis on Physics-specific courses in the Physics Major program. In Years 2+3, PHY237H5, 247H5, 331H5, and 341H5 will no longer be offered or will be replaced by new PHY courses, while MAT311H5 is replaced by PHY325H5. SCI498H5 is no longer offered.

**Before:** Limited Enrolment: **8.0** credits are required including at least **2.5** at the 300/400 **level**.  
Year 1 **PHY135Y5 (minimum 60%); CHM140Y5; MAT135Y5/137Y5**  
Year 2 PHY241H5, 242H5, 245H5, **247H5**  
**0.5 credit from: PHY237H5; JCP221H5/CHM221H5; MAT232H5, 242H5**  
Years 3 & 4 **PHY324H5; JCP321H5**  
**At least 1.5 credits from:PHY331H5, 332H5, 341H5, 399Y5/473H5/489Y5; JCP322H5, MAT311H5, JCP410H5/JCP422H5/SCI498H5**

**After:** Limited Enrolment: **Enrolment in this program is based on completion of 4.0 credits including PHY135Y/(136H5, 137H5) (minimum grade of 60%).8.0 credits** are required including at least **3.0** at the 300/400 **level.PHY333H5 and JCP421H5 alternate with PHY332H5 and PHY451H5 in consecutive years. Check individual course listing for the details in a given calendar year.**  
Year 1 **PHY135Y5/(136H5, 137H5); MAT134Y5/135Y5/137Y5**  
Year 2 PHY241H5, 242H5, 245H5, **JCP221H5/CHM221H5**  
Years 3 & 4 **PHY324H5, 325H5, 347H5, 451H5; JCP321H5, 421H5; 1.0 additional 300/400 level PHY/JCP credits.**

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## Program #13 ERMAJ2070 Geography (Science)

**Rationale for change:** JBG312H5 is changed to GGR312H5.

**Before:** Third Year 2.5 credits:  
2.0 credits from the following:  
GGR305H5, 307H5, 309H5, 311H5, 315H5, 316H5, 317H5, 338H5, 377H5, 378H5,  
**379H5,JBG312H5**  
0.5 credit from the following:  
GGR321H5, 337H5, 372H5, 375H5, 380H5

**After:** Third Year 2.5 credits:  
2.0 credits from the following:  
GGR305H5, 307H5, 309H5, 311H5, **312H5**, 315H5, 316H5, 317H5, 338H5, 377H5, 378H5, **379H5**  
0.5 credit from the following:  
GGR321H5, 337H5, 372H5, 375H5, 380H5

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## Program #14 ERMAJ2204 Astronomy (Science)

**Rationale for change:** 2nd Year: Remove: MAT212H5-because the calendar now designates it for students in the life sciences or medicine, which is not appropriate for physical science students. Keep MAT242H5. Add:

MAT233H5-because the course descriptions are nearly the same. 3rd Year: Remove: PHY344H5-because this course is no longer offered by Physics; Add: one 300/400-level to compensate for PHY course removed.

**Before:**

First Year AST110H5; MAT102H5, 135Y5/137Y5, MAT223H5; **PHY135Y5** (70% recommended)  
Second Year AST221H1(G), 222H1(G); **MAT212H5/242H5, 232H5**, 368H5; PHY241H5, 245H5  
Third Year AST320H1(G); JCP321H5; **JCP322H5/PHY344H5**

**After:**

First Year AST110H5; MAT102H5, 135Y5/137Y5, MAT223H5; **PHY135Y5/(136H5,137H5)** (70% recommended)  
Second Year AST221H1(G), 222H1(G); **MAT242H5, 232H5/233H5**, 368H5; PHY241H5, 245H5  
Third Year AST320H1(G); JCP321H5; **JCP322H5/one 300/400-level half-course approved by the faculty advisor.**

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**Program #15 ERMAJ2364 Biology (Science)**

**Rationale for change:**

With the introduction of the Biology for Health Sciences Major program, confusion has arisen with respect to the two-major program degree requirement. Students have mistakenly enrolled in both this program and the Biology for Health Sciences Major believing this will satisfy degree requirements. The two major programs are designed to be completed separately and not in conjunction. Students cannot should not be active in both subject posts. This note should help to alleviate any confusion. The senior research credit limit will ensure that students complete a well-rounded biology program (i.e. lecture-based courses, individual project courses, lab courses, etc.). As space is often limited in these courses, it will also help to give all students interested in research project courses a better chance at securing a project.

**Before:**

7.0 credits are required including at least 2.0 at the 300/400 level.  
- CHM140Y5; **MAT132Y5/134Y5\*/135Y5/137Y5**  
- BIO152H5, 153H5, 204H5, 205H5, 206H5, 207H5  
- 2.0 in Biology from the 300 or 400 level. \*MAT134Y5 - Calculus for Life Sciences is highly recommended.  
Notes:  
- Although BIO215H5 is not required for a Biology Major, it is a prerequisite for many cell and molecular courses at the 300 level. Students should consider carefully which 300/400 level courses they intend to take.  
- PSL201Y1, offered on the St. George campus, will not meet the Physiology requirements for the Biology Major program and may not be substituted for BIO204H5.

**After:**

7.0 credits are required including at least 2.0 at the 300/400 level.  
- **(CHM110H5, 120H5)/**CHM140Y5; **MAT134Y5\*/135Y5/137Y5**  
- BIO152H5, 153H5, 204H5, 205H5, 206H5, 207H5  
- 2.0 in Biology from the 300 or 400 level. \*MAT134Y5 - Calculus for Life Sciences is highly recommended.  
Notes:  
- **Students should be aware of the distinct credit requirement for their degree (see section 8.6 - HBS Sc Degree Requirements for full details). Completion of this program with another non-specialist Biology program will not satisfy the min. 12.0 distinct credit requirement for a degree. Please choose programs and courses accordingly.**  
- Although BIO215H5 is not required for a Biology Major, it is a prerequisite for many cell and molecular courses at the 300 level. Students should consider carefully which 300/400 level courses they intend to take.  
- PSL201Y1, offered on the St. George campus, will not meet the Physiology requirements for the Biology Major program and may not be substituted for BIO204H5.  
- **Students may take no more than 2.0 credits combined in ROP, Individual Projects or Thesis courses at the 300/400-level for credit toward their Biology program.**

## Program #16 ERMIN0840 Biomedical Communications (Science)

**Rationale for change:** ANT101H5 and ANT102H5 will be removed from the BMC minor curriculum as the minor is now a Biology program. To keep in line with all our other Biology programs and the required life science background, all students must now have BIO152H5 and BIO153H5. HSC200H5 is a new proposed course for the BMC/HSC curriculum. The course is designed to provide a basic foundation for the technique and theories in senior level HSC courses. For this reason, it will be a required course for the program. HSC400H5 is proposing to be deleted for the 2011-12 calendar so is being removed as an optional course for this program. HSC406H5 is a proposed new course for 2011-12. It is a continuation to HSC300H5, a current optional course in the BMC minor. This new course will, therefore, also be an optional course for students in this program.

**Before:** 4.0 credits are required including:  
- **1.0 credits from** BIO152H5, **153H5, or ANT101H5, 102H5**  
- **3.0 credits from** HSC300H5, 301H5, 302H5, **400H5,** 401H5, 402H5, 403H5, 404H5, **405H5**

**After:** 4.0 credits are required including:  
- BIO152H5, **153H5**  
- **HSC200H5**  
- **2.5 credits from** HSC300H5, 301H5, 302H5, 401H5, 402H5, 403H5, 404H5, **405H5, 406H5**

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## Program #17 ERMIN1061 Environmental Science (Science)

**Rationale for change:** ENV232H5 is not recommended for the minor program. The addition of ENV490H5, 491H5 gives additional course flexibility to students.

**Before:**  
Upper Years: 1.0 credit  
- Field, Experiential & Research Perspectives: 0.5 credit chosen from this list: ANT318H5; BIO301H5, 302H5, 313H5, 316H5, 329H5; ERS325H5; **ENV232H5, 299Y5,** 399Y5; GGR317H5 (with field trip option), 379H5; SCI398H5; or another program-relevant Field, Experiential, or Research course, with permission of the Program Advisor  
- Biogeochemical Perspectives: 0.5 credit chosen from this list: BIO311H5, 330H5, 333H5, 373H5; CHM311H5, 333H5, 347H5, 361H5, 362H5, 391H5, 393H5; ERS315H5, 321H5; GGR305H5, 307H5, 309H5, 311H5, 315H5, 316H5, 317H5, 321H5, 337H5, 338H5, 372H5, 375H5, 377H5, 378H5;  
**JBG312H5;** PHY331H5, 332H5

**After:**  
Upper Years: 1.0 credit  
- Field, Experiential & Research Perspectives: 0.5 credit chosen from this list: ANT318H5; BIO301H5, 302H5, 313H5, 316H5, 329H5; ERS325H5; **ENV299Y5,** 399Y5; GGR317H5 (with field trip option), 379H5; SCI398H5; or another program-relevant Field, Experiential, or Research course, with permission of the Program Advisor  
- Biogeochemical Perspectives: 0.5 credit chosen from this list: BIO311H5, 330H5, 333H5, 373H5; CHM311H5, 333H5, 347H5, 361H5, 362H5, 391H5, 393H5; **ENV490H5, 491H5 (in years when these Special Topics courses are offered in a SCI format);** ERS315H5, 321H5; GGR305H5, 307H5, 309H5, 311H5, **312H5,** 315H5, 316H5, 317H5, 321H5, 337H5, 338H5, 372H5, 375H5, 377H5, 378H5; PHY331H5, 332H5

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## Program #18 ERMIN1160 Psychology (Science)

**Rationale for change:** - Removal of STA219H5 - correction of error. Course is unrelated to PSY201H5 or to STA220H5. - PSY no longer offers the Human Communication and Technology program and does not teach any CCT courses. The removed courses were either transferred to psychology last year or cancelled. The one that remains with CCT designation is now taught as a Social Science course by non-PSY faculty and as such cannot fulfil a key program requirement in PSY.

**Before:** Limited Enrolment: Enrolment in this program is limited to students who have:  
- completed any Gr.12(4U) Mathematics or equivalent;  
- completed 4.0 credits;

- a grade of at least 63% in **PSY 100Y5**; and
  - a minimum CGPA of 2.0 Students not initially meeting these requirements may be admissible after meeting the second-year requirements. Further information is available on the Psychology Department web site: [www.utm.utoronto.ca/psychology](http://www.utm.utoronto.ca/psychology)
- Higher Years
- PSY201H5/ BIO360H5/ ECO220Y5/227Y5/ SOC350H5/ **STA218H5/219H5/220H5**
  - 1.5 credits from the following courses:  
0.5 credit must be taken from each group:
  - Biological Bases of Behaviour: PSY252H5, 290H5, 295H5
  - Perception/Cognition/Communication:  
PSY270H5, 274H5, 280H5
  - Developmental/Abnormal/ Social/Personality:  
PSY210H5, 213H5, 220H5, 230H5, 240H5
  - 1.0 credit in PSY at the 300 level. **Students may take one or more of the following courses instead: CCT316H5, 326H5, 371H5, 373H5, 379H5**

**After:**

- Limited Enrolment: Enrolment in this program is limited to students who have:
- completed any Gr.12(4U) Mathematics or equivalent;
  - completed 4.0 credits;
  - a grade of at least 63% in **PSY100Y5**; and
  - a minimum CGPA of 2.0 Students not initially meeting these requirements may be admissible after meeting the second-year requirements. Further information is available on the Psychology Department web site: [www.utm.utoronto.ca/psychology](http://www.utm.utoronto.ca/psychology)
- Higher Years
- PSY201H5/ BIO360H5/ ECO220Y5/227Y5/ SOC350H5/ **STA218H5/220H5**
  - 1.5 credits from the following courses:  
0.5 credit must be taken from each group:
  - Biological Bases of Behaviour: PSY252H5, 290H5, 295H5
  - Perception/Cognition/Communication:  
PSY270H5, 274H5, 280H5
  - Developmental/Abnormal/ Social/Personality:  
PSY210H5, 213H5, 220H5, 230H5, 240H5
  - 1.0 credit in PSY at the 300 level.

**Program #19 ERMIN1376 Chemistry (Science)**

**Rationale for change:**

Updating program for new courses introduced.

**Before:**

Limited Enrolment: Enrolment in the Chemistry Minor Program is based on completion of 4.0 credits including **CHM140Y5** (minimum grade of 60%) and MAT134Y5/135Y5/137Y5  
Year 1 **CHM140Y5**

**After:**

Limited Enrolment: Enrolment in the Chemistry Minor Program is based on completion of 4.0 credits including **CHM140Y5/(110H5,120H5)** (minimum grade of 60%) and MAT134Y5/135Y5/137Y5  
Year 1 **CHM140Y5/(110H5,120H5)**

**Program #20 ERMIN1465 Earth Science (Science)**

**Rationale for change:**

To prevent capricious enrolments in this program.

**Before:**

Limited Enrolment:

**After:**

Limited Enrolment: **Enrolment in this program is based on completion of 4.0 credits including ENV100Y5 / (ERS103H5, 120H5) (minimum grade of 60%).**

## Program #21 ERMIN1540 Statistics, Applied (Science)

**Rationale for change:**                   ◇ Clarified substitutions of ECO courses, for double majors.  
  ◇ Added a list to second year requirements, as students have been reading the requirements incorrectly.

**Before:**                                   Notes:

- **Several courses in this program are excluded by STA257H5. To obtain credit, they must be taken** prior to STA257H5.
  - Please note that a number of courses in this program have MAT prerequisites.
  - ECO220Y5 cannot be substituted for STA257H5 and/or STA258H5 and/or STA261H5.
- Second Year **MAT232H5/233H5; STA257H5,258H5;** (STA220H5, **221H5)/(PSY201H5, 202H5)/(BIO360H5, 361H5)/(SOC350H5, 351H5)/ECO220Y5/ECO227Y5/(STA331H5,332H5)**
- Higher Year 1.0 additional credits from any STA course except **STA107H5 or STA218H5** of which at least 0.5 credits must be at 300/400 level.

**After:**                                   Notes:

- **Course listed under second or third year with a single asterisks (\*) must be completed** prior to **registration in** STA257H5.
  - **\*\*STA331H5 and STA332H5 must be taken after STA258H5 has been completed.**
  - Please note that a number of courses in this program have MAT prerequisites.
  - ECO220Y5 cannot be substituted for STA257H5 and/or STA258H5 and/or STA261H5. **ECO227Y5 can be substituted for STA257H5 and 258H5, but not for STA261H5.**
- Second Year **MAT232H5/233H5, STA257H5, 258H5;**  
**Second or Third Year** (STA220H5, **221H5)/(PSY201H5, 202H5)/(BIO360H5, 361H5)/(SOC350H5, 351H5)/ECO220Y5/(STA331H5,332H5)\*\***
- Higher Year 1.0 additional credits from any STA course except **STA218H5**, of which at least 0.5 credits must be at 300/400 level.

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## Program #22 ERMIN1944 Physics (Science)

**Rationale for change:**   Program course requirements are updated to reflect changes to PHY course offerings. Specifically, in Years 2+3, PHY237H5, 247H5, 331H5, and 341H5 will no longer be offered or will be replaced by new PHY courses.

**Before:**                                   Limited Enrolment: 4.0 credits are required including at least **1.0** at the 300/400 level. Please note that a number of these courses have MAT prerequisites or **corequisites.**

Year 1 **PHY135Y5**

Year 2 PHY241H5, 242H5, **247H5, 237H5/245H5**

Years 3 & 4 1.0 credits from: **PHY331H5, 332H5, 341H5; JCP321H5, 322H5**

**After:**                                   Limited Enrolment: **Enrolment in this program is based on completion of 4.0 credits including PHY135Y/(136H5, 137H5) (minimum grade of 60%).4.0 credits** are required including at least **1.5** at the 300/400 level. Please note that a number of these courses have MAT prerequisites or **corequisites.PHY333H5 and**

**JCP421H5 alternate with PHY332H5 and PHY451H5 in consecutive years. Check individual course listing for the details in a given calendar year.**

Year 1 **PHY135Y5/(136H5, 137H5)**

Year 2 PHY241H5, 242H5, **245H5**

Years 3 & 4 **JCP321H5**, 1.0 credits from: **PHY325H5**, 332H5, **333H5, 433H5, 451H5, JCP322H5, 421H5**

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### Program #23 ERMIN2364 Biology (Science)

**Rationale for change:** Confusion has arisen with the change of BIO210 from an H to a Y course as to the number of credits needed to complete a Biology minor. The changes should make the requirements more clear.

**Before:** **A minimum of 4.0 credits are required, including 1.0 at the 200 level, and at least 1.0 at the 300 level.**

- BIO152H5, 153H5

- two courses from **BIO204H5/210Y5**, 205H5, 206H5, 207H5

- 2.0 additional Biology **courses**, at least 1.0 at the 300/400 level. Note: Three of the five courses in requirement 2 (above) require CHM140Y5 as a **pre- or corequisite**.

**After:** **Program requirements:**

- BIO152H5, 153H5

- two courses from **(BIO204H5 or 210Y5)**, 205H5, 206H5, 207H5

- 2.0 additional Biology **credits**, at least 1.0 at the 300/400 level. Note: Three of the five courses in requirement 2 (above) require CHM140Y5 as a **pre-requisite**.

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### Program #24 ERSPE0105 Anthropology (Science)

**Rationale for change:** The revised requirements are more streamlined and reflect the department's decision to introduce several 200 level courses in sociocultural and linguistic anthropology that will give students more exposure and therefore enhancing the student experience in these two sub-fields. At the present moment, Anthropology is well staffed in these sub-fields and is in a position to restructure its program to incorporate flexibility in its course offerings and to attract students to its programs. By streamlining the Arts program the department has also revised the program criteria in the Science Specialist and Major programs. The Department considers it important that all students enrolled in Anthropology are introduced to its 4 sub-fields: sociocultural, linguistics, archaeology and biological anthropology. Within the science programs, student will have some flexibility to choose from a range of sociocultural and linguistic anthropology 200 level courses but will be required to enroll in second year archaeology and biological anthropology courses that are the foundation for upper level Anthropology science courses.

**Before:** Limited Enrolment: Enrolment in this program is limited. To qualify, students must have completed 4.0 credits (including ANT101H5 and ANT102H5), achieved at least 65% in both ANT101H5 and ANT102H5, and achieved a cumulative grade point average of at least 2.00. Students applying to enrol after second year must have completed 8.0 credits, achieved at least 65% in each of ANT200Y5, 203Y5,

**204Y5/206Y5**, and achieved a CGPA of at least 2.00.

Second Year ANT200Y5, **203Y5, 204Y5/206Y5**

**After:** Limited Enrolment: Enrolment in this program is limited. To qualify, students must have completed 4.0 credits (including ANT101H5 and ANT102H5), achieved at least 65% in both ANT101H5 and ANT102H5, and achieved a cumulative grade point average of at least 2.00. Students applying to enrol after second year must have completed 8.0 credits, achieved at least 65% in each of ANT200Y5, 203Y5,

**204H5/206H5/207H5**, and achieved a CGPA of at least 2.00.

Second Year **1. ANT200Y5, 203Y5**

**2. ANT204H5 and 0.5 from ANT206H5/207H5/208H5/209H5**

## Program #25 ERSPE0482 Comparative Physiology (Science)

**Rationale for change:** PHY335H5 is no longer offered. The two new physics courses listed cover similar material as PHY335H5. The senior research credit limit will ensure that students complete a well-rounded biology program (i.e. lecture-based courses, individual project courses, lab courses, etc.). As space is often limited in these courses, it will also help to give all students interested in research project courses a better chance at securing a project.

**Before:** **BIO151Y5/(152H5, 153H5)** are prerequisites for most 300 level BIO courses and should be completed by the end of second **year**.  
First Year  
- BIO152H5, 153H5; CHM140Y5; **MAT132Y5/134Y5/135Y5/137Y5**  
- 1.0 credit from the following: CLA201H5; ENV100Y5; ERS120H5; **PHY135Y5/137Y5**, PSY100Y5; WRI203H5, 307H5  
Third and Fourth Years  
- BIO304H5, 310H5, 312H5, 360H5, 409H5; (CHM242H5, 243H5)  
- At least 2.0 credits from: BIO329H5, 354H5, 361H5, 372H5, 410H5, 411H5, 434H5, 481Y5; CHM361H5, 362H5; **PHY335H5**; PSY290H5, 395H5  
- 1.0 additional BIO credit

**After:** **BIO152H5, 153H5** are prerequisites for most 300 level BIO courses and should be completed by the end of second **year. Students may take no more than 2.0 credits combined in ROP, Individual Projects or Thesis courses at the 300/400-level for credit toward their Biology program.**  
First Year  
- BIO152H5, 153H5; **(CHM110H5, 120H5)/**CHM140Y5; **MAT134Y5/135Y5/137Y5**  
- 1.0 credit from the following: CLA201H5; ENV100Y5; ERS120H5; **(PHY136H5, 137H5)/PHY135Y5**, PSY100Y5; WRI203H5, 307H5  
Third and Fourth Years  
- BIO304H5, 310H5, 312H5, 360H5, 409H5; (CHM242H5, 243H5)  
- At least 2.0 credits from: BIO329H5, 354H5, 361H5, 372H5, 410H5, 411H5, 434H5, 481Y5; CHM361H5, 362H5; **PHY331H5, 332H5**; PSY290H5, 395H5  
- 1.0 additional BIO credit

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## Program #26 ERSPE0509 Geology (Science)

**Rationale for change:** Enrolment limits are introduced to prevent capricious enrolments in this program. Program course requirements are updated to reflect changes to CHM and PHY first year courses.

**Before:** Limited Enrolment:  
First Year **CHM140Y5**; ENV100Y5/ (ERS103H5, 120H5); **MAT132Y5/137Y5/138Y5**;  
**PHY135Y5/137Y5**  
Second Year ERS201H5, 202H5, 203H5; 0.5 credit from GGR217H5, 214H5; PHY237H5; AST252H5;  
BIO356H5; GLG217H1; 1.0 credit from CHM211H5, **221H5**, 231H5; 1.0 credit from MAT212H5,  
**222H5**; STA257H5, 261H5  
Fourth Year  
**- GLG445H1**  
- 2.5 credits from GLG(G) and ERS 400 level courses.

**After:** Limited Enrolment: **Enrolment in this program is based on completion of 4.0 credits including ENV100Y5 / (ERS103H5, 120H5) (minimum grade of 60%).**  
First Year **CHM140Y5/(110H5,120H5)**; ENV100Y5/ (ERS103H5, 120H5);

**MAT134Y5/135Y5/137Y5; PHY135Y5/(136H5,137H5)**

Second Year ERS201H5, 202H5, 203H5; 0.5 credit from GGR217H5, 214H5; PHY237H5; AST252H5; BIO356H5; GLG217H1; 1.0 credit from CHM211H5, **221H5/JCP221H5**, 231H5; 1.0 credit from MAT212H5, **223H5**; STA257H5, 261H5

Fourth Year **1. GLG445H1**

**2.** 2.5 credits from GLG(G) and ERS 400 level courses.

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**Program #27 ERSPE1009 Forensic Chemistry (Science)**

**Rationale for change:**

No Changes to 1st year. Higher Years Change to: 1. BIO200H5, 206H5, 215H5; CHM211H5, JCP221H5, 231H5, 242H5, 243H5; FSC271H5 ADD: BIO200H5 Introduction to Pharmacology ; BIO206H5 Introductory Cell and Molecular Biology BIO215H5 Laboratory in Molecular Biology and Genetics RATIONALE TO ADD BIO200H5, BIO206H5 AND BIO215H5: BIO200H5 is a more appropriate discipline specific (biology) course for Forensic Chemistry students; BIO206H5 is being added as a required course because it is recommended preparation for BIO200H5 and also a prerequisite to BIO215H5 -added as a requirement to meet FSC accreditation standards; provides students in Forensic Chemistry with a more enhanced learning experience with in this discipline. DELETE: BIO204H5/210Y5 RATIONALE: to help make room for the new required courses (BIO200H5, 206H5, 215H5) DELETE:/PHL271H5 RATIONALE FOR DELETING PHL271H5: PHL271H5 -Ethics and the Law: this course does not meet the accreditation standard requirement of an ethics & professionalism course in forensic science, a requirement in all streams of Forensic Science; this course is too general and does not cover the discipline; FSC271H5 better enhances the student s learning experience in the discipline. 2. CHM311H5, 331H5/333H5, 341H5/345H5, 361H5, 371H5/391H5, 393H5; BIO360H5/STA220H5 3. FSC300H5, 302H5, 360H5, 402H5 ADD: FSC360H5 -Evidence, Law and Forensic Science in Canada RATIONALE: a forensic law component is being included in the program to meet forensic science accreditation standards; providing students in Forensic Chemistry with a more enhanced learning experience with in this discipline. DELETE: CHM347H5 RATIONALE: to make room for the other more discipline appropriate courses required to meet FSC accreditation. DELETE: /BIO 361H5 and /STA221H5 RATIONALE: only 0.5 STA credit is required to meet both FSC-CHM and CHM accreditation standards; removed to make room for the other more discipline appropriate courses required to meet FSC accreditation standards DELETE: FSC401H5 RATIONALE: to make room for the other more discipline appropriate courses required to meet FSC accreditation standards; 4. CHM414H5, 416H5 5. FSC481Y5 (with forensic chemistry focus)/CHM489Y5 DELETE: /CHM489Y5 Introduction to Research in Chemistry, is being removed due to the similarity in requirements with the required FSC481Y -Internship in Forensic Science course, required by all forensic science specialists and is required to meet forensic science accreditation; FSC481Y5 provides an appropriate discipline specific course to better enhanced the student s learning experience within the final year of this program.

**Before:**

Limited Enrolment: Admission into the Forensic Science-Chemistry program is by special application ONLY. To be considered for admission into the program, ALL students, including students admitted into the 1st year Forensic Science category, MUST submit a direct online FSC application, upon completing the 1st year minimum requirements . Meeting the minimum requirements does not guarantee admission into the program. Minimum Requirements:

- Completion of 4.0 credits; including 3.0 science credits.
- Completion of CHM140Y5 with 65% or better.
- Completion of MAT134Y5/ 135Y5/ 137Y5.

- A minimum Cumulative Grade Point Average of at least 3.0. The actual CGPA requirement **in any particular year may exceed this value, in order to achieve a proper balance between enrolments and teaching resources.** Application for admission into the program for ALL students can be found at: [www.utm.utoronto.ca/forensic](http://www.utm.utoronto.ca/forensic) Forensic Science Applications Open: March 1 of each year Forensic Science Application Deadline: May 1 of each year **NOTE: RE - Transfer Students who have attended another post-secondary institution, or another faculty within the University of Toronto (including St. George and UTSC), who wish to gain admission into the program MUST also apply through the Ontario Universities Application Centre: [www.ouac.on.ca](http://www.ouac.on.ca) (OUAC 105 application form), in addition to applying directly to the Forensic Science program. NOTES:**

- Students are strongly advised to consult the program advisor regarding their program of study.
  - Corequisites for CHM371H5 are CHM361H5, 362H5.
  - Students are strongly urged to take as many forensic sciences courses as possible from the following list: ANT205H5, 306H5; BIO338H5; FSC306H5, 310H5, 350H5, **360H5**, 361H5; PSY328H5, 344H5.
  - The program requirements in effect at the time the student is admitted to the program must be met in order to fulfill the degree requirements.
  - Prospective students already holding a degree in **Biology**, Chemistry, **Psychology or Anthropology may not** complete a Forensic **Science program in their first specialty** due to the overlap of course content for courses already **completed**.
  - Students without pre- and co-requisites or written permission of the instructor can be de-registered from courses at any time. Once a student has been admitted into a FSC program stream, written authorization from the Forensic Science program advisor **MUST** be obtained for any request of change in a student's area of study within the Forensic Science program.
- First Year **CHM140Y5**; FSC239Y5; MAT134Y5/135Y5/137Y5; **PHY135Y5**
- Higher Years
- **BIO204H5/210Y5; CHM211H5, 221H5, 231H5**, 242H5, 243H5;  
**FSC271H5/PHL271H5**
  - CHM311H5, 331H5/333H5, 341H5/345H5, **347H5**, 361H5, 371H5/391H5, 393H5; (**BIO360H5, 361H5**)/(**STA220H5, 221H5**)
  - FSC300H5, 302H5, **401H5**, 402H5
  - CHM414H5, 416H5
  - FSC481Y5 (with chemistry **focus**)/**CHM489Y5**

**After:**

Limited Enrolment: Admission into the Forensic Science-Chemistry program is by special application ONLY. To be considered for admission into the program, ALL students, including students admitted into the 1st year Forensic Science category, **MUST** submit a direct online FSC application, upon completing the 1st year minimum requirements. Meeting the minimum requirements does not guarantee admission into the program. Minimum Requirements:

- Completion of 4.0 credits; including 3.0 science credits.
- Completion of CHM140Y5 with 65% or better.
- Completion of MAT134Y5/ 135Y5/ 137Y5.
- A minimum Cumulative Grade Point Average of at least 3.0. The actual **minimum** CGPA requirement **varies from year to year but is never less than 3.0** Application for admission into the program for ALL students can be found at: [www.utm.utoronto.ca/forensic](http://www.utm.utoronto.ca/forensic) Forensic Science Applications Open: March 1 of each year Forensic Science Application Deadline: May 1 of each **yearNOTES:**

- Students are strongly advised to consult the program advisor regarding their program of study.
  - Corequisites for CHM371H5 are CHM361H5, 362H5.
  - Students are strongly urged to take as many forensic sciences courses as possible from the following list: ANT205H5, 306H5; BIO338H5; FSC306H5, 310H5, 350H5, 361H5; PSY328H5, 344H5.
  - The program requirements in effect at the time the student is admitted to the program must be met in order to fulfill the degree requirements.
  - Prospective students already holding a degree in Chemistry, **cannot** complete a Forensic **Chemistry Specialist Program** due to the overlap of course content for courses already **completed in their first specialty**.
  - Students without pre- and co-requisites or written permission of the instructor can be de-registered from courses at any time.
  - Once a student has been admitted into a FSC program stream, written authorization from the Forensic Science program advisor **MUST** be obtained for any request of change in a student's area of study within the Forensic Science program.
- First Year **CHM140Y5/(CHM110H5, 120H5)**; FSC239Y5; MAT134Y5/135Y5/137Y5;  
**PHY135Y5/(PHY136H5, 137H5)**
- Higher Years
- **BIO200H5, 206H5, 215H5; CHM211H5; JCP221H5, CHM231H5**, 242H5,

- 243H5; **FSC271H5**  
 - CHM311H5, 331H5/333H5, 341H5/345H5, 361H5, 371H5/391H5, 393H5;  
**BIO360H5/STA220H5**  
 - FSC300H5, 302H5, **360H5**, 402H5  
 - CHM414H5, 416H5  
 - FSC481Y5 (with chemistry **focus**)

## Program #28 ERSPE1020 Ecology and Evolution (Science)

**Rationale for change:** Update reflects change of JBG312H5 to be GGR312H5. Course will still be open to Biology students. As course material will not change, course can still be used as an option for Ecology & Evolution Specialist students. BIO342H5 (Evolutionary Biology) is a new course that the Department is introducing to the curriculum. Currently we do not have a required course that directly addresses evolutionary biology in this program. This course will fill this void. The senior research credit limit will ensure that students complete a well-rounded biology program (i.e. lecture-based courses, individual project courses, lab courses, etc.). As space is often limited in these courses, it will also help to give all students interested in research project courses a better chance at securing a project.

**Before:**

Program Name: Ecology and **Evolution**

First year

- BIO152H5, 153H5; CHM140Y5; **MAT132Y5/134Y5/135Y5/137Y5**
- 1.0 credit from the following: CLA201H5, CSC108H5, 148H5; ENV100Y5; ERS120H5;

**PHY135Y5/137Y5**; PSY100Y5; WRI203H5, 307H5

Third and Fourth years

- BIO313H5
- BIO360H5
- 1.0 credit from courses in organismal biology: BIO325H5, 338H5, 335H5, 354H5, 356H5, 370Y5
- 0.5 credit from field courses: BIO316H5, other OUPFB\*\* Field Courses (P.I.)
- 2.5 credits from core ecology/evolutionary biology courses: BIO311H5, 329H5, 330H5, 333H5\*, 339H5\*, 341H5, 361H5, 373H5, 406H5, 442H5, 443H5, 464H5, **JBG312H5**
- **1.5** credits from other biology courses: BIO215H5, 310H5, 312H5, 318Y5, 371H5, 372H5, 407H5, 409H5, 410H5, 434H5, 481Y5
- 1.0 credit from related courses from other departments: BIO314H5; MAT212H5, 222H5, 232H5; STA302H5, 322H5; GGR227H5, 278H5 (formerly GGR261), GGR305H5, 307H5, 309H5, 311H5, or from courses listed in #4, #5 and #6

\* Offered in alternate years

\*\* Ontario Universities Program in Field Biology

**After:**

Program Name: Ecology and **Evolution (Science)**  
***This program involves the understanding of the diversity of life (microbes, fungi, plants, animals) and all aspects of organismal biology in the natural world. Ecology is the study of the relations of organisms to each other and their environment and evolution (a quote from Charles Darwin) is descent with modification. Evolutionary biologists study both the history and mechanisms of evolutionary change. Biologists recognize that all organisms have evolved and that an understanding of the central question of the origin and maintenance of diversity from genomes to ecosystems underlies all life sciences. This understanding is also critical to our stewardship of life. Society needs to make informed decisions about sustainable development, global temperature change, control of invasive species, the preservation of genetic diversity and ecosystem integrity, and the control of emerging infectious diseases such as drug-resistant malaria. These are fundamentally***

**evolutionary and ecological problems. Research faculty use a broad array of approaches in their studies, including molecular studies, laboratory experiments, computer and mathematical modeling, and field studies in many different areas of the world. Instruction provides opportunities for research projects conducted in the laboratory and the field. Students may take no more than 2.0 credits combined in ROP, Individual Projects or Thesis courses at the 300/400-level for credit toward their Biology program.**

First year

- BIO152H5, 153H5; **(CHM110H5, 120H5)/**CHM140Y5; **MAT134Y5/135Y5/137Y5**
- 1.0 credit from the following: CLA201H5, CSC108H5, 148H5; ENV100Y5; ERS120H5; **(PHY136H5, 137H5)/ PHY135Y5**; PSY100Y5; WRI203H5, 307H5

Third and Fourth years

- BIO313H5 **and BIO342H5**
- BIO360H5
- 1.0 credit from courses in organismal biology: BIO325H5, 338H5, 335H5, 354H5, 356H5, 370Y5
- 0.5 credit from field courses: BIO316H5, other OUPFB\*\* Field Courses (P.I.)
- 2.5 credits from core ecology/evolutionary biology courses: BIO311H5, 329H5, 330H5, 333H5\*, 339H5\*, 341H5, 361H5, 373H5, 406H5, 442H5, 443H5, 464H5, **GGR312H5**
- **1.0** credits from other biology courses: BIO215H5, 310H5, 312H5, 318Y5, 371H5, 372H5, 407H5, 409H5, 410H5, 434H5, 481Y5
- 1.0 credit from related courses from other departments: BIO314H5; MAT212H5, 222H5, 232H5; STA302H5, 322H5; GGR227H5, 278H5 (formerly GGR261), GGR305H5, 307H5, 309H5, 311H5, or from courses listed in #4, #5 and #6

\* Offered in alternate years

\*\* Ontario Universities Program in Field Biology

### Program #29 ERSPE1025 Astronomical Sciences (Science)

**Rationale for change:** MAT212H5 removed because not suitable for AST; PHY344H5 no longer exist; AST420H1(G), 425H5 replaced by AST425Y1(G) because UTM AST does not have the capacity to teach the expanded AST425Y at UTM.

**Before:**

First Year AST110H5; MAT102H5, 135Y5/137Y5, MAT223H5; **PHY135Y5** (70% recommended)  
 Second Year AST221H1(G), 222H1(G); **MAT212H5/242H5, 232H5**, 368H5; PHY241H5, 245H5  
 Fourth Year **AST420H1(G), 425H5; PHY344H5, 351H1(G)**, STA220H5, and **one** 300/400-level half-course approved by the faculty advisor.

**After:**

First Year AST110H5; MAT102H5, 135Y5/137Y5, MAT223H5; **PHY135Y5/(136H5,137H5)** (70% recommended)  
 Second Year AST221H1(G), 222H1(G); **MAT242H5, 232H5/233H5**, 368H5; PHY241H5, 245H5  
 Fourth Year **AST425Y1(G); PHY351H1(G)**, STA220H5, and **two** 300/400-level half-course approved by the faculty advisor.

### Program #30 ERSPE1038 Information Security (Science)

**Rationale for change:** ◇ MAT137Y5 has been changed to MAT135Y5 or equivalent. The pre-requisites have been changed to match. MAT135Y5 is sufficient to fulfill the requirements for the program. MAT137Y5 was changed two years ago to be more suitable for Math

Specialists.

- ◇ MAT224H5 and MAT301H5 remain in the program. They are both required prerequisites to MAT302H5 (cryptography).
- ◇ CSC358H5 has been added as a choice for networking experience.
- ◇ Three CSC3xx/4xx electives have been removed to bring the program close to the recommended size for a specialist and to match the St. George program.

**Before:**

Limited Enrolment: Enrolment in this program is limited to students who meet the following criteria:

- Prerequisite Courses A minimum of 4.0 credits to include CSC148H5 (65%); MAT102H5 (60%), **137Y5 (60%).**

- Cumulative Grade Point Average (CGPA) The minimum CGPA is determined annually. It is never lower than 2.0. 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](http://www.fees.utoronto.ca) for more information on the fee structures. Within an Honours degree, **14.0** credits are required.

First Year CSC108H5, 148H5, 290H5; MAT102H5, **137Y5**

Third and Fourth Years CSC458H5; two of (CSC422H5, 423H5, 427H5, 490H5); **three half courses from any 300/400 level U of T Mississauga CSC courses, except for CSC492H5 and CSC493H5**

**After:**

Limited Enrolment: Enrolment in this program is limited to students who meet the following criteria:

- Prerequisite Courses A minimum of 4.0 credits to include CSC148H5 (65%); MAT102H5 (60%), **and one of (MAT134Y5 (60%), MAT135Y5 (60%), MAT137Y5).**

- Cumulative Grade Point Average (CGPA) The minimum CGPA is determined annually. It is never lower than 2.0. 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](http://www.fees.utoronto.ca) for more information on the fee structures. Within an Honours degree, **12.5** credits are required.

First Year CSC108H5, 148H5, 290H5; MAT102H5, **134Y5/135Y5/137Y5**

Third and Fourth Years CSC458H5; two of (CSC422H5, 423H5, 427H5, 490H5);

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## Program #31 ERSPE1061 Environmental Science (Science)

**Rationale for change:**

Addition of ENV490H5 and 491H5 will provide students with more flexibility in course choices. JBG312H5 is changed to GGR312H5. Other minor housecleaning issues (for example, CHM140 has changed to CHM110, 120).

**Before:**

First Year: 4.0 credits

- Introduction: ENV100Y5

- Quantitative Foundation: 1.0 credit chosen from this list: **(CSC108H5, 148H5);** MAT134Y5, 135Y5, 137Y5

- Basic Scientific Foundation: 2.0 credits chosen from this list: BIO152H5, 153H5; ERS103H5, 120H5;

**CHM140Y5; PHY135Y5**

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

- Biological & Ecological Perspectives: 0.5 credit chosen from this list: BIO200H5, 204H5, 205H5, 206H5, 215H5

- Geographical Perspectives: 1.0 credit chosen from this list: ENV201H5; GGR214H5, 217H5, 227H5

- Earth Science Perspectives: ERS201H5

- Physical & Chemical Perspectives: 1.0 credit chosen from this list: CHM221H5, 231H5, 242H5;

ERS202H5, 203H5; PHY237H5

- Analytical & Research Methods: 1.0 credit chosen from this list: BIO360H5, 361H5; CHM211H5; ENV232H5; GGR276H5, 277H5, 278H5, 380H5; STA220H5, 221H5; or another program-relevant 200/300-level Research Methods course (SCI), with permission of the Program Advisor

Upper Years: 4.0 credits

- Field Perspectives: 1.0 credit chosen from this list: ANT318H5; BIO301H5, 302H5, 313H5, 316H5, 329H5;

ERS325H5; ENV331H5; GGR317H5 (with field-trip option), 379H5, 390H1; or another program-relevant Field course (SCI), with permission of the Program Advisor

- Experiential & Research Perspectives: 1.0 credit chosen from this list: BIO400Y5; ENV399Y5, 400Y5, 497H5, 498Y5; GGR417Y5; SCI398H5, 498H5, 499H5; or another program-relevant Experiential or Research course (SCI), with permission of the Program Advisor
- Biogeochemical Perspectives: 1.5 credits chosen from this list: BIO311H5, 312H5, 316H5, 318Y5, 328H5, 330H5, 333H5, 373H5, 405H5, 406H5, 436H5, 464H5; CHM310H1, 311H5, 331H5, 347H5, 361H5, 362H5, 391H5, 393H5, 416H5; ENV315H1, 393H5, 490H5, 491H5; ERS315H5, 321H5; GGR305H5, 307H5, 309H5, 311H5, 315H5, 316H5, 317H5, 321H5, 337H5, 338H5, 372H5, 375H5, 377H5, 378H5, 403H1, 406H5, 407H5, 409H1, 413H1, 463H5, 479H5, 493H5; **JBG312H5**; PHY331H5, 332H5
- Social, Economic & Policy Perspectives: 0.5 credit chosen from this list: **ANT368H5**; ECO373Y5; ENG259H5; ENV393H5; GGR329H5, 333H5, 345H5, 348H5, 349H5, 361H5, 365H5, 367H5, 369H5, 370H5, 378H5, 380H5; HIS318H5, 319H5; MGT394H5; PHL273H5, 373H1; POL250Y5, 343Y5; SOC226H5, 319Y5, 339H5, 349H5, 355H5, 356H5; WRI375H5

**After:**

First Year: 4.0 credits

- Introduction: ENV100Y5
- Quantitative Foundation: 1.0 credit chosen from this list: **CSC108H5, 148H5**; MAT134Y5, 135Y5, 137Y5
- Basic Scientific Foundation: 2.0 credits chosen from this list: **ANT101H5**; BIO152H5, 153H5; ERS103H5, 120H5; **CHM140Y5, 110H5, 120H5; GGR117Y5; PHY135Y5, 136H5, 137H5**

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

- Biological & Ecological Perspectives: 0.5 credit chosen from this list: BIO200H5, 204H5, 205H5, 206H5, 215H5
- Geographical Perspectives: 1.0 credit chosen from this list: ENV201H5; GGR214H5, 217H5, 227H5
- Earth Science Perspectives: ERS201H5
- Physical & Chemical Perspectives: 1.0 credit chosen from this list: CHM221H5, 231H5, 242H5; ERS202H5, 203H5; PHY237H5
- Analytical & Research Methods: 1.0 credit chosen from this list: BIO360H5, 361H5; CHM211H5; ENV232H5; GGR276H5, 277H5, 278H5, **337H5**, 380H5; STA220H5, 221H5; or another program-relevant 200/300-level Research Methods course (SCI), with permission of the Program Advisor

Upper Years: 4.0 credits

- Field Perspectives: 1.0 credit chosen from this list: ANT318H5; BIO301H5, 302H5, 313H5, 316H5, 329H5; ERS325H5; ENV331H5; GGR317H5 (with field-trip option), 379H5, 390H1; or another program-relevant Field course (SCI), with permission of the Program Advisor
- Experiential & Research Perspectives: 1.0 credit chosen from this list: BIO400Y5; ENV399Y5, 400Y5, 497H5, 498Y5; GGR417Y5; SCI398H5, 498H5, 499H5; or another program-relevant Experiential or Research course (SCI), with permission of the Program Advisor
- Biogeochemical Perspectives: 1.5 credits chosen from this list: BIO311H5, 312H5, 316H5, 318Y5, 328H5, 330H5, 333H5, 373H5, 405H5, 406H5, 436H5, 464H5; CHM310H1, 311H5, 331H5, 347H5, 361H5, 362H5, 391H5, 393H5, 416H5; ENV315H1, 393H5, 490H5, 491H5; ERS315H5, 321H5; GGR305H5, 307H5, 309H5, 311H5, **312H5**, 315H5, 316H5, 317H5, 321H5, 337H5, 338H5, 372H5, 375H5, 377H5, 378H5, 403H1, 406H5, 407H5, 409H1, 413H1, 463H5, **464H5**, 479H5, 493H5; PHY331H5, 332H5
- Social, Economic & Policy Perspectives: 0.5 credit chosen from this list: **ANT357H5, 368H5, 370H5, 457H5**; ECO373Y5; ENG259H5; ENV393H5; GGR329H5, 333H5, 345H5, 348H5, 349H5, 361H5, 365H5, 367H5, 369H5, 370H5, 378H5, 380H5; HIS318H5, 319H5; MGT394H5; PHL273H5, 373H1; POL250Y5, 343Y5; SOC226H5, 319Y5, 339H5, 349H5, 355H5, 356H5; WRI375H5

**Note: ENV490H5, 491H5 can substitute for #1, #2, #3, or #4 as course requirements, where appropriate, and with permission of the Program Advisor or Academic Counsellor.**

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**Program #32 ERSPE1118 Biotechnology (Science)**

- Rationale for change:** The senior research credit limit will ensure that students complete a well-rounded biology program (i.e. lecture-based courses, individual project courses, lab courses, etc.). As space is often limited in these courses, it will also help to give all students interested in research project courses a better chance at securing a project.
- Before:** Limited Enrolment: Enrolment in this program is limited. Students who wish to enrol at the end of first year (4.0 credits) must obtain a grade of at least C (63%) in CHM140Y5 and a cumulative grade point average of at least 2.50 to qualify. Students who do not meet these criteria after first year can apply to enter the Specialist at the end of second year (8.0 credits) with the following new requirements: a grade of at least 70% in CHM242H5 and a cumulative grade point average of at least 2.50.\*MAT134Y5 - Calculus for Life Sciences is highly recommended. \*\*Please note that while MGM101H and 102H are listed as first-year courses, students cannot enrol in these courses until they are admitted into the Specialist Program and therefore will be taking these courses in their 2nd, 3rd or 4th years of study NOTE: No substitute statistics course will be allowed for BIO360H5. It is recommended that students in this program consider taking a research project or internship course in either Biology (BIO400Y5/481Y5) or Chemistry (CHM489Y5). Other 4th-year courses directly relevant to this program are BIO443H5, 477H5, CHM414H5 and **CHM462H5**.  
First Year BIO152H5, 153H5; CHM140Y5; **MAT132Y5/134Y5\*/135Y5/137Y5**; MGM101H5\*\*, 102H5\*\*
- After:** Limited Enrolment: Enrolment in this program is limited. Students who wish to enrol at the end of first year (4.0 credits) must obtain a grade of at least C (63%) in **(CHM110H5, 120H5)/**CHM140Y5 and a cumulative grade point average of at least 2.50 to qualify. Students who do not meet these criteria after first year can apply to enter the Specialist at the end of second year (8.0 credits) with the following new requirements: a grade of at least 70% in CHM242H5 and a cumulative grade point average of at least 2.50.\*MAT134Y5 - Calculus for Life Sciences is highly recommended. \*\*Please note that while MGM101H and 102H are listed as first-year courses, students cannot enrol in these courses until they are admitted into the Specialist Program and therefore will be taking these courses in their 2nd, 3rd or 4th years of study NOTE: No substitute statistics course will be allowed for BIO360H5. It is recommended that students in this program consider taking a research project or internship course in either Biology (BIO400Y5/481Y5) or Chemistry (CHM489Y5). Other 4th-year courses directly relevant to this program are BIO443H5, 477H5, CHM414H5 and **CHM462H5**. **Students may take no more than 2.0 credits combined in ROP, Individual Projects or Thesis courses at the 300/400-level for credit toward their Biology program.**  
First Year BIO152H5, 153H5; **(CHM110H5, 120H5)/**CHM140Y5; **MAT134Y5\*/135Y5/137Y5**; MGM101H5\*\*, 102H5\*\*

### Program #33 ERSPE1160 Psychology (Science)

- Rationale for change:** PSY no longer offers the Human Communication and Technology program and does not teach any CCT courses. The removed courses were either transferred to psychology last year or cancelled. The one that remains with CCT designation is now taught as a Social Science course by non-PSY faculty and as such cannot fulfil a key program requirement in PSY.
- Before:**
- Third Year
  - PSY309H5
  - One laboratory course from the following:  
PSY319H5, 329H5, 379H5, 399H5
  - 2.5 credits from the following courses: 0.5 credit must be taken from each group:
    - Biological Bases of Behaviour:  
PSY318H5, 346H5, 351H5, 353H5, 354H5, 355H5, 362H5, 372H5, 393H5, 395H5, 397H5, 398H5;  
BIO304H5, 310H5, 318Y5, 328H5
    - Perception/Cognition/Communication: PSY312H5, 315H5, 316H5, 331H5, 351H5, 360H5, 362H5, 371H5, 372H5, 374H5, 376H5, 384H5, 385H5, 387H5, 393H5, **397H5; CCT316H5, 326H5, 373H5**
    - Developmental/Abnormal/Social/Personality: PSY310H5, 311H5, 312H5, 315H5, 316H5, 318H5, 320H5, 321H5, 324H5, 325H5, 327H5, 328H5, 331H5, 333H5, 340H5, 341H5, 343H5, 344H5, 345H5, 346H5, **353H5; CCT316H5, 326H5**

**After:**

- Third Year
- PSY309H5
  - One laboratory course from the following:  
PSY319H5, 329H5, 379H5, 399H5
  - 2.5 credits from the following courses: 0.5 credit must be taken from each group:
    - Biological Bases of Behaviour:  
PSY318H5, 346H5, 351H5, 353H5, 354H5, 355H5, 362H5, 372H5, 393H5, 395H5, 397H5, 398H5;  
BIO304H5, 310H5, 318Y5, 328H5
    - Perception/Cognition/Communication: PSY312H5, 315H5, 316H5, 331H5, 351H5, 360H5, 362H5, 371H5,  
372H5, 374H5, 376H5, 384H5, 385H5, 387H5, 393H5, **397H5**
    - Developmental/Abnormal/Social/Personality: PSY310H5, 311H5, 312H5, 315H5, 316H5, 318H5, 320H5,  
321H5, 324H5, 325H5, 327H5, 328H5, 331H5, 333H5, 340H5, 341H5, 343H5, 344H5, 345H5, 346H5,  
**353H5**

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**Program #34 ERSPE1237 Molecular Biology (Science)**

**Rationale for change:** BIO476H5 (Molecular Basis of Disease) is a new course that the Department is introducing to the curriculum. The course is designed to compliment BIO477H5, a required course in this program. (See rationale for new course) The senior research credit limit will ensure that students complete a well-rounded biology program (i.e. lecture-based courses, individual project courses, lab courses, etc.). As space is often limited in these courses, it will also help to give all students interested in research project courses a better chance at securing a project.

**Before:** Limited Enrolment: Enrolment in this program is limited. Students wishing to enrol at the end of first year (4.0 credits) must obtain a grade of at least 'C' (63%) in CHM140Y5 and a cumulative grade point average of at least 2.50 to qualify. Students who do not meet these criteria can apply to enter the Specialist at the end of second year (8.0 credits) with the following new criteria: a grade of at least 70% in BIO206H5 and a cumulative grade point average of at least 2.50. Notes:

- Students wishing to enrol in this program are asked to see the program advisor in their first year.
- BIO206H5 can be taken in the first year of studies provided special permission is obtained from the program advisor.
- Students intending to continue into Graduate Studies should consider including a course in independent research in Year 4.

First Year BIO152H5, 153H5; CHM140Y5; **MAT132Y5/134Y5/135Y5/137Y5**; plus 1.0 of  
CLA201H5; ENV100Y5; ERS120H5; **PHY135Y5/137Y5/140Y5**; PSY100Y5; WRI203H5, 307H5  
Fourth Year BIO477H5\* plus 1.0 of: BIO407H5, BIO411H5, 443H5, 481Y5; BCH441H1; CHM462H5,  
489Y5; JBC472H5, CSB435H1, 450H1, 459H1, 472H1, 473H1, 474H1, 475H1; MGY425H1, 428H1, 440H1,  
445H1, 451H1, 452H1, 470H1, MIJ485H1

\* In the event that BIO477H5 is not offered during the 4th year of student's studies, the student must take **1.5** credits from the Fourth Year list above. In such a year, MGY420H1 may be taken.

**After:** Limited Enrolment: Enrolment in this program is limited. Students wishing to enrol at the end of first year (4.0 credits) must obtain a grade of at least 'C' (63%) in **(CHM110H5, 120H2)**/CHM140Y5 and a cumulative grade point average of at least 2.50 to qualify. Students who do not meet these criteria can apply to enter the Specialist at the end of second year (8.0 credits) with the following new criteria: a grade of at least 70% in BIO206H5 and a cumulative grade point average of at least 2.50. Notes:

- Students wishing to enrol in this program are asked to see the program advisor in their first year.
- BIO206H5 can be taken in the first year of studies provided special permission is obtained from the program advisor.
- Students intending to continue into Graduate Studies should consider including a course in independent research in Year 4.

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

First Year BIO152H5, 153H5; **(CHM110H5, 120H5)**/CHM140Y5;

**MAT134Y5/135Y5/137Y5**; plus 1.0 of CLA201H5; ENV100Y5; ERS120H5; **(PHY136H5, 137H5)/ PHY135Y5**; PSY100Y5; WRI203H5, 307H5

Fourth Year BIO477H5\* plus 1.0 of: BIO407H5, BIO411H5, 443H5, **476H5**, 481Y5; BCH441H1; CHM462H5, 489Y5; JBC472H5, CSB435H1, 450H1, 459H1, 472H1, 473H1, 474H1, 475H1; MGY425H1, 428H1, 440H1, 445H1, 451H1, 452H1, 470H1, MIJ485H1

\* In the event that BIO477H5 is not offered during the 4th year of student's studies, the student must take **1.0** credits from the Fourth Year list above. In such a year, MGY420H1 may be taken.

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## Program #35 ERSPE1338 Forensic Anthropology (Science)

**Rationale for change:** Initially, it was thought that all Programs under the Forensic Science umbrella must include the same minimum requirements across the board in order to keep with Accreditation Standards in Forensic Science, namely the chemistry, and math requirements. Therefore, in previous years all FSC program minimum requirements were changed to reflect uniformity across the board for all the FSC streams. However, this is not the case and accreditation can be granted to EACH individual FSC stream and not necessarily the entire FSC Programs as a whole. Each stream (FSC -ANT, -BIO, -CHM, -CSC, & -PSY) has its own mandate and standards within the forensic science sub disciplines, particularly FSC ANT, & -PSY programs. To become an expert in the field of Forensic Anthropology one must complete degrees at the Masters and PhD levels, therefore, by deleting the highlighted courses in this program, we can now include more discipline specific courses in order to better prepare the students for graduate studies. **CHANGE IN MINIMUM GRADE REQUIREMENT IN MINIMUM PROGRAM REQUIREMENTS:** The CHM and MAT requirements were not necessary for FSC-ANT disciplinary standards and were obstacles for students trying to meet the minimum requirements to enter this program. Therefore, we deleted these courses and raised the minimum grade requirement in the ANT 101H5 & 102H5 ANT Intro courses to 75% and for students applying to enroll after second year they MUST have at least 8.0 credits and achieved at least 75% in both ANT200Y World Archaeology and Prehistory and ANT205H5 Introduction to Forensic Anthropology -more disciplinary appropriate courses to better assess the students knowledge skills for students applying to enter this discipline. **First Year Now:** ANT101H5, 102H5; BIO152H5, 153H5; FSC239Y5, **REMOVE:** CHM140Y5; MAT134Y5/135Y5/137Y5 **RATIONALE:** make room for more discipline appropriate courses for this program discipline. **Second Year:** ANT200Y5, 203Y5, 205H5; BIO210Y5; FSC271H5 **REMOVE:** /204Y5; **RATIONALE:** removing the option of /ANT204Y Social Cultural & Linguistic Anthropology, ANT 200Y5 - World Archaeology and Prehistory best meets the knowledge required for the FSC ANT mandate: students need to know the difference between ANT evidence that is of recent forensic interest vs. archaeological or historical interest. **REMOVE:** BIO204H5/; **RATIONALE:** BIO210Y5 Fundamentals of Human Anatomy and Physiology provides students in Forensic Anthropology with a more enhanced learning experience -it includes Human anatomy which better complements FSC-ANT (skeletal anatomy); also BIO204 Intro to Phiology: prerequisites include CHM140Y which has been deleted from the FSC-ANT Specialist requirements. **REMOVE:** /PHL271H5; **RATIONALE:** does not meet the mandate/accreditation standard requirement of an ethics & professionalism course in forensic science which is required in all disciplines of Forensic Science; PHL271H5 course is too general and does not cover the discipline; FSC271H5 provides a more enhanced learning experience. **REMOVE:** PHY135Y5 **RATIONALE:** make room for other more discipline appropriate courses for this discipline. **Third and Fourth Years:** 1. ANT306H5, 312H5, 317H5, 334H5, 336H5/FSC310H5, ANT340H5, FSC300H5, 302H5, BIO360H5 **ADD:** ANT312H5, Archaeological Analysis **RATIONALE:** to introduce students to archaeological analyses a required component in Forensic Anthropology. **ADD:** 317H5, Archeology of Eastern North America **RATIONALE:** to provide students with a background in First Nations cultures of the past, in order to provide a basis of comparison that will allow them to distinguish archaeological burials vs. modern forensic cases. **ADD:** FSC360H5, Evidence, Law and Forensic Science in Canada **RATIONALE:** a forensic law component is being included in the program to meet forensic science standards. **DELETE:** BIO361H5 **RATIONALE:** Only 0.5 is required for program discipline standards. **(MOVE TO 3rd & 4th Year #2):** ANT439Y5; FSC481Y52. **CHANGE #2. Third & Fourth Years TO:** 2. ANT415H5, 439Y5; FSC401H5, 481Y; HSC403H5, 405H5; **RATIONALE:** Re-org of 3rd & 4th Year courses and adding HSC403H5, 405H5 -discipline appropriate courses and deleting BIO338H5 to make room for added FSC-ANT related courses. Recommended Courses: PSY100Y5; SOC100H5; CHM140Y5/(CHM110H5, 120H5) (--with co-requisite of MAT134Y5/135Y5/137Y5)

**Before:** Limited Enrolment: Admission into the Forensic Science-Anthropology program is by special application ONLY. To be considered for admission into the program, ALL students, including students admitted into the 1st year Forensic Science category, MUST submit a direct online FSC Application, upon completing the **1st year** minimum requirements. Meeting the minimum requirements does not guarantee admission into the program. Minimum Requirements:

- Completion of 4.0 credits; including 3.0 science credits.

- Completion of ANT101H5 and ANT102H5 with a grade of at least **65%** in each (students applying to enrol after second year must have completed 8.0 credits and achieved at least **65%** in each of **ANT200Y5/204Y5** and **203Y5**).
  - **Completion of CHM140Y5 with a grade of 65% or better.**
  - **Completion of MAT134Y5/135Y5/137Y**
  - A minimum Cumulative Grade Point Average of at **least 3.0**. The actual CGPA **requirement in any particular** year **may exceed this value, in order to achieve a proper balance between enrolments and teaching resources.**
- Application for admission into the program for ALL students can be found at: [www.utm.utoronto.ca/forensic](http://www.utm.utoronto.ca/forensic)  
 Forensic Science Applications Open: March 1 of each year Forensic Science Application Deadline: May 1 of each year **NOTE: RE - Transfer Students who have attended another post-secondary institution, or another faculty within the University of Toronto (including St. George and UTSC), who wish to gain admission into the program MUST also apply through the Ontario Universities Application Centre: [www.ouac.on.ca](http://www.ouac.on.ca) (OUAC 105 application form), in addition to applying directly to the Forensic Science program.** Within an Honours degree, at least **16.5** credits are required. NOTES:

- The program requirements in effect at the time the student is admitted to the program must be met in order to fulfill the degree requirements.
- Prospective students already holding a degree in **Biology, Chemistry, Psychology or Anthropology** may not complete **a Forensic Science program in their first specialty** due to the overlap of course content for courses already **completed**.
- Students without pre- and co-requisites or written permission of the instructor can be de-registered from courses at any time. Once a student has been admitted into a FSC program stream, written authorization from the Forensic Science program advisor **MUST** be obtained for any request of change in a student's area of study within the Forensic Science program.

First Year ANT101H5, 102H5; **CHM140Y5**; BIO152H5, 153H5; **FSC239Y5**, **MAT134Y5/135Y5/137Y5**

Second Year **ANT200Y5/204Y5**, 203Y5, 205H5; **BIO204H5/210Y5**; **FSC271H5/PHL271H5**; **PHY135Y5**

Third **and Fourth Years**

- ANT306H5, 334H5, 336H5/FSC310H5, ANT340H5, **ANT439Y5**; FSC300H5, 302H5, **481Y5**; **BIO360H5, 361H5**

- **1.0 credits from the following: ANT414H5, 415H5; BIO338H5; FSC401H5, 402H5, 489H5**

Recommended ANT338H5, 358H5, 438H5; WRI203H5, 307H5; **HSC403H5**

**After:**

Limited Enrolment: Admission into the Forensic Science-Anthropology program is by special application ONLY. To be considered for admission into the program, ALL students, including students admitted into the 1st year Forensic Science category, **MUST** submit a direct online FSC Application, upon completing the minimum requirements. Meeting the minimum requirements does not guarantee admission into the program. Minimum Requirements:

- Completion of 4.0 credits; including 3.0 science credits.
  - Completion of ANT101H5 and ANT102H5 with a grade of at least **75%** in each (students applying to enrol after second year must have completed 8.0 credits and achieved at least **75%** in each of **ANT200Y5** and **205H** ).
  - A minimum Cumulative Grade Point Average of at **least 3.0**. The actual **mimimum** CGPA **varies from** year to **year but is never below 3.0** **class='underline'>**
- Application for admission into the program for ALL students can be found at: [www.utm.utoronto.ca/forensic](http://www.utm.utoronto.ca/forensic)

Forensic Science Applications Open: March 1 of each year Forensic Science Application Deadline: May 1 of each **year** Within an Honours degree, at least **16** credits are required. NOTES:

- The program requirements in effect at the time the student is admitted to the program must be met in order to fulfill the degree requirements.

- Prospective students already holding a degree in Anthropology may not complete **the Forensic Anthropology Specialist Program** due to the overlap of course content for courses already **completed in their first specialty**.

- Students without pre- and co-requisites or written permission of the instructor can be de-registered from courses at any time. Once a student has been admitted into a FSC program stream, written authorization from the Forensic Science program advisor MUST be obtained for any request of change in a student's area of study within the Forensic Science program.

First Year ANT101H5, 102H5; BIO152H5, 153H5; **FSC239Y5**

Second Year **ANT200Y5**, 203Y5, 205H5; **210Y5; FSC271H5**

Third **Year** ANT306H5, **312H5, 317H5**, 334H5, 336H5/FSC310H5, ANT340H5, FSC300H5, 302H5, **360H5, BIO360H5**

**Fourth Year ANT415H5, 439Y5; FSC401H5, 481Y5; HSC403H5, 405H5**

Recommended ANT338H5, 358H5, 438H5; WRI203H5, 307H5; **BIO361H5**

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### Program #36 ERSPE1376 Chemistry (Science)

**Rationale for change:** Program altered to reflect new courses and course designations.

**Before:** Limited Enrolment: Enrolment in this Program is restricted. Selection will be based on completion of 4.0 credits including **CHM140Y5** (minimum grade of 65%); MAT134Y5/135Y5/137Y5 (minimum grade of 65%); and a minimum CGPA of 2.5. Notes:

- Students who are in ETP@UTM may substitute (CHM485H5 + SCI499H5) in place of CHM489Y5Y.

- Additional 300 level CHM/JCP courses available include CHM333H5, 347H5, 362H5; JCP322H5

- Additional 400 level CHM/JCP courses include **CHM414H5**, 416H5, 442H5, 444H5, 462H5,

**463H5**, 485H5 and JCP410H5, **422H5** plus the selection of CHM400 level courses at St. George.

- Students are strongly advised to consult the Program Advisor regarding the program of study.

- MAT134Y5/135Y5/137Y5 prerequisite is required for most 200 level CHM courses.

Year 1 **CHM140Y5; MAT134Y5/135Y5/137Y5; PHY135Y5**

Year 3 CHM311H5, 331H5, **341H5/345H5**, 361H5, 391H5, 393H5; JCP321H5

Year 4 CHM489Y5; **1.5** 400 level CHM/JCP courses, 1.0 300/400 level CHM/JCP or other science course(s).

**After:** Limited Enrolment: Enrolment in this Program is restricted. Selection will be based on completion of 4.0 credits including **CHM140Y5/(110H5,120H5)** (minimum grade of 65%);

MAT134Y5/135Y5/137Y5 (minimum grade of 65%); and a minimum CGPA of 2.5. Notes:

- Students who are in ETP@UTM may substitute (CHM485H5 + SCI499H5) in place of CHM489Y5Y.

- Additional 300 level CHM/JCP courses available include CHM333H5, 347H5, 362H5; JCP322H5

- Additional 400 level CHM/JCP courses include **CHM412H5, 414H5**, 416H5, 442H5, 444H5, 462H5, 485H5 and JCP410H5, **421H5, 422H5, 463H5** plus the selection of CHM400 level courses at St. George.

- Students are strongly advised to consult the Program Advisor regarding the program of study.

- MAT134Y5/135Y5/137Y5 prerequisite is required for most 200 level CHM courses.

Year 1 **CHM140Y5/(110H5,120H5); MAT134Y5/135Y5/137Y5;**

**PHY135Y5/(136H5,137H5)**

Year 3 CHM311H5, 331H5, **341H5, 345H5**, 361H5, 391H5, 393H5; JCP321H5

Year 4 CHM489Y5; **1.0** 400 level CHM/JCP courses, 1.0 300/400 level CHM/JCP or other science course(s).

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## Program #37 ERSPE1410 Forensic Biology (Science)

**Rationale for change:** **First Year:**1. BIO152H5, 153H5; CHM140Y5; FSC239Y5; MAT134Y5/135Y5/137Y5; PHY135Y5 ADD: PHY135Y5 Introduction to Physics: was moved from 2nd year, students should take it in 1st year to avoid timetabling conflicts with CHM242H5 & 243H5. **DELETE:**2. (ANT101H5,102H5)/PSY100Y5 **RATIONALE:** to make room for more appropriate discipline specific courses with the program; these are not required to meet FSC accreditation standards in Forensic Biology. **Second Year:**1. BIO204H5, 206H5, 207H5, 210Y5 / , 215H5; CHM242H5, 243H5; FSC271H5/PHL271H5; PHY135Y5 **DELETE:** / ADD: , between BIO210Y and 215H5 **RATIONALE:** both are appropriate discipline specific courses for forensic biology; molecular & genetics lab component required for forensic science accreditation standards; better enhances the student s learning experience in the discipline. **DELETE:** PHL271H5 **RATIONALE FOR DELETING PHL271H5:** PHL271H5 -Ethics and the Law: this course does not meet the accreditation standard requirement of an ethics & professionalism course in forensic science, a requirement in all streams of Forensic Science; this course is too general and does not cover the discipline; FSC271H5 better enhances the student s learning experience in the discipline. **DELETE:** PHY135Y5 **RATIONALE:** MOVED from 2nd year to 1st year requirements. **Third and Fourth Years:**1. BIO 338H5, 360H5, 361H5; FSC300H5, 302H5, 310H5/BIO 314H5; FSC360H5 401H5, 402H5, 481Y5 **DELETE:** BIO 338H5 **RATIONALE:** although an appropriate and discipline specific course in forensic biology, it was removed as a required course and moved/added as a recommended course to make room for the molecular and genetics lab required for forensic science accreditation; students can still take it as part of their 1.5 additional BIO credits **ADD:** /BIO314H5 Laboratory in Cell & Molecular Biology **RATIONALE:** optional course to FSC310H5 -DNA Evidence in Forensic Science; appropriate discipline specific course for forensic biology; lab component meets accreditation standards. **ADD:** FSC360H5 -Evidence, Law and Forensic Science in Canada **RATIONALE:** a forensic law component is required in the program to meet forensic science accreditation standards; providing students in Forensic Biology with a more enhanced learning experience with in this discipline. 2. 1.5 additional BIO credits at the 300/400 level.  
(Recommended Courses: BIO338H5)

**Before:** Limited Enrolment: Admission into the Forensic **Science-Biology** program is by special application ONLY. To be considered for admission into the program, ALL students, including students admitted into the 1st year Forensic Science category, MUST submit a direct online FSC application, upon completing the 1st year minimum requirements. Meeting the minimum requirements does not guarantee admission into the program. Minimum Requirements:

- Completion of 4.0 credits; including 3.0 science credits
- Completion of BIO152H5 and BIO153H5 with 65% or better
- Completion of CHM140Y5 with 65% or better
- Completion of MAT134Y5/135Y5/137Y
- A minimum Cumulative Grade Point Average of at least 3.0. The actual CGPA requirement **in any particular year may exceed this value, in order to achieve a proper balance between enrolments and teaching resources.** Application for admission into the program for ALL students can be found at: [www.utm.utoronto.ca/forensic](http://www.utm.utoronto.ca/forensic) Forensic Science Applications Open: March 1 of each year Forensic Science Application Deadline: May 1 of each year **NOTE: RE - Transfer Students who have attended another post-secondary institution, or another faculty within the University of Toronto (including St. George and UTSC), who wish to gain admission into the program MUST also apply through the Ontario Universities Application Centre: [www.ouac.on.ca](http://www.ouac.on.ca) (OUAC 105 application form), in addition to applying directly to the Forensic Science program.****NOTES:**

- The program requirements in effect at the time the student is admitted to the program must be met in order to fulfill the degree requirements.
- Prospective students already holding a degree in Biology, **Chemistry, Psychology or Anthropology** may not complete **a Forensic Science program in their first specialty** due to the overlap of course content **for courses already completed.**
- Students without pre- and co-requisites or written permission of the instructor can be de-registered from courses at any time. Once a student has been admitted into a FSC **program stream**, written authorization from the Forensic Science program advisor MUST be obtained for any request of change in a

student's area of study within the Forensic Science **program.**

First Year

- BIO152H5, 153H5; **CHM140Y5**; FSC239Y5; **MAT134Y5/135Y5/137Y5**
- **(ANT101H5, 102H5)/PSY100Y5**

Second Year

- BIO204H5, 206H5, 207H5, **210Y5/215H5**; CHM242H5, 243H5; **FSC271H5/PHL271H5**;  
**PHY135Y5**

Third and Fourth Years

- **BIO338H5, 360H5**, 361H5; FSC300H5, 302H5, **310H5**, 401H5, 402H5, 481Y5
- 1.5 additional BIO credits at the 300/400 level.

**After:**

Limited Enrolment: Admission into the Forensic **Biology** program is by special application ONLY. To be considered for admission into the program, ALL students, including students admitted into the 1st year Forensic Science category, MUST submit a direct online FSC application, upon completing the 1st year minimum requirements. Meeting the minimum requirements does not guarantee admission into the program. Minimum Requirements:

- Completion of 4.0 credits; including 3.0 science credits
- Completion of BIO152H5 and BIO153H5 with 65% or better
- Completion of CHM140Y5 with 65% or better
- Completion of MAT134Y5/135Y5/137Y5
- A minimum Cumulative Grade Point Average of at least 3.0. The actual **minimum** CGPA requirement **varies from year to year but is never less than 3.0** Application for admission into the program for ALL students can be found at: [www.utm.utoronto.ca/forensic](http://www.utm.utoronto.ca/forensic) Forensic Science Applications Open: March 1 of each year Forensic Science Application Deadline: May 1 of each **yearNOTES:**

- The program requirements in effect at the time the student is admitted to the program must be met in order to fulfill the degree requirements.

- Prospective students already holding a degree in Biology, may not complete **the Forensic Biology Specialist Program** due to the overlap of course content already **completed in their first specialty.**

- Students without pre- and co-requisites or written permission of the instructor can be de-registered from courses at any time.

- Once a student has been admitted into a FSC **program**, written authorization from the Forensic Science program advisor MUST be obtained for any request of change in a student's area of study within the Forensic Science **program.**

First Year BIO152H5, 153H5; **CHM140Y5/(CHM110H5, 120H5)**; FSC239Y5;  
**MAT134Y5/135Y5/137Y5; PHY135Y5/(PHY136H/137H)**

Second Year BIO204H5, 206H5, 207H5, **210Y5, 215H5**; CHM242H5, 243H5; **FSC271H5**

Third and Fourth Years

- **BIO360H5**, 361H5; FSC300H5, 302H5, **310H5/BIO314H5; FSC360H**, 401H5, 402H5, 481Y5
- 1.5 additional BIO credits at the 300/400 level.

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## Program #38 ERSPE1465 Earth Science (Science)

**Rationale for change:** Enrolment limits are introduced to prevent capricious enrolments in this program. Program course requirements are updated to reflect changes to CHM and PHY first year courses.

**Before:**

Limited Enrolment:

First Year ENV100Y5/(ERS103H5, 120H5); **CHM140Y5**;  
**MAT132Y5/134Y5/135Y5/137Y5/138Y5; PHY135Y5/137Y5**

After:

Limited Enrolment: **Enrolment in this program is restricted to students who have obtained a minimum grade of 60% in ENV100Y5/(ERS103H5, 120H5).**

First Year ENV100Y5/(ERS103H5, 120H5); **CHM140Y5/(110H5,120H5); MAT134Y5/135Y5/137Y5; PHY135Y5/(136H5,137H5)**

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### Program #39 ERSPE1505 Forensic Psychology (Science)

Rationale for change:

Initially, it was thought that all Programs under the Forensic Science umbrella must include the same minimum requirements across the board in order to keep with Accreditation Standards in Forensic Science, namely the chemistry, and math requirements. Previously FSC program min. requirements were changed to reflect uniformity across the board for all the FSC disciplines. This is not the case and accreditation can be granted to EACH individual FSC discipline and not necessarily the entire FSC Programs as a whole. Each (FSC -ANT, -BIO, -CHM, -CSC, & -PSY) has its own mandate and standards within the forensic sub disciplines, particularly, FSC PSY & -ANT programs. To become an expert in the field of FSC-PSY one must complete degrees at the Masters and PhD levels, by deleting the highlighted courses, we can include more discipline specific courses in order to better prepare the students for graduate studies. CHANGE IN PROGRAM REQUIREMENTS (MINIMUM REQUIRED NUMBER OF COMPLETED COURSES & MINIMUM GRADE REQUIREMENT): Changing the required minimum number of completed courses needed to enroll into the Program from 4.0 credits (including 3.0 science credits) to: Completion of 8.0 credits. In addition, we have dropped the minimum requirement of completion of PSY100Y with at least 77% and now require **at least 77% as the average of PSY201H5, 202H5 and at least 1.5 FCE in 200 series PSY courses.** This change better reflects the minimum entry requirements already in place for the PSY Specialist Program and allows for better assessment of their knowledge skills within the discipline. **FIRST YEAR:** 1. PSY100Y5; FSC239Y5; BIO152H5, 153H5 **REMOVE:** CHM140Y5; MAT134Y5/135Y5/137Y5 **RATIONALE:** allow room to include more discipline appropriate courses. (DELETING Titles 2nd, 3rd & Higher Year categories) -will read "Higher Years": **HIGHER YEARS:** 1. (PSY201H5, 202H5)/(BIO360H5, 361H5) 2. FSC271H5; BIO210Y5 **REMOVE:** #2. /PHL271H5 **RATIONALE:** PHL271H5 -Ethics and the Law: course does not meet the mandate/accreditation standard requirement of an ethics & professionalism course in forensic science, a requirement in all Forensic Science disciplines; this course is too general and does not cover the discipline; FSC271H5 better enhances the student's learning experience in the discipline. **REMOVE:** BIO204H5; **RATIONALE:** BIO210Y5 -more discipline appropriate course; provides students with more enhanced learning experience within this discipline; BIO204H5: prerequisites include CHM140Y deleted from the requirements. **REMOVE:** #3. PSY328H5/344H5 **RATIONALE:** MOVING both under the "Higher Years" as required courses -not optional (PSY328H5/344H5); both are discipline appropriate courses and PSY 328H5 meets the required discipline law component; better enhancing the student's learning experience. **REMOVE:** PHY135Y5 **RATIONALE:** to make room for more discipline appropriate courses for this discipline. **REMOVE:** #5. 2.5 credits from the following PSY courses: 0.5 credit must be taken from each of the following groups: **RATIONALE:** redundant -new selection of requirements includes the 0.5 requirement from each group; selection of required courses are now more discipline specific, providing students with a more enhanced learning experience. **Change/Add -continuing under Higher Years:** #3 a. Biological Bases of Behaviour: PSY290H5, 295H5 b. Cognitive/Perception: PSY270H5/280H5/274H5 c. Social/Personality/Abnormal: PSY220H5, 230H5, 240H5 d. Developmental: PSY210H5/213H5 **RATIONALE FOR DELETING: PSY252H5 ( Biological grouping) ADDING PSY274H5(Cognitive):** now better complements and provides students with a more enhanced learning experience within this discipline. **THIRD YEAR: DELETE:** 1. 2.0 credits from the following: PSY320H5, 321H5, 325H5, 327H5, 328H5, 331H5, 343H5, 333H5, 340H5, 341H5, 344H5, 345H5, 346H5, 384H5, 393H5 **RATIONALE:** reorganization of required 3rd year courses automatically includes/meets this requirement. **continues under HIGHER YEARS:** 4. FSC300H5, 302H5, PSY309H5; PSY328H5, 340H5/341H5, 344H5, 346H5 5. One laboratory course from: PSY329H5, 379H5, 399H5 6. 1.0 credits from the following: FSC306H5, 360H5, 361H5, 401H5, 402H5, 489H5; BIO338H5 **RATIONALE:** 3rd year level course requirements now include more discipline specific courses; provides students with a more enhanced learning experience within the discipline. **DELETE: FOURTH YEAR --now continues under Higher Years: DELETE:** 1. PSY400Y/442Y **ADD -continuing under Higher Years:** 7. 0.5 FCE in PSY 400 series courses 8. FSC481Y5 **RATIONALE:** PSY400Y5/ -Thesis, is being removed due to the similarity in requirements with the required FSC481Y -Internship in Forensic Science course; excessive to require the completion two thesis based courses in the final year; now requesting 0.5 FCE in PSY 400 level series courses, complements FSC481Y, provides an appropriate discipline specific course; better enhancing the student's learning experience within the final year of their program.

Before:

Limited Enrolment: Admission into the Forensic **Science-Psychology program** is limited to a relatively small number of students per year and admission is by special application ONLY. To be

considered for admission into the program, ALL students, including students admitted into the 1st year Forensic Science category, MUST submit a direct online FSC application, upon completing the 1st year minimum requirements . Meeting the minimum requirements does not guarantee admission into the program. Minimum Requirements:

- Completion of **4.0 credits, including 3.0 science credits**
- Completion of **CHM140Y5 with 65% or better; MAT134Y5/135Y5/137Y**
- **Completion of PSY100Y5 with a grade of at least 77%**
- A minimum Cumulative Grade Point Average of at least 3.0. The actual CGPA requirement **in any particular year may exceed this value, in order to achieve a proper balance between enrolments and teaching resources.** Application for admission into the program for ALL students can be found at: [www.utm.utoronto.ca/forensic](http://www.utm.utoronto.ca/forensic) Forensic Science Applications Open: March 1 of each year Forensic Science Application Deadline: May 1 of each year **NOTE: RE - Transfer Students who have attended another post-secondary institution, or another faculty within the University of Toronto (including St. George and UTSC), who wish to gain admission into the program MUST also apply through the Ontario Universities Application Centre: [www.ouac.on.ca](http://www.ouac.on.ca) (OUAC 105 application form), in addition to applying directly to the Forensic Science program.** Within an Honours degree, at least **17.0** credits are **required.** **NOTES:**

- The program requirements in effect at the time the student is admitted to the program must be met in order to fulfill the degree requirements.

- Prospective students already holding a degree in **Biology, Chemistry, Psychology or Anthropology** may not complete a Forensic **Science program in their first specialty** due to the overlap of course content for courses already **completed.**

- Students without pre- and co-requisites or written permission of the instructor can be de-registered from courses at any time. Once a student has been admitted into a FSC program stream, written authorization from the Forensic Science program advisor MUST be obtained for any request of change in a student's area of study within the Forensic Science program.

First Year

- **CHM140Y5; FSC239Y5; MAT134Y5/135Y5/137Y5; PSY100Y5, BIO152H5, 153H5**

**Second and Higher Years**

- **(PSY201H5\*, 202H5)/(BIO360H5\*, 361H5)**

**\*No substitute statistics course will be allowed for PSY201H5 or BIO360H5 except under exceptional circumstances.**

- **FSC271H5/PHL271H5; BIO204H5/210Y5**

- **PSY328H5/344H5**

- **PHY135Y**

- **2.5 credits from the following PSY courses: 0.5 credit must be taken from each of the following groups**

- Biological Bases of Behaviour: **PSY252H5, 290H5, 295H5**

- Cognitive/Perception: **PSY270H5, 280H5**

- Social/Personality/Abnormal: **PSY220H5, 230H5, 240H5**

- Developmental: **PSY210H5, 213H5**

**Third Year**

- **PSY309H5**

- One laboratory course from: **PSY329H5, 379H5, 399H5**

**Third and Fourth Year**

- **2.0 credits from the following: PSY320H5, 321H5, 325H5, 327H5, 328H5, 331H5, 343H5, 333H5, 340H5, 341H5, 344H5, 345H5, 346H5, 384H5, 393H5**

- 1.0 credits from the following: **FSC300H5, 302H5, 306H5, 360H5, 361H5, 401H5, 402H5, 489H5**

**Fourth Year**

- **PSY400Y5/442Y5**

- FSC481Y5

**After:**

Limited Enrolment: Admission into the Forensic **Psychology Specialist Program** is limited to a relatively small number of students per year and admission is by special application ONLY. To be considered for admission into the program, ALL students, including students admitted into the 1st year Forensic Science category, MUST submit a direct online FSC application, upon completing the 1st year minimum requirements. Meeting the minimum requirements does not guarantee admission into the program. Minimum Requirements:

- Completion of **any Grd. 12 (4U) Mathematics or equivalent;**

- Completion of **8.0 credits**

- **At least 77% as the average of PSY201H5, 202H5 and at least 1.5 FCE in 200 series PSY courses; and**

- A minimum Cumulative Grade Point Average of at least 3.0. The actual **minimum** CGPA requirement **varies from year to year but is never lower than 3.0** Application for admission into the program for ALL students can be found at: [www.utm.utoronto.ca/forensic](http://www.utm.utoronto.ca/forensic) Forensic Science Applications Open: March 1 of each year Forensic Science Application Deadline: May 1 of each **year** Within an Honours degree, at least **15.5** credits are **required. NOTES:**

- The program requirements in effect at the time the student is admitted to the program must be met in order to fulfill the degree requirements.

- Prospective students already holding a degree in Psychology may not complete a Forensic **Psychology Specialist Program** due to the overlap of course content for courses already **completed in their first specialty.**

- Students without pre- and co-requisites or written permission of the instructor can be de-registered from courses at any time.

- Once a student has been admitted into a FSC program stream, written authorization from the Forensic Science program advisor MUST be obtained for any request of change in a student's area of study within the Forensic Science program.

First Year **PSY100Y5**; FSC239Y5; BIO152H5, 153H5

Higher Years

- **(PSY201H5, 202H5)/(BIO360H5, 361H5)**

- **FSC271H5; BIO210Y5**

- Biological Bases of Behaviour: **PSY290H5, 295H5**

- Cognitive/Perception: **PSY270H5/274H5/280H5**

- Social/Personality/Abnormal: PSY220H5, 230H5, 240H5

- Developmental: **PSY210H5/213H5**

- **FSC300H5, 302H5; PSY309H5, 328H5, 340H5/341H5, 344H5, 346H5**

- One laboratory course from: PSY329H5, 379H5, 399H5

- 1.0 credits from the following: **FSC306H5, 360H5, 361H5, 401H5, 402H5, 489H5;**

- **BIO338H5**

- **0.5 FCE from PSY 400 level series courses**

- FSC481Y5

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## Program #40 ERSPE1540 Statistics, Applied (Science)

**Rationale for change:** Clarified substitutions of ECO courses, for double majors.

**Before:** Notes:

- MAT133Y5 is accepted if the student also completes MAT233H5 (in which case MAT232H5 is not required).
- ECO220Y5 cannot be substituted for STA257H5 and/or STA258H5 and/or STA261H5.
- Students enrolled in this program may participate in the PEY program. For more information visit [www.pey.utoronto.ca](http://www.pey.utoronto.ca)

**After:** Notes:

- MAT133Y5 is accepted if the student also completes MAT233H5 (in which case MAT232H5 is not required).
- ECO220Y5 cannot be substituted for STA257H5 and/or STA258H5 and/or STA261H5. **ECO227H5 can be substituted for STA257H5 and 258H5, but not STA261H5.**
- Students enrolled in this program may participate in the PEY program. For more information visit [www.pey.utoronto.ca](http://www.pey.utoronto.ca)

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## Program #41 ERSPE1688 Computer Science (Science)

**Rationale for change:**

- ◇ MAT137Y5 has been changed to MAT135Y5 or equivalent. The pre-requisites have been changed to match. MAT135Y5 is sufficient enough to fulfill program requirements. MAT137Y5 was changed two years ago to be more suitable for Math Specialists.
- ◇ MAT224H5 has been removed since no courses require it as a prerequisite.
- ◇ In the current St. George curriculum proposal, MAT232H5 has also been removed, but it remains in our proposal. This proposal also retains a "core" of third year courses; the St. George proposal removes the third year core.
- ◇ CSC324H5 (languages) has been replaced by CSC358H5/CSC458H5 (networking). Languages is being replaced by networks to reinforce the importance of networks within the program, and to reflect the more prominent role networking plays in computer science.
- ◇ CSC338H5 and one half credit elective have been removed to bring the program number down to match the St. George program. Note that the IS and CS specialists have the same number of third and fourth year courses.

**Before:**

Limited Enrolment: Enrolment in this program is limited to students who meet the following criteria:

- Prerequisite courses A minimum of 4.0 credits to include CSC148H5(65%); MAT102H5(60%); and one of **(MAT137Y5(60%), MAT232H5(60%))**.
- Cumulative Grade Point Average (CGPA) The minimum CGPA is determined annually. It is never lower than 2.0. 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](http://www.fees.utoronto.ca) for more information on the fee structures. Within an Honours degree, **13.5** credits are required.

First Year CSC108H5, 148H5, 290H5; MAT102H5, **137Y5**

Second Year CSC207H5, 209H5, 236H5, 258H5, 263H5; MAT223H5, **224H5**, 232H5; STA257H5

Third Year **CSC324H5, 338H5, 343H5**, 363H5, 369H5, **373H5**

**Third and Fourth Years Six** half courses from any 300/400 level U of T Mississauga CSC courses (including at least 1.0 credit from 400-level courses, except for CSC492H5 and CSC493H5).

**After:**

Limited Enrolment: Enrolment in this program is limited to students who meet the following criteria:

- Prerequisite courses A minimum of 4.0 credits to include CSC148H5(65%); MAT102H5(60%); and one of **(MAT134Y5 (60%), MAT135Y5 (60%), MAT137Y5)**.
- Cumulative Grade Point Average (CGPA) The minimum CGPA is determined annually. It is never lower

than 2.0. 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](http://www.fees.utoronto.ca) for more information on the fee structures. Within an Honours degree, **12.0** credits are required.

First Year CSC108H5, 148H5, 290H5; MAT102H5, **134Y5/135Y5/137Y5**

Second Year CSC207H5, 209H5, 236H5, 258H5, 263H5; MAT223H5, 232H5; STA257H5

Third **and Fourth** Year **CSC343H5, 358H5/458H5**, 363H5, 369H5, **373H5; Five** half courses from any 300/400 level U of T Mississauga CSC courses (including at least 1.0 credit from 400-level courses, except for CSC492H5 and CSC493H5).

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## Program #42 ERSPE1883 Exceptionality in Human Learning (Science)

**Rationale for change:** - First year: Editorial change - Second year: STA219H5 removed - error correction; course unrelated to PSY201H5 or STA220H5 - Requirement 3c - New BIO course on Molecular Basis of Disease will benefit - students who are interested in understanding the biological basis of some disabilities. - PSY442Y5 - CTEP students will be offered placements throughout their 5 year program and don't require an additional one. PSY442Y5 is a seminar limited to 20 students and may not be able to accommodate a potentially greater number of EHL Specialists due to the large number of PJ CTEP students who are accepted this year. PSY345H5 offers the same basic content in lecture format. - Requirement 4 - CCT326H5 removed (see justification under PSY programs)

**Before:**

First Year PSY100Y5; (ANT101H5, **102H5**)/(**BIO152H5, 153H5**)/**SOC100H5**/ 1.0 credit from BIO204H5, 205H5, 206H5, **207H5**

Second Year

- PSY201H5/ BIO360H5/ ECO220Y5/227Y5/ SOC350H5/ **STA218H5/219H5/220H5/**

- PSY210H5, 213H5

- 0.5 credit from the following: PSY202H5 (or equivalent), 240H5, 270H5, 274H5, 280H5, 290H5, 295H5  
Second and Higher Years

- 3.0 credits from the following: PSY310H5, 311H5, 312H5, 315H5, 316H5, 318H5, 319H5, 321H5, 325H5, 331H5, 333H5, 340H5, 341H5, 343H5, 344H5, 346H5, 353H5, 374H5, 376H5, 384H5, 385H5, 393H5

- PSY442Y5 and at least 0.5 credit from the following: PSY400Y5, 403H5, 404H5, 405H5, 406H5, 410H5, 415H5, 440H5, 474H5, 495H5

- 2.0 credits from one of the following lists:

- ANT203Y5, 204Y5, 205H5, 206Y5, 241Y5, 304H5, 306H5, 322H5, 331H5, 332H5, 333H5, 334H5, 335H5, 339Y5, 362H5, 364H5, 401H5, 433H5, 434H5, 460H5, 461H5

- SOC209H5, 211H5, 216H5, 244H5, 252H5, 263H5, 284H5, 302H5, 307H5, 310H5, 316H5, 319Y5, 323H5, 332H5, 333H5, 348H5, 356H5, 365H5, 368H5, 371H5, 375H5, 455H5, 456H5

- BIO204H5, 205H5, 206H5, 207H5, 210Y5, 215H5, 304H5, 315H5, 341H5, 370Y5, 371H5, 372H5, 380H5, 403H5, 407H5, 443H5, 477H5; ANT203Y5, 331H5, 332H5, 334H5, 339Y5; PSL201Y1

NOTE: Students who took SOC100H5 must take 2.5 credits from List 3(b)

- 2.5 additional credits to be selected from the following (no more than 1.0 credit from any one discipline):

ANT Any course in 3(a) not counted previously

SOC Any course in 3(b) not counted previously

BIO Any course in 3(c) not counted previously

**CCT CCT326H5**

CHM CHM242H5, 243H5, 341H5, 345H5, 347H5, 361H5, 362H5, 371H5

ENG ENG234H5

FGI/FRE FGI225Y5, FRE355H5

HIS HIS308H5, 310H5, 326Y5, 338H5

LIN LIN100Y5, 200H5, 256H5, 358H5

JAL JAL253H5, 355H5

PHL PHL243H5, 244H5, 255H5, 267H5, 271H5, 272H5, 274H5, 277Y5, 282H5, 283H5, 290H5, 350H5, 355H5, 375H5, 380H5

RLG RLG224H5, 309H5, 314H5

SCI SCI395H5, 396H5, 499H5

WGS Any course

**After:**

First Year PSY100Y5; (ANT101H5, **102H5**)/1.0 credit from (**BIO152H5, 153H5**), BIO204H5, 205H5, 206H5, **207H5/ SOC100H5**

Second Year

- PSY201H5/ BIO360H5/ ECO220Y5/227Y5/ SOC350H5/ **STA218H5/220H5/**

- PSY210H5, 213H5

- 0.5 credit from the following: PSY202H5 (or equivalent), 240H5, 270H5, 274H5, 280H5, 290H5, 295H5  
Second and Higher Years

- 3.0 credits from the following: PSY310H5, 311H5, 312H5, 315H5, 316H5, 318H5, 319H5, 321H5, 325H5, 331H5, 333H5, 340H5, 341H5, 343H5, 344H5, 346H5, 353H5, 374H5, 376H5, 384H5, 385H5, 393H5

- PSY442Y5 and at least 0.5 credit from the following: PSY400Y5, 403H5, 404H5, 405H5, 406H5, 410H5, 415H5, 440H5, 474H5, 495H5

**NOTE: Primary Junior CTEP students are exempt from PSY442Y5 and may take PSY345H5 and any 0.5 FCE 400 level course in psychology instead.**

- 2.0 credits from one of the following lists:

- ANT203Y5, 204Y5, 205H5, 206Y5, 241Y5, 304H5, 306H5, 322H5, 331H5, 332H5, 333H5, 334H5, 335H5, 339Y5, 362H5, 364H5, 401H5, 433H5, 434H5, 460H5, 461H5

- SOC209H5, 211H5, 216H5, 244H5, 252H5, 263H5, 284H5, 302H5, 307H5, 310H5, 316H5, 319Y5, 323H5, 332H5, 333H5, 348H5, 356H5, 365H5, 368H5, 371H5, 375H5, 455H5, 456H5

- BIO204H5, 205H5, 206H5, 207H5, 210Y5, 215H5, 304H5, 315H5, 341H5, 370Y5, 371H5, 372H5, 380H5, 403H5, 407H5, 443H5, **476H5**, 477H5; ANT203Y5, 331H5, 332H5, 334H5, 339Y5; PSL201Y1

NOTE: Students who took SOC100H5 must take 2.5 credits from List 3(b)

- 2.5 additional credits to be selected from the following (no more than 1.0 credit from any one discipline):

ANT Any course in 3(a) not counted previously

SOC Any course in 3(b) not counted previously

BIO Any course in 3(c) not counted previously

CHM CHM242H5, 243H5, 341H5, 345H5, 347H5, 361H5, 362H5, 371H5

ENG ENG234H5

FGI/FRE FGI225Y5, FRE355H5

HIS HIS308H5, 310H5, 326Y5, 338H5

LIN LIN100Y5, 200H5, 256H5, 358H5

JAL JAL253H5, 355H5

PHL PHL243H5, 244H5, 255H5, 267H5, 271H5, 272H5, 274H5, 277Y5, 282H5, 283H5, 290H5, 350H5, 355H5, 375H5, 380H5

RLG RLG224H5, 309H5, 314H5

SCI SCI395H5, 396H5, 499H5

WGS Any course

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**Program #43 ERSPE1944 Biomedical Physics Specialist (Science)**

**Rationale for change:** The Biological Physics Specialist program has not been updated since its inception 5 years ago, and suffers from low enrolments. As part of a complete overhaul of UTM Physics offerings, this Specialist program is re-named as Biomedical Physics and revised to incorporate several new Physics courses having increased emphasis on applications of fundamental biophysics to biomedical issues, thereby encouraging linkages with the Mississauga Academy of Medicine. Importantly, in conjunction with a strategy of alternating-year course offerings of several 3<sup>rd</sup> and 4<sup>th</sup> year PHY courses, with our current Physics faculty complement (including a new Medical Biophysics hire being searched this academic year), the entire program can be completed by students in 4 years, something that was not possible prior to this overhaul.

**Before:** Limited Enrolment: Enrolment in **the** program is **restricted to students with 70% in PHY135Y. Within** an Honours Degree, **14.0** credits are **required.**

Year 1 **PHY135Y5; CHM140Y5; MAT135Y5/137Y5**

Year 2 PHY241H5, 242H5, 245H5, **247H5**; JCP221H5/CHM221H5; **MAT223H5, 232H5,** 242H5; BIO206H5

Year 3 **PHY331H5**, 332H5, **341H5**; JCP321H5, **322H5**; **MAT311H5**;  
**MAT332H5/STA257H5**, **PHY324H5/CHM371H5**  
Year 4 **PHY424H5**, **441H5**, **489Y5**; **JCP410H5/422H5**

**After:**

Limited Enrolment: Enrolment in **this** program is **based on completion of 4.0 credits including PHY135Y/(136H5, 137H5) (minimum grade of 65%).** Within an Honours Degree, **13.0** credits are **required.** **PHY333H5 and JCP421H5 alternate with PHY332H5 and PHY451H5 in consecutive years. Check individual course listing for the details in a given calendar year.**

Year 1 **PHY135Y5/(136H5, 137H5)**; **CHM140Y5/(110H5,120H5)**;  
**MAT134Y5/135Y5/137Y5**

Year 2 **PHY241H5**, 242H5, 245H5, **255H5**; JCP221H5/CHM221H5; **MAT232H5**, 242H5;  
BIO206H5

Year 3 **PHY324H5**, **325H5**, 332H5, **333H5**, **347H5**; JCP321H5, **322H5**

Year 4 **PHY433H5**, **451H5**, (**JCP463H5**, **PHY473H5**)/**PHY489Y5**;  
**JCP421H5**

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#### Program #44 ERSPE1995 Biological Chemistry (Science)

**Rationale for change:**

Program has been altered to reflect new and changed courses and course designations

**Before:**

Limited Enrolment: Enrolment in this program is restricted. Selection will be based on completion of 4.0 credits including **CHM140Y5** (minimum grade of 65%); MAT134Y5/135Y5/137Y5 (minimum grade of 65%); and a minimum CGPA of 2.5. Completion of BIO152H5 is recommended. Notes:

- Enrolment in CHM371H5 and certain BCH (St. George) courses is limited.
- Additional 300/400-level CHM/JCP courses include CHM311H5, 331H5, 391H5, 393H5, 414H5, 416H5, 442H5, 444H5, 462H5, **463H5**, 485H5 and JBC472H5 and JCP321H5, 322H5, 410H5, **422H5** at U of T Mississauga plus the 300/400 level CHM/BCH courses at St. George.
- Students are strongly advised to consult the program advisor regarding their course of study.

Year 1 BIO152H5; **CHM140Y5**; MAT134Y5/135Y5/137Y5; **PHY135Y5**

Year 3 CHM333H5, **341H5/345H5**, 347H5, 361H5, 362H5, 371H5; BIO372H5

Year 4 CHM489Y5; **1.0** 400 level CHM, JBC, JCP or BCH **course(s)**

**After:**

Limited Enrolment: Enrolment in this program is restricted. Selection will be based on completion of 4.0 credits including **CHM140Y5/(110H5,120H5)** (minimum grade of 65%); MAT134Y5/135Y5/137Y5 (minimum grade of 65%); and a minimum CGPA of 2.5. Completion of BIO152H5 is recommended. Notes:

- Enrolment in CHM371H5 and certain BCH (St. George) courses is limited.
- Additional 300/400-level CHM/JCP courses include CHM311H5, 331H5, 391H5, 393H5, **412H5**, 414H5, 416H5, 442H5, 444H5, 462H5, 485H5 and JBC472H5 and JCP321H5, 322H5, 410H5, **421H5**, **422H5**, **463H5** at U of T Mississauga plus the 300/400 level CHM/BCH courses at St. George.
- Students are strongly advised to consult the program advisor regarding their course of study.

Year 1 BIO152H5; **CHM140Y5/(110H5,120H5)**; MAT134Y5/135Y5/137Y5;  
**PHY135Y5/(136H5,137H5)**

Year 3 CHM333H5, **341H5**, **345H5**, 347H5, 361H5, 362H5, 371H5; BIO372H5

Year 4 CHM489Y5; **0.5** 400 level CHM, JBC, JCP or BCH **course**

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#### Program #45 ERSPE2070 Geography (Science)

**Rationale for change:** JBG312H5 is changed to GGR312H5.

**Before:**

Third Year 4.0 credits:

3.0 credits from the following:

GGR305H5, 307H5, 309H5, 311H5, 315H5, 316H5, 317H5, 338H5, 377H5, 378H5, **379H5,**  
**JBG312H5**

1.0 credit from the following:

GGR321H5, 337H5, 372H5, 375H5, 380H5

**After:**

Third Year 4.0 credits:

3.0 credits from the following:

GGR305H5, 307H5, 309H5, 311H5, **312H5,** 315H5, 316H5, 317H5, 338H5, 377H5, 378H5, **379H5**

1.0 credit from the following:

GGR321H5, 337H5, 372H5, 375H5, 380H5

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### Program #46 ERSPE2171 Geocomputational Science (Science)

**Rationale for change:** Addition of advanced remote sensing course increases flexibility with which students can complete the major program. Course also completes remote sensing education and training required to work with the technology in practice.

**Before:**

Program Name: Geocomputational **Science**

Fourth Year 2.5 credits from

GGR463H5, 488H5, 417Y5, CSC492H5/493H5/411H5/310H5/321H5/ 0.5 credit from  
CSC369H5/373H5/320H5/309H5/318H5

[Notes 1, 2 and 3]

**After:**

Program Name: Geocomputational **Science (Science)**

Fourth Year 2.5 credits from

GGR463H5, **464H5,** 488H5, 417Y5, CSC492H5/493H5/411H5/310H5/321H5/ 0.5 credit from  
CSC369H5/373H5/320H5/309H5/318H5

[Notes 1, 2 and 3]

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### Program #47 ERSPE2364 Biology (Science)

**Rationale for change:** The Geography Department has proposed to make this solely a GGR course (previously was a joint biology and geography course). The course would be removed from the Biology course listing. Because the content will stay mostly the same, it will remain open to Biology students. As a result, we propose to move it from the Biology course list section of this program to the "Biology-related courses" list. BIO476H5 is a new course the Department is introducing in the Cell, Molecular and Developmental Biology area. It is open to all students with the required background and can be used toward fulfilling the Biology Specialist program requirements. BIO342H5 is a new course the Department is introducing in the Evolutionary Biology area. It is open to all students with the required background and can be used toward fulfilling the Biology Specialist program requirements. The senior research credit limit will ensure that students complete a well-rounded biology program (i.e. lecture-based courses, individual project courses, lab courses, etc.). As space is often limited in these courses, it will also help to give all students interested in research project courses a better chance at securing a project.

**Before:**

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, 312H5, 313H5, 316H5, 329H5, 330H5, 333H5\*, 464H5;

**JBG312H5;** PHY335H5

- Biology of Whole Organisms: 325H5, 335H5, 338H5, 354H5, 356H5

- Genetics and Evolution: BIO341H5, 407H5, 442H5, 443H5\*, 464H5

- Cell, Molecular and Developmental Biology: BIO314H5, 315H5, 370Y5, 371H5, 372H5, 380H5, 407H5, 477H5; CHM361H5, 362H5.

- Physiology and Behaviour: BIO210Y5, 304H5, 310H5, 312H5, 318Y5, 328H5, 409H5, 410H5, 411H5, 434H5; PHY335H5 \*MAT134Y5 - Calculus for Life Sciences is highly recommended. Up to 1.0 credit may

be taken from the following biology-related courses: GGR227H5, 305H5, 307H5, 309H5, **311H5**; CHM347H5, 361H5, 362H5, 371H5; PHY335Y5; PSY290H5, 355H5, 357H5, 395H5, 397H5; ANT334H5, 336H5, 340H5. Additional courses: BIO361H5, 481Y5 \* Offered in alternate years Notes:

- Students wishing to emphasize cell biology, molecular biology, microbiology, physiology or genetics, should take CHM240Y5/(241H5, 261H5)/(242H5, 243H5) in second year. Such students should take MAT132Y5/134Y5/135Y5/137Y5, a prerequisite, in their first year.
- No substitute statistics course will be allowed for BIO360H5.
- Certain U of T Mississauga Biology courses will be treated as equivalent to corresponding St. George campus courses in satisfying requirements for certain St. George specialist programs related to Biology and Basic Medical Sciences. Students who intend to begin these programs at U of T Mississauga should consult a Biology advisor as early as possible.

First Year

- BIO152H5, 153H5; CHM140Y5; **MAT132Y5/134Y5\*/135Y5/137Y5**
- 1.0 from the following: CLA201H5; ENV100Y5; ERS120H5; **PHY135Y5/137Y5**, PSY100Y5; WRI203H5, 307H5

**After:**

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, 312H5, 313H5, 316H5, 329H5, 330H5, 333H5\*, 464H5; PHY335H5
- Biology of Whole Organisms: 325H5, 335H5, 338H5, 354H5, 356H5
- Genetics and Evolution: BIO341H5, **342H5**, 407H5, 442H5, 443H5\*, 464H5
- Cell, Molecular and Developmental Biology: BIO314H5, 315H5, 370Y5, 371H5, 372H5, 380H5, 407H5, **476H5**, 477H5; CHM361H5, 362H5.

- Physiology and Behaviour: BIO210Y5, 304H5, 310H5, 312H5, 318Y5, 328H5, 409H5, 410H5, 411H5, 434H5; PHY335H5 \*MAT134Y5 - Calculus for Life Sciences is highly recommended. Up to 1.0 credit may

be taken from the following biology-related courses: GGR227H5, 305H5, 307H5, 309H5, **311H5**, **312H5**; CHM347H5, 361H5, 362H5, 371H5; PHY335Y5; PSY290H5, 355H5, 357H5, 395H5, 397H5; ANT334H5, 336H5, 340H5. Additional courses: BIO361H5, 481Y5 \* Offered in alternate years Notes:

- Students wishing to emphasize cell biology, molecular biology, microbiology, physiology or genetics, should take CHM240Y5/(241H5, 261H5)/(242H5, 243H5) in second year. Such students should take MAT132Y5/134Y5/135Y5/137Y5, a prerequisite, in their first year.
- No substitute statistics course will be allowed for BIO360H5.

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

- Certain U of T Mississauga Biology courses will be treated as equivalent to corresponding St. George campus courses in satisfying requirements for certain St. George specialist programs related to Biology and Basic Medical Sciences. Students who intend to begin these programs at U of T Mississauga should consult a Biology advisor as early as possible.

First Year

- BIO152H5, 153H5; **(CHM110H5, 120H5)/**CHM140Y5; **MAT134Y5\*/135Y5/137Y5**
- 1.0 from the following: CLA201H5; ENV100Y5; ERS120H5; **(PHY135H5, 137H5)/****PHY135Y5**, PSY100Y5; WRI203H5, 307H5

**Program #48 ERSPE2470 Behaviour, Genetics, and Neurobiology (Science)**

**Rationale for change:**

- MAT132Y5 is no longer offered and thus removed from program - Chemistry is no longer offering CHM140Y5, replacing it with CHM110H5 and CHM120H5. Department decided to accept the same statistics options as the PSY Specialist as they all provide the background necessary to progress to more advanced courses in research methods and independent research.

**Before:**

Limited Enrolment: Enrolment is limited to students who have:

- completed 8.0 credits;
- successfully completed BIO152H5, 153H5, **CHM140Y5** and MAT134Y5/135Y5/137Y5;
- at least 73% as the average of PSY201H5, **202H5**, and at least 1.0 FCE from: BIO205H5/206H5/207H5/ PSY252H5/290H5

- a minimum CGPA of 2.50

First Year PSY100Y5; BIO152H5; BIO153H5; **CHM140Y5;**  
**MAT132Y5/134Y5/135Y5/137Y5**

Second Year

- (PSY201H5, 202H5)/(BIO360H5, **361H5**)

- BIO205H5; BIO206H5; BIO207H5; PSY252H5; PSY290H5 Second year notes:

- BIO204H5 (Introduction to Physiology) is required for several courses in the Neurobiology stream

- BIO215H5 (Laboratory in Molecular Biology and Genetics) is required for several courses in the Genetics stream

- PSY210H5 (Introduction to Developmental Psychology) is required for several courses in the Behavioural stream Students are encouraged to consider taking these courses depending on their planned course of study.

Third Year 1.0 credit from each of the following three streams:

- Behaviour: BIO318Y5/328H5, PSY316H5, 318H5, 346H5, 351H5, 353H5, 354H5, 355H5, 360H5, 362H5, 385H5, 393H5, 395H5, 397H5, 398H5, 399H5

- Genetics: BIO314H5, 315H5, 341H5, 372H5, 407H5, PSY355H5

- Neurobiology: BIO304H5, 309H5, 310H5, 380H5, PSY318H5, 346H5, 385H5, 393H5, 397H5, 399H5 Third year note:

- Students interested in taking PSY400Y5 **must** take **PSY309H5 in third year.**

#### After:

Limited Enrolment: Enrolment is limited to students who have:

- completed 8.0 credits;

- successfully completed BIO152H5, 153H5, **CHM140Y5/(110H5, 120H5)** and MAT134Y5/135Y5/137Y5;

- at least 73% as the average of PSY201H5, **202H5 (or equivalent)**, and at least 1.0 FCE from: BIO205H5/206H5/207H5/ PSY252H5/290H5

- a minimum CGPA of 2.50

First Year PSY100Y5; BIO152H5; BIO153H5; **CHM140Y5/(110H5,120H5);**  
**MAT134Y5/135Y5/137Y5**

Second Year

- (PSY201H5, 202H5)/(BIO360H5, **361H5**)/ (**ECO220Y5/227Y5**)/(**STA220H5, 221H5**)

- BIO205H5; BIO206H5; BIO207H5; PSY252H5; PSY290H5 Second year notes:

- BIO204H5 (Introduction to Physiology) is required for several courses in the Neurobiology stream

- BIO215H5 (Laboratory in Molecular Biology and Genetics) is required for several courses in the Genetics stream

- PSY210H5 (Introduction to Developmental Psychology) is required for several courses in the Behavioural stream Students are encouraged to consider taking these courses depending on their planned course of study.

Third Year 1.0 credit from each of the following three streams:

- Behaviour: BIO318Y5/328H5, PSY316H5, 318H5, 346H5, 351H5, 353H5, 354H5, 355H5, 360H5, 362H5, 385H5, 393H5, 395H5, 397H5, 398H5, 399H5

- Genetics: BIO314H5, 315H5, 341H5, 372H5, 407H5, PSY355H5

- Neurobiology: BIO304H5, 309H5, 310H5, 380H5, PSY318H5, 346H5, 385H5, 393H5, 397H5, 399H5 Third year note:

- Students interested in taking PSY400Y5 **are advised to** take **PSY309H5.**

# New Courses

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## Course #1 ANT307H5 Statistics and Archaeological Analyses (SCI)

<b>Description:</b>	The fragmentary nature of archaeological data sets presents many challenges for investigators. Is there meaningful pattern to be found? How do we transform a description of the data set into an interpretation about the society we are studying? This course provides students with an introduction to general statistical principles used by social scientists and the different methods suitable for archaeological exploration. Students will learn how to apply statistical procedures using Minitab software to case studies. Each class will include a lab component. [24L, 12T]
<b>Exclusion:</b>	BIO360H5, BIO361H5, ECO220Y5, ECO227Y5, PSY201H5, PSY202H5, SOC300Y5, (SOC350H5, SOC351H5), STA218H5, STA220H5, STA221H5, STA257H5, STA258H5, STA261H5
<b>Prerequisite:</b>	ANT200Y5
<b>Rationale:</b>	Currently a course of this nature has not been offered in the Department of Anthropology at St. George or UTM. An understanding of basic statistical analyses will enhance students' understanding of empirical research and how the process of forming interpretations in Anthropology differs from the other sciences.
<b>No. Hours Instruction:</b>	24L, 12T
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

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## Course #2 BIO342H5 Evolutionary Biology (SCI)

<b>Description:</b>	An introduction to the concepts and importance of evolutionary biology. The course will focus on how genetic variation arises and is maintained, mechanisms of evolutionary change and how these mechanisms lead to adaptation, sexual selection, speciation and co-evolution. Throughout the course we will consider how fossils, experiments, genetics and molecular systematics can be used to understand evolution.
<b>Prerequisite:</b>	BIO207H5
<b>Rationale:</b>	Evolution is fundamental to the origin and maintenance of all biological diversity. The principles of evolutionary biology have been implemented in applied biology to maximize agricultural production and design more effective medical practices and drugs. Therefore, a concentrated course in evolutionary biology is essential to all biology and genetics students. Presently, there is no focused mid-level course to build on the concepts introduced in BIO15H52. This course will fill this void and complement the capstone advanced course in evolutionary biology (BIO442H5).
<b>No. Hours Instruction:</b>	36L
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

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## Course #3 BIO476H5 Molecular Basis of Disease (SCI)

<b>Description:</b>	This advanced course explores the primary concepts of pathogenesis and investigates current research in the field of molecular pathology. Specific disease topics include inflammation, injury and repair, neoplasia, immune disorders, infectious disease, cardiovascular disease, and toxicology. Analysis of the primary literature is a key component of this course.
<b>Prerequisite:</b>	BIO310H5, 315H5, 325H5
<b>Recommended Preparation:</b>	BIO341H5, 372H5
<b>Rationale:</b>	Currently, a course that addresses the connections between genetics, cell biology, morphology, physiology, and broad disease does not exist in this department. This course, Molecular Basis of Disease, will fill this void and will be a good compliment to BIO477H5: Molecular Biology of Gene Expression and Cancer, which is offered in the winter term.  This course specifically addresses 6 key learning outcomes for the Biology program, including: (1) Explain the fundamental concepts that characterize biology including how biological units, ranging from molecules to populations, interact with one another and across levels within the biosphere. (2) Work independently and, when directed, in teams to solve simple and increasing complex, multifaceted

problems.

(3) Tolerate ambiguity and adapt to changing situations, make complex decisions, solve problems, and evaluate actions.

(4) Assess, select, critically read, interpret and evaluate scientific literature.

(5) Communicate biological knowledge and concepts in a clear, concise and correct manner both in written and oral forms.

(6) Critically question and solve problems in the spirit of scholarly inquiry and open-mindedness with enthusiasm and determination.

**No. Hours Instruction:** 36 L  
**Offered at St George:** No  
**Revived Course:** No

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#### Course #4 CHM110H5 Chemical Principles 1 (SCI)

**Description:** An introductory chemistry course covering topics of atomic and molecular structure, states of matter and intermolecular forces, and organic chemical reaction and mechanisms. [36L, 18P, 12T]

**Exclusion:** CHM139H1, 151Y1, 140Y5

**Prerequisite:** Grade 12 Chemistry (SCH4U); Grade 12 Advanced Functions (MHF4U0)

**Corequisite:** MAT134Y5/135Y5/137Y5

**Rationale:** Offering first year chemistry in the form of two half courses, as opposed to the current full year course, will decrease the negative consequences of student failure (losing a half credit instead of a full credit), allow students to get back on track more quickly (since the half courses can be offered in the summer), provide greater flexibility in student timetabling, permit the department to better tailor the match between enrolments and TA contracts, and bring our first year chemistry course offerings into alignment with comparable offerings at StG and UTSc, not to mention 90% of post-secondary institutions across the country.

**No. Hours Instruction:** [36L, 18P, 12T]  
**Offered at St George:** No  
**Revived Course:** No

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#### Course #5 CHM120H5 Chemical Principles 2 (SCI)

**Description:** An introductory chemistry course, building on the subject matter of CHM110H5, to include topics of chemical equilibria, thermodynamics, electrochemistry and kinetics. [36L, 18P, 12T]

**Exclusion:** CHM151Y1, 140Y5

**Prerequisite:** CHM110H5

**Corequisite:** MAT134Y5/135Y5/137Y5

**Rationale:** Offering first year chemistry in the form of two half courses, as opposed to the current full year course, will decrease the negative consequences of student failure (losing a half credit instead of a full credit), allow students to get back on track more quickly (since the half courses can be offered in the summer), provide greater flexibility in student timetabling, permit the department to better tailor the match between enrolments and TA contracts, and bring our first year chemistry course offerings into alignment with comparable offerings at StG and UTSc, not to mention 90% of post-secondary institutions across the country.

**No. Hours Instruction:** [36L, 18P, 12T]  
**Offered at St George:** No  
**Revived Course:** No

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#### Course #6 CHM412H5 Analytical Methods of Biomolecule Analysis (SCI)

**Description:** An exploration of biomolecule analysis methodologies, with an emphasis on nucleic acid analysis, will be done from the perspective of the Analytical Biochemist. The course will begin with brief reviews of the structure and function of biomolecules, solid-phase synthesis, extraction, pre-concentration and amplification methods. This will be followed by an exploration of established and emerging techniques for target biomolecule determinations,

including: bioprobes, microarrays, biosensors and DNA sequencing technologies (including next-next-generation single molecule approaches). Current examples of implementation in the fields of proteomics and genomics will be discussed throughout the course, with an emphasis on life sciences and diagnostic testing applications. Course work will include independent literature reviews and student presentations. [24L, 12T]

**Prerequisite:** CHM311H5

**Recommended Preparation:** CHM243H5

**Rationale:** This new course will serve to expand the offerings of the Specialist programs in Biological Chemistry, Biotechnology and Chemistry at UTM by providing an opportunity for students interested in nucleic acid technologies to become familiar with this exciting area of analytical biotechnology. The course will focus on nucleic acids so as to complement the protein biochemistry focus of the current course offerings at UTM, including the Seminars in Biotechnology Course (JBC472H5), Techniques in Biological Chemistry (CHM371H5) laboratory course, Structural Biochemistry (CHM361H5), Metabolism and Bioenergetics (CHM362H5), An Introduction to Medicinal Chemistry and Molecular Recognition (CHM444H5) and Molecular Biology (BIO372H5). In addition, this course will offer an introduction to biosensor technologies, a substantial sub-discipline of Analytical Chemistry, which will serve to provide UTM students with an avenue for significant exposure to the topic that they would otherwise receive only through the Biosensors and Chemical Sensors course (CHM414H1) offered on the St. George campus.

**No. Hours Instruction:** [24L, 12T]

**Offered at St George:** No

**Revived Course:** No

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### Course #7 CSC358H5 Principles of Computer Networks (SCI)

**Description:** Introduction to computer networks and systems programming of networks. Basic understanding of computer networks and network protocols. Network hardware and software, routing, addressing, congestion control, reliable data transfer, and socket programming.

**Prerequisite:** CSC209H5, 258H5, 263H5, 290H5

**Rationale:** Description focuses on networking basics and practical programming applications. CSC458 has been updated to fit with this course. Languages is being replaced by networks to reinforce the importance of networks within the program, and to reflect the more prominent role networking plays in computer science.

**No. Hours Instruction:** [24L, 12T]

**Offered at St George:** Yes

**Revived Course:** No

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### Course #8 GGR312H5 Landscape Ecology of Animal Populations (SCI)

**Description:** A companion course to GGR311H5, further investigating the principles governing the distribution and success of animal populations in landscapes. Topics include microhabitat selection, home range use, scale-dependent foraging theory, dispersal, genetic structure of populations, cyclic populations, metapopulation dynamics, colonization and extinction, and implications for conservation biology. [24L, 18T]

**Exclusion:** JBG312H5

**Prerequisite:** BIO205H5 and P.I.

**Recommended Preparation:** GGR311H5

**Rationale:**

**No. Hours Instruction:** 24L, 18T

**Offered at St George:** No

**Revived Course:** No

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### Course #9 GGR464H5 Advanced Remote Sensing (SCI)

<b>Description:</b>	This course builds on the fundamental remote sensing concepts, techniques, and applications introduced in GGR 337, and aims to provide an advanced study of digital image processing and remote sensing applications. Topics include image pre-processing and calibration, spectral data transformation, image enhancement, pattern recognition, artificial intelligence, hyperspectral image analysis, and change detection. Students will apply these advanced remote sensing techniques in practical lab exercises and a term project. [12L, 24P]
<b>Prerequisite:</b>	GGR337 or PI
<b>Rationale:</b>	This course will increase the course offerings at the 4th year level in our GIS Major program. The course complements GGR337, offering an advanced treatment of the application of remote sensing to problems in physical geography. By taking the introductory and advanced remote sensing courses, students will obtain the theoretical and technical background necessary to apply remote sensing in practice.
<b>No. Hours Instruction:</b>	12L, 24P
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

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### Course #10 HSC200H5 Imaging Technologies for Scientific Visual Communication (SCI)

<b>Description:</b>	Introduction to image and media technologies central to modern digital communication, with emphasis on their use in science communication and education. Topics include the appropriate use of visual media, design strategies, design for legibility and scientific image conventions. Tutorial sessions will introduce vector and bitmap image creation and manipulation tools. [12L, 24T]
<b>Prerequisite:</b>	Completion of 4.0 credits.
<b>Rationale:</b>	Currently there is no course that meets the communication technology needs of science students. This course is designed to provide a basic foundation for the technique and theories in senior level HSC courses. It will be a required course for the program.
<b>No. Hours Instruction:</b>	12L, 24T
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

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### Course #11 HSC406H5 Advanced Written Communication for Health Care (SCI)

<b>Description:</b>	This course builds on skills developed in HSC300H. Topics include: communication of epidemiological data; medical and science journalism; illness narratives; image-text integration, and graphic novels in healthcare. Students learn to think critically about health and science reporting, interpret complex or contentious evidence from the medical literature, and produce in-depth health documents in a range of formats. [12L, 24S]
<b>Prerequisite:</b>	HSC300H5
<b>Rationale:</b>	A follow-up course to HSC300 will round out students' exposure to the varieties of medical/scientific writing, allow them to extend their skills, and expose them to aspects of professional practice in medical writing.
<b>No. Hours Instruction:</b>	12L, 24S
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

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### Course #12 JCP421H5 Quantum Mechanics (SCI)

<b>Description:</b>	The course offers an in-depth examination of the fundamental principles of quantum theory and a guide to its applications. Topics may vary but will include: time-independent Schrodinger equation, quantum dynamics in Heisenberg and Schrodinger pictures, time-independent perturbation theory, WKB approximation, variational method, spin, addition of angular momentum, time-dependent perturbation theory, scattering. [36L]
<b>Exclusion:</b>	PHY456H1
<b>Prerequisite:</b>	JCP321H5, PHY325H5
<b>Rationale:</b>	Students with a Major or Specialist degree in Physics from UTM are currently not exposed to Quantum Mechanics theory beyond an introductory, chemistry-based 300 level course (JCP321H5). This puts them at a significant disadvantage when they go to graduate school. The new course will correct this situation by building upon the

basic concepts learned in JCP321 and will take advantage of more advanced mathematical knowledge that students usually accumulate by their 4th year of studies.

**No. Hours Instruction:** [36L]  
**Offered at St George:** No  
**Revived Course:** No

Offered in alternating years, alternating with PHY451H5. Offered in 2011-12.

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### Course #13 PHY136H5 Introductory Physics I (SCI)

**Description:** An introductory course focusing on conceptual understanding and problem solving skills of subjects such as: Vector Kinematics; Forces and Newton's Laws of Motion; Dynamics of Uniform Circular Motion; Work and Energy; Impulse and Momentum; Rotational Kinematics; Rotational Dynamics; Simple Harmonic Motion and Elasticity; Waves and Sound; Interference Phenomena. [36L, 15P, 12T]

**Prerequisite:** Grade 12 Physics (SPH4U)/P.I.; Grade 12 Advanced Functions (MHF4U)

**Corequisite:** MAT134Y5/135Y5/137Y5

**Recommended Preparation:** Grade 12 Calculus & Vectors (MCV4U) highly recommended

**Rationale:** New course PHY136H5: PHY135Y5 split into two courses: PHY136H5 and PHY137H5  
(1) To add more flexibility for the students to take PHY137H5 (formerly, the second part of PHY135Y5) whenever they find it appropriate and not necessarily to be in the same academic year and directly after taking PHY136H5.  
(2) To permit the students who already finished PHY136H5 and feel that they will not be able to take PHY137H5 (i.e. unable to complete the, formerly, second part of PHY135Y5) to get credit for completing the, now, independent PHY136H5.

**No. Hours Instruction:** [36L, 15P, 12T]  
**Offered at St George:** No  
**Revived Course:** No

Students without Grade 12 Physics (SPH4U) require P.I.

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### Course #14 PHY137H5 Introductory Physics II (SCI)

**Description:** An introductory course focusing on conceptual understanding and problem solving skills of subjects such as: Electric Forces and Fields; Gauss' Law; Electric Potential Energy and the Electric Potential; Electric Circuits; Kirchhoff's Rules; RC circuits; Magnetic Forces and Magnetic Fields; Ampère's Law; Electromagnetic Induction; Faraday's Law; Lenz's Law; The Special Theory of Relativity. [36L, 15P, 12T]

**Prerequisite:** PHY136H5

**Rationale:** New course PHY135Y5 into two courses: PHY136H5 and PHY137H5  
(1) To add more flexibility for the students to take PHY137H5 (formerly, the second part of PHY135Y) whenever they find it appropriate and not necessarily to be in the same academic year and directly after taking PHY136H5.  
(2) To permit the students who already finished PHY136H5 and feel that they will not be able to take PHY137H5 (i.e. unable to complete the, formerly, second part of PHY135Y5) to get credit for completing the, now, independent PHY136H5.

**No. Hours Instruction:** [36L, 15P, 12T]  
**Offered at St George:** No  
**Revived Course:** No

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### Course #15 PHY255H5 Introduction to Biomedical Physics (SCI)

**Description:** The course focuses on applying principles from introductory Physics to biomedical phenomena. The goal is to illustrate the application of physical principles in life sciences and how this enhances one's understanding of biology. Topics may vary but they will include: the elasticity of muscles, the flow of blood, the electrical signal propagation in nerve cells, the optical properties of the eye, and the sound generation in vocal cords. In addition,

the physical basis of medical techniques such as ultrasound imaging, endoscopy, electrocardiography, magnetic resonance imaging, laser surgery, and radiation therapy will be treated quantitatively. [24L, 12T]

**Prerequisite:** PHY135Y5/(136H5, 137H5)

**Rationale:** This is a completely new course that is meant to introduce students early on to biomedical applications of introductory Physics. The course will serve as an early entry point for students enrolled in the Biomedical Physics Specialist Program and will also be accessible to a broad, non-specialist audience.

**No. Hours Instruction:** [24L, 12T]

**Offered at St George:** No

**Revived Course:** No

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### Course #16 PHY325H5 Mathematical Physics (SCI)

**Description:** The theory and applications of mathematical methods for the physical sciences. The topics include: vector calculus, linear algebra applied to coordinate transformations, probability distributions, systems of linear ordinary differential equations and boundary value problems, Fourier analysis and orthogonal functions, Laplace's, Bessel's and the Heat equations in various coordinate systems, and use of Legendre polynomials and Spherical Bessel functions. Computational methods and standard software tools will be used to solve the complex physics problems. [24L, 12T]

**Prerequisite:** PHY241H5, 242H5, 245H5, JCP221H5

**Rationale:** The course is introduced to prepare students for PHY347H5; 421H5, 422H5 and JCP321H5; 322H5 courses as well as fill the gap in the program for computational physics methods.

**No. Hours Instruction:** [24L, 12T]

**Offered at St George:** No

**Revived Course:** No

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### Course #17 PHY333H5 Physics of the Cell (SCI)

**Description:** A biophysical description of the structural properties and biological processes of the cell. The course will focus on: membrane biophysics, osmosis and transport through membranes, cell division, differentiation and growth, cell motility and muscular movement, cellular communication, cellular signal transduction and control, nerve impulses, action potential, synaptic signal transmission, free energy transduction in biological systems and bioenergetics of the cell, photosynthesis and respiration, photobiophysics, photoreception, and bioluminescence. [24L, 12T]

**Exclusion:** PHY441H5

**Prerequisite:** PHY242H5, 255H5, JCP221H5/CHM221H5

**Rationale:** The new course replaces PHY441H5 and some topics from PHY331H5. The change is introduced due to shift of emphasis from biological to medical physics in the renamed Biomedical Physics program, which will allow to condense the two biophysics courses and introduce two new biomedical physics courses PHY255H5 and PHY433H5.

**No. Hours Instruction:** [24L, 12T]

**Offered at St George:** No

**Revived Course:** No

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Offered in alternating years, alternating with PHY332H5. Offered in 2011-12.

---

### Course #18 PHY347H5 Optics (SCI)

**Description:** A comprehensive introduction to the physics of light. Topics may vary but will include: geometrical optics, aberration theory, optical instruments, electromagnetic waves and light propagation, the diffraction and the interference of light, the basis of coherence theory, Fourier optics, polarization and birefringence. Applications include the optics of the eye, lasers, fiber optics, optical displays and nonlinear optical devices. [24L, 16P, 8T]

**Exclusion:** PHY247H5

**Prerequisite:** PHY241H5, 245H5

**Rationale:** The new course replaces PHY247H5 by offering similar topics in introductory optics, but with an enhanced more rigorous mathematical treatment. Offering it in the 3rd year also takes advantage of the fact that students are now better introduced to other Physics concepts in the 2nd year, including waves and electromagnetism.

**No. Hours Instruction:** [24L, 16P, 8T]

**Offered at St George:** No

**Revived Course:** No

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### Course #19 PHY433H5 Medical Physics (SCI)

**Description:** An introduction to key physical principles applied to medical diagnostics, imaging and radiation therapy. Topics include: electrophysiology, electrocardiogram and encephalogram; biomagnetism, magnetocardiogram and magnetoencephalogram; atomic and nuclear physics, ionizing radiation, radioactivity, nuclear medicine; theory of image formation and analysis, X- and gamma-ray imaging, positron emission tomography; lasers, optical light-matter interactions, optical imaging and therapy; physics of ultrasound, Doppler scanning and imaging with ultrasound; principles of nuclear magnetic resonance, contrast in magnetic resonance imaging. [24L, 12T]

**Prerequisite:** PHY332H5, 333H5, JCP321H5, 322H5

**Rationale:** The course is introduced to provide students enrolled in the modified Biomedical Physics Program with an introduction to key physical principles applied to medical diagnostics, imaging and radiation therapy.

**No. Hours Instruction:** [24L, 12T]

**Offered at St George:** No

**Revived Course:** No

---

### Course #20 PHY451H5 Classical Electrodynamics (SCI)

**Description:** An overview of electromagnetism leading to the study of radiation. A review of electrostatics, magnetostatics, and Maxwell's equations is followed by a discussion of propagating, non-propagating and guided waves; interactions with dielectric boundaries; multipole radiation fields, and simple models of optical dispersion. [24L, 12T]

**Exclusion:** PHY341H5

**Prerequisite:** PHY241, 245H5, 325H5

**Rationale:** Replaces PHY341H5. Advanced course content requires Physics and Mathematics preparation at 3rd year level.

**No. Hours Instruction:** [24L, 12T]

**Offered at St George:** No

**Revived Course:** No

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Offered in alternating years, alternating with JCP421H5. Not offered in 2011-12.

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# Courses - Resource Implications

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## Course #1 ANT101H5 Introduction to Biological Anthropology and Archaeology

**Resource implications:** Teaching Assistant support for tutorials and marking.

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## Course #2 ANT203Y5 Biological Anthropology

**Resource implications:** TA support for marking and tutorials.

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## Course #3 ANT205H5 Introduction to Forensic Anthropology

**Resource implications:** Resource implications remain unchanged from previous years. Teaching Assistant support in the form of 140 hours to conduct tutorials.

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## Course #4 ANT307H5 Statistics and Archaeological Analyses

**Resource implications:** Teaching Assistant support for tutorials.

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## Course #5 ANT320H5 Archaeological Approaches to Technology

**Resource implications:** Resources remain unchanged from previous years. No Ta support allotted.

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## Course #6 ANT415H5 Faunal Archaeo-Osteology

**Resource implications:** Resources remain unchanged from previous years.

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## Course #7 AST252H5 Cosmic Evolution

**Resource implications:** None

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## Course #8 BIO201H5 The Biology Behind the News

**Resource implications:** None.

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## Course #9 BIO204H5 Introduction to Physiology

**Resource implications:** None.

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## Course #10 BIO206H5 Introductory Cell and Molecular Biology

**Resource implications:** None.

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## Course #11 BIO207H5 Introductory Genetics

**Resource implications:** None.

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## Course #12 BIO211H5 Dinosaurs and the History of Life

**Resource implications:** None.

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## Course #13 BIO215H5 Laboratory in Molecular Biology and Genetics

**Resource implications:** An appropriate-sized lecture room will be required for a 2-hr block per week (from the previous 1-hr per week slot).

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### **Course #14 BIO304H5 Integrative Animal Physiology I**

**Resource implications:** Bio310 current enrolment is ~300, while Bio304 is ~150; both have a waitlist of ~50 students. I expect that making Bio304 the prerequisite for Bio310 will lead to increased enrolment pressure on Bio304 and the class size will need to grow. An additional TA and a larger classroom will be required.

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### **Course #15 BIO310H5 Integrative Animal Physiology II**

**Resource implications:** Bio310 current enrolment is ~300, while Bio304 is ~150; both have a waitlist of ~50 students. I expect that making Bio304 the prerequisite for Bio310 will lead to increased enrolment pressure on Bio304 and the class size will need to grow. An additional TA and a larger classroom will be required.

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### **Course #16 BIO311H5 Landscape Ecology**

**Resource implications:** None.

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### **Course #17 BIO312H5 Plant Physiology**

**Resource implications:** None.

---

### **Course #18 BIO314H5 Laboratory in Cell and Molecular Biology**

**Resource implications:** An appropriate-sized lecture room will be required for a 2-hr block per week (from the previous 1-hr per week slot).

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### **Course #19 BIO315H5 Human Cell Biology**

**Resource implications:** TA allotment will reduce from 5 TAs to 2.5.

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### **Course #20 BIO333H5 Freshwater Ecology**

**Resource implications:** None.

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### **Course #21 BIO338H5 Forensic Entomology**

**Resource implications:** None.

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### **Course #22 BIO342H5 Evolutionary Biology**

**Resource implications:** - TA allotment - 0.7 hrs per student - lecture hall to accommodate approx. 120 students

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### **Course #23 BIO361H5 Biometrics II**

**Resource implications:** None.

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### **Course #24 BIO380H5 Human Development**

**Resource implications:** TA allotment will reduce from 6 TAs to 2.5.

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### **Course #25 BIO400Y5 Biology Internship**

**Resource implications:** None.

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### **Course #26 BIO406H5 Current Topics in Ecology and Evolution**

**Resource implications:** None.

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### **Course #27 BIO410H5 Insect Physiology**

Resource implications: None.

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### **Course #28 BIO416H5 Field Course in Ecology**

Resource implications: None.

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### **Course #29 BIO434H5 Sensory Biology**

Resource implications: None.

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### **Course #30 BIO476H5 Molecular Basis of Disease**

Resource implications: This course will be taught by one instructor and require a room to accommodate approx. 24 students.

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### **Course #31 CCT307H5 Conversational Structures**

Resource implications: None.

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### **Course #32 CCT377H5 Applied Perception: Image and Sound Processing**

Resource implications: None.

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### **Course #33 CHM110H5 Chemical Principles 1**

**Resource implications:** It will be necessary to offer extra tutorials, facilitated study groups, help sessions, etc., in order to accelerate the transition of first year chemistry students from high school to university level expectations. Furthermore, in the spirit of test early test often, more TA marking and invigilation hours will be budgeted for. These funds will be obtained from savings realized as a result of the decrease in the number of laboratory sections needed in the Winter term due to attrition in the Fall term.

---

### **Course #34 CHM120H5 Chemical Principles 2**

**Resource implications:** It will be necessary to offer extra tutorials, facilitated study groups, help sessions, etc., in order to accelerate the transition of first year chemistry students from high school to university level expectations. Furthermore, in the spirit of test early test often, more TA marking and invigilation hours will be budgeted for. These funds will be obtained from savings realized as a result of the decrease in the number of laboratory sections needed in the Winter term due to attrition in the Fall term.

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### **Course #35 CHM211H5 Fundamentals of Analytical Chemistry**

Resource implications: None

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### **Course #36 CHM231H5 Inorganic Chemistry I**

Resource implications: None

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### **Course #37 CHM242H5 Introductory Organic Chemistry I**

Resource implications: None

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### **Course #38 CHM412H5 Analytical Methods of Biomolecule Analysis**

**Resource implications:** This course can be accommodated by our existing cohort of analytical chemistry faculty. Provision of classroom space and associated timetabling of the course are the only requirements.

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### **Course #39 ENV400Y5 Environmental Internship**

Resource implications: None.

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### **Course #40 FSC300H5 Forensic Identification**

**Resource implications:** N. /A. - This course currently has an assignment of 40 TA hours --we DO NOT anticipate a need for additional TA hours for this course.

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### **Course #41 FSC302H5 Advanced Forensic Identification**

**Resource implications:** With doubling the practical hours in FSC302H and incorporating the "FSC Crime Scene House" (the old Artist's Cottage) into this course, a teaching assistant will now be required to assist with this course. We anticipate a 70 hour TAship requirement to assist with some in-lab demonstrative; open lab sessions; set-up and take-down in practical labs and staging of the "crime scene house".

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### **Course #42 FSC481Y5 Internship in Forensic Science**

**Resource implications:** N/A --update in description.

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### **Course #43 GGR312H5 Landscape Ecology of Animal Populations**

**Resource implications:** None.

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### **Course #44 GGR337H5 Environmental Remote Sensing**

**Resource implications:** All elements of the course will be met with existing resources.

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### **Course #45 GGR464H5 Advanced Remote Sensing**

**Resource implications:** All elements of the course will be met with existing resources.

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### **Course #46 HSC200H5 Imaging Technologies for Scientific Visual Communication**

**Resource implications:** A classroom and computer lab of appropriate size will be required (max. enrollment to be set at 48). Also, a 50-hr TA position will be required to support the course instructor.

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### **Course #47 HSC300H5 Written Communication for Health Care**

**Resource implications:** None.

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### **Course #48 HSC401H5 Web-Based Health and Science Communication Design**

**Resource implications:** None.

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### **Course #49 HSC403H5 Visualization of Forensic Demonstrative Evidence**

**Resource implications:** None.

---

### **Course #50 HSC406H5 Advanced Written Communication for Health Care**

**Resource implications:** A classroom for approx. 30 students will be required to run the course.

---

### **Course #51 JCP421H5 Quantum Mechanics**

**Resource implications:** None

---

### **Course #52 PHY136H5 Introductory Physics I**

**Resource implications:** Dividing PHY135Y5 into two half-courses, PHY136H5 and 137H5, requires a considerable input of funds for 1) updating current laboratory demonstration setups / equipment, and 2) purchasing multiple copies of such setups. Funds sufficient to cover these costs will be obtained from the laboratory fees now charged to students for all laboratory courses.

---

### **Course #53 PHY137H5 Introductory Physics II**

**Resource implications:** Dividing PHY135Y5 into two half-courses, PHY136H5 and 137H5, requires a considerable input of funds for 1) updating current laboratory demonstration setups / equipment, and 2) purchasing multiple copies of such setups. Funds sufficient to cover these costs will be obtained from the laboratory fees now charged to students for all laboratory courses.

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**Course #54 PHY237H5 The Physics of the Climate System**

**Resource implications:** None

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**Course #55 PHY241H5 Electromagnetism**

**Resource implications:** None

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**Course #56 PHY242H5 Thermal Physics and Fluid Mechanics**

**Resource implications:** None

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**Course #57 PHY245H5 Vibrations and Waves**

**Resource implications:** None

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**Course #58 PHY255H5 Introduction to Biomedical Physics**

**Resource implications:** None

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**Course #59 PHY325H5 Mathematical Physics**

**Resource implications:** none

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**Course #60 PHY332H5 Molecular Biophysics**

**Resource implications:** None

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**Course #61 PHY333H5 Physics of the Cell**

**Resource implications:** None

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**Course #62 PHY347H5 Optics**

**Resource implications:** None

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**Course #63 PHY433H5 Medical Physics**

**Resource implications:** None

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**Course #64 PHY451H5 Classical Electrodynamics**

**Resource implications:** None

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# Deleted Courses

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## Course #1 ANT430Y5 Special Problems in Biological Anthropology and Archaeology

**Rationale:** This course was reweighted from a full year (Y) to half-year (H) in the 2010 curriculum cycle. However, the Y course was never deleted from the online calendar system and appears in this year's calendar. This was an oversight and needs to be removed from the 2011 calendar. The course structure remains unchanged.

---

## Course #2 ANT433H5 Genes, Language, Artifact and Mind

**Rationale:** The course instructor is no longer with UTM and currently there is no staff to teach this course. However, some course content is covered in ANT336H5.

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## Course #3 CHM140Y5 The Study of Matter and Its Transformations

**Rationale:** CHM140Y5 will be replaced by two half courses - CHM110H5 and CHM120H5.

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## Course #4 CSC340H5 Requirements Engineering

**Rationale:** Has not been offered for at least two years, and do not anticipate offering.

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## Course #5 CSC354H5 Discrete-Event Simulation and Modeling

**Rationale:** Has not been offered for at least two years, and do not anticipate offering.

---

## Course #6 CSC407H5 Software Architecture and Design

**Rationale:** Has not been offered for at least two years, and do not anticipate offering.

---

## Course #7 CSC438H5 Computability and Logic

**Rationale:** Has not been offered for at least two years, and do not anticipate offering.

---

## Course #8 HSC400H5 Advanced Visual Media for Scientific Communication Project

**Rationale:** Student interest for this course is low and enrollment has been consistently small over multiple years. Removing this course from the curriculum will make room for courses that better suit the needs and interest of the program and students.

---

## Course #9 JBG312H5 Landscape Ecology of Animal Populations

**Rationale:** Geography is proposing to take over this completely, renaming it GGR312H5. The course will then be taught and administered solely within the geography department but will still remain open to biology students as a bio-related course in the Bio Specialist and Ecology & Evolution Specialist programs.

---

## Course #10 PHY135Y5 Introductory Physics

**Rationale:** PHY135Y5 is being replaced by two half credit courses PHY136H5 and PHY137H5 in 2011-12.

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## Course #11 PHY247H5 Optics

**Rationale:** The course will be replaced by a 3rd year course (PHY347H5) in 2011-2012, to ensure a better math and physics preparation of the students.

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## Course #12 PHY331H5 Foundations of Biophysics

**Rationale:** Replaced by PHY333H5

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**Course #13 PHY341H5 Electromagnetic Radiation and Matter**

**Rationale:** This course will be replaced by PHY451H5 in 2011-2012.

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**Course #14 PHY424H5 Biophysical Techniques**

**Rationale:** Lack of resources. The course will be consolidated with JCP463H5 in a future year.

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**Course #15 PHY441H5 Physics of the Cell**

**Rationale:** Replaced by PHY333H5.

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**Course #16 STA248H5 Statistics with Applied Probability**

**Rationale:** Was replaced by STA258H5 in 2005-06.

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# Renumbered Courses

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## Course #1 BIO416H5 Field Course in Ecology

**Before:** ***BIO316H5***

**After:** ***BIO416H5***

**Rationale:** Ecology & Evolutionary Behaviour at the St. George campus has re-numbered their 2-week field courses to be 400-level courses. Re-numbering of our corresponding field course is to remain consistent with our curriculum across the campuses.

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# Courses - Description Changes

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## Course #1 AST425H5 Research Topic in Astronomy

**Before:** *Consists of a research report by the student, in consultation with an individual staff member in the department. Students must enrol with the faculty advisor of the department on the U of T Mississauga campus.*

**After:** *Current AST425H5 Requested Revision: Drop AST425H5 Rationales: for description change; for reweighted course and for change in course name: In the Specialist Program ERSPE1025 Astronomical Sciences: 4th Year: 1. Current - AST420H1, AST425H5. Requested revision AST425Y1(G). AST420H1 is no longer taught on the St. George Campus. INstead, they have folded that material into an enlarged AST425 and changed it from H to Y. This is to make the UTM course the same as the St. George course, including the material that had been covered in AST420H1. The corequisite AST420H1(G) no longer exists, and we do not have the capacity to teach the expanded AST425Y at UTM. The specialist program now requires the corresponding St. George course, AST425Y1(G).*

**Rationale:** In the Specialist Program ERSPE1025 Astronomical Sciences: 4th Year: 1. Current - AST420H1, AST425H5. Requested revision AST425Y1(G). AST420H1 is no longer taught on the St. George Campus. INstead, they have folded that material into an enlarged AST425 and changed it from H to Y. This is to make the UTM course the same as the St. George course, including the material that had been covered in AST420H1. The corequisite AST420H1(G) no longer exists, and we do not have the capacity to teach the expanded AST425Y at UTM. The specialist program now requires the corresponding St. George course, AST425Y1(G).

---

## Course #2 BIO201H5 The Biology Behind the News

**Before:** News stories are used to explore areas of biology, to learn about the process of science, and to find and assess the validity of information. The topics for the course modules will change yearly because the course is designed to give students the tools to explore the biology behind the news, not to teach a comprehensive survey of biological facts. Reading, writing, and research skills are emphasized. This is a biology course for students in the Humanities and Social Sciences as well as other non-Biology Sciences. *This course is not open to Biology students. See course web page for details.[36L]*

**After:** News stories are used to explore areas of biology, to learn about the process of science, and to find and assess the validity of information. The topics for the course modules will change yearly because the course is designed to give students the tools to explore the biology behind the news, not to teach a comprehensive survey of biological facts. Reading, writing, and research skills are emphasized. This is a biology course for students in the Humanities and Social Sciences as well as other non-Biology Sciences. *[36L]*

**Rationale:** This course is designed for students with no previous biology/ life science background. Students that have completed any university level biology will be at an unfair advantage in this course. As a result, we feel that any student that has completed our 100-level biology course(s) (or equivalent) should be excluded from this course.

---

## Course #3 BIO211H5 Dinosaurs and the History of Life

**Before:** This course provides a survey of major events in the evolution of life, and includes overviews of science as a process, plate tectonics, climate, and evolution. Special focus will be on major events including origin of life and Cambrian explosion, plant and animal radiations onto land, Mesozoic evolution of dinosaurs, Cenozoic diversification of mammals, and human-induced climate change. Course consists of two lectures and one online tutorial per week. This is a biology course for students in the Humanities and Social Sciences as well as other non-Biology Sciences. *This course is not open to Biology students.* [24L, 12T]

**After:** This course provides a survey of major events in the evolution of life, and includes overviews of science as a process, plate tectonics, climate, and evolution. Special focus will be on major events including origin of life and Cambrian explosion, plant and animal radiations onto land, Mesozoic evolution of dinosaurs, Cenozoic diversification of mammals, and

human-induced climate change. Course consists of two lectures and one online tutorial per week. This is a biology course for students in the Humanities and Social Sciences as well as other non-Biology Sciences. [24L, 12T]

**Rationale:** This course is designed for students with no previous biology/ life science background. Students that have completed any university level biology will be at an unfair advantage in this course. As a result, we feel that any student that has completed our 100-level biology course(s) (or equivalent) should be excluded from this course.

---

#### Course #4 BIO215H5 Laboratory in Molecular Biology and Genetics

**Before:** Students perform some modern molecular biology techniques including: DNA restriction analysis, transformation, plasmid isolation and characterization, PCR and DNA finger-printing. Additional labs in classical genetics include: Mendelian genetics, monohybrid and dihybrid crosses in *Drosophila melanogaster*, sex linkage, chromosome mapping and tetrad analysis. A **1-hour** lecture each week provides an introduction and theoretical basis for each lab. [12L, 36P]

**After:** Students perform some modern molecular biology techniques including: DNA restriction analysis, transformation, plasmid isolation and characterization, PCR and DNA finger-printing. Additional labs in classical genetics include: Mendelian genetics, monohybrid and dihybrid crosses in *Drosophila melanogaster*, sex linkage, chromosome mapping and tetrad analysis. A **2-hour** lecture each week provides an introduction and theoretical basis for each lab. [24L, 36P]

**Rationale:** A 2-hr per week lecture will allow for a more in-depth discussion in preparation for the upcoming labs. The 2nd hour of lecture will also be used to administer term tests so that lecture time is not lost.

---

#### Course #5 BIO304H5 Integrative Animal Physiology I

**Before:** ***The biology of nervous systems, including the electrophysiological properties of neurons and muscles, the role of the cell membrane in bioelectricity, and the organization of neural circuits into higher-order processing systems (i.e., the central nervous system).*** [24L, 12T]

**After:** ***Principles of cell physiology, and the physiology of neurons, the sensory nervous system, and muscle.*** [36L]

**Rationale:** Traditionally, and at other institutions, third year physiology is taught as a full year course. The sequence of topics is a progression from basic cell physiology and common principles followed by in depth examination of the nervous system, muscular, endocrine cardiovascular, respiratory, renal and digestive systems. This is the desired sequence of topics because it starts with a foundation of basic principles and progresses through the more complicated and integrated systems. Over the past few years the third year physiology courses were taught as two distinct courses and in the wrong sequence. Although there was consultation and discussion between the responsible instructors there was necessarily some redundancy between the courses and lack of synergy in the flow of topics. The proposed sequencing of topics and courses alleviates these problems. Making Bio304 the prerequisite for Bio310 will ensure all students have the correct background preparation.

---

#### Course #6 BIO304H5 Integrative Animal Physiology I

**Before:**

**After:** ***NOTE: BIO210H5 (half-course) is not an acceptable pre-requisite for this course.***

**Rationale:** Traditionally, and at other institutions, third year physiology is taught as a full year course. The sequence of topics is a progression from basic cell physiology and common principles followed by in depth examination of the nervous system, muscular, endocrine cardiovascular, respiratory, renal and digestive systems. This is the desired sequence of topics because it starts with a foundation of basic principles and progresses through the more complicated and integrated systems. Over the past few years the third year physiology courses were taught as two distinct courses and in the wrong sequence. Although there was consultation and discussion between the responsible instructors there was necessarily some redundancy between the courses and lack of synergy in the flow of topics. The proposed sequencing of topics and courses alleviates these problems. Making Bio304 the prerequisite for Bio310 will ensure all students have the correct background preparation.

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#### Course #7 BIO311H5 Landscape Ecology

**Before:**

**After:**

***Students interested in this course will need to meet with the course instructor before being approved and permitted to enroll.***

Rationale:

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### Course #8 BIO312H5 Plant Physiology

**Before:** ***The principal physiological processes, and the influence of environmental factors on them, are studied in plants. Topics include photosynthesis, water relations, mineral nutrition, translocation, respiration, general metabolism, and growth. Implications for agriculture, ecology and biotechnology are identified. [36L]***

**After:** ***This course will focus on the principal physiological processes in plants and their response to environmental factors and global change. By addressing factors involved in global change, including rising atmospheric CO<sub>2</sub>, alterations of the global nitrogen cycle and global climate warming, and examining their effects on photosynthesis and plant metabolism, the course will provide the basis to understand the implications of global change factors to plants, ecosystems and their impact on carbon sources and sinks in the modern biosphere.***

**Rationale:** The new description reflects updates and changes to the course that the new instructor has made and will be implementing when the course is back on our 2011-2012 timetable.

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### Course #9 BIO315H5 Human Cell Biology

**Before:** This course uses the information learned in prerequisite courses to cover advanced details in specific areas. The course will also introduce students to many exciting new topics in the structure and function of normal and diseased cells. Areas of focus include cell adhesion, intercellular communication, signal transduction, the cytoskeleton, chemotaxis, motor proteins, receptor mediated endocytosis and intracellular trafficking with an eye towards understanding their underlying roles in the disease process. ***In the tutorials,*** students will learn about the underlying approaches, methods and experimentation used by biomedical researchers including polyacrylamide gel electrophoresis, western blotting, ***immunolocalization*** and various means of localizing proteins within cells. ***[24L, 12T]***

**After:** This course uses the information learned in prerequisite courses to cover advanced details in specific areas. The course will also introduce students to many exciting new topics in the structure and function of normal and diseased cells. Areas of focus include cell adhesion, intercellular communication, signal transduction, the cytoskeleton, chemotaxis, motor proteins, receptor mediated endocytosis and intracellular trafficking with an eye towards understanding their underlying roles in the disease process. ***Throughout the course,*** students will learn about the underlying approaches, methods and experimentation used by biomedical researchers including polyacrylamide gel electrophoresis, western blotting, ***immunolocalization, pharmacological intervention*** and various means of localizing proteins within cells. ***[36L]***

**Rationale:** Providing a third hour of lecture will allow for more professor-student contact. Adding BIO215H5 as an extra pre-requisite for the course will ensure (along with the third hour of lecture) that students have the practical background that was previously reinforced in the tutorials.

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### Course #10 BIO333H5 Freshwater Ecology

**Before:** A functional analysis of freshwater ecosystems, with emphasis on lakes. Lectures cover water chemistry; the physical structure of lakes; the different ways that algae, zooplankton, benthic invertebrates, and fish have evolved to succeed in these habitats and interact with one another; and the impact of man on freshwater systems. ***[24L, 18P, 5T]***

**After:** A functional analysis of freshwater ecosystems, with emphasis on lakes. Lectures cover water chemistry; the physical structure of lakes; the different ways that algae, zooplankton, benthic invertebrates, and fish have evolved to succeed in these habitats and interact with one another; and the impact of man on freshwater systems. ***Students must be available to participate in a mandatory weekend field trip to a lake on one of two weekends in late September or early October. Students not***

**available for one of those weekends should not register for this course.**

[24L, 18P, 5T]

**Rationale:** Field trip requirement is stated in the course description so that students are aware at time of enrolment and can plan their schedule accordingly.

---

### Course #11 BIO380H5 Human Development

**Before:** Reproduction and embryonic development in humans are emphasized. After a general review of human reproduction, the formation of sperm and eggs is analyzed, followed by an in-depth analysis of fertilization in vivo and in vitro. Early embryonic developmental processes are studied with a view to how the embryo becomes organized so that all of the tissues and organs of the adult body form in the right places at the proper times. The course ends with an in-depth analysis of limb development and organ regeneration. The relevance of the material to such topics as human infertility, contraception, cloning, biotechnology and disease is continually addressed. **[24L, 12T]**

**After:** Reproduction and embryonic development in humans are emphasized. After a general review of human reproduction, the formation of sperm and eggs is analyzed, followed by an in-depth analysis of fertilization in vivo and in vitro. Early embryonic developmental processes are studied with a view to how the embryo becomes organized so that all of the tissues and organs of the adult body form in the right places at the proper times. The course ends with an in-depth analysis of limb development and organ regeneration. The relevance of the material to such topics as human infertility, contraception, cloning, biotechnology and disease is continually addressed. **[36L]**

**Rationale:** Third hour of lecture will allow for more professor-student interaction. Material previously reviewed in tutorial will be covered now within the three lecture hours.

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### Course #12 BIO400Y5 Biology Internship

**Before:** Through a part-time, unpaid, 200-hour work placement, fourth year students apply biology content and skills. Placements are made throughout the GTA in both the private (e.g. pharmaceutical or biotech companies) or public (e.g. Peel Region Medical Office, hospitals, Great Lakes Laboratory) sector. Monthly class meetings plus year-end report and presentation are required. Students in a biology specialist program are given priority. **Apply to the Course Coordinator, A. Cordon (Room 3057, South Bldg.), [anne.cordon@utoronto.ca](mailto:anne.cordon@utoronto.ca).**

**After:** Through a part-time, unpaid, 200-hour work placement, fourth year students apply biology content and skills. Placements are made throughout the GTA in both the private (e.g. pharmaceutical or biotech companies) or public (e.g. Peel Region Medical Office, hospitals, Great Lakes Laboratory) sector. Monthly class meetings plus year-end report and presentation are required. Students in a biology specialist program are given priority. **Updated application information will be on-line at [www.utm.utoronto.ca/intern](http://www.utm.utoronto.ca/intern) by February 1st of each year. Please see the Internship Office (SE 3004) for more information.**

**Rationale:** Changes reflect new applications procedures and change in course coordinator.

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### Course #13 BIO416H5 Field Course in Ecology

**Before:** Students may choose from a variety of field courses offered through a cooperative arrangement among ecologists at ten Ontario universities. Most courses involve a two-week period at a field site in early May or late August, and require a major paper or project report be submitted within six weeks of course completion. A fee for room and board is usually charged over and above tuition. Lists of courses available are posted **outside Room A3032, South Bldg. in January of each year.** Please check this list early for balloting dates. **Students must see the U of T Mississauga Field Course Coordinator before registering in the course.**

**After:** Students may choose from a variety of field courses offered through a cooperative arrangement among ecologists at ten Ontario universities. Most courses involve a two-week period at a field site in early May or late August, and require a major paper or project report be submitted within six weeks of course completion. A fee for room and board is usually charged over and above tuition. Lists of courses available are posted **at [www.eeb.utoronto.ca](http://www.eeb.utoronto.ca).** Please check this list early for balloting dates.

**Rationale:** Changes reflect the new procedures in the application process.

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## Course #14 CHM333H5 Bioinorganic Chemistry

- Before:** Principles of inorganic chemical reactions and their application to biochemical systems: kinetics, mechanisms and thermodynamics of ligand exchange, acid-base and redox reactions involving metalloproteins and their model compounds; mechanisms of catalysis by metalloenzymes and their model compounds; **therapeutic uses of coordination complexes.** [36L]
- After:** Principles of inorganic chemical reactions and their application to biochemical systems: kinetics, mechanisms and thermodynamics of ligand exchange, acid-base and redox reactions involving metalloproteins and their model compounds; mechanisms of catalysis by metalloenzymes and their model compounds; **metal ion related diseases; metals in chemotherapy.** [36L]
- Rationale:** The amended description better describes the actual course content which includes this emerging area of study.
- 

## Course #15 CHM341H5 Organic Chemistry: Mechanism and Structure

- Before:** **Offered in alternate years. Offered in 2010-2011.**
- After:**
- Rationale:** CHM341H5 and CHM345H5 are needed background for CHM442H5 and will be offered every year and will be added as prerequisites for CHM442H5.
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## Course #16 CHM345H5 Organic Synthesis

- Before:** **Offered in alternate years. Not offered in 2010-2011.**
- After:**
- Rationale:** CHM342H5 and CHM345H5 are needed background for CHM442H5 and will be offered every year and will be added as prerequisites for CHM442H5.
- 

## Course #17 CHM442H5 Developments in Organic Chemistry

- Before:**
- After:** **Offered in alternate years with CHM444H5. Offered in 2011-2012.**
- Rationale:** No staffing available to teach both CHM442H5 and CHM444H5 each year. There is no necessity to offer them every year because they are neither prerequisites for other CHM courses nor are they required for a Chemistry Specialist, but are options.
- 

## Course #18 CHM444H5 An Introduction to Medicinal Chemistry and Molecular Recognition

- Before:**
- After:** **Offered in alternate years with CHM442H5. Not offered in 2011-2012.**
- Rationale:** No staffing available to teach both CHM442H5 and CHM444H5 each year. There is no necessity to offer them every year because they are neither prerequisites for other CHM courses nor are they required for a Chemistry Specialist, but are options.
- 

## Course #19 CHM462H5 Advances in Chemical Biology

- Before:** **Not offered** in 2010-11.
- After:** **Offered** in 2011-12.
- Rationale:** Offered in 2011-12
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## Course #20 CSC258H5 Computer Organization

- Before:** Introduction to computer organization and architecture. The view ranges from low-level bits, with Boolean expressions and the associated gates, to higher-level processor and memory structures. The design and analysis of combinational circuits

- and sequential circuits. The control unit and the datapath. Students will design and implement circuits. [24L, **12T, 6P**]
- After:** Introduction to computer organization and architecture. The view ranges from low-level bits, with Boolean expressions and the associated gates, to higher-level processor and memory structures. The design and analysis of combinational circuits and sequential circuits. The control unit and the datapath. Students will design and implement circuits. [24L, **24P**]
- Rationale:** Replace the 12T, 6P component with 24P. This is consistent with how the course has been taught of the past three years.
- 

### Course #21 CSC458H5 Computer Networks

- Before:** Computer network architectures, protocol layers, network **programming**. Transmission media, encoding systems, switching, multiple access arbitration. Network routing, congestion control, flow control. Transport protocols, real-time, multicast, **network security**. [24L, 12T]
- After:** Computer **networks with an emphasis on systems programming of real networks and applications. Computer programming, and performance analysis**. Transmission media, encoding systems, switching, multiple access arbitration. Network routing, congestion control, flow control. Transport protocols, real-time, multicast, **social networks**. [24L, 12T]
- Rationale:** Changes to description, prerequisites and recommended preparation based on addition of CSC358H5.
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### Course #22 ENV232H5 Environmental Sustainability Practicum

- Before:** This course, offered in collaboration with campus administrative offices of the University of Toronto Mississauga, provides Environment Students with practical collaborative work **experience, in** preparation for upper-year field courses and internships. Students will work with the campus **Sustainability** Coordinator and participating faculty to develop skills in communication, interdisciplinary teamwork, problem identification, and reporting while working on an environmental project on campus or in the local community. This course is strongly recommended for Specialist and Major students in any of the Environment Programs. **[24P, 24S]**
- After:** This course, offered in collaboration with campus administrative offices of the University of Toronto Mississauga, provides Environment Students with practical collaborative work **experience. In** preparation for upper-year field courses and internships. Students will work with the campus **Environmental Project** Coordinator and participating faculty to develop skills in communication, interdisciplinary teamwork, problem identification, and reporting while working on an environmental project on campus or in the local community. This course is strongly recommended for Specialist and Major students in any of the Environment Programs. **[24S, 12P]**
- Rationale:** Change the title of the coordinator.
- 

### Course #23 ENV400Y5 Environmental Internship

- Before:** Through a part-time, unpaid work placement, students apply the environmental expertise gained through previous course work. Placements are made at local conservation authorities, municipal planning departments, environmental consulting companies, corporations, federal agencies, and other organizations. You must see the **course coordinator, Dr. Murck (barbara.murck@utoronto.ca)** before June 1 to apply for the course. **A written report and presentation are required. These, along with the employer's assessment, provide the main part of the course mark.** Specialists in an Environment Program will be given priority for admission. It is difficult to place students with CGPA of less than 2.5. If you are in this position and this is a required course for your program, please see a Program Advisor or the **Undergraduate Assistant** for an alternative course placement.
- After:** Through a part-time, unpaid work placement, students apply the environmental expertise gained through previous course work. Placements are made at local conservation authorities, municipal planning departments, environmental consulting companies, corporations, federal agencies, and other organizations. You must see the **Internship Support Officer, Jennifer Storer-Folt (jennifer.storerfolt@utoronto.ca)** before June 1 to apply for the course. Specialists in an Environment Program will be given priority for admission. It is difficult to place students with CGPA of less than 2.5. If you are in this position and this is a required course for your program, please see a Program

Advisor or the **Academic Counsellor** for an alternative course placement.

**Rationale:** The course content covers both Social Science and Science, depending on the nature of the individual placement. The course description was too long, it has been shortened slightly.

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### Course #24 FSC300H5 Forensic Identification

**Before:** Focusing on the scene of the crime and evidence found there, this course is an introduction to the field of forensic identification. Topics include: crime scene protocols, management and reconstruction; image collection, storage and enhancement; recognition collection; and chain of custody and preservation of evidence. [24L, **12T**]

**After:** Focusing on the scene of the crime and evidence found there, this course is an introduction to the field of forensic identification. Topics include: crime scene protocols, management and reconstruction; image collection, storage and enhancement; recognition collection; and chain of custody and preservation of evidence. [24L, **24P**]

**Rationale:** We are revising/changing 12T to 24P as there has always been a lab component in this course which has been listed incorrectly. We are also increasing the hours from 12 to 24 (practical) hours as we are now incorporating the "FSC Crime Scene House" (the old Artist's Cottage) into this course --and all our Forensic Identification courses. Therefore, these courses will now encompass a wider range of Forensic Identification techniques/crime scene management skills. The added practical hours will provide the instructor with additional time for in-lab/"crime scene" demonstrative and also provide students with more hands-on lab/"crime scene" time which will enhance the student's learning experience in this course.

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### Course #25 FSC302H5 Advanced Forensic Identification

**Before:** Continuing from FSC300H5 which critically examines identification processes, which are compared and contrasted to systematics; impression evidence and physical match theory and practice; biometrics; presentation of evidence; the expert witness; requirements of society and the court. [24L, **12P**]

**After:** Continuing from FSC300H5 which critically examines identification processes, which are compared and contrasted to systematics; impression evidence and physical match theory and practice; biometrics; presentation of evidence; the expert witness; requirements of society and the court. [24L, **24P**]

**Rationale:** We are increasing the practical hours from 12P to 24P as we are now incorporating the "FSC Crime Scene House" (old Artist's Cottage) into our Forensic Identification courses (FSC300H5 & 302H5). Therefore, FSC302H will now encompass a wider range of forensic identification/crime scene management techniques, requiring additional time for instructor in-lab demonstrative and to also provide students with more hands-on lab/"crime scene" time which in turn will enhance the student's learning experience in this course.

---

### Course #26 FSC481Y5 Internship in Forensic Science

**Before:** **A research paper or term paper is required. Placements are largely dependent upon availability of positions and may involve a research project or part-time work in a forensic unit or related facility. Forensic units include the Centre of Forensic Sciences, the Office of the Chief Coroner of Ontario, and a variety of local, provincial and national police and private agencies. Students will be teamed with an appropriate expert in the field of interest.**

**After:** **As the capstone experience for the Forensic Science Specialist Programs, this course provides students with professional practice and research experience. Students are required to attend classes that address proper research design and methodology, as well as issues of professional practice in the forensic sciences including: ethics; research protocols; written and verbal communication skills; professional communication (interviews, letters, emails, reports, presentations, and publications); and expert witness testimony. Students will also be placed with a participating forensic agency to conduct research and gain an understanding of the unit's daily operations. In addition to practice presentations, critiques, an ethics approval application, a 10-15 page research proposal, and a mock interview, students are required to**

***formally present the results of their research at the annual Forensic Science Day symposium and submit a publication quality manuscript of their work.***

**Rationale:** The existing description does not make it clear that students are required to attend classes to gain the knowledge and skills necessary to conduct research, communicate, and operate effectively as a forensic scientist. Students considering this course must understand the level of commitment and workload they will be taking on by registering in this class. The new course description is updated to provide students with more detailed information about the scope of the course.

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#### **Course #27 GGR337H5 Environmental Remote Sensing**

**Before:** ***Monitoring environmental change; soil-water-plant system. Remotely sensed digital images. Computer-assisted interpretation, preprocessing and pattern recognition. Resource mapping and modelling. [24L, 24P]***

**After:** ***This introductory course emphasizes mastering fundamental remote sensing concepts and utilizing remotely sensed data for monitoring land resources and environmental change. Topics include surface-energy interactions, sensor systems, image interpretation, and applications for examining soil, vegetation and water resources. Upon completion of this course, students should have the necessary knowledge and skills to pursue more advanced work in digital image processing and remote sensing applications. [24L, 12P]***

**Rationale:** The new course description is updated to provide students with more detailed information and to help them understand how this course connects with the advanced course.

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#### **Course #28 HSC403H5 Visualization of Forensic Demonstrative Evidence**

**Before:** This course examines the visual representation of forensic demonstrative evidence in Canadian courtrooms. A case-based approach simulates professional practice. Forensic anthropology, biology and visual communication theory are explored in new media for presentation. Visual problem solving skills are developed through collaboration. In class, presentations and practica are combined with **online** critical analysis of visualizations. [12L, 24P]

**After:** This course examines the visual representation of forensic demonstrative evidence in Canadian courtrooms. A case-based approach simulates professional practice. Forensic anthropology, biology and visual communication theory are explored in new media for presentation. Visual problem solving skills are developed through collaboration. In class, presentations and practica are combined with critical analysis of visualizations. [12L, 24P]

**Rationale:**

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#### **Course #29 JCP463H5 Techniques in Structural Biology**

**Before:** ***Biophysical*** approaches to studies of protein interactions, structures, and dynamics. Theory and practice of specific experimental approaches will provide a fundamental understanding on information potential and technique limitations. Specific applications from the current literature will be discussed. Student evaluations will include oral presentations describing studies using the techniques. [24L, 12T]

**After:** ***Biochemical and biophysical*** approaches to studies of protein interactions, structures, and dynamics. Theory and practice of specific experimental approaches will provide a fundamental understanding on information potential and technique limitations. Specific applications from the current literature will be discussed. Student evaluations will include oral presentations describing studies using the techniques. [24L, 12T]

**Rationale:** The course content is appropriate for Biophysicists and Biochemists, hence the re-designation as JCP\*\*\*. Furthermore JCP463H5 will now be an option in the renamed Biomedical Physics Specialist Program. The title change and description change are required to enable the course to include both biophysical and biochemical experiments in the study of proteins and nucleic acids.

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#### **Course #30 PHY237H5 The Physics of the Climate System**

**Before:** Not offered in **2010-11.**  
**After:** Not offered in **2011-12.**  
**Rationale:** Insufficient faculty complement.

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### Course #31 PHY242H5 Thermal Physics and Fluid Mechanics

**Before:** An introduction to the basic concepts and modern analysis of thermal-fluid sciences. Topics include: **Introduction and Basic Concepts, Energy, Energy Transfer, General Energy Analysis, Energy Analysis of Closed Systems, Mass and Energy Analysis of Control Volumes, Mechanisms of Heat Transfer, Steady Heat Conduction, Transient Heat Conduction, Forced Convection, Natural Convection, Fundamentals of Thermal Radiation, Radiation Heat Transfer, Heat Exchangers, Introduction to Fluid Mechanics, Properties of Fluids, Fluid Statics, Fluid Kinematics, Bernoulli and Energy Equations, Momentum Analysis of Flow Systems, Internal Flow, External Flow: Drag and Lift. Transport Processes and Diffusion.** [24L, 16P, 8T]

**After:** An introduction to the basic concepts and modern analysis of thermal-fluid sciences. Topics include: Mechanisms of Heat **Transfer; Heat Conduction; Forced and Natural Heat Convection; Radiation Heat Transfer; Fluid Statics; Fluid Kinematics; Fluid Dynamics; Bernoulli and Energy Equations; Internal Flow; Transport Processes and Diffusion; and Biomedical Applications of Thermal Physics and Fluid Mechanics.** [24L, 16P, 8T]

**Rationale:** To make the course description more concise, simple and informative.

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### Course #32 PHY332H5 Molecular Biophysics

**Before:** Offered in alternate years, alternating with **PHY331H5. Offered in 2010-2011.**

**After:** Offered in alternate years, alternating with **PHY333H5. Not offered in 2011-2012**

**Rationale:** PHY332H5 will be offered as an alternating course with new course PHY333H5; was alternating with PHY331H5 which will not be offered anymore.

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### Course #33 PSY274H5 Introduction to Psychology of Human Communication

**Before:** A survey of research on human communicative abilities from a **psychological** perspective. Topics include human vs. non-human communication, spoken vs. signed languages, co-speech gesture, and relationships among music, language, and general cognition. [36L]

**After:** A survey of research on human communicative abilities from a **cognitive/perceptual** perspective. Topics include human vs. non-human communication, spoken vs. signed languages, co-speech gesture, and relationships among music, language, and general cognition. [36L]

**Rationale:** This small modification results in a description that more explicitly signals the course's place within the cognitive/perception/communication stream in the psychology curriculum. As a result, this change should help students avoid confusion that the course might address communication from the perspective of social/personality/abnormal psychology (i.e., a distinct "stream" within the psychology curriculum).

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### Course #34 PSY400Y5 Thesis

**Before:** Independent research supervised by individual faculty members. Seminars on general topics relevant to the conduct of independent research, student research proposals, and the presentation of findings. Admission by academic merit. Interested students in their fourth (or final) year **must apply during the prior Winter term and should (a) obtain an application form from Room 2037B; (b) approach potential faculty supervisors and discuss the possibility of research project supervision contingent on acceptance into the course; and (c) submit the**

**completed** application **form** to **the Thesis Coordinator** by the end of the Winter term examination **period. Final** admission decisions **will be made by the Coordinator and applicants notified** after June 15. [72S, 72P]

**After:** Independent research supervised by individual faculty members. Seminars on general topics relevant to the conduct of independent research, student research proposals, and the presentation of findings. Admission by academic merit. Interested students in their fourth (or final) year should obtain and submit **an** application to **Room 2037B** by the end of the Winter term examination **period prior to the Fall they plan to begin this course. Applicants will receive** admission decisions after June 15. [72S, 72P]

**Rationale:** Course outline shortened and includes fewer details about admission process to enable the department to improve the way students and faculty are matched.

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### **Course #35 PSY442Y5 Practicum in Exceptionality in Human Learning**

**Before:** Seminar and practicum on issues relating to the life-long development of individuals with disabilities. Seminar at U of T Mississauga; practicum involves supervised placements in schools or social service agencies. Course is required for students enrolled in the Exceptionality in Human Learning Specialist program and is available to Psychology Specialists, Exceptionality in Human Learning Majors and Psychology Majors and Minors on a competitive basis. Course fulfills the 400 level seminar requirement for the Psychology Specialist Program. Interested students must apply by the end of May by completing application available from the Internship Office, Room 3004 South. [72S, 80P]

**After:** Seminar and practicum on issues relating to the life-long development of individuals with disabilities. Seminar at U of T Mississauga; practicum involves supervised placements in schools or social service agencies. Course is required for students enrolled in the Exceptionality in Human Learning Specialist program **(Primary Junior CTEP students are exempted - please consult program requirements)** and is available to Psychology Specialists, Exceptionality in Human Learning Majors and Psychology Majors and Minors on a competitive basis. Course fulfills the 400 level seminar requirement for the Psychology Specialist Program. Interested students must apply by the end of May by completing application available from the Internship Office, Room 3004 South. [72S, 80P]

**Rationale:** Rational described under program requirement changes. PJ CTEP students do several placements in schools as part of their B.Ed. curriculum and don't require another placement. Opportunity will be provided on a competitive basis to all students enrolled in psychology programs.

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# Changes in Course Name

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## Course #1 BIO304H5 Integrative Animal Physiology I

**Before:** Physiology *of Neural Systems*

**After:** *Integrative Animal* Physiology *I*

**Rationale:** Traditionally, and at other institutions, third year physiology is taught as a full year course. The sequence of topics is a progression from basic cell physiology and common principles followed by in depth examination of the nervous system, muscular, endocrine cardiovascular, respiratory, renal and digestive systems. This is the desired sequence of topics because it starts with a foundation of basic principles and progresses through the more complicated and integrated systems. Over the past few years the third year physiology courses were taught as two distinct courses and in the wrong sequence. Although there was consultation and discussion between the responsible instructors there was necessarily some redundancy between the courses and lack of synergy in the flow of topics. The proposed sequencing of topics and courses alleviates these problems. Making Bio304 the prerequisite for Bio310 will ensure all students have the correct background preparation.

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## Course #2 BIO310H5 Integrative Animal Physiology II

**Before:** Integrative Animal Physiology

**After:** Integrative Animal Physiology *II*

**Rationale:** Traditionally, and at other institutions, third year physiology is taught as a full year course. The sequence of topics is a progression from basic cell physiology and common principles followed by in depth examination of the nervous system, muscular, endocrine cardiovascular, respiratory, renal and digestive systems. This is the desired sequence of topics because it starts with a foundation of basic principles and progresses through the more complicated and integrated systems. Over the past few years the third year physiology courses were taught as two distinct courses and in the wrong sequence. Although there was consultation and discussion between the responsible instructors there was necessarily some redundancy between the courses and lack of synergy in the flow of topics. The proposed sequencing of topics and courses alleviates these problems. Making Bio304 the prerequisite for Bio310 will ensure all students have the correct background preparation.

---

## Course #3 CHM399Y5 Research Opportunity Program

**Before:** Research Opportunity

**After:** Research Opportunity *Program*

**Rationale:** The word Program was missing from the title.

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## Course #4 JCP463H5 Techniques in Structural Biology

**Before:** *Biophysical Methods for Studying Biological Molecules*

**After:** *Techniques in Structural Biology*

**Rationale:** The course content is appropriate for Biophysicists and Biochemists, hence the re-designation as JCP\*\*\*. Furthermore JCP463H5 will now be an option in the renamed Biomedical Physics Specialist Program.  
A request is being made to change the title to "Techniques in Structural Biology" to better reflect the contents of this course.

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## Course #5 PHY399Y5 Research Opportunity Program

**Before:** Research Opportunity

**After:** Research Opportunity *Program*

**Rationale:** The word Program was missing from title.

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# Courses - Other Changes

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## Course #1 ANT101H5 Introduction to Biological Anthropology and Archaeology

**Before:** Prerequisite: **ANT102H5**

**After:** Prerequisite:

**Rationale:** ANT102H5 preparation not required for this course. By removing the prerequisite, this course will appeal to a number of students in other disciplines who are looking to complete the science breadth requirement.

---

## Course #2 ANT203Y5 Biological Anthropology

**Before:** Prerequisite: **ANT(101H5, 102H5)**

**After:** Prerequisite: **ANT101H5/BIO152H5**

**Rationale:** ANT102H5 preparation not required for this course.

BIO152H5 added at the request of course instructor. Every year the instructor receives requests from Biology students to enrol in the course-- the prerequisite was added to accommodate such requests. BIO152H5 has adequate preparation for ANT203Y5.

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## Course #3 ANT205H5 Introduction to Forensic Anthropology

**Before:** Prerequisite: **ANT(101H5, 102H5)**

**After:** Prerequisite: **ANT101H5/BIO152H5**

**Rationale:** ANT102H5 preparation not required for this course.

BIO152H5 added at the request of the course instructor. Every year, the instructor receives requests from Biology students to enrol in this course-- the prerequisite was added to accommodate such requests. BIO152H5 has adequate preparation for ANT205H5.

---

## Course #4 ANT320H5 Archaeological Approaches to Technology

**Before:** Recommended Preparation: **ANT204Y5**

**After:** Recommended Preparation: **(ANT204H5, 207H5)/204Y5**

**Rationale:** Recommended preparation update.

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## Course #5 ANT415H5 Faunal Archaeo-Osteology

**Before:** Recommended Preparation: **ANT312H5/334Y5**

**After:** Recommended Preparation: **ANT312H5/(334H5, 340H5)/334Y5**

**Rationale:** Prerequisite update.

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## Course #6 AST252H5 Cosmic Evolution

**Before:** Prerequisite: **CHM140Y5/PHY135Y5/137Y5**

**After:** Prerequisite: **CHM140Y5/(110H5,120H5)/PHY135Y5/(136H5,137H5)**

**Rationale:** Update the first year Chemistry/Physics prerequisite split to two half courses.

---

## Course #7 BIO201H5 The Biology Behind the News

**Before:** Course Exclusion:

**After:** Course Exclusion: **BIO152H5, BIO153H5**

**Rationale:** This course is designed for students with no previous biology/ life science background. Students that have completed any university level biology will be at an unfair advantage in this course. As a result, we feel that any student that has completed our 100-level biology course(s) (or equivalent) should be excluded from this course.

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### Course #8 BIO204H5 Introduction to Physiology

**Before:** Prerequisite: (CHM140Y5; BIO152H5, 153H5) **or P.I.**

**After:** Prerequisite: (CHM140Y5; BIO152H5, 153H5)

**Rationale:** All students entering this course should have the requisite university-level biology and chemistry background.

---

### Course #9 BIO206H5 Introductory Cell and Molecular Biology

**Before:** Course Exclusion: **BIO250Y1**

**After:** Course Exclusion: **BIO240H1, 241H1, 250Y1**

**Rationale:** New exclusion courses reflect new St. George courses with similar content.

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### Course #10 BIO207H5 Introductory Genetics

**Before:** Course Exclusion: BIO203H5, **260H1**

**After:** Course Exclusion: BIO203H5, **260H1; HMB265H1**

**Rationale:** New exclusion reflects St. George equivalent course with similar content.

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### Course #11 BIO211H5 Dinosaurs and the History of Life

**Before:** Course Exclusion:

**After:** Course Exclusion: **BIO152H5, BIO153H5**

**Rationale:** This course is designed for students with no previous biology/ life science background. Students that have completed any university level biology will be at an unfair advantage in this course. As a result, we feel that any student that has completed our 100-level biology course(s) (or equivalent) should be excluded from this course.

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### Course #12 BIO215H5 Laboratory in Molecular Biology and Genetics

**Before:** Course Exclusion: **BIO250Y1**

**After:** Course Exclusion: **BIO240H1, 241H1, 250Y1**

**Rationale:** New exclusions reflect new St. George courses with similar content.

---

### Course #13 BIO304H5 Integrative Animal Physiology I

**Before:** Prerequisite: **BIO204H5/specific permission of the instructor**

**After:** Prerequisite: **BIO204H5/ BIO210Y5**

**Rationale:** Traditionally, and at other institutions, third year physiology is taught as a full year course. The sequence of topics is a progression from basic cell physiology and common principles followed by in depth examination of the nervous system, muscular, endocrine cardiovascular, respiratory, renal and digestive systems. This is the desired sequence of topics because it starts with a foundation of basic principles and progresses through the more complicated and integrated systems. Over the past few years the third year physiology courses were taught as two distinct courses and in the wrong sequence. Although there was consultation and discussion between the responsible instructors there was necessarily some redundancy between the courses and lack of synergy in the flow of topics. The proposed sequencing of topics and courses alleviates these problems. Making Bio304 the prerequisite for Bio310 will ensure all students have the correct background preparation.

BIO210H5 is not an acceptable pre-requisite as the course did not cover enough background for BIO304H5 when it was a half-course. In the expanded full-year course, there is significantly more of this in the curriculum.

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### Course #14 BIO310H5 Integrative Animal Physiology II

**Before:** Prerequisite: **BIO204H5/210Y5/210H5**

**After:** Prerequisite: **BIO304H5**

**Rationale:** Traditionally, and at other institutions, third year physiology is taught as a full year course. The sequence of topics is a progression from basic cell physiology and common principles followed by in depth examination of the nervous system, muscular, endocrine cardiovascular, respiratory, renal and digestive systems. This is the desired sequence of topics because it starts with a foundation of basic principles and progresses through the more complicated and integrated systems. Over the past few years the third year physiology courses were taught as two distinct courses and in the wrong sequence. Although there was consultation and discussion between the responsible instructors there was necessarily some redundancy between the courses and lack of synergy in the flow of topics. The proposed sequencing of topics and courses alleviates these problems. Making Bio304 the prerequisite for Bio310 will ensure all students have the correct background preparation.

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### Course #15 BIO311H5 Landscape Ecology

**Before:** Prerequisite: BIO205H5

**After:** Prerequisite: BIO205H5 **and P.I.**

**Rationale:** Enrolment for this course is capped at 20 students. Because of this small class size, the instructor would like to meet with students beforehand to ensure students have the appropriate background.

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### Course #16 BIO312H5 Plant Physiology

**Before:** Prerequisite: **BIO204H5. Students without the required prerequisite are invited to obtain permission of the instructor**

**After:** Prerequisite: **BIO204H5**

**Rationale:** The new description reflects updates and changes to the course that the new instructor has made and will be implementing when the course is back on our 2011-2012 timetable.  
All students enrolling in the course should have the requisite background.

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### Course #17 BIO315H5 Human Cell Biology

**Before:** Prerequisite: BIO206H5, **207H5**

**After:** Prerequisite: BIO206H5, **207H5, 215H5**

**Rationale:** Providing a third hour of lecture will allow for more professor-student contact. Adding BIO215H5 as an extra pre-requisite for the course will ensure (along with the third hour of lecture) that students have the practical background that was previously reinforced in the tutorials.

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### Course #18 BIO338H5 Forensic Entomology

**Before:** Prerequisite: (BIO152H5, **153H5**)/P.I.

**After:** Prerequisite: (BIO152H5, **153H5**)

**Rationale:** All students should have the requisite background for this course.

---

### Course #19 BIO361H5 Biometrics II

**Before:** Prerequisite: **BIO360H5/P.I.**

**After:** Prerequisite: **BIO360H5**

**Rationale:** All students should have the requisite background for this course.

---

### Course #20 BIO400Y5 Biology Internship

**Before:** Prerequisite: Fourth year standing in Biology Specialist or Major Program, 3.0 **CGPA**, P.I.  
**After:** Prerequisite: Fourth year standing in Biology Specialist or Major Program, 3.0 **CGPA and** P.I.  
**Rationale:** Changes reflect new applications procedures and change in course coordinator.

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### Course #21 BIO406H5 Current Topics in Ecology and Evolution

**Before:** Prerequisite: (BIO205H5, **360H5**)/P.I.  
**After:** Prerequisite: (BIO205H5, **360H5**)  
**Rationale:** All students should have the requisite background for this course.

---

### Course #22 BIO410H5 Insect Physiology

**Before:** Prerequisite: **BIO204H5/P.I.**  
**After:** Prerequisite: **BIO204H5**  
**Rationale:** All students should have the requisite background for this course.

---

### Course #23 BIO416H5 Field Course in Ecology

**Before:** Prerequisite: **Permission of Coordinator**  
**After:** Prerequisite:  
**Rationale:** Changes reflect the new procedures in the application process.

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### Course #24 BIO434H5 Sensory Biology

**Before:** Prerequisite: **BIO304H5/318Y5/P.I.**  
**After:** Prerequisite: **BIO304H5/318Y5**  
**Rationale:** All students should have the requisite background for this course.

---

### Course #25 CCT307H5 Conversational Structures

**Before:** Prerequisite: **CCT202H5**  
**After:** Prerequisite: **CCTT109H5, 110H500H5/CCT100H5,101H5**  
**Rationale:** CCT202H5 is no longer offered.  
CCT109H5 and CCT110H5 are replacing CCT100H5 and CCT101H5.

---

### Course #26 CCT377H5 Applied Perception: Image and Sound Processing

**Before:** Prerequisite: **CCT100H5, 101H5, 202H5**; PSY100Y5  
**After:** Prerequisite: **CCT109H5, 110H5/CCT100H5, 101H5; CCT202H5**; PSY100Y5  
**Rationale:** CCT109H5 and 110H5 are replacing CCT100H5 and 101H5.

---

### Course #27 CHM211H5 Fundamentals of Analytical Chemistry

**Before:** Prerequisite: MAT134Y5/135Y5/137Y5; A mark of 60% or higher in **CHM140Y5**  
**After:** Prerequisite: MAT134Y5/135Y5/137Y5; A mark of 60% or higher in **CHM140Y5/(110H5,120H5)**  
**Rationale:** Update the first year Chemistry prerequisite split to two half courses.

---

### Course #28 CHM231H5 Inorganic Chemistry I

**Before:** Prerequisite: MAT134Y5/135Y5/137Y5; A mark of 60% or higher in **CHM140Y5**  
**After:** Prerequisite: MAT134Y5/135Y5/137Y5; A mark of 60% or higher in **CHM140Y5/(110H5,120H5)**  
**Rationale:** Update the first year Chemistry prerequisite split to two half courses.

---

### Course #29 CHM242H5 Introductory Organic Chemistry I

**Before:** Prerequisite: A mark of 60% or higher in **CHM140Y5**  
**After:** Prerequisite: A mark of 60% or higher in **CHM140Y5/(110H5,120H5)**  
**Rationale:** Update the first year Chemistry prerequisite split to two half courses.

---

### Course #30 CHM442H5 Developments in Organic Chemistry

**Before:** Prerequisite: **CHM341H5/345H5**  
**After:** Prerequisite: **CHM341H5, 345H5**  
**Rationale:** No staffing available to teach both CHM442H5 and CHM444H5 each year. There is no necessity to offer them every year because they are neither prerequisites for other CHM courses nor are they required for a Chemistry Specialist, but are options.

---

### Course #31 CSC301H5 Introduction to Software Engineering

**Before:** Prerequisite: **CSC207H5, 209H5**, 290H5  
**After:** Prerequisite: **CSC209H5**, 290H5  
**Rationale:** Remove CSC207H5 prerequisite since CSC209H5 is a prerequisite.

---

### Course #32 CSC309H5 Programming on the Web

**Before:** Prerequisite: CSC209H5, **290H5, 343H5** Corequisite:  
**After:** Prerequisite: CSC209H5, **290H5** Corequisite: **Prerequisite or Corequisite: CSC343H5**  
**Rationale:** Make CSC343H5 a prerequisite OR corequisite at the instructor's request. The instructor and department have received a significant number of prerequisite waivers for this course.

---

### Course #33 CSC338H5 Numerical Methods

**Before:** Course Exclusion: **CSC350H5**  
**After:** Course Exclusion: **CSC336H1, 350H5**  
**Rationale:** Adding CSC336H1 as an exclusion at the instructor's request. There were multiple instances of students trying to take both classes.

---

### Course #34 CSC411H5 Machine Learning and Data Mining

**Before:** Prerequisite: **CSC290H5, 263H5/270H5, STA257H5, 248H5, 258H5, 261H5**  
**After:** Prerequisite: **CSC207H5, 290H5, (MAT134Y5/135Y5/137Y5)/(MAT133Y5, 233H), MAT223H5; STA257H5**  
**Rationale:** Adding to prereqs at instructor's request.

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### Course #35 CSC458H5 Computer Networks

**Before:** Prerequisite: CSC209H5, 258H5, 290H5

**After:** Prerequisite: CSC209H5, 258H5, **263H5**, 290H5

**Rationale:** Changes to description, prerequisites and recommended preparation based on addition of CSC358H5.

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### Course #36 CSC488H5 Compilers and Interpreters

**Before:** Prerequisite: **CSC263H5/378H5**, 290H5, **324H5**, **258H5**

**After:** Prerequisite: **CSC258H5**, **263H5**, 290H5, **324H5**

**Rationale:** Re-ordering pre-requisites and removing CSc378H5.

---

### Course #37 ENV232H5 Environmental Sustainability Practicum

**Before:** Prerequisite: 2nd-year standing in any of the **ENV** Specialist **and** Major **Programs**.

**After:** Prerequisite: 2nd-year standing in any of the **Environment** Specialist **or** Major **Programs with a CGPA of 2.00 or higher or PI**.

**Rationale:** The course is very competitive for ENV Specialist and Major students and a CGPA prerequisite would help with the enrollment process.

---

### Course #38 ENV400Y5 Environmental Internship

**Before:** Distribution: SCI

**After:** Distribution: **SSc** SCI

**Rationale:** The course content covers both Social Science and Science, depending on the nature of the individual placement. The course description was too long, it has been shortened slightly.

---

### Course #39 HSC300H5 Written Communication for Health Care

**Before:** Distribution: **SSc** SCI

**After:** Distribution: SCI

**Rationale:** Course is now part of the curriculum for a Biology program, requiring BIO152H5 as a pre-requisite. As such, it should fall under the SCI distribution only.

---

### Course #40 HSC401H5 Web-Based Health and Science Communication Design

**Before:** Distribution: **SSc** SCI

**After:** Distribution: SCI

**Rationale:** Course is now part of the curriculum for a Biology program, requiring a biology background as a pre-requisite. As such, it should fall under the SCI distribution only.

---

### Course #41 HSC403H5 Visualization of Forensic Demonstrative Evidence

**Before:** Prerequisite: **FSC239Y5/BIO210H5/BIO210Y5 and ANT306H5 and completion** of 10.0 **credits. Corequisite:** ANT306H5

**After:** Prerequisite: **Completion** of 10.0 **credits, including one of FSC239Y5/ BIO210H5/ 210Y5/ ANT205H5/** ANT306H5 **Corequisite:**

**Rationale:** New pre-requisites better reflect the background required for students to succeed in this course.

---

### Course #42 JCP221H5 Thermodynamics and Kinetics

**Before:** Prerequisite: MAT134Y5/135Y5/137Y5; **(A mark of 60% or higher in**

### **CHM140Y5)/PHY135Y5**

**After:** Prerequisite: MAT134Y5/135Y5/137Y5; **CHM140Y5/(110H5,120H5) (minimum 60%)/PHY135Y5/(136H5,137H5) (minimum 60%)**

**Rationale:** Minimum of 60% required from both CHM and PHY prerequisite courses.

---

### **Course #43 JCP463H5 Techniques in Structural Biology**

**Before:** Prerequisite: **CHM361H5, 362H5** Recommended Preparation: JCP221H5

**After:** Prerequisite: **CHM361H5/(PHY332H5/333H5)** Recommended Preparation: **CHM362H5**, JCP221H5

**Rationale:** The course content is appropriate for Biophysicists and Biochemists, hence the re-designation as JCP\*\*\*. Furthermore JCP463H5 will now be an option in the renamed Biomedical Physics Specialist Program.  
Prerequisite: CHM362H5 is not required for JCP463H5 but it should still remain we are entering it in the "Recommended Preparation" area. PHY332H5 and PHY333H5 will allow physics students to take this course.

---

### **Course #44 MAT402H5 Classical Geometries**

**Before:** Course Exclusion:

**After:** Course Exclusion: **MAT365H5**

**Rationale:** MAT365H5 is now listed as an exclusion - the calendar description states that MAT402H5 is formerly MAT365H5, however, it has never been listed as an exclusion.

---

### **Course #45 PHY237H5 The Physics of the Climate System**

**Before:** Prerequisite: **PHY135Y5**; MAT134Y5/135Y5/137Y5

**After:** Prerequisite: **PHY135Y5/(136H5,137H5)**; MAT134Y5/135Y5/137Y5

**Rationale:** Insufficient faculty complement.  
Update the first year Physics prerequisite split to two half courses.

---

### **Course #46 PHY241H5 Electromagnetism**

**Before:** Prerequisite: **PHY135Y5**; MAT135Y5/137Y5

**After:** Prerequisite: **PHY135Y5/(136H5,137H5)**; MAT135Y5/137Y5

**Rationale:** Update the first year Physics prerequisite split to two half courses.

---

### **Course #47 PHY242H5 Thermal Physics and Fluid Mechanics**

**Before:** Prerequisite: **PHY135Y5**; MAT135Y5/137Y5

**After:** Prerequisite: **PHY135Y5/(136H5, 137H5)**; MAT135Y5/137Y5

**Rationale:** Update the first year Physics prerequisite split to two half courses.

---

### **Course #48 PHY245H5 Vibrations and Waves**

**Before:** Prerequisite: **PHY135Y5**, MAT135Y5/137Y5

**After:** Prerequisite: **PHY135Y5/(136H5,137H5)**, MAT135Y5/137Y5

**Rationale:** Update the first year Physics prerequisite split to two half courses.

---

### **Course #49 PHY324H5 Advanced Physics Laboratory**

**Before:** Prerequisite: PHY241H5, 242H5, **245H5, 247H5**

**After:** Prerequisite: PHY241H5, 242H5, **245H5**  
**Rationale:** Prerequisite: PHY247H5 removed since course deleted.

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### Course #50 PHY332H5 Molecular Biophysics

**Before:** Recommended Preparation: **PHY331H5**, JCP321H5  
**After:** Recommended Preparation: JCP321H5  
**Rationale:** PHY332H5 will be offered as an alternating course with new course PHY333H5; was alternating with PHY331H5 which will not be offered anymore.

---

### Course #51 PSY201H5 Research Design and Analysis in Psychology I

**Before:** Course Exclusion: **BIO360H5/ECO220Y5/227Y5/SOC300Y5/350H5/STA218H5/219H5/220H5**  
**After:** Course Exclusion: **BIO360H5/ECO220Y5/227Y5/SOC300Y5/350H5/STA218H5/220H5**  
**Rationale:** Correction of error. Content of STA219H5 is not related to PSY201H5 or STA220H5.

---

### Course #52 PSY299Y5 Research Opportunity Program

**Before:** Prerequisite:  
**After:** Prerequisite: **Completion of 4.0 FCE including PSY100Y5**  
**Rationale:** No change - prerequisites are now stated in course listing.

---

### Course #53 PSY360H5 Operant and Classical Conditioning

**Before:** Course Exclusion: **PSY260H5**  
**After:** Course Exclusion: **PSY260H1**  
**Rationale:** PSY260H5 has not been removed from our curriculum for at least 5 years. It is still offered, however, on the St. George campus.

---

### Course #54 PSY379H5 Cognitive Psychology Laboratory

**Before:** Prerequisite: PSY(201H5, 202H5)/ equivalent, **270H5**, 309H5  
**After:** Prerequisite: PSY(201H5, 202H5)/ equivalent, **270H5/274H5**, 309H5  
**Rationale:** Correction of error of omission. Last year we added new course PSY274H5 but forgot to add it as potential prerequisite for this course. Both PSY270H5 and 274H5 provide students with an introduction to cognitive psychology - the content necessary for a more advanced research methods lab in cognition.

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### Course #55 PSY385H5 Hearing and Hearing Disorders

**Before:** Prerequisite: PSY201H5/equivalent, **210H5/213H5/270H5/274H5/280H5/295H5/CCT202H5**  
**After:** Prerequisite: PSY201H5/equivalent, **210H5/213H5/270H5/274H5/280H5/295H5**  
**Rationale:** Last year psychology pulled out of the CCT program and is no longer offering the Specialist in Human Communication and Technology or teaching any CCT courses. The CCT program has taken a shift towards the humanities and social sciences. As a result, should CCT202H5 be offered again it will not be taught by PSY faculty and therefore will not provide the type of preparation PSY385H5 requires.

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### Course #56 PSY400Y5 Thesis

**Before:** Prerequisite: PSY202H (or **equivalent**), **laboratory course in psychology, satisfactory**

**progress in the Psychology Specialist Program.** Corequisite:

**After:** Prerequisite: PSY202H (or **equivalent**); **Minimum last AGPA of 3.2 (varies from year to year and is rarely below 3.4)** Corequisite: **PSY309H5/399H5**

**Rationale:** In order to open course up to strong PSY Majors reference to progress in the Specialist program was removed and prerequisite for lab course was replaced with corequisite. GPA requirement is now stated formally but has been practiced for many years.

---

#### **Course #57 PSY403H5 Individual Project**

**Before:** Prerequisite: **PSY(201H5, 202H5)/equivalent), laboratory course in Psychology, 1.0**  
300 level credit in **Psychology**

**After:** Prerequisite: **PSY(201H5/ equivalent); 1.0** 300 level credit in **Psychology; minimum last AGPA of 3.0 or above**

**Rationale:** To attract strong PSY Majors prerequisites are relaxed but GPA requirement is added to clearly indicate high expectations.

---

#### **Course #58 PSY404H5 Individual Project**

**Before:** Prerequisite: **PSY(201H5, 202H5)/equivalent), laboratory course in Psychology, 1.0**  
300 level credit in **Psychology**

**After:** Prerequisite: **PSY(201H5/ equivalent); 1.0** 300 level credit in **Psychology; minimum last AGPA of 3.0 or above**

**Rationale:** To attract strong PSY Majors prerequisites are relaxed but GPA requirement is added to clearly indicate high expectations.

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#### **Course #59 PSY405H5 Individual Project**

**Before:** Prerequisite: **PSY(201H5, 202H5)/equivalent), laboratory course in Psychology, 1.0**  
300 level credit in **Psychology**

**After:** Prerequisite: **PSY(201H5/ equivalent); 1.0** 300 level credit in **Psychology; minimum last AGPA of 3.0 or above**

**Rationale:** To attract strong PSY Majors prerequisites are relaxed but GPA requirement is added to clearly indicate high expectations.

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#### **Course #60 PSY406H5 Individual Project**

**Before:** Prerequisite: **PSY(201H5, 202H5)/equivalent, laboratory course in Psychology, 1.0**  
300 level credit in **Psychology**

**After:** Prerequisite: **PSY(201H5/ equivalent); 1.0** 300 level credit in **Psychology; minimum last AGPA of 3.0 or above**

**Rationale:** To attract strong PSY Majors prerequisites are relaxed but GPA requirement is added to clearly indicate high expectations.

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#### **Course #61 PSY442Y5 Practicum in Exceptionality in Human Learning**

**Before:** Corequisite:

**After:** Corequisite: **Primary Junior CTEP students are exempt from PSY442Y5 and may take PSY345H5 and any 0.5 FCE 400 level course in psychology instead**

**Rationale:** Rational described under program requirement changes. PJ CTEP students do several placements in schools as part of their B.Ed. curriculum and don't require another placement. Opportunity will be provided on a competitive basis to all students enrolled in psychology programs.

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### Course #62 PSY471H5 Special Topics in Cognitive Psychology

**Before:** Prerequisite: PSY270H5, 1.0 credit from PSY312H5, 315H5, 360H5, 362H5, **372H5/397H5**, 374H5, 379H5, **393H5**

**After:** Prerequisite: PSY270H5, 1.0 credit from PSY312H5, 315H5, 360H5, 362H5, **372H5**, 374H5, 379H5, **393H5, 397H5**

**Rationale:** Correction of error.

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### Course #63 PSY495H5 Special Topics in Neuropsychology

**Before:** Prerequisite: PSY290H5/295H5, 1.0 credit from PSY315H5, 318H5, 346H5, 362H5, **372H5/397H5**, 374H5, 379H5, **393H5**

**After:** Prerequisite: PSY290H5/295H5, 1.0 credit from PSY315H5, 318H5, 346H5, 362H5, **372H5**, 374H5, 379H5, **393H5, 397H5**

**Rationale:** Correction of error.

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### Course #64 STA312H5 Topics in Statistics: Applied Statistical Modelling

**Before:** Prerequisite: **STA331H5/ECO327Y5**

**After:** Prerequisite: **STA258H5/ECO327Y5**

**Rationale:** To allow students to take the course in 3rd year.

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### Course #65 STA313H5 Topics in Statistics: Applications of Statistical Models

**Before:** Prerequisite: **STA331H5/ECO327Y5**

**After:** Prerequisite: **STA258H5/ECO327Y5**

**Rationale:** To allow students to take the course in 3rd year.

---

### Course #66 STA431H5 Structural Equation Models

**Before:** Prerequisite: **STA331H5 /ECO327Y5/STA302H1/STA302H5**

**After:** Prerequisite: **STA258H5/ECO327Y5/STA302H1/STA302H5**

**Rationale:** To allow students to take the course in third year.

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