

**Sciences**

## SCIENCES - Table of Contents

<u>SUMMARY OF COURSE CHANGES</u> .....	1
<u>New Programs</u> .....	2
<u>Programs - Resource Implications</u> .....	3
<u>Deleted Programs</u> .....	6
<u>Programs - Other Changes</u> .....	7
<u>New Courses</u> .....	32
<u>Courses - Resource Implications</u> .....	36
<u>Deleted Courses</u> .....	44
<u>Renumbered Courses</u> .....	45
<u>Rewighted Courses</u> .....	46
<u>Courses - Description Changes</u> .....	47
<u>Changes in Course Name</u> .....	63
<u>Courses - Other Changes</u> .....	65

# 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	0	0	0	2	1	15
Astronomy	0	0	0	0	0	0
Biology	0	0	1	2	3	8
Biomedical Communications	0	0	0	0	0	5
Chemistry	0	1	0	0	0	7
Communication, Culture and Information Technology	0	0	0	0	0	0
Computer Science	0	0	0	1	1	6
Earth Science	0	0	0	0	0	2
Economics	0	0	0	0	1	0
Environment	0	0	0	2	1	2
Forensic Science	0	0	0	1	1	1
Geography	0	0	0	1	0	4
Mathematics	0	0	0	0	0	25
Physics	0	0	0	0	0	5
Psychology	0	0	1	1	0	4
Science	0	0	0	0	0	0
Sociology	0	0	1	0	0	1
Statistics	0	0	0	0	0	5

# New Programs

---

NONE

# Programs - Resource Implications

---

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

Resource implications: None.

## **Program #2 ERMAJ1061 Environmental Science (Science)**

Resource implications: not applicable

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

Resource implications: None.

## **Program #4 ERMAJ1160 Psychology (Science)**

Resource implications: None

## **Program #5 ERMAJ1376 Chemistry (Science)**

Resource implications: There are no resource implications.

## **Program #6 ERMAJ1540 Statistics, Applied (Science)**

Resource implications: None

## **Program #7 ERMAJ1688 Computer Science**

Resource implications: None.

## **Program #8 ERMAJ1883 Exceptionality in Human Learning (Science)**

Resource implications: None

## **Program #9 ERMAJ2364 Biology (Science)**

Resource implications: None.

## **Program #10 ERMAJ2511 Mathematical Sciences (Science)**

Resource implications: None

## **Program #11 ERMIN1160 Psychology (Science)**

Resource implications: None

## **Program #12 ERMIN1376 Chemistry (Science)**

Resource implications: There are no resource implications.

## **Program #13 ERMIN1540 Statistics, Applied (Science)**

Resource implications: None

## **Program #14 ERMIN1688 Computer Science**

Resource implications: None.

## **Program #15 ERSPE0105 Anthropology (Science)**

Resource implications: None.

**Program #16 ERSPE0482 Comparative Physiology (Science)**

Resource implications: None.

**Program #17 ERSPE1020 Ecology and Evolution (Science)**

Resource implications: None.

**Program #18 ERSPE1038 Information Security (Science)**

Resource implications: None.

**Program #19 ERSPE1061 Environmental Science (Science)**

Resource implications: not applicable

**Program #20 ERSPE1118 Biotechnology (Science)**

Resource implications: None.

**Program #21 ERSPE1160 Psychology (Science)**

Resource implications: None

**Program #22 ERSPE1338 Forensic Anthropology (Science)**

Resource implications: N/A

**Program #23 ERSPE1376 Chemistry (Science)**

Resource implications: There are no resource implications.

**Program #24 ERSPE1505 Forensic Psychology (Science)**

Resource implications: N/A

**Program #25 ERSPE1540 Statistics, Applied (Science)**

Resource implications: None.

**Program #26 ERSPE1688 Computer Science (Science)**

Resource implications: None

**Program #27 ERSPE1868 Bioinformatics**

Resource implications: None

**Program #28 ERSPE1883 Exceptionality in Human Learning (Science)**

Resource implications: None

**Program #29 ERSPE1995 Biological Chemistry (Science)**

Resource implications: There are no resource implications.

**Program #30 ERSPE2364 Biology (Science)**

Resource implications: None.

**Program #31 ERSPE2470 Behaviour, Genetics, and Neurobiology (Science)**

Resource implications: None

**Program #32 ERSPE2511 Mathematical Sciences (Science)**

Resource implications: none

# Deleted Programs

---

NONE

# Programs - Other Changes

---

## Program #1 ERMAJ0105 Anthropology (Science)

**Rationale for change:** These controls were useful at time when Anthropology had few faculty members but now we have a significant complement. In addition we found that required lab courses were oversubscribed but given the new lab space being developed, this should not be an issue any longer. We also believe that this will allow enrollments to rise in classes that currently have low enrollment. Finally, we feel that many students mature intellectually during their 2nd year and in their 3rd year. The current controls eliminate such students from the potential enjoyment of, and being informed by, our exciting discipline. Furthermore, given that 50% is a passing grade, these students should have access to upper year courses as part of a Major in Anthropology. In addition the department will introduce that ANT200Y5Y be divided into 2 half courses. The second half of ANT200Y will be introduced as a new course. As result the program requirements need to be amended to reflect the new course changes.

**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, 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

**After:** Limited Enrolment: Enrolment in this program is limited. To qualify, students must have completed 4.0 credits (including 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, and achieved a CGPA of at least 2.00.

Second Year 1. **ANT(200H5, 201H5),203Y5**  
2. ANT204H5 and 0.5 from ANT206H5/207H5/208H5/209H5

---

## Program #2 ERMAJ0305 Geographical Information Systems (Science)

**Rationale for change:** This change is in response to the elimination of GGR117Y with the replacement of GGR111H5 and GGR112H5.

**Before:** First Year 1.0 credit: **GGR117Y5**

**After:** First Year 1.0 credit: **GGR111H5 & GGR112H5**

---

## Program #3 ERMAJ1061 Environmental Science (Science)

**Rationale for change:** These are all responses to known changes to other department's courses.

**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: 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.

**After:**

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

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; **CHM110H5,** 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: **CHM231H5, 242H5, JCP221H5;** 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; **BIO313H5, 329H5, 416H5;** ERS325H5; ENV232H5, 299Y5, 331H5, 399Y5, 400Y5; GGR317H5 (with field-trip option), 379H5; **SCI395H5, 396H5,** 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**; ECO373Y5; ENG259H5; ENV393H5; GGR329H5, 333H5, 345H5, 348H5, 349H5, 361H5, 365H5, 367H5, 369H5, 370H5, 378H5, 380H5; HIS318H5, 319H5; MGT394H5; PHL255H5, 273H5, 373H1; POL250Y5, 343Y5; SOC226H5, 339H5, 349H5, 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 #4 ERMAJ1149 Biology for Health Sciences (Science)

**Rationale for change:** 1. BIO304H5 is a pre-requisite for BIO310H5 (already a program requirement). Adding BIO304H5 acknowledges the fact that students must complete this course in order to move into BIO310H5. 2. Addition of BIO375H5 to Cell, Molecular, and Developmental Biology reflects addition of new BIO375H5 course (Intro Medical Biotechnology) for 2012-2013, which will be a course option for all Biology for Health Science Major students.

**Before:** 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 - HBSc 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).

**After:** 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, **304H5**, 310H5, 380H5, (BIO360H5/STA220H5/PSY201H5)

- **1.0** credits from one of the following lists: Cell, Molecular, and Biotechnology Stream: BIO200H5, 215H5, 314H5, 315H5, 370Y5, 372H5, 374H5, **375H5**, 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 - HBSc 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, **Internship Program**, or **Individual Project** / 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).

---

## Program #5 ERMAJ1160 Psychology (Science)

**Rationale for change:** All programs offered by the Department of Psychology lead to the B.Sc. Degree and require a 2nd year course in statistics as well as 2nd and/or 3rd year courses in brain and behaviour. Our current students are ill prepared in both areas resulting in a high failure and drop rate in courses such as PSY201H. Psychology increasingly focuses on the biological basis of behaviour even in areas that have been studied primarily by social scientists. Fields such as personality, social behaviour, and parenting now involve genetic components as well as imaging of the live brain during cognitive tasks to better understand the biological mechanisms that underlie behaviour. We are also interested in synchronizing our admission requirements with those of other B.Sc. programs in Psychology including St. George. Most require Biology and more advanced math than what we currently require.

- 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 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)
- 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. **\* First year students applying to this program in 2014/15 will be required to have completed Gr.12(4U) Biology and Advanced Functions or equivalent.** 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)
- 

### Program #6 ERMAJ1376 Chemistry (Science)

- Rationale for change:** In the Limited Enrolment description for all Chemistry programs, we are changing the first year Chemistry mark requirement so that rather than requiring a specific mark in both CHM110 and CHM120, we will now require that same mark ONLY in CHM120. Rationale (for all programs): Many students struggle with the transition from high school to university. In order to allow them more time to adjust to university life before assessing their eligibility for CHM programs, we will consider their mark only from the second first year CHM course, CHM120, rather than both CHM110 and CHM120.
- Before:** 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.
- After:** Limited Enrolment: Enrolment in the Chemistry Major Program is based on completion of 4.0 credits including **CHM140Y5(minimum grade of 60%)/(110H5,120H5)** (minimum grade of **60% in CHM120H5**) and MAT134Y5/135Y5/137Y5.
- 

### Program #7 ERMAJ1540 Statistics, Applied (Science)

- Rationale for change:** This aligns the stats major enrolment criteria with those for the UTM math major; quasi-aligns UTM with StG stats specialists requires completion 4.0 courses all at 50% (accepts MAT137Y/135Y1); StG does not offer any 100 level stats courses; ; STA107H5 is not a prerequisite for any other course, but CS & math both require their specialist & majors to complete STA257H5, also economics accepts STA257H+STA258H as equivalent to ECO227Y so many good students don't take STA107H, and we don't want to exclude them from our programs; Courses renumbering.
- Before:** Limited Enrolment: **"Limited Enrolment - Enrolment** in the Major program is limited to students with a minimum of 4.0 courses to include **MAT223H5**; 60% in **STA107H5**; and **MAT137Y5** or 60% in **MAT233H5** or **60% in MAT134Y5/ 135Y5."**  
Higher Years **STA331H5, 332H5**; 1.0 additional credit from STA219H5, 312H5/313H5, 322H5/304H5/304H1, 348H5, 413H5, 431H5, 437H5, **442H5**, 457H5
- After:** Limited Enrolment: Enrolment in the Major program is limited to students with a minimum of 4.0 courses to include 60% in **STA107H5** or 60% in **STA257H5**; and **MAT137Y5 /135Y5/134Y5** or **75% in MAT133H5**; **a minimum cumulative grade point average, to be determined annually.**  
Higher Years **STA302H5/331H5, 305H5/332H5**; 1.0 additional credit from STA219H5, 312H5/313H5, 322H5/304H5/304H1, 348H5, 413H5, 431H5, 437H5, **441H5/442H5**, 457H5
- 

### Program #8 ERMAJ1688 Computer Science

**Rationale for change:**

Many of the notes for the Computer Science Major, Specialist, and Minor and the Information Security Specialist should be identical, but they have diverged over time and are being printed multiple times (below each program's table of courses). We wish to collect these notes in a single location to make them easier to find and update, and we have asked that they be added to the introduction to the CSC programs entry in the calendar.

Before:

**- All CSC programs have a writing requirement. The recommended course to satisfy that requirement is CSC290H5. If a student wishes to substitute another course to satisfy the writing requirement, the student should consult the CSC faculty advisor.**  
**- 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:

---

### Program #9 ERMAJ1883 Exceptionality in Human Learning (Science)

**Rationale for change:** All programs offered by the Department of Psychology lead to the B.Sc. Degree and require a 2nd year course in statistics as well as 2nd and/or 3rd year courses in brain and behaviour. Our current students are ill prepared in both areas resulting in a high failure and drop rate in courses such as PSY201H. Psychology increasingly focuses on the biological basis of behaviour even in areas that have been studied primarily by social scientists. Fields such as personality, social behaviour, and parenting now involve genetic components as well as imaging of the live brain during cognitive tasks to better understand the biological mechanisms that underlie behaviour. We are also interested in synchronizing our admission requirements with those of other B.Sc. programs in Psychology including St. George. Most require Biology and more advanced math than what we currently require.

**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 PSY100Y5;
- successfully completed 1.0 credit from BIO152H5/153H5/204H5/205H5/206H5/207H5; and
- a minimum CGPA of 2.00. Students not initially meeting these requirements may be admissible after meeting the second-year requirements. Further information is available on the Psychology Department website: [www.utm.utoronto.ca/psychology](http://www.utm.utoronto.ca/psychology)

**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;
- successfully completed 1.0 credit from BIO152H5/153H5/204H5/205H5/206H5/207H5; and
- a minimum CGPA of 2.00. **\* First year students applying to this program in 2014/15 will be required to have completed Gr.12(4U) Biology and Advanced Functions or equivalent.** Students not initially meeting these requirements may be admissible after meeting the second-year requirements. Further information is available on the Psychology Department website: [www.utm.utoronto.ca/psychology](http://www.utm.utoronto.ca/psychology)

---

### Program #10 ERMAJ2070 Geography (Science)

**Rationale for change:** This change is in response to the elimination of GGR117Y with the replacement of GGR111H5 and GGR112H5.

**Before:**

First Year 1.0 credits: **GGR117Y5**

**After:**

First Year 1.0 credits: **GGR111H5 & GGR112H5**

---

### Program #11 ERMAJ2364 Biology (Science)

<b>Rationale for change:</b>	Not all St. George life science courses have equivalents to UTM BIO courses and not all are acceptable for BIO credit. This note will help guide students to seek consultation to ensure the courses they are looking at taking will be appropriate for their program and/ or as pre-requisites for upper year courses.
<b>Before:</b>	<p>7.0 credits are required including at least 2.0 at the 300/400 level.</p> <ul style="list-style-type: none"> <li>- (CHM110H5, 120H5)/ CHM140Y5; MAT134Y5*/ 135Y5/ 137Y5</li> <li>- BIO152H5, 153H5, 204H5, 205H5, 206H5, 207H5</li> <li>- 2.0 in Biology from the 300 or 400 level. *MAT134Y5 - Calculus for Life Sciences is highly recommended.</li> </ul> <p>Notes:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> <li>- 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.</li> <li>- Students may take no more than 2.0 credits combined in ROP, <b>Individual Projects</b> or Thesis courses at the 300/400-level for credit toward their Biology program.</li> </ul>
<b>After:</b>	<p>7.0 credits are required including at least 2.0 at the 300/400 level.</p> <ul style="list-style-type: none"> <li>- (CHM110H5, 120H5)/ CHM140Y5; MAT134Y5*/ 135Y5/ 137Y5</li> <li>- BIO152H5, 153H5, 204H5, 205H5, 206H5, 207H5</li> <li>- 2.0 in Biology from the 300 or 400 level. *MAT134Y5 - Calculus for Life Sciences is highly recommended.</li> </ul> <p>Notes:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> <li>- 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.</li> <li>- Students may take no more than 2.0 credits combined in ROP, <b>Internship Program</b>, or <b>Individual Project</b> / Thesis courses at the 300/400-level for credit toward their <b>Biology program</b>.</li> <li>- <b>Students must consult with the Undergraduate Advisor before enrolling in any St. George course that they wish to use for credit toward any Biology program.</b></li> </ul>

## Program #12 ERMAJ2511 Mathematical Sciences (Science)

<b>Rationale for change:</b>	<p>These requirements are necessary for students to succeed in our upper level courses.</p> <p>Change: Under Higher years , Item 1: change 378H5/392H5 to 378H5/392H5/405H5, and change 315H5/344H5 to 302H5/315H5/344H5. Rationale: we are giving more flexibility.</p> <p>Change: Under Second year , change 232H5 to 232H5/233H5. Rationale: MAT233H5 can be accepted instead of MAT232H5.</p>
<b>Before:</b>	<p>Limited Enrolment: Enrolment in the Major program is limited to students <b>with</b> 60% in MAT102H5 and 60% in <b>MAT134Y5/135Y5/137Y5</b>.</p> <p>Second Year MAT202H5, 224H5, <b>232H5</b>, 242H5 Higher Years</p> <ul style="list-style-type: none"> <li>- MAT301H5, 334H5, <b>378H5/392H5</b> (*MAT392H5 is recommended for CTEP students), 402H5, 252H5/311H5/332H5/368H5, <b>315H5/344H5</b></li> <li>- STA257H5/0.5 MAT credit at the 300+ level</li> </ul>
<b>After:</b>	<p>Limited Enrolment: Enrolment in the Major program is limited to students <b>who meet the following criteria: (1) A minimum of 4.0 credits, including</b> 60% in</p>

MAT102H5 and 60% in **MAT134Y5/ MAT135Y5/ MAT137Y5. (2) A minimum cumulative grade point average (CGPA), to be determined annually.**

Second Year MAT202H5, 224H5, **232H5/233H5**, 242H5  
Higher Years

- MAT301H5, 334H5, **378H5/392H5/405H5** (\*MAT392H5 is recommended for CTEP students), 402H5, 252H5/311H5/332H5/368H5, **302H5/315H5/344H5**
- STA257H5/0.5 MAT credit at the 300+ level

---

### Program #13 ERMIN0305 Geographical Information Systems (Science)

**Rationale for change:** This change is in response to the elimination of GGR117Y with the replacement of GGR111H5 and GGR112H5.

**Before:**

First Year 1.0 credit : **GGR117Y5**

**After:**

First Year 1.0 credit : **GGR111H5 & GGR112H5**

---

### Program #14 ERMIN1061 Environmental Science (Science)

**Rationale for change:** These are all responses to known changes to other department s courses.

**Before:**

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

**After:**

Upper Years: 1.0 credit

- Field, Experiential & Research Perspectives: 0.5 credit chosen from this list: ANT318H5; **BIO313H5, 329H5, 416H5**; ERS325H5; ENV299Y5, 399Y5; GGR317H5 (with field trip option), 379H5; **SCI395H5, 396H5**; 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

---

### Program #15 ERMIN1160 Psychology (Science)

**Rationale for change:** All programs offered by the Department of Psychology lead to the B.Sc. Degree and require a 2nd year course in statistics as well as 2nd and/or 3rd year courses in brain and behaviour. Our current students are ill prepared in both areas resulting in a high failure and drop rate in courses such as PSY201H. Psychology increasingly focuses on the biological basis of behaviour even in areas that have been studied primarily by social scientists. Fields such as personality, social behaviour, and parenting now involve genetic components as well as imaging of the live brain during cognitive tasks to better understand the biological mechanisms that underlie behaviour. We are also interested in synchronizing our admission requirements

with those of other B.Sc. programs in Psychology including St. George. Most require Biology and more advanced math than what we currently require

**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 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)

**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 **\* First year students applying to this program in 2014/15 will be required to have completed Gr.12(4U) Biology and Advanced Functions or equivalent.** 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)

---

**Program #16 ERMIN1376 Chemistry (Science)**

**Rationale for change:**

In the Limited Enrolment description for all Chemistry programs, we are changing the first year Chemistry mark requirement so that rather than requiring a specific mark in both CHM110 and CHM120, we will now require that same mark ONLY in CHM120. Rationale (for all programs): Many students struggle with the transition from high school to university. In order to allow them more time to adjust to university life before assessing their eligibility for CHM programs, we will consider their mark only from the second first year CHM course, CHM120, rather than both CHM110 and CHM120.

**Before:**

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

**After:**

Limited Enrolment: Enrolment in the Chemistry Minor Program is based on completion of 4.0 credits including **CHM140Y5(minimum grade of 60%)/(110H5,120H5)** (minimum grade of **60% in CHM120H5**) and MAT134Y5/135Y5/137Y5

---

**Program #17 ERMIN1540 Statistics, Applied (Science)**

**Rationale for change:**

Calculus is a hidden prerequisite; don't need the linear algebra for the minor.

Lots of students misinterpret existing program description, missing the college requirement for a minor, thinking they can complete the stats minor with 0.5 300/400 level credits; deleted point references hidden prerequisites; courses renumbering.

**Before:**

**4.0** credits are required. 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.

First Year **MAT223H5**

Second or Third Year (STA220H5, 221H5)/(PSY201H5, 202H5)/(BIO360H5, 361H5)/(SOC350H5, **351H5)/ECO220Y5\*/(STA331H5,332H5)\*\***

**After:**

**4.5** credits are required. Notes:

- Course listed under second or third year with a single asterisks (\*) must be completed prior to registration in STA257H5.

- **\*\*STA302H5/331H5** and **STA305H5/332H5** must be taken after STA258H5 has been completed.
  - Please note that **1.0 credits at 300/400 level, is 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.
- First Year **(4.5 Credits) MAT137Y5/135Y5/134Y5/133Y5**  
 Second or Third Year (STA220H5, 221H5)/(PSY201H5, 202H5)/(BIO360H5, 361H5)/(SOC350H5, **351H5)/ECO220Y5\*/(STA302H5/331H5,305H5/332H5)\*\***

### Program #18 ERMIN1688 Computer Science

**Rationale for change:** The specialist and major programs are deregulated fee programs, so allowing students to complete those degrees in all but name would not be fair to students in those programs and may decrease interest in our specialist and major programs. The 1.5 credit cutoff allows minor students to take one additional course over the required number for the minor. This restriction is the same as the downtown campus.

Initially, we were concerned that restricting enrollment in this way will decrease enrollment in our programs, as some students delay entering the major/specialist until the end of their last year to avoid incurring the fees. However, our records indicate that very few students switch from a regulated (normal tuition) to a deregulated (increased tuition) fee program in their last year.

**Before:** Notes:

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

**After:** Notes: **Students in the CSC minor may only complete 1.5 credits of third and fourth year computer science courses. To enrol in additional upper year courses, a student must enter a CSC specialist or major program.**

### Program #19 ERMIN2070 Geography (Science)

**Rationale for change:** 1) GGR111 + GGR112 is in response to the elimination of GGR117Y. 2) The previous requirement of 2.0 credits from any GGR Science courses was found not to adequately prepare students in the minor program, and may have prevented students from taking a sufficiently integrated and complementary mix of upper-year geography courses toward the minor requirements. The change fixes these issues. Previously students could take all second year courses and complete the program. The revision now requires at least 1.0 at the 300/400 level.

**Before:**  
 First Year 1.0 credit :**GGR117Y5**  
 Second Year 1.0 credit from GGR214H5, 217H5, 227H5  
 2.0 additional credits from the list of GGR Science courses as described in the Geography Course Descriptions section of this **calendar.**

**After:**  
 First Year 1.0 credit :**GGR111H5 & GGR112H5**  
 Second Year 1.0 credit from GGR214H5, 217H5, 227H5  
 2.0 additional credits from the list of GGR Science courses as described in the Geography Course Descriptions section of this **calendar, including at least 1.0 credit at the 300/400 level.**

### Program #20 ERSPE0105 Anthropology (Science)

**Rationale for change:** These controls were useful at time when Anthropology had few faculty members but now we have a significant complement. In addition we found that required lab courses were oversubscribed but given the

new lab space being developed, this should not be an issue any longer. We also believe that this will allow enrollments to rise in classes that currently have low enrollment. Finally, we feel that many students mature intellectually during their 2nd year and in their 3rd year. The current controls eliminate such students from the potential enjoyment of, and being informed by, our exciting discipline. Furthermore, given that 50% is a passing grade, these students should have access to upper year courses as part of a Major in Anthropology. In addition the department will introduce that ANT200Y5Y be divided into 2 half courses. The second half of ANT200Y will be introduced as a new course. As result the program requirements need to be amended to reflect the new course changes.

**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, 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

**After:** Limited Enrolment: Enrolment in this program is limited. To qualify, students must have completed 4.0 credits (including 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, and achieved a CGPA of at least 2.00.  
Second Year 1. **ANT(200H5, 201H5),** 203Y5  
2. ANT204H5 and 0.5 from ANT206H5/207H5/208H5/209H5

---

### Program #21 ERSPE0482 Comparative Physiology (Science)

**Rationale for change:** Not all St. George life science courses have equivalents to UTM BIO courses and not all are acceptable for BIO credit. This note will help guide students to seek consultation to ensure the courses they are looking at taking will be appropriate for their program and/ or as pre-requisites for upper year courses.

**Before:** Within an Honours degree, **14** credits are required, including at least 5.0 at the 300/400 level, of which 1.0 must be at the 400 **level. 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.

**After:** Within an Honours degree, **14.0** credits are required, including at least 5.0 at the 300/400 level, of which 1.0 must be at the 400 **level. No substitute statistics course will be allowed for BIO360H5. Students** may take no more than 2.0 credits combined in ROP, **Internship Program, or Individual Project /** Thesis courses at the 300/400-level for credit toward their **Biology program. Students must consult with the Undergraduate Advisor before enrolling in any St. George course that they wish to use for credit toward any** Biology program.

---

### Program #22 ERSPE1020 Ecology and Evolution (Science)

**Rationale for change:** 1. Changes in 300/400-level credit requirement more accurately reflect course requirements within program as well as recent changes to courses (i.e. field course re-numbered to 400-level). 2. Not all St. George life science courses have equivalents to UTM BIO courses and not all are acceptable for BIO credit. This note will help guide students to seek consultation to ensure the courses they are looking at taking will be appropriate for their program and/ or as pre-requisites for upper year courses. 3. Amendment of 'core eco/evo' course list reflects new additions and deletions to our course offerings - BIO442H5 is being deleted and replaced with a new course, BIO445H5 (Evolutionary Ecology, proposed for 2012-2013). This new course will be an option to all Ecology and Evolution Specialist students.

**Before:** Within an honours degree, 13.5 full course equivalents are required, including at least **5.0** at 300/400 level, of which **1.0** full course must be at the 400 **level. 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.  
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

**After:**

Within an honours degree, 13.5 full course equivalents are required, including at least **6.0** at 300/400 level, of which **1.5** full course must be at the 400 **level. No substitute statistics course will be allowed for BIO360H5. Students** may take no more than 2.0 credits combined in ROP, **Internship Program**, or **Individual Project / Thesis** courses at the 300/400-level for credit toward their Biology **program. Students must consult with the Undergraduate Advisor before enrolling in any St. George course that they wish to use for credit toward any Biology** program.

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, **445H5**, 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 #23 ERSPE1025 Astronomical Sciences (Science)**

**Rationale for change:**

Year 2: Added PHY242H5/JCP221H5 Year 3: PHY347H5 replaces PHY247H5, which is no longer taught PHY325H5 replaces PHY341H5, which is no longer taught Year 4: JCP421H5 replaces PHY351H1, which is no longer taught PHY451H5 is explicitly listed instead of making it a student option STA257H5 is added as an option to STA220H5 Comment: Add PHY242H5, a core course that has been added to the UTM physics courses since the AST requirements were last updated (consistent with the St. George AST program, which also requires thermal physics); also added JCP221H5 as an option (another thermal physics course) Comment: PHY347H5 replaces PHY247H5, which is no longer taught. PHY325H5 (which is a prerequisite for JCP421H5 and PHY451H5) replaces PHY341H5, which is no longer taught. Comment: Add PHY242H5, a core course that has been added to the UTM physics courses since the AST requirements were last updated (consistent with the St. George AST program, which also requires thermal physics); also added JCP221H5 as an option (another thermal physics course) Comment: PHY347H5 replaces PHY247H5, which is no longer taught. PHY325H5 (which is a prerequisite for JCP421H5 and PHY451H5) replaces PHY341H5, which is no longer taught.

**Before:**

Second Year AST221H1(G), 222H1(G); **MAT242H5, 232H5/233H5**, 368H5; PHY241H5, 245H5  
 Third Year AST320H1(G); JCP321H5, 322H5; MAT311H5, 334H5; **PHY247H5, 341H5**  
 Fourth Year AST425Y1(G); **PHY351H1(G), STA220H5**, and two 300/400-level half-course approved by the faculty advisor.

**After:**

Second Year AST221H1(G), 222H1(G); **MAT232H5/233H5, 242H5**, 368H5; PHY241H5,

### **242H5/JCP221H5**, 245H5

Third Year AST320H1(G); JCP321H5, 322H5; MAT311H5, 334H5; **PHY325H5, 347H5**

Fourth Year AST425Y1(G); **JCP421H5, PHY451H5, STA220H5/257H5**, and two 300/400-level half-course approved by the faculty advisor.

---

## **Program #24 ERSPE1038 Information Security (Science)**

**Rationale for change:** Collecting all information in a single location makes it easier to find and to keep updated.

The second year contained 4.5 credits worth of courses. Moving MAT223 to the first year better balances those two years.

CSC358 is a networking option that will be offered in years that CSC458 is not offered. It covers sufficient network material for the program.

**Before:**

**- This specialist program has a writing requirement. The recommended course to satisfy that requirement is CSC290H5. If a student wishes to substitute another course to satisfy the writing requirement, the student should consult the Computer Science Faculty Advisor.**

**- Students enrolled in this program may participate in the PEY program. For more information visit [www.pey.utoronto.ca](http://www.pey.utoronto.ca)**

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

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

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

**After:**

First Year CSC108H5, 148H5, 290H5; MAT102H5, **134Y5/135Y5/137Y5, 223H5**

Second Year CSC207H5, 209H5, 236H5, 258H5, 263H5; **MAT224H5**, 232H5; STA257H5

Third and Fourth Years **CSC358H5/458H5**; two of (CSC422H5, 423H5, 427H5, 490H5);

---

## **Program #25 ERSPE1061 Environmental Science (Science)**

**Rationale for change:** These are all responses to known changes to other department's courses.

**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: 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.

After:

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

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; **CHM110H5**, 120H5; **GGR112H5;** 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: **CHM231H5**, 242H5;

- JCP221H5;** 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; **BIO313H5, 329H5, 416H5;** 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; **SCI395H5, 396H5**, 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;** ECO373Y5; ENG259H5; ENV393H5; GGR329H5, 333H5, 345H5, 348H5, 349H5, 361H5, 365H5, 367H5, 369H5, 370H5, 378H5, 380H5; HIS318H5, 319H5; MGT394H5; PHL273H5, 373H1; POL250Y5, 343Y5; SOC226H5, 339H5, 349H5, 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 #26 ERSPE1118 Biotechnology (Science)

- Rationale for change:** 1. Not all St. George life science courses have equivalents to UTM BIO courses and not all are acceptable for BIO credit. This note will help guide students to seek consultation to ensure the courses they are looking at taking will be appropriate for their program and/ or as pre-requisites for upper year courses. 2. Addition of BIO375H5 to Third Year Course List reflects addition of new BIO375H5 course (Intro Medical Biotechnology) for 2012-2013, which will be a course option for all Biotech Specialist students.
- Before:** \*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.  
Third and Fourth Years  
- BIO314H5, 315H5, 360H5, 370Y5, 372H5, 374H5; CHM311H5, 361H5; JBC472H5  
- 1.0 credit from: BIO304H5, 310H5, 312H5, 341H5, 380H5, 409H5; CHM333H5 (note: CHM231H5 is prerequisite for this course), CHM341H5, 345H5, 347H5, 362H5, 371H5  
- 1.0 credit from CHM/BIO courses at the 400 level.
- After:** \*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, **Internship Program, or Individual Project / Thesis** courses at the 300/400-level for credit toward their Biology **program. Students must consult with the Undergraduate Advisor before enrolling in any St. George course that they wish to use for credit toward any Biology** program.  
Third and Fourth Years  
- BIO314H5, 315H5, 360H5, 370Y5, 372H5, 374H5; CHM311H5, 361H5; JBC472H5  
- 1.0 credit from: BIO304H5, 310H5, 312H5, 341H5, **375H5**, 380H5, 409H5; CHM333H5 (note: CHM231H5 is prerequisite for this course), CHM341H5, 345H5, 347H5, 362H5, 371H5  
- 1.0 credit from CHM/BIO courses at the 400 level.

---

## Program #27 ERSPE1160 Psychology (Science)

- Rationale for change:** All programs offered by the Department of Psychology lead to the B.Sc. Degree and require a 2nd year course in statistics as well as 2nd and/or 3rd year courses in brain and behaviour. Our current students are ill prepared in both areas resulting in a high failure and drop rate in courses such as PSY201H. Psychology increasingly focuses on the biological basis of behaviour even in areas that have been studied primarily by social scientists. Fields such as personality, social behaviour, and parenting now involve genetic components as well as imaging of the live brain during cognitive tasks to better understand the biological mechanisms that underlie behaviour. We are also interested in synchronizing our admission requirements with those of other B.Sc. programs in Psychology including St. George. Most require Biology and more advanced math than what we currently require.
- Before:** Limited Enrolment: Enrolment in this program is limited to students who have:  
- completed any Gr.12(4U) Mathematics or **equivalent**;  
- completed 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 CGPA of 3.0. Psychology Department website:  
**[www.utm.utoronto.ca/psychology](http://www.utm.utoronto.ca/psychology) Within an honours degree, at least 10.0 credits in Psychology are required. At least 5.0 credits must be at the 300/400 level of which at least**

1.0 must be at the 400 level. A single course can be used to satisfy only one program requirement.

**After:**

Limited Enrolment: Enrolment in this program is limited to students who have:

- completed any Gr.12(4U) Mathematics or **equivalent\***;
- completed 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 CGPA of 3.0. **\* Students applying to this program in 2014/15 will be required to have completed Gr.12(4U) Biology and Advanced Functions or equivalent.** Psychology Department website:

**[www.utm.utoronto.ca/psychology](http://www.utm.utoronto.ca/psychology)**At least 10.0 credits in Psychology are required. At least 5.0 credits must be at the 300/400 level of which at least 1.0 must be at the 400 level. A single course can be used to satisfy only one program requirement.

---

### Program #28 ERSPE1237 Molecular Biology (Science)

**Rationale for change:**

Addition of BIO375H5 to Third Year Course List reflects addition of new BIO375H5 course (Intro Medical Biotechnology) for 2012-2013, which will be a course option for all Molecular Bio Specialist students.

**Before:**

Third Year BIO314H5, 315H5, 360H5, 370Y5, 372H5; CHM361H5, 362H5, 371H5; plus 0.5 of BIO304H5, 310H5, 341H5, 374H5, 380H5; CHM347H5; PHY335H5; BCH335H1, 340H1

**After:**

Third Year BIO314H5, 315H5, 360H5, 370Y5, 372H5; CHM361H5, 362H5, 371H5; plus 0.5 of BIO304H5, 310H5, 341H5, 374H5, **375H5**, 380H5; CHM347H5; PHY335H5; BCH335H1, 340H1

---

### Program #29 ERSPE1338 Forensic Anthropology (Science)

**Rationale for change:**

Consistency with the proposed change being introduced this year in the Anthropology Program: They are replacing ANT200Y5 with two half courses (ANT200H5, 201H5) in order to increase flexibility of instructors teaching the courses and more flexibility for students.

**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 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**, ANT203Y5 and ANT205H5 ).
  - A minimum Cumulative Grade Point Average of at least 3.0 The actual minimum CGPA 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
- Second Year **ANT200Y5**, 203Y5, 205H5; BIO210Y5; FSC271H5

**After:**

Limited Enrolment: Admission into the Forensic **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 **ANT200H5**, **ANT201H5**, ANT203Y5 and ANT205H5 ).
- A minimum Cumulative Grade Point Average of at least 3.0 The actual minimum CGPA 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

### Program #30 ERSPE1376 Chemistry (Science)

- Rationale for change:** In the Limited Enrolment description for all Chemistry programs, we are changing the first year Chemistry mark requirement so that rather than requiring a specific mark in both CHM110 and CHM120, we will now require that same mark ONLY in CHM120. Rationale (for all programs): Many students struggle with the transition from high school to university. In order to allow them more time to adjust to university life before assessing their eligibility for CHM programs, we will consider their mark only from the second first year CHM course, CHM120, rather than both CHM110 and CHM120.
- Before:** 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.  
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).
- After:** Limited Enrolment: Enrolment in this Program is restricted. Selection will be based on completion of 4.0 credits including **CHM140Y5(minimum grade of 65%)/(110H5,120H5)** (minimum grade of **65% in CHM120H5**); MAT134Y5/135Y5/137Y5 (minimum grade of 65%); and a minimum CGPA of 2.5.  
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).

### Program #31 ERSPE1505 Forensic Psychology (Science)

- Rationale for change:** Consistency with the proposed change being introduced this year in the Psychology Program: All programs offered by the Department of Psychology lead to the B.Sc. Degree and require a 2nd year course in statistics as well as 2nd and/or 3rd year courses in brain and behaviour. Our current students are ill prepared in both areas (e.g., many struggle with basic calculations of percentages and don't understand basic concepts such as cells and membranes). The result is a high failure and drop rate in courses such as PSY201H. Currently, high school students are not required to take any Biology courses before coming to study Psychology at UTM. Some of our students have taken no science beyond general Grade 10 science, which is clearly insufficient. While students currently have to take any Grade 12 math course for admission, many take Data Management which has proven to be useless according to UTM experts who teach 2nd year statistics and have a good understanding of the high school math curriculum. A recent evaluation found a highly significant difference in PSY201 (and STA220) grades (and CGPA) between students who took only Data Management and those who took the more difficult Advanced Functions course (64.4% vs. 71.7%). This clearly demonstrates that taking more advanced math in high school is associated with greater success in second year statistics. This will not require students to take an additional high school course but rather a different one (students who complete Grade 11 Functions will progress to Grade 12 Advanced Functions instead of Grade 12 Data Management). Psychology increasingly focuses on the biological basis of behaviour even in areas that have been studied primarily by social scientists. Fields such as personality, social behaviour, and parenting now involve genetic components as well as imaging of the live brain during cognitive tasks to better understand the biological mechanisms that underlie behaviour. We are often asked why the admission requirements to Psychology at UTM are lower than those at St. George. Psychology has been part of the Life-Science admission stream for many years on the St. George campus. This is consistent with admission standards for most B.Sc. programs in psychology throughout the province. This change will ensure that UTM is not seen as the "easier" place to study psychology compared with St. George and other universities. We are delaying the implementation of this requirement for three years to give high school students a chance to prepare. The above mentioned evaluation showed that many of our strong students already come to UTM with the proposed requirement. We hope that this change will bring to UTM students who are better prepared to cope with the expectations of the Psychology program.
- Before:** 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.  
**class="red">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

**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 **Gr.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**

**\* First year students applying to this program in 2014/15 will be required to have completed Gr.12(4U) Biology and Advanced Functions or equivalent.**

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

---

### Program #32 ERSPE1540 Statistics, Applied (Science)

**Rationale for change:** This aligns the stats specialist enrolment criteria with those for the UTM math specialist; quasi-aligns UTM with StG where stats specialists requires completion 4.0 courses all at 50% (but only accepts MAT137Y1); StG does not offer any 100 level stats courses; STA107H5 is not a prereq for any other course, but CS & math both require their specialist & majors to complete STA257H5, also economics accepts STA257H+STA258H as equivalent to ECO227Y so many good students don't take STA107H, and we don't want to exclude them from our programs; Course renumbering.

**Before:** Limited Enrolment: Enrolment in the Specialist program is limited to students with a minimum of 4.0 courses to include at least 60% in **MAT223H5; 65% in STA107H5; and** 60% in MAT137Y5 or 60% in **MAT233H5** or **65%** in **MAT134Y5/135Y5.**

Third Year MAT378H5; STA322H5/304H5/304H1, **331H5, 332H5,** 348H5

Third and Fourth Years STA413H5; three of STA312H5/313H5, **413H5,** 431H5, 437H5, **442H5,** 457H5; 1.5 credits from (CSC411H5; MAT332H5, 334H5, 344H5, 368H5; any STA courses except STA218H5, 220H5, 221H5)

**After:** Limited Enrolment: Enrolment in the Specialist program is limited to students with a minimum of 4.0 courses to include at least 60% in **STA107H5** or 60% in **STA257H5; and** MAT137Y5 or 60% in **MAT135Y5/134Y5** or **75%** in **MAT133H5; a minimum cumulative grade point average, to be determined annually.**

Third Year MAT378H5; STA322H5/304H5/304H1, **302H5/331H5, 305H5/332H5,** 348H5

Third and Fourth Years STA413H5; three of STA312H5/313H5, 431H5, 437H5, **441H5/442H5,** 457H5; 1.5 credits from (CSC411H5; MAT332H5, 334H5, 344H5, 368H5; any STA courses except STA218H5, 220H5, 221H5)

---

### Program #33 ERSPE1688 Computer Science (Science)

**Rationale for change:** Many of the notes for the Computer Science Major, Specialist, and Minor and the Information Security Specialist should be identical, but they have diverged over time and are being printed multiple times (below

each program's table of courses). We wish to collect these notes in a single location to make them easier to find and update, and we have asked that they be added to the introduction to the CSC programs entry in the calendar. A parenthesis in the table of courses was misplaced, making it unclear that CSC492/493 do not count toward the program at all.

**Before:**

### **Notes**

**- All Computer Science programs have a writing requirement. The recommended course to satisfy that requirement is CSC290H5. If a student wishes to substitute another course to satisfy the writing requirement, the student should consult the Computer Science Faculty Advisor.**

- Students in the Computer Science Specialist program are advised to arrange their program so as to complete the requirement for the Major in Computer Science by the end of the third **year**.

**- Students enrolled in this program may participate in the PEY program. For more information visit [www.pey.utoronto.ca](http://www.pey.utoronto.ca)**

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**).

**After:**

**Notes:** Students in the Computer Science Specialist program are advised to arrange their program so as to complete the requirement for the Major in Computer Science by the end of the third **year**.

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**.

---

## **Program #34 ERSPE1868 Bioinformatics**

**Rationale for change:**

1. The Third and Fourth Years category has been split to indicate which courses must be taken in the third year.

Rationale: Additional guidance in course scheduling will help students complete the program on time.

2. CHM140Y5 was replaced by CHM110H5, 120H5.

Rationale: The first year chemistry courses have been updated.

3. MAT223H5 was moved from the second year to the third year, and MAT232H5 was moved from the second year to the third year.

Rationale: These courses can be taken later in the program than originally recommended since no fourth year math courses are required, and moving these courses to the third year decreases the required first year load.

4. MAT212H5 was added as an option.

Rationale: The MAT program has introduced a differential equations course targeted at life science students.

5. BIO478H5 was removed as an option.

Rationale: The course is no longer offered.

6. JBC472H5 and CHM362H5 were removed as options.

Rationale: Both of these courses require significant numbers of prerequisites that are not in the program.

7. At Upper Years (4.5 credits), the last three items are in statistics, and they should now be STA302H5/331H5, 348H5, 442H5.

Rationale: adding STA302H5/331H5 as a recommended option.

Updates to the notes following the table of required courses:

1. Students need to obtain permission from the instructors to take BIO207H5 without the BIO153H5 prerequisite.

Rationale: The prerequisites of BIO207H5 and of BIO314H5 have changed.

2. If BIO477H5 is not offered in the fourth year of a student's studies, he or she must take an additional 0.5 credit from the recommended 400-level courses.  
Rationale: BIO478 and BIO443 were removed from this note, since BIO478 is no longer offered and BIO443 is an optional course.

3. Students intending to take CHM361H5 as one of their recommended courses must take CHM243H5 as a prerequisite course.  
Rationale: This makes the CHM243H5 prerequisite explicit.

4. All third and fourth year CSC courses have a writing requirement. The recommended course for satisfying that requirement is CSC290H5, but students may substitute a different writing course. If a student wishes to substitute another course to satisfy the writing requirement, the student should consult a Bioinformatics Faculty Advisor.  
Rationale: This makes the writing requirement in CSC3XX courses explicit and offers a means for completing CSC courses without it.

**Before:**

First Year (**4.5** credits) BIO152H5; **CHM140Y5; MAT102H5, 134Y5/135Y5/137Y5, 223H5; CSC108H5, 148H5**  
Second Year (4.0 credits) BIO206H5, 207H5, 215H5; CHM242H5; CSC207H5, 236H5, 263H5;  
**MAT232H5.**  
Upper Years (**6.0** credits) BIO314H5, 372H5, **477H5/478H5; CSC321H5/411H5, 343H5, 373H5; MAT242H5 (should be taken in 3rd year), 332H5; STA257H5, 258H5 (must be taken in 3rd year).**

At least 1.0 credit from the following list of recommended courses, of **which** at least 0.5 must be at the 400-level: **BIO315H5, 341H5, 370Y5, 371H5, 380H5, 443H5, 481Y5; CBJ481Y5; CHM361H5, 362H5; CSC310H5, 338H5, 363H5; JBC472H5; JCP410H5; STA348H5, 442H5**

**After:**

First Year (**4.0** credits) BIO152H5; **CHM110H5, 120H5; CSC108H5, 148H5; MAT102H5, 134Y5/135Y5/137Y5**  
Second Year (4.0 credits) BIO206H5, 207H5, 215H5; CHM242H5; CSC207H5, 236H5, 263H5;  
**MAT223H5**  
**Third Year (2.0 credits) MAT212H5/242H5, MAT232H5; STA257H5, 258H5**  
Upper Years (**4.5** credits) BIO314H5, 372H5, **477H5; CSC321H5/411H5, 343H5, 373H5; MAT332H5**

At least 1.0 credit from the following list of recommended courses, of **which** at least 0.5 must be at the 400-level:  
**BIO315H5, 341H5, 370Y5, 371H5, 380H5, 443H5, 481Y5; CBJ481Y5; CHM361H5; CSC310H5, 338H5, 363H5; JCP410H5; STA302H5/331H5,348H5, 442H5**

**Notes:**

**1. Students need to obtain permission from the instructors to take BIO207H5 without the BIO153H5 prerequisite.**

**2. If BIO477H5 is not offered in the fourth year of a student's studies, he or she must take an additional 0.5 credit from the recommended 400-level courses.**

**3. Students intending to take CHM361H5 as one of their recommended courses must take CHM243H5 as a prerequisite**

**course.**

**4. All third and fourth year CSC courses have a writing requirement. The recommended course for satisfying that requirement is CSC290H5, but students may substitute a different writing course. If a student wishes to substitute another course to satisfy the writing requirement, the student should consult a Bioinformatics Faculty Advisor.**

---

## Program #35 ERSPE1883 Exceptionality in Human Learning (Science)

**Rationale for change:** All programs offered by the Department of Psychology lead to the B.Sc. Degree and require a 2nd year course in statistics as well as 2nd and/or 3rd year courses in brain and behaviour. Our current students are ill prepared in both areas resulting in a high failure and drop rate in courses such as PSY201H. Psychology increasingly focuses on the biological basis of behaviour even in areas that have been studied primarily by social scientists. Fields such as personality, social behaviour, and parenting now involve genetic components as well as imaging of the live brain during cognitive tasks to better understand the biological mechanisms that underlie behaviour. We are also interested in synchronizing our admission requirements with those of other B.Sc. programs in Psychology including St. George. Most require Biology and more advanced math than what we currently require.

**Before:** Limited Enrolment: Enrolment is limited to students who have:

- completed any Gr.12(4U) Mathematics or **equivalent;**
- completed 8.0 credits;
- at least 75% as the average of PSY201H5, 210H5, 213H5 and at least 1.0 FCE in 200 series ANT/BIO/SOC courses
- a minimum CGPA of 2.70. Meeting the minimum grade requirements does not guarantee **admission. Within an Honours degree, 13.0** credits are required, including at least 3.5 300/400 level credits and 1.5 400 level credits.

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

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

**After:**

Limited Enrolment: Enrolment is limited to students who have:

- completed any Gr.12(4U) Mathematics or **equivalent\***;
- completed 8.0 credits;
- at least 75% as the average of PSY201H5, 210H5, 213H5 and at least 1.0 FCE in 200 series ANT/BIO/SOC courses
- a minimum CGPA of 2.70. **\* Students applying to this program in 2014/15 will be required to have completed Gr.12(4U) Biology and Advanced Functions or equivalent.** Meeting the minimum grade requirements does not guarantee **admission. Further information is available on the Psychology Department web site:**

**www.utm.utoronto.ca/psychology.13.0** credits are required, including at least 3.5 300/400 level credits and 1.5 400 level credits.

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

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, **204H5**, 205H5, **206H5, 207H5**, 241Y5, 306H5, 322H5, 331H5, 332H5, 333H5, 334H5, 335H5, 339Y5, 362H5, 364H5, 401H5, 434H5, 460H5, 461H5

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

- BIO204H5, 205H5, 206H5, 207H5, 210Y5, 215H5, 315H5, 341H5, 370Y5, 371H5, 372H5, 380H5, 403H5, 407H5, 443H5, 476H5, 477H5; ANT203Y5, 331H5, 332H5, **333H5**, 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, 380H5**

JAL JAL253H5, 355H5

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

355H5, **358H5**, 375H5, 380H5

RLG **RLG314H5**

SCI SCI395H5, 396H5, 499H5

WGS Any course

---

## Program #36 ERSPE1995 Biological Chemistry (Science)

**Rationale for change:**

In the Limited Enrolment description for all Chemistry programs, we are changing the first year Chemistry mark requirement so that rather than requiring a specific mark in both CHM110 and CHM120, we will now require that same mark ONLY in CHM120. Rationale (for all programs): Many students struggle with the transition from high school to university. In order to allow them more time to adjust to university life before assessing their eligibility for CHM programs, we will consider their mark only from the second first year CHM

course, CHM120, rather than both CHM110 and CHM120.

**Before:** 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.  
Year 3 CHM333H5, **341H5, 345H5**, 347H5, 361H5, 362H5, 371H5; BIO372H5  
Year 4 CHM489Y5; **0.5** 400 level CHM, JBC, JCP or BCH course

**After:** Limited Enrolment: Enrolment in this program is restricted. Selection will be based on completion of 4.0 credits including **CHM140Y5(minimum grade of 65%)/(110H5,120H5)** (minimum grade of **65% in CHM120H5**); MAT134Y5/135Y5/137Y5 (minimum grade of 65%); and a minimum CGPA of 2.5. Completion of BIO152H5 is recommended.  
Year 3 CHM333H5, **341H5/345H5**, 347H5, 361H5, 362H5, 371H5; BIO372H5  
Year 4 CHM489Y5; **1.0** 400 level CHM, JBC, JCP or BCH course

---

### Program #37 ERSPE2070 Geography (Science)

**Rationale for change:** This change is in response to the elimination of GGR117Y with the replacement of GGR111H5 and GGR112H5.

**Before:**  
First Year 1.0 credit: **GGR117Y5**

**After:**  
First Year 1.0 credit: **GGR111H5 & GGR112H5**

---

### Program #38 ERSPE2171 Geocomputational Science (Science)

**Rationale for change:** This change is in response to the elimination of GGR117Y with the replacement of GGR111H5 and GGR112H5.

**Before:**  
First Year 3.5 credits from:  
CSC108H5, 148H5; MAT102H5, 135Y5/137Y5; **GGR117Y5/ENV100Y5**

**After:**  
First Year 3.5 credits from:  
CSC108H5, 148H5; MAT102H5, 135Y5/137Y5; **GGR111H5, 112H5/ENV100Y5**

---

### Program #39 ERSPE2364 Biology (Science)

**Rationale for change:** 1. Not all St. George life science courses have equivalents to UTM BIO courses and not all are acceptable for BIO credit. This note will help guide students to seek consultation to ensure the courses they are looking at taking will be appropriate for their program and/ or as pre-requisites for upper year courses. 2. Addition of BIO374H5 and BIO375H5 to Cell, Molecular, and Developmental Biology Stream reflects addition of two new biotechnology courses (BIO374H5 introduced two years ago; BIO375H5 proposed for 2012-2013). Both courses are options for Biology Specialist students. 3. Amendment of Genetics and Evolution Stream course list reflects new additions and deletions to our course offerings - BIO442H5 is being deleted and replaced with a new course, BIO445H5 (Evolutionary Ecology, proposed for 2012-2013). This new course will be an option to all Biology Specialist students.

**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; 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.**

**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**
- Biology of Whole Organisms: 325H5, 335H5, 338H5, 354H5, 356H5
- Genetics and Evolution: BIO341H5, 342H5, 407H5, **445H5, 443H5**, 464H5
- Cell, Molecular and Developmental Biology: BIO314H5, 315H5, 370Y5, 371H5, 372H5, **374H5, 375H5**, 380H5, 407H5, 476H5, **477H5**
- Physiology and Behaviour: BIO210Y5, 304H5, 310H5, 312H5, 318Y5, 328H5, 409H5, 410H5, 411H5, **434H5**\*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; **PHY332H5, 333H5**; PSY290H5, 355H5, 357H5, 395H5, 397H5; ANT334H5, 336H5, 340H5. Additional courses: BIO361H5, 481Y5

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 **MAT134Y5/135Y5/137Y5**, 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, **Internship Program**, or **Individual Project** / Thesis courses at the 300/400-level for credit toward their Biology program.
- **Students must consult with the Undergraduate Advisor before enrolling in any St. George course that they wish to use for credit toward any Biology program.**

---

**Program #40 ERSPE2470 Behaviour, Genetics, and Neurobiology (Science)**

**Rationale for change:**

Admission requirements are raised to align them with the Specialist Program in Psychology. This program has attracted poorer students who could not find supervisors for required senior research projects. This change will ensure that students who qualify for the Specialist program are indeed potential graduate school bound students who can benefit from the extra resources provided primarily to Specialists (i.e., research opportunities, guaranteed spots in seminar courses etc.).

**Before:**

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 Within an Honours degree**, 11.5 credits are required, including at least 3.0 300/400 level credits and 1.0 400 level credits.

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.

#### 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 **77%** as the average of PSY201H5, 202H5 (or equivalent), and at least 1.0 FCE from:

BIO205H5/206H5/207H5/ PSY252H5/290H5

- a minimum CGPA of **3.0** 11.5 credits are required, including at least 3.0 300/400 level credits and 1.0 400 level credits.

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, **476H5**, PSY355H5

- Neurobiology: BIO304H5, **409H5**, 310H5, 380H5, PSY318H5, 346H5, 385H5, 393H5, 397H5, 399H5

Third year note:

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

---

### Program #41 ERSPE2511 Mathematical Sciences (Science)

#### Rationale for change:

These requirements are necessary for students to succeed in the upper level courses that are required in the program.

Change: Remove MAT252H5 from the Second Year requirements . Add MAT311 to item 1 of the Third and Fourth year requirements .

Rationale: Instead of requiring two courses in Ordinary Differential Equations (MAT242 and MAT252), we prefer to require one course in Ordinary Differential Equations (MAT242) and one course in Partial Differential Equations (MAT311).

Change: Add MAT302H5/MAT315H5 to item 1 of Third and Fourth year requirements .

Rationale: We would like to ensure that students take at least one of these courses.

Change: Add MAT402 to item 1 of Third and Fourth year requirements .

Rationale: This is the only course in geometry that we currently offer and we would like to ensure that students be exposed to the subject.

Third and Fourth year requirements , item 2: Change to: 1.0 additional credit, chosen from MAT302H5, 309H5, 315H5, 332H5,344H5.

Rationale: removed from this list courses that are becoming required under item 1 of Third and Fourth Years .

Third and Fourth year requirements , item 3: Change to: 0.5 additional credits in MAT at the 400 level (405 is recommended).

Rationale: because MAT402 has become mandatory, we only need to require one more 400 level half-course. MAT405 is essential for students who continue to graduate studies in mathematics. We have not had enough successful experience with MAT492 (senior thesis) to justify recommending it.

#### Before:

Limited Enrolment: Enrolment in the Specialist program is limited to students **with 60% in**

MAT102H5 and **60% in MAT137Y5.**

Second Year CSC207H5/209H5/236H5; MAT202H5, 224H5, 232H5, **242H5, 252H5**; STA257H5, 258H5/261H5

Third & Fourth Years

- **MAT334H5**, 368H5, **392H5**

- **Three of** MAT302H5, 309H5, **311H5**, 315H5, 332H5, **344H5**

- **1.0** additional **credit** in MAT at the 400 level (**MAT492H5** is **recommended**)

- 1.5 additional credits at the 300+ level in CSC/MAT/STA

**After:**

Limited Enrolment: Enrolment in the Specialist program is limited to students **who meet the following criteria: (1) A minimum of 4.0 credits, including MAT102H5 (60%) and MAT137Y5 (60%). (2) A minimum cumulative grade point average (CGPA), to be determined annually.**

Second Year CSC207H5/209H5/236H5; MAT202H5, 224H5, 232H5, **242H5**; STA257H5, 258H5/261H5

Third & Fourth Years

- **MAT311H5, 334H5**, 368H5, **392H5, 302H5/315H5, 402**

- **1.0 additional credit, chosen from** MAT302H5, 309H5, 315H5, 332H5, **344H5.**

- **0.5** additional **credits** in MAT at the 400 level (**405** is **recommended**).

- 1.5 additional credits at the 300+ level in CSC/MAT/STA

---

# New Courses

---

## Course #1 ANT201H5 World Prehistory (SCI)

<b>Description:</b>	Survey of human cultural development over 2.5 million years. The course will cover the following topics: the nature and origins of material culture; the nature and development of hunter-gather-fisher economies; the nature and development of resource production; and the nature of development of complex societies.
<b>Exclusion:</b>	ANT200Y5
<b>Recommended Preparation:</b>	ANT101H5
<b>Rationale:</b>	At present, the topics in this half-course are covered in the second term of ANT200Y5. We propose to replace ANT200Y5 with two half courses in order to increase flexibility of instructors teaching the courses and more flexibility for students.
<b>No. Hours Instruction:</b>	24L, 12P
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

---

## Course #2 ANT210H5 Fantasies, Hoaxes and Misrepresentations of the Ancient World (SCI)

<b>Description:</b>	The anatomy of significant hoaxes, outrageous claims, and archaeology in popular culture are examined. Why are these claims so popular? How do we critically evaluate potential hoaxes and fictional accounts of the past? What role has racism played in these views? This course provides the tools for evaluation of these claims as well as for the lifetime enjoyment of what is truly exciting about archaeology.
<b>Rationale:</b>	Pseudoarchaeology is popular on television (History Channel, Discovery, PBS etc.), in literature, and in movies. This course is intended to produce informed students who will not only be able to critically evaluate the archaeological claims of popular culture but also to provide the tools and perspective for students to enjoy a life long engagement with the world of archaeology. It will provide a science breadth requirement and should help Anthropology take on more students. Several other service courses are being offered at the 2nd year in Anthropology but this will be the first such course in archaeology.
<b>No. Hours Instruction:</b>	24L
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

---

## Course #3 BIO375H5 Introductory Medical Biotechnology (SCI)

<b>Description:</b>	This course reviews a full range of discoveries from the life sciences, which includes both drugs and medical devices. The course reviews a range of biotechnology products with respect to: regulatory path for experiments to support for new biotechnologies; key science concepts behind the technology and the business context. [36L]
<b>Prerequisite:</b>	Completion of 2.0 credits in Biology, plus BIO360H5/ STA220H5/ PSY201H5
<b>Rationale:</b>	This course will build the undergraduate biotechnology specialists program's course offerings and provide a context for students to understand such courses as BIO476H (Molecular Basis of Disease) in which small disease populations pose unique challenges for product testing.
<b>No. Hours Instruction:</b>	36L
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

---

## Course #4 BIO445H5 Evolutionary Ecology (SCI)

<b>Description:</b>	This course focuses on the interface between ecology and evolution. Research has shown that biotic and abiotic ecological factors drive evolution, and in turn, evolution feeds back to influence the ecological processes and patterns of populations and communities. Throughout this course we will focus on this dynamic interplay over short and long time spans in animals, plants, fungi, and other microbes. While covering the concepts and questions of this field we will also consider the theory, methods, and statistics used to bring new insights to evolutionary ecology. Students will be expected to participate in discussions, present methods and concepts to the class, and
---------------------	--

complete written assignments. [48L]

<b>Exclusion:</b>	EEB324H1
<b>Prerequisite:</b>	BIO205H5, 207H5, 342H5
<b>Rationale:</b>	This course will serve as a capstone to students interested in ecology and evolution, solidifying their understanding of the concepts and intersection of these fields, while helping to hone their critical thinking skills, their proficiency with reading and writing in the sciences, as well as their presentation skills.
<b>No. Hours Instruction:</b>	48L
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

---

### Course #5 CSC322H5 Introduction to Algebraic Cryptography (SCI)

<b>Description:</b>	The course will take students on a journey through the methods of algebra and number theory in cryptography, from Euclid to Zero Knowledge Proofs. Topics include: block ciphers and the Advanced Encryption Standard (AES); algebraic and number-theoretic techniques and algorithms in cryptography, including methods for primality testing and factoring large numbers; encryption and digital signature systems based on RSA, factoring, elliptic curves and integer lattices; and zero-knowledge proofs. [36L, 12T]
<b>Exclusion:</b>	MAT302H5
<b>Prerequisite:</b>	MAT223H5, 224H5, 301H5
<b>Rationale:</b>	MAT302 is an existing course being taught by a computer science faculty member. Cross-listing that course in computer science makes it possible for CSC students in all programs (not just the information security program) to take the course for CSC credit.
<b>No. Hours Instruction:</b>	36L, 12T
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

---

### Course #6 ENV495H5 Restoration Ecology I (SCI)

<b>Description:</b>	Restoration ecology is an emerging cross-disciplinary field of study that concerns human activities undertaken to promote the recovery, health, integrity and sustainability of degraded ecosystems. This course introduces the fundamental concepts of ecological restoration, addressing topics such as assessing ecosystem health, resilience, resistance and stability; community structure and biodiversity; invasive species; ecosystem processes and functions; societal aspects of ecological restoration (e.g., the relationship between social, economic and environmental sustainability). Many types of ecosystems (marine, freshwater, terrestrial, tropical and temperate) will be studied, largely through case-study investigations. Occasional field exercises on campus will be scheduled during regular class meeting times. [24L, 12T]
<b>Prerequisite:</b>	ENV100; completion of at least 10 credits. BIO205 is STRONGLY recommended. Preference will be given to students enrolled in an ENV program
<b>Rationale:</b>	This course fills an important niche for students in environmental science and environmental management, and is likely to attract students with a background in ecology and biology. It provides a theoretical background to an applied science, and has an experiential component as well. As a problem-based learning course, it allows students to develop skills in problem-solving, communication, collaboration and critical analysis of scientific discourse. The overall goals of this course are to introduce students to the theory and practice of ecological restoration; to provide a historical context for the current ideas and practices in the discipline; to gain awareness of current issues and restoration goals at the local, regional and global scales; and to appreciate and begin developing the skills and resources required to be a successful practitioner in ecological restoration.
<b>No. Hours Instruction:</b>	
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

---

### Course #7 ENV496H5 Restoration Ecology II (SCI)

<b>Description:</b>	The follow-up course Restoration Ecology I will build on its theoretical foundations to focus on student involvement in a variety of restoration projects planned or underway by Credit Valley Conservation and other groups in Mississauga and the greater Credit Valley watershed. The emphasis here is on planning and implementation of
---------------------	---

restoration projects; good scientific design; understanding policies and procedures; identifying and working with stakeholders, etc. Occasional field exercises may be scheduled during regular class meeting times. [24L, 12T]

**Prerequisite:** ENV495H5(Restoration Ecology I) or permission of the instructor

**Rationale:** This course allows students to apply the theoretical principles learned in Restoration Ecology I to current restoration problems/projects underway in the Credit Valley watershed. Although field opportunities are limited due to the timing (winter course), this is truly an experiential learning course as the objective is to work in groups to develop a restoration plan and present it to managers at CVC in a formal presentation day. Plans that are successful may be adopted by CVC, and students may be able to participate in the implementation of their restoration plans after the course is completed.

**No. Hours**

**Instruction:**

**Offered at St George:** No

**Revived Course:** No

---

### Course #8 FSC406H5 Introduction To 3D Crime Scene Mapping And Reconstruction (SCI)

**Description:** This course introduces students to both standard and innovative methods of documenting, mapping, analyzing, and visualizing/reconstructing a crime scene for investigative purposes, including: total stations; laser scanners; panoramic images; and photogrammetry. Course topics range from basic measurement theory and statistics, to legal considerations such as admissibility and preparing courtroom-ready visualizations. Students will learn to use forensic mapping software to create courtroom-ready graphics. [12L, 24P]

**Prerequisite:** FSC300H5, FSC302H5

**Rationale:** Forensic animations and 3D crime scene reconstructions are becoming more common in courtrooms, raising jury expectations about how evidence and data are presented. The UTM FSC program is developing a distinct identity within the forensic science academic community and reasserting our position as the number one forensic science program in Canada, by building on our strengths in data and evidence visualization through collaborations with the Biomedical Communications Program. This course will complement existing courses (Visualization of Forensic Demonstrative Evidence, Digital Forensic Facial Reconstruction) and complete the Forensic Identification courses that focus on acquiring crime scene data (FSC 300H5, FSC 302H5).

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

**Offered at St George:** No

**Revived Course:** No

(Priority given to Forensic Science Specialists and Majors.)

---

### Course #9 GGR112H5 Physical Geography (SCI)

**Description:** This physical geography course introduces earth systems processes occurring in and between the atmosphere, lithosphere, hydrosphere and the biosphere. It addresses human interaction and interference with the natural environment and compares natural and anthropogenic environmental changes. Key tools used to understand earth systems and the natural environment including hands-on empirical approaches, systems models, remote sensing, and geographical information systems are addressed in both the lectures and the practical sessions. [24L, 12P]

**Rationale:** This course introduces the discipline of physical geography. It provides a basic understanding of hydrological, geological, climatological, and ecological processes and dynamics required for all upper-level geography science courses. The practical sessions are essential to give students initial experiences with methods in physical geography that are further built upon in upper level courses. This course is a prerequisite for all students intending to enrol in a Geography specialist or major programs or a Geography (Sci) minor program.

**No. Hours**

**Instruction:**

**Offered at St George:** No

**Revived Course:** No

---

### Course #10 JCB487Y5 Advanced Interdisciplinary Research Laboratory (SCI)

**Description:** Students will work together as members of a multidisciplinary team toward the completion of an interdisciplinary experimental or theoretical research project. Teams will be comprised of at least three students, with representation from at least three areas of specialization, namely, astronomy, biology, chemistry, earth sciences or physics. The interdisciplinary projects will be based on current trends in research and student teams will work to

complete their projects with guidance provided by a team of faculty advisors from the Biology Department and the Department of Chemical and Physical Sciences. In addition to the rigorous development of research skills, the course will also provide students with practical experience in project management and training in effective project management techniques. [240P]

<b>Exclusion:</b>	BIO481Y5, CBJ481Y5, CHM489Y5, CHM499Y1, PHY489Y5
<b>Prerequisite:</b>	2.0 credits 300 level from BIO/CHM/JBC/JCP/PHY and 1.0 credit from BIO215H5, 314H5, CHM371H5, 391H5, 393H5, PHY324H5. The course is normally taken in the student's fourth year. In order to enroll in this course, students must obtain approval from a faculty member(s) who will serve as the supervisor(s) several months in advance of the start of the course.
<b>Rationale:</b>	This is a new course offering to provide students with interdisciplinary research experience spanning the biological and physical sciences, as well as providing preparation for careers in science. The course will emphasize project management, communication, and teamwork skills, areas not stressed as extensively in existing fourth year research courses in CPS and Biology. The course will also provide an opportunity for the training of students [graduate students and undergraduates studying in the Concurrent Teacher Education Program (CTEP)] interested in multidisciplinary research and teaching, who may become involved in both developing and offering the course. Faculty from the Chemical and Physical Sciences and Biology departments will be involved in offering the course, as part of their teaching duties.
<b>No. Hours Instruction:</b>	240P
<b>Offered at St George:</b>	No
<b>Revived Course:</b>	No

**Evaluation:** As these are team-based projects, identical grades will be awarded to all members of a given team. This is a balloted course.

---

### **Course #11 PSY3XXH5 Interpersonal Relationships (SCI)**

<b>Description:</b>	The objective of this course is to review what relationship science can tell us about close relationships, with a particular focus on romantic relationships. We will explore questions such as: Why do we want to be in relationships, what informs our choice of relationship partners, what predicts satisfaction and stability in relationships, and what is the role of sexuality in relationships? These and other questions will be examined from a variety of theoretical perspectives and will be applied to better understand real-world relationship functioning. General topics include theory and methods of relationships, attraction, social cognition, interdependence, attachment, sexuality, culture and gender, jealousy, and thriving relationships. [36L]
<b>Exclusion:</b>	PSY324H1, 424H1
<b>Prerequisite:</b>	PSY201H5/equivalent, 220H5/230H5
<b>Rationale:</b>	The Department of Psychology at UTM currently offers very few content courses for students with a sustained interest in Social Psychology. Social Psychology is frequently cited by students as one of the most interesting areas of the discipline because of its far-reaching implications for real-life social situations. This 300-level course will provide students with an in-depth focus on attraction, relationships, and interpersonal processes, and will ultimately provide a bridge between the 200-level lecture course on Introduction to Social Psychology (PSY220) and 400-level seminars in this area (e.g., Special Topics in Social Psychology, PSY420). Growing student interest in close relationships is a natural consequence of the expansion of the Adjustment & Well-Being cluster as well as with the appointment of Prof. Emily Impett as a new faculty member in the department.
<b>No. Hours Instruction:</b>	36L
<b>Offered at St George:</b>	Yes
<b>Revived Course:</b>	No

---

# Courses - Resource Implications

---

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

**Resource implications:** Same resources as in past years--TA support.

---

## **Course #2 ANT200H5 Prehistoric Archaeology**

**Resource implications:** Same resources as in past years--TA support.

---

## **Course #3 ANT201H5 World Prehistory**

**Resource implications:** Teaching Assistant support.

---

## **Course #4 ANT203Y5 Biological Anthropology**

**Resource implications:** Same resources as in past years--TA support.

---

## **Course #5 ANT205H5 Introduction to Forensic Anthropology**

**Resource implications:** Same resources as in past years--TA support.

---

## **Course #6 ANT210H5 Fantasies, Hoaxes and Misrepresentations of the Ancient World**

**Resource implications:** Teaching Assistant support.

---

## **Course #7 ANT308H5 Case Studies in Archaeological Botany and Zoology**

**Resource implications:** None at the moment. However, TA support maybe required dependent on enrolment numbers.

---

## **Course #8 ANT309H5 Southeast Asian Archaeology**

**Resource implications:** None at the moment. However, TA support maybe required dependent on enrolment numbers.

---

## **Course #9 ANT312H5 Archaeological Analysis**

**Resource implications:** Same resources as in past years--TA support.

---

## **Course #10 ANT313H5 China, Korea and Japan in Prehistory**

**Resource implications:** None at the moment. However, TA support maybe required dependent on enrolment numbers.

---

## **Course #11 ANT314H5 Archaeological Theory**

**Resource implications:** None at the moment. However, TA support maybe required dependent on enrolment numbers.

---

## **Course #12 ANT317H5 Archaeology of Eastern North America**

**Resource implications:** None at the moment. However, TA support maybe required dependent on enrolment numbers.

---

## **Course #13 ANT318H5 Archaeological Fieldwork**

**Resource implications:** Same resources as in past years--TA years.

---

## **Course #14 ANT320H5 Archaeological Approaches to Technology**

**Resource implications:** None at the moment. However, TA support maybe required dependent on enrolment numbers.

---

---

**Course #15 ANT327H5 Agricultural Origins: The Second Revolution**

**Resource implications:** TA support maybe required dependent on enrolment numbers.

---

**Course #16 ANT407H5 Statistics and Archaeological Analyses to Quantitative Methods in Biological Anthropology and Archaeology**

**Resource implications:** Teaching Assistant support.

---

**Course #17 ANT414H5 People and Plants in Prehistory**

**Resource implications:** Same resources as in past years--TA support.

---

**Course #18 ANT415H5 Faunal Archaeo-Osteology**

**Resource implications:** Same resources as in past years--TA support.

---

**Course #19 BIO207H5 Introductory Genetics**

**Resource implications:** None.

---

**Course #20 BIO312H5 Plant Physiology**

**Resource implications:** Appropriate lab space for two lab sections of 24 students; equipment to run labs; lab technician; TA support according to the Departmental standard for a lab course (1.8 hours per student) for the running of the course; also a one-time 70-hour TA to assist with the development of the new labs.

---

**Course #21 BIO318Y5 Animal Behaviour**

**Resource implications:** None.

---

**Course #22 BIO328H5 Lectures in Animal Behaviour**

**Resource implications:** None.

---

**Course #23 BIO330H5 Plant Ecology**

**Resource implications:** None.

---

**Course #24 BIO356H5 Major Features of Vertebrate Evolution**

**Resource implications:** None.

---

**Course #25 BIO374H5 Biotechnology and Society**

**Resource implications:** None.

---

**Course #26 BIO375H5 Introductory Medical Biotechnology**

**Resource implications:** TA support - calculated as it is for all lecture-only BIO courses, 0.7 hrs per student.

---

**Course #27 BIO400Y5 Biology Internship**

**Resource implications:** None.

---

**Course #28 BIO445H5 Evolutionary Ecology**

**Resource implications:** An appropriate seminar-style room; no TA support.

---

**Course #29 BIO476H5 Molecular Basis of Disease**

Resource implications: None.

---

**Course #30 BIO477H5 Molecular Biology of Gene Expression and Cancer**

Resource implications: None.

---

**Course #31 BIO481Y5 Biology Research Project**

Resource implications: None.

---

**Course #32 CBJ481Y5 Independent Project in Bioinformatics**

Resource implications: None.

---

**Course #33 CHM211H5 Fundamentals of Analytical Chemistry**

Resource implications: There are no resource implications.

---

**Course #34 CHM231H5 Inorganic Chemistry I**

Resource implications: There are no Resource implications.

---

**Course #35 CHM242H5 Introductory Organic Chemistry I**

Resource implications: There are no resource implications.

---

**Course #36 CHM331H5 Inorganic Chemistry II: Advanced Inorganic Chemistry**

Resource implications: There are no resource implications.

---

**Course #37 CHM333H5 Bioinorganic Chemistry**

Resource implications: There are no resource implications.

---

**Course #38 CHM444H5 An Introduction to Medicinal Chemistry and Molecular Recognition**

Resource implications: There are no resource implications.

---

**Course #39 CSC108H5 Introduction to Computer Programming**

Resource implications: None.

---

**Course #40 CSC318H5 The Design of Interactive Computational Media**

Resource implications: None

---

**Course #41 CSC321H5 Introduction to Neural Networks and Machine Learning**

Resource implications: None

---

**Course #42 CSC322H5 Introduction to Algebraic Cryptography**

Resource implications: None

---

**Course #43 CSC338H5 Numerical Methods**

Resource implications: None

---

---

**Course #44 CSC358H5 Principles of Computer Networks**

Resource implications: None

---

**Course #45 CSC384H5 Introduction to Artificial Intelligence**

Resource implications: None

---

**Course #46 ECO227Y5 Quantitative Methods in Economics**

Resource implications: Not applicable.

---

**Course #47 ENV400Y5 Environmental Internship**

Resource implications: not applicable

---

**Course #48 ENV490H5 Special Topics in Environmental Studies**

Resource implications: not applicable

---

**Course #49 ENV491H5 Special Topics in Environmental Studies**

Resource implications: not applicable

---

**Course #50 ENV495H5 Restoration Ecology I**

Resource implications: not applicable

---

**Course #51 ENV496H5 Restoration Ecology II**

Resource implications: not applicable

---

**Course #52 ERS120H5 Planet Earth**

Resource implications: There are no resource implications.

---

**Course #53 ERS319H5 Earth Resources**

Resource implications: There are no resource implications.

---

**Course #54 FSC300H5 Forensic Identification**

Resource implications: N/A

---

**Course #55 FSC406H5 Introduction To 3D Crime Scene Mapping And Reconstruction**

**Resource implications:** use of computer lab; sessional instructor; TA; 4 laser distance meters (\$1600) software licenses are being provided for free from the company it would be ideal to invest in one significant piece of equipment that could be utilized in at least 4 of the FSC courses in addition to this one (FSC 300H5, 302H5, 306H5, ANT 306H5) with potential use in the other forensic visualization courses (HSC403H5, 405H5) e.g. hand-held laser scanner for evidence (approximately \$16K)

---

**Course #56 FSC481Y5 Internship in Forensic Science**

Resource implications: N/A

---

**Course #57 GGR112H5 Physical Geography**

Resource implications: not applicable

---

---

**Course #58 GGR217H5 Fundamentals of Hydrology**

Resource implications: not applicable

---

**Course #59 GGR309H5 Wetland Ecosystems**

Resource implications: not applicable

---

**Course #60 GGR315H5 Physical Hydrology**

Resource implications: not applicable

---

**Course #61 GGR407H5 Ecohydrology**

Resource implications: not applicable

---

**Course #62 HSC200H5 Imaging Technologies for Scientific Visual Communication**

Resource implications: None.

---

**Course #63 HSC300H5 Written Communication for Health Care**

Resource implications: None.

---

**Course #64 HSC301H5 Data and Information Visualization**

Resource implications: None.

---

**Course #65 HSC302H5 Biocommunication Visualization**

Resource implications: None.

---

**Course #66 HSC401H5 Health and Science Communication Design**

Resource implications: None.

---

**Course #67 JCB487Y5 Advanced Interdisciplinary Research Laboratory**

Resource implications: There are no resource implications.

---

**Course #68 JCP221H5 Thermodynamics and Kinetics**

Resource implications: There are no resource implications.

---

**Course #69 MAT212H5 Modeling with Differential Equations in Life Sciences and Medicine**

Resource implications: None

---

**Course #70 MAT232H5 Calculus of Several Variables**

Resource implications: None

---

**Course #71 MAT233H5 Calculus of Several Variables**

Resource implications: None

---

**Course #72 MAT242H5 Differential Equations I**

---

Resource implications: None

---

**Course #73 MAT301H5 Groups and Symmetries**

Resource implications: None

---

**Course #74 MAT302H5 Introduction to Algebraic Cryptography**

Resource implications: None

---

**Course #75 MAT309H5 Introduction to Mathematical Logic**

Resource implications: None

---

**Course #76 MAT311H5 Partial Differential Equations**

Resource implications: None

---

**Course #77 MAT315H5 Introduction to Number Theory**

Resource implications: None

---

**Course #78 MAT332H5 Introduction to Nonlinear Dynamics and Chaos**

Resource implications: None

---

**Course #79 MAT334H5 Complex Variables**

Resource implications: None

---

**Course #80 MAT344H5 Introduction to Combinatorics**

Resource implications: None

---

**Course #81 MAT368H5 Vector Calculus**

Resource implications: None

---

**Course #82 MAT378H5 Introduction to Analysis**

Resource implications: None

---

**Course #83 MAT382H5 Mathematics for Teachers**

Resource implications: None

---

**Course #84 MAT388H5 Topics in Mathematics**

Resource implications: None

---

**Course #85 MAT392H5 Ideas of Mathematics**

Resource implications: None

---

**Course #86 MAT401H5 Polynomial Equations and Fields**

Resource implications: None

---

**Course #87 MAT402H5 Classical Geometries**

Resource implications: None

---

**Course #88 MAT405H5 Introduction to Topology**

Resource implications: None

---

**Course #89 MAT406H5 Mathematical Introduction to Game Theory**

Resource implications: None

---

**Course #90 MAT478H5 Topics in Mathematics**

Resource implications: None

---

**Course #91 MAT488H5 Topics in Mathematics**

Resource implications: None

---

**Course #92 MAT492H5 Senior Thesis**

Resource implications: None

---

**Course #93 MAT498H5 Topics in Mathematics**

Resource implications: None

---

**Course #94 PHY237H5 The Physics of the Climate System**

Resource implications: Not offered in 2012-13.

---

**Course #95 PHY241H5 Electromagnetism**

**Resource implications:** We will require an additional 12 TA hours. Suitable laboratory rooms (DV2055 and DV2062) have been identified, and they are known to have the capacity to accommodate the additional hours. Equipment requirements will be minimal, and will involve either existing equipment or items to be covered from the departmental budget. The nature of the experiments in this course will be such that no consumables (chemicals, etc.) will be required, so there are no resources required for these.

---

**Course #96 PHY325H5 Mathematical Physics**

**Resource implications:** There are no resource implications.

---

**Course #97 PHY347H5 Optics**

**Resource implications:** There are no resource implications.

---

**Course #98 PHY451H5 Classical Electrodynamics**

**Resource implications:** There are no resource implications.

---

**Course #99 PSY220H5 Introduction to Social Psychology**

Resource implications: None

---

**Course #100 PSY316H5 Infant Perception and Cognition**

Resource implications: None

---

**Course #101 PSY343H5 Theories of Psychotherapy**

Resource implications: None

---

---

**Course #102 PSY353H5 Developmental Social Neuroscience**

Resource implications: None

---

**Course #103 PSY3XXH5 Interpersonal Relationships**

Resource implications: None

---

**Course #104 SOC350H5 Quantitative Analysis I**

Resource implications: Not applicable

---

**Course #105 STA107H5 An Introduction to Probability and Modelling**

Resource implications: None.

---

**Course #106 STA302H5 Regression Analysis**

Resource implications: None.

---

**Course #107 STA305H5 Experimental Design**

Resource implications: None.

---

**Course #108 STA431H5 Structural Equation Models**

Resource implications: None.

---

**Course #109 STA441H5 Methods of Applied Statistics**

Resource implications: None

---

# Deleted Courses

---

## Course #1 BIO442H5 Mechanisms of Evolution

**Rationale:** Our proposed new course, BIO445H5 will replace this course, which has not been offered since the retirement of David Gibo in 2009.

---

## Course #2 PSY327H5 Emotion and Cognition

**Rationale:** This covers a very specific area for which there are few suitable instructors available. It has not been taught for the past few years and there is no interest in offering it again.

---

## Course #3 SOC351H5 Quantitative Analysis II

**Rationale:** This course has not been required for Sociology Specialists since 2006. It is not central to any program, and is unlikely to be offered in the foreseeable future.

---

# Renumbered Courses

---

## Course #1 ANT407H5 Statistics and Archaeological Analyses to Quantitative Methods in Biological Anthropology and Archaeology

Before: **ANT307H5**

After: **ANT407H5**

**Rationale:** Because the data used for instruction on statistical methods are drawn directly from the discipline, an understanding of the practice of biological anthropology and archaeology is critical. Preparation in requisite coursework is necessary for grasping fundamental statistical concepts. Given that currently enrolled students are majors, this course seems like a logical follow-up for students interested in pursuing more specialized topics. As such, the course should be offered at the fourth-year level.

---

## Course #2 STA302H5 Regression Analysis

Before: **STA331H5**

After: **STA302H5**

**Rationale:** STA331H5 is equivalent to STA302H1. Doesn't need to propagate itself in prerequisite/exclusion lists since it was previously STA302H5 (we followed StG through numbering changes).

---

## Course #3 STA305H5 Experimental Design

Before: **STA332H5**

After: **STA305H5**

**Rationale:** STA332H5 is equivalent to STA305H1.

---

## Course #4 STA441H5 Methods of Applied Statistics

Before: **STA442H5**

After: **STA441H5**

**Rationale:** StG has a STA442H1 and it is not the same as STA442H5; STA442H1 is cross listed as STA2101H1 - a UTM graduate who began her MSc at StG was almost excluded from the grad course since she'd completed STA442H5; the number 441 is not used for a stats course at any UofT campus.

---

# Rewighted Courses

---

## Course #1 ANT200H5 Prehistoric Archaeology

**Before:** ***ANT200Y5***

**After:** ***ANT200H5***

**Rationale:** Y course divided into 2 half courses. ANT200Y5 to be changed to ANT200H5, with new title and description. Change from tutorials to practicals: Due to lack of sufficient lab space, first and second year courses in biological anthropology and archaeology have not been able to conduct proper lab practicals. However, with the new teaching labs planned for next year, and the shift of research materials to the new HSC building, the opening of space in North has allowed us to make this change already in the way the courses are taught, starting 2011 or in some with 2010.

Y course divided into 2 half courses. ANT200Y5 to be changed to ANT200H5, with new title and description. The second half has been introduced as a new course ANT201H5.

---

# Courses - Description Changes

---

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

- Before:** Anthropology is the global and holistic study of human biology and behaviour, and includes four subfields: biological anthropology, archaeology, sociocultural anthropology and linguistics. The material covered is directed to answering the question: What makes us human? This course is a survey of biological anthropology and archaeology. [24L, **12T**]
- After:** Anthropology is the global and holistic study of human biology and behaviour, and includes four subfields: biological anthropology, archaeology, sociocultural anthropology and linguistics. The material covered is directed to answering the question: What makes us human? This course is a survey of biological anthropology and archaeology. [24L, **12P**]
- Rationale:** Change from tutorials to practicals: Due to lack of sufficient lab space, first and second year courses in biological anthropology and archaeology have not been able to conduct proper lab practicals. However, with the new teaching labs planned for next year, and the shift of research materials to the new HSC building, the opening of space in North has allowed us to make this change already in the way the courses are taught, starting 2011 or in some with 2010.
- 

## Course #2 ANT200H5 Prehistoric Archaeology

- Before:** Archaeological method and **theory, and world prehistory**. Principles of scientific research will be applied to archaeological **information, from the Early Pleistocene to the beginning of written history**. [48L, **24T**]
- After:** Archaeological **theory**, method and **technique**. Principles of scientific research will be applied to archaeological **information. The course will cover the following topics: how archaeology applies the scientific method; how archaeological projects are planned and organized; how archaeological data are recovered through survey, excavation and other means; how archaeological data are organized and analyzed to produce information about the human past; the major theoretical paradigms that archaeologists use to interpret the human past**. [24L, **12P**]
- Rationale:** Y course divided into 2 half courses. ANT200Y5 to be changed to ANT200H5, with new title and description. Change from tutorials to practicals: Due to lack of sufficient lab space, first and second year courses in biological anthropology and archaeology have not been able to conduct proper lab practicals. However, with the new teaching labs planned for next year, and the shift of research materials to the new HSC building, the opening of space in North has allowed us to make this change already in the way the courses are taught, starting 2011 or in some with 2010. To better reflect the course content of a Y course divided into 2 half courses.
- 

## Course #3 ANT203Y5 Biological Anthropology

- Before:** A survey of the field of biological anthropology. Topics will include human evolution and palaeontology, skeletal biology, human genetics and variation, human growth, primatology and human adaptation. [48L, **24T**]
- After:** A survey of the field of biological anthropology. Topics will include human evolution and palaeontology, skeletal biology, human genetics and variation, human growth, primatology and human adaptation. [48L, **24P**]
- Rationale:** Change from tutorials to practicals: Due to lack of sufficient lab space, first and second year courses in biological anthropology and archaeology have not been able to conduct proper lab practicals. However, with the new teaching labs planned for next year, and the shift of research materials to the new HSC building, the opening of space in North has allowed us to make this change already in the way the courses are taught, starting 2011 or in some with 2010.
- 

## Course #4 ANT205H5 Introduction to Forensic Anthropology

- Before:** Introduction to the field of forensic anthropology. Outlines the areas in which forensic anthropologists may contribute to a death investigation and introduces basic concepts relating to the recovery and analysis of human remains. [24L, **12T**]
- After:** Introduction to the field of forensic anthropology. Outlines the areas in which forensic anthropologists may contribute to a death investigation and introduces basic concepts relating to the recovery and analysis of human remains. [24L, **12P**]
- Rationale:** Change from tutorials to practicals: Due to lack of sufficient lab space, first and second year courses in biological anthropology and archaeology have not been able to conduct proper lab practicals. However, with the new teaching labs planned for next year, and the shift of research materials to the new HSC building, the opening of space in North has allowed us to make this change already in the way the courses are taught, starting 2011 or in some with 2010.

---

## Course #5 ANT407H5 Statistics and Archaeological Analyses to Quantitative Methods in Biological Anthropology and Archaeology

- Before:** 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]**
- After:** The fragmentary nature of data *recovered from prehistoric sites* 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.
- Rationale:** Course description presently limited to statistical instruction and should emphasize the research design component of the course. The course is intended to help students' gain a first-hand experience with the scientific method and inductive reasoning.
- 

## Course #6 BIO312H5 Plant Physiology

- Before:** 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. **[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. **[36L, 15P]**
- Rationale:** This course will provide the setting for the Department to develop the plant physiology stream more fully, which we have not had the chance to expand in recent years due to staffing issues. The addition of five 3-hour labs in this course will act as a compliment to our senior animal physiology lab course (BIO409H5). The two plant labs that are currently in BIO409H will be moved to BIO312H and three new ones developed for the course. The Department's hope and plan is to grow this course to eight 3-hour labs in future years.
- 

## Course #7 BIO318Y5 Animal Behaviour

- Before:** *An introductory overview of the behaviour of animals presented from a zoological perspective for Biology specialists. Behaviour is examined as the evolved result of interaction with other animals, such as predators, potential mates and other aspects of the environment. Other topics include behavioural genetics, development, communication, motivation and the control of behaviour by physiological mechanisms. Students are required to complete an independent project.* [48L, 72P]
- After:** *This course will cover the adaptive (evolved) behaviours of organisms that result from interactions with the biological environment. We ask why animals behave in a particular way, i.e. how does their behaviour enhance success in survival or reproduction? Examples involve adaptive strategies in competing with rivals, choosing mates, and avoiding parasites. We also ask how adaptive behaviour is controlled; what are the genetic, developmental, and physiological mechanisms underlying behaviour? Assignments involve observing and analyzing (suggesting alternative explanations/ hypotheses) for behaviour, followed by a use of these skills to critique a published scientific paper.* [48L, 72P]

**Rationale:** The new course description more accurately reflects the course content.

---

### Course #8 BIO328H5 Lectures in Animal Behaviour

**Before:** *An introductory overview of the behaviour of animals presented from a zoological perspective for Biology specialists. Behaviour is examined as the evolved result of interaction with other animals, such as predators or potential mates, and other aspects of the environment. Other topics include behavioural genetics, development, communication, motivation and the control of behaviour by physiological mechanisms.* No laboratory or field work is included. [48L]

**After:** *This course will cover the adaptive (evolved) behaviours of organisms that result from interactions with the biological environment. We ask why animals behave in a particular way, i.e. how does their behaviour enhance success in survival or reproduction? Examples involve adaptive strategies in competing with rivals, choosing mates, and avoiding parasites. We also ask how adaptive behaviour is controlled; what are the genetic, developmental, and physiological mechanisms underlying behaviour? Assignments involve observing and analyzing (suggesting alternative explanations/ hypotheses) for behaviour, followed by a use of these skills to critique a published scientific paper.* No laboratory or field work is included. [48L]

**Rationale:** The change in course description more accurately reflects course content.

---

### Course #9 BIO356H5 Major Features of Vertebrate Evolution

**Before:** The evolution of the vertebrates as evidenced by the fossil record. The origin and adaptive radiation of major groups including amphibians and reptiles is emphasized. *Practical sessions include the study of fossils, and techniques of collection and preparation. Six laboratory sessions are held at the Royal Ontario Museum. [24L, 36P]*

**After:** The evolution of the vertebrates as evidenced by the fossil record. The origin and adaptive radiation of major groups including amphibians and reptiles is emphasized. *Principles and knowledge will be demonstrated through written assignments and essays. [36L]*

**Rationale:** Change in course description reflects changes currently being made to the course. Practicals will be removed from this course. With increasing enrollment, removing the practicals will allow us to offer this course to more than 96 students each year. To maintain the academic standard for a 300-level course (now that there are no labs), an increase in the lecture hours (from 24 to 36 hours) will be made. This will allow for the development of writing assignments and essays as well as an in-depth the exploration of phylogenetic principles/ methodologies.

---

### Course #10 BIO374H5 Biotechnology and Society

**Before:** This course provides an overview of methods and applications of biotechnology and their relevance to society. The course covers the gambit of biotechnology applications and delves into the pros and cons of each technology and the perceived risks to society in each case. Topics may *include: Bioethics, Gene Therapy, Plant Biotechnology, Marine Biotechnology, Bioinformatics and the Pharmaceutical Industry, Vaccine Development, Animal Biotechnology, Intellectual Property and Career Choices, Risk Perception of Biotechnology, Biotechnology and the Developing World, Environmental Impact of Biotechnology, Gene Screening and Pharmacogenomics, Stem Cell Biology, Microbial Biotechnology.* [36L]

**After:** This course provides an overview of methods and applications of biotechnology and their relevance to society. The course covers the gambit of biotechnology applications and delves into the pros and cons of each technology and the perceived risks to society in each case. Topics may *include microbial biotechnology, plant*

**biotechnology, animal biotechnology, forensic biotechnology, environmental biotechnology, aquatic biotechnology and medical biotechnology. It may also discuss the application of bioinformatics/genomics in biotechnology.** [36L]

**Rationale:** Change in course description addresses content changes to the course that are to take place for 2012-2013.

---

### Course #11 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. 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 (DV **3004**) for more information.

**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 (DV **3201D**) for more information.

**Rationale:**

---

### Course #12 BIO477H5 Molecular Biology of Gene Expression and Cancer

**Before:** The first part of the course examines how genes are regulated in eukaryotic cells. It also explores the field of functional genomics and in particular examines how gene expression can be **monitored** on a genome-wide basis using DNA **microarrays**. The second part of the course examines the molecular and genetic basis of cancer including the role of oncogenes, tumor suppressor genes and cell cycle regulating proteins in the development of this disease. Lectures and seminars involve presentation and discussion of recently published research articles. [36L, 12S]

**After:** The first part of the course examines how genes are regulated in eukaryotic cells. It also explores the field of functional genomics and in particular examines how gene expression **and genomes** can be **studied** on a genome-wide basis using DNA **microarrays and high throughput sequencing**. The second part of the course examines the molecular and genetic basis of cancer including the role of oncogenes, tumor suppressor genes and cell cycle regulating proteins in the development of this disease. **It also looks at cancer from a functional genomics perspective**. Lectures and seminars involve presentation and discussion of recently published research articles. [36L, 12S]

**Rationale:** The minor changes to the course description reflects some of the changes in course content over the past few years.

---

### Course #13 CHM444H5 An Introduction to Medicinal Chemistry and Molecular Recognition

**Before:** An introduction to drug discovery, design and development. This course will focus on the potential of proteins (enzymes, receptors, receptor structure and signal transduction) as targets for molecular therapeutic intervention. The strategies of finding a drug target, optimizing target interactions and synthetic molecular therapeutic development will all be considered and discussed. The modern technologies of targeting protein-protein interactions will also be covered. **[24L, 12T]**

**After:** An introduction to drug discovery, design and development. This course will focus on the potential of proteins (enzymes, receptors, receptor structure and signal transduction) as targets for molecular therapeutic intervention. The strategies of finding a drug target, optimizing target interactions and synthetic molecular therapeutic development will all be considered and discussed. The modern technologies of targeting protein-protein interactions will also be covered. **[24L]**

**Rationale:** To be reduced from 24L, 12T to just 24L (no tutorials). To be taught as a single two-hour lecture per week. Rationale: Instructor feels that a single two-hour block per week is both more convenient for students and fully sufficient to cover the material, and departmental administration agrees.

---

### Course #14 CSC318H5 The Design of Interactive Computational Media

**Before:** **User-centred** design of interactive **systems; methodologies, principles and metaphors**; task **analysis**. Interdisciplinary design; the role of **graphic design**, industrial design and the behavioural sciences. Interactive hardware and software; concepts from computer graphics. **Typography**,

**layout, colour, sound, video, gesture and usability enhancements.** Classes of **interactive graphical media**; direct manipulation systems, extensible systems, rapid **proto-typing** tools. Students work on projects in interdisciplinary teams. Enrolment limited, but non-computer scientists **welcome.** [24L, 12T]

**After:** **User-centered** design of interactive **systems. Methodologies, principles, metaphors,** task **analysis, and other topics.** Interdisciplinary design; the role of industrial design and the behavioural sciences. Interactive hardware and software; concepts from computer graphics. Classes of direct manipulation systems, extensible systems, rapid **prototyping** tools. **Additional topics in interactive computational media.** Students work on projects in interdisciplinary teams. Enrolment limited, but non-computer scientists **welcome.**[24L, 12T]

**Rationale:** The current course instructor has indicated that the content has been developed and refined at StG since the course was first offered. This description is currently in use on the other campuses.

---

### Course #15 CSC321H5 Introduction to Neural Networks and Machine Learning

**Before:** **Supervised neural networks:** the perceptron learning procedure, the **backpropagation** learning procedure and **its applications. Elaborations of backpropagation: activation and error functions, improving speed and generalization, Bayesian approaches. Associative memories and optimization: Gibbs sampling, mean field search. Representation in neural networks: distributed representations, effects of damage, hierarchical representations. Unsupervised neural networks: competitive learning,** Boltzmann machines, **sigmoid** belief nets. [24L, 12T]

**After:** **The first half of the course is about supervised learning for regression and classification problems and will include the** perceptron learning procedure, **backpropagation, and methods for ensuring good generalisation to new data. The second half of the course is about unsupervised learning methods that discover hidden causes and will include Kmeans, the EM algorithm,** Boltzmann machines, **and deep** belief nets. [24L, 12T]

**Rationale:** The current course instructor has indicated that the content has been developed and refined at StG since the course was first offered. This description is currently in use on the other campuses.

---

### Course #16 CSC338H5 Numerical Methods

**Before:** **The study of numerical** methods for solving problems in **linear algebra,** non-linear equations, approximation, **integration** and **ordinary differential equations.** The aim is to give students a basic understanding of **both** floating-point arithmetic and the **methods** used to solve **numerical problems** as well as a familiarity with **the types** of **subroutines found in typical software packages.** [24L, 12T]

**After:** **Computational** methods for solving **numerical** problems in **science, engineering and business. Linear and** non-linear equations, approximation, **optimization, interpolation, integration** and **differentiation.** The aim is to give students a basic understanding of floating-point arithmetic and the **implementation of algorithms** used to solve **numerical problems,** as well as a familiarity with **current numerical computing environments. Course concepts are crucial to a wide range of practical applications such as computational finance and portfolio management, graphics and special effects, data mining and machine learning, as well as robotics, bioinformatics, medical imaging and others.**[24L, 12T]

**Rationale:** The regular course instructor, Anthony Bonner, has modified the description to be less abstract and more meaningful to computer science students.

---

## Course #17 CSC358H5 Principles of Computer Networks

- Before:** 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.
- After:** 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. **[24L,12P]**
- Rationale:** Contact hours are missing.
- 

## Course #18 CSC384H5 Introduction to Artificial Intelligence

- Before:** A broad introduction to the sub-disciplines of AI. Core topics: search methods, game playing and rule-based systems. Overview of: natural language understanding, knowledge representation, reasoning, planning, vision, robotics, learning and neural networks. Assignments provide practical experience, both theory and programming, of the core topics. **LISP or Prolog programming is required for at least one assignment.** [24L, 12T]
- After:** A broad introduction to the sub-disciplines of AI. Core topics: search methods, game playing and rule-based systems. Overview of: natural language understanding, knowledge representation, reasoning, planning, vision, robotics, learning and neural networks. Assignments provide practical experience, both theory and programming, of the core topics. [24L, 12T]
- Rationale:** The assignments could be implemented in a number of languages that the students know. Restricting the instructor to a single language has no tangible benefit.
- 

## Course #19 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 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.
- 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, **municipalities**, environmental consulting companies, corporations, federal agencies, and other organizations. You must see the Internship Support Officer, Jennifer Storer-Folt (jennifer.storerfolt@utoronto.ca) **to submit your application by March 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:** To be more in line with the NEW registration dates.
- 

## Course #20 ENV490H5 Special Topics in Environmental Studies

- Before:** These courses highlight various topics of special interest in environmental studies. The specific focus and format of the course will vary, depending on the chosen topic. The course will not be offered every year. Please check with the Academic Counsellor, **Grace Chung** (905-828-5465), for further information. [24L]
- After:** These courses highlight various topics of special interest in environmental studies. The specific focus and format of the course will vary, depending on the chosen topic. The course will not be offered every year. Please check with the Academic Counsellor, **Sabrina Ferrari** (905-828-5465), for further information. [24L]
- Rationale:** Update Academic Counsellor
- 

## Course #21 ENV491H5 Special Topics in Environmental Studies

- Before:** These courses highlight various topics of special interest in environmental studies. The specific focus and format of the courses will vary, depending on the chosen topic. The courses will not be offered every year. Please check with the Academic Counsellor, **Grace Chung** (905-828-5465), for further information. [24L]
- After:**

These courses highlight various topics of special interest in environmental studies. The specific focus and format of the courses will vary, depending on the chosen topic. The courses will not be offered every year. Please check with the Academic Counsellor, **Sabrina Ferrari** (905-828-5465), for further information. [24L]

**Rationale:** Update Academic Counsellor

---

### Course #22 ERS120H5 Planet Earth

**Before:** We discuss the age and origin of the Earth, the nature of its deep interior, the origin of mountains, oceans, earthquakes and volcanoes, and show how these features are related in a unifying theory known as Plate Tectonics, that explains how the evolution of the Earth's surface is driven by internal processes. Tutorials will include laboratory exercises devoted to the understanding and recognition of minerals, rocks and geological structures. [24L, **12T**]

**After:** We discuss the age and origin of the Earth, the nature of its deep interior, the origin of mountains, oceans, earthquakes and volcanoes, and show how these features are related in a unifying theory known as Plate Tectonics, that explains how the evolution of the Earth's surface is driven by internal processes. Tutorials will include laboratory exercises devoted to the understanding and recognition of minerals, rocks and geological structures. [24L, **12P**]

**Rationale:** Change the course hours from [24L, 12T] to [24L, 12P], to reflect the fact that the tutorial hours are being used for lab work.

---

### Course #23 ERS319H5 Earth Resources

**Before:** The formation and global distribution of precious and industrial mineral deposits are introduced. Exploration methods and mining practices are discussed in terms of environmental effects and issues. Basic aspects of the economics and strategic importance of mineral reserves are also covered. Weekly field trips are included. [24L, **36P**]

**After:** The formation and global distribution of precious and industrial mineral deposits are introduced. Exploration methods and mining practices are discussed in terms of environmental effects and issues. Basic aspects of the economics and strategic importance of mineral reserves are also covered. Weekly field trips are included. [24L, **48P**]

**Rationale:** Change course hours from [24L, 36P] to [24L, 48P] The extra hours reflect field-work already being done; this is instructor-led and outdoors, so it does not increase TA hours or staff hours, and does not require any room booking.

---

### 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, 24P]

**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:**

---

### Course #25 FSC481Y5 Internship in Forensic Science

**Before:** Notes:

- Students MUST contact Ms. Jennifer Storer-Folt in the Internship Support Office (Room **3004**, William G. Davis Bldg., 905-828-5295, jennifer.storerfolt@utoronto.ca) by the November preceding the placement.
- Students must have one free day (Monday - Friday) to work in a placement position, and must be in the final year before graduation. Students are expected to provide their own transportation to placement work site.
- Five week placements during the summer may be possible.

**After:** Notes:

- Students MUST contact Ms. Jennifer Storer-Folt in the Internship Support Office (Room **3201D**, William G. Davis Bldg., 905-828-5295, jennifer.storerfolt@utoronto.ca) by the November preceding the placement.
- Students must have one free day (Monday - Friday) to work in a placement position, and must be in the final year before graduation. Students are expected to provide their own transportation to placement work site.
- Five week placements during the summer may be possible.

**Rationale:**

---

### Course #26 GGR217H5 Fundamentals of Hydrology

**Before:**

The presence of water on and in the **continents, atmosphere** and **oceans**, sustains the **Earth's climate, biosphere and life itself**. This course **takes** a systems approach to the movement and storage of water on and in **the Earth**. Based on the framework of the **global** water cycle, the stores and transfers of water and energy in the Earth **system are investigated from a scientific perspective**. **Emphases are on the physical processes that control these transfers (e.g. short and longwave energy balances, evaporation, surface and subsurface flow of water)**. [24L, 12P]

**After:** **Hydrology is the study of the quantity, quality, storage, and transfer of the world's freshwater**. The presence of water on and in the **continents** and **atmosphere** sustains the **terrestrial biosphere, including human life**. This course **focuses on the central concepts of hydrology by taking** a systems approach to the movement and storage of water on and in **a watershed**. Based on the framework of the water cycle, the **course emphasizes the physical processes that control the** stores and transfers of water and energy in the Earth **system. This course serves as a gateway to the more advanced treatment of hydrology in upper levels, as well as providing a solid understanding of the fundamentals of the science of water for students in other streams of physical geography, environmental science, earth science, and biology**. [24L, 12P]

**Rationale:** The change in course title and description reflects the change in faculty appointment to this course and the hydrology stream in the Department of Geography. It also better illustrates that this is an introductory course in hydrology meant to be taken in sequence with upper level hydrology-stream courses, as well as for other science majors to develop an appreciation of the hydrosphere.

---

### Course #27 GGR309H5 Wetland Ecosystems

**Before:** **This course is offered in even-numbered years, alternating with GGR315H5.**

**After:**

**Rationale:** The change in course title and minor change to the course description better reflects the content of the course. The management and preservation topics are not addressed in great enough depth to warrant inclusion in the title. This is a science course exploring wetland ecosystems; this is what the course should be called. The addition of 24 practical hours (from 12 to 36) reflects the need for students to become engaged with wetlands beyond the lectures. Students will make several trips to local wetlands and participate in laboratories, increasing their knowledge breadth. This course has been operated for several years in succession, with increasing enrollments. It no longer needs to be alternated between years.

---

### Course #28 GGR309H5 Wetland Ecosystems

**Before:** Wetlands are an integral part of our biosphere, playing fundamental roles in the modification of water quality, **biodiversity** and the global carbon cycle. This course focuses on the **definition**, classification, **hydrology** and **biogeochemistry** of wetland systems. The latter part of the course builds on this physical foundation by introducing management issues associated with wetland preservation, restoration and creation. [24L, 12P]

**After:** Wetlands are an integral part of our biosphere, playing fundamental roles in the modification of water quality, **biodiversity**, and the global carbon cycle. This course focuses on the classification, **hydrology**, **biogeochemistry**, and **ecology** of wetland systems. The latter part of the course builds on this physical foundation by introducing management issues associated with wetland preservation, restoration and creation. [24L, 36P] **test3**

**Rationale:** The change in course title and minor change to the course description better reflects the content of the course. The management and preservation topics are not addressed in great enough depth to warrant inclusion in the title. This is a science course exploring wetland ecosystems; this is what the course should be called. The addition of 24 practical hours (from 12 to 36) reflects the need for students to become engaged with wetlands beyond the lectures. Students will make several trips to local wetlands and participate in laboratories, increasing their knowledge breadth. This course has been operated for several years in succession, with increasing enrollments. It no longer needs to be alternated between years.

---

### Course #29 GGR315H5 Physical Hydrology

**Before:** *This course is offered in odd-number years, alternating with GGR309H5.*

**After:**

**Rationale:** The minor change to the course description reflects the advanced nature of the subject matter. The addition of 24 practical hours (from 12 to 36) reflects the need for students to become engaged with field and lab research in hydrology. Students will conduct weekly assignments outdoors and in the lab setting, in addition to a term-long field monitoring project all of which will significantly increasing their connection to the subject matter. The removal of GGR227H5 from the list of prerequisites is necessary to ensure students have the required prior knowledge for the course. Either 214 or 217 provides the background. This course has been operated for several years in succession, with increasing enrollments. It no longer needs to be alternated between years.

---

### Course #30 GGR315H5 Physical Hydrology

**Before:** This course centres on the physical principles involved in the occurrence and movement of water on and beneath the Earth's surface. Watershed-scale hydrologic systems are investigated, along with basic principles of fluid mechanics. Open channel hydraulics, soil **water** and groundwater processes are investigated. The importance of understanding water movement in the environment by exploring the relationship of hydrology to other environmental sciences is stressed. [24L, **12P**]

**After:** This course centres on the **advanced treatment of the** physical principles involved in the occurrence and movement of water on and beneath the Earth's surface. Watershed-scale hydrologic systems are investigated, along with basic principles of fluid mechanics. Open channel hydraulics, soil **water**, and groundwater processes are investigated. The importance of understanding water movement in the environment by exploring the relationship of hydrology to other environmental sciences is stressed. [24L, **36P**]

**Rationale:** The minor change to the course description reflects the advanced nature of the subject matter. The addition of 24 practical hours (from 12 to 36) reflects the need for students to become engaged with field and lab research in hydrology. Students will conduct weekly assignments outdoors and in the lab setting, in addition to a term-long field monitoring project all of which will significantly increasing their connection to the subject matter. The removal of GGR227H5 from the list of prerequisites is necessary to ensure students have the required prior knowledge for the course. Either 214 or 217 provides the background. This course has been operated for several years in succession, with increasing enrollments. It no longer needs to be alternated between years.

---

### Course #31 GGR407H5 Ecohydrology

**Before:** **Watershed hydrologic controls on water quality** are **emphasized**. Topics include hydrologic **flowpaths, mixing models, isotopic** and **geochemical tracers and the interactions amongst** watershed **biologic, geologic and hydrologic systems**. Students are expected to conduct independent study. [24L]

**After:** **Ecohydrology explores the feedbacks between biological, hydrological and biogeochemical processes that help shape ecosystem form and function. These feedbacks are central to the regulation of the global climate and water resources. With pronounced and rapid human modification to the landscape and climate system this field of study is increasingly relevant to formulate mitigation strategies. This seminar and research course explores the feedback processes most crucial to climate change and water resources.** Topics include **ecosystem control on the water balance, the role of peatlands in ameliorating climate change,** hydrologic **controls on species diversity,** and the **role of the** watershed **in mitigating human pollutants**. Students are expected to conduct independent **and collaborative** study. [24S, 36P]

**Rationale:** The change in course description better reflects to students what is meant by ecohydrology. The previous description referred to watershed water and solute cycling, a different area in the advanced treatment of hydrology. The addition of 36 practical hours will allow students to engage in group and individual research projects (including the collection of data) as part of the course requirements. The change from 24 lecture hours to 24 seminar hours reflects how the course operates. The addition of several alternative prerequisites is intended to broaden the pool of students eligible for this course. The change in content allows for greater exploration of ecological interactions with hydrology. Students without 315, but an introduction to hydrology (217) and additional ecological and soil science courses would do well.

---

### Course #32 HSC401H5 Health and Science Communication Design

- Before:** This course presents the principles of health and science communication and examines the characteristics of effective audience-specific media design. Included are issues of learning context, target audience analysis, and effective information design in the development of tools that communicate concepts to the general public. Students will analyze existing media, conduct an information needs assessment, and design **a website** on a current health or science-related topic. [12L, 12S, 12P]
- After:** This course presents the principles of health and science communication and examines the characteristics of effective audience-specific media design. Included are issues of learning context, target audience analysis, and effective information design in the development of tools that communicate concepts to the general public. Students will analyze existing media, conduct an information needs assessment, and design **an \*interactive learning tool\*** on a current health or science-related topic. [12L, 12S, 12P]
- Rationale:** Change in course name and description more accurately reflects the kind of work students do in the course, which now includes, for examples, the design of apps rather than simply web-based media.
- 

### Course #33 MAT233H5 Calculus of Several Variables

- Before:** Limited enrolment; preference given to students enrolled in MAT programs.
- After:** Limited enrolment; preference given to students enrolled in MAT **or STA** programs.
- Rationale:** This is a bridging course that allows students who took Calculus for Commerce, MAT133, to continue to higher level courses in MAT and STA.
- 

### Course #34 MAT242H5 Differential Equations I

- Before:** **Solution of first order** differential **equations. Applications. Linear equations, especially** of second **order. Systems of** linear **equations. Nonlinear phenomena,** linearization of **nonlinear** systems. (MAT242H5 and 252H5 replace MAT258Y5.) [36L, 12T]
- After:** **Ordinary** differential **equations of the first and** second **order, existence and uniqueness; solutions by series and integrals;** linear **systems of first order;** linearization of **non-linear** systems. **Applications in life and physical sciences.** (MAT242H5 and 252H5 replace MAT258Y5.) [36L, 12T]
- Rationale:** This is a small fine-tuning that makes the course consistent with the analogous course at the St.George campus.
- 

### Course #35 MAT242H5 Differential Equations I

- Before:**
- After:** **Priority is given to students enrolled in MAT programs.**
- Rationale:** This is a small fine-tuning that makes the course consistent with the analogous course at the St.George campus.
- 

### Course #36 MAT301H5 Groups and Symmetries

- Before:**
- After:** **Priority is given to students enrolled in the Mathematics Specialist or Major programs or in the Information Security Specialist program.**
- Rationale:** We would like to give priority to students who need this course for their program of study.
- 

### Course #37 MAT302H5 Introduction to Algebraic Cryptography

- Before:** The course will **introduce the** students **to** the methods of algebra and number theory **used in modern cryptography. The topics to be covered** include: **an overview of basic ciphers such as shift/substitution/permutation ciphers;** block ciphers and **Feistel ciphers;**

**RSA** and **Factoring; finite fields, elliptic curves, and Discrete Log-Based Systems.**  
[36L, 12T]

**After:** The course will **take** students **on a journey through** the methods of algebra and number theory in **cryptology, from Euclid to Zero Knowledge Proofs. Topics** include: block ciphers and **the Advanced Encryption Standard (AES); algebraic and number-theoretic techniques and algorithms in cryptology, including methods for primality testing and factoring large numbers; encryption and digital signature systems based on RSA, factoring, elliptic curves and integer lattices; and zero-knowledge proofs.** [36L, 12T]

**Rationale:** We would like to give priority to students who need this course for their program of study. MAT302 is an existing course being taught by a computer science faculty member. Cross-listing that course in computer science makes it possible for CSC students in all programs (not just the information security program) to take the course for CSC credit.

---

### Course #38 MAT302H5 Introduction to Algebraic Cryptography

**Before:**

**After:** **Priority is given to students enrolled in the Mathematics Specialist or Major programs or in the Information Security Specialist program.**

**Rationale:** We would like to give priority to students who need this course for their program of study. MAT302 is an existing course being taught by a computer science faculty member. Cross-listing that course in computer science makes it possible for CSC students in all programs (not just the information security program) to take the course for CSC credit.

---

### Course #39 MAT309H5 Introduction to Mathematical Logic

**Before:**

**After:** **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

**Rationale:** We would like to give priority to students who need this course for their program of study.

---

### Course #40 MAT311H5 Partial Differential Equations

**Before:**

**After:** **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

**Rationale:** We would like to give priority to students who need this course for their program of study.

---

### Course #41 MAT315H5 Introduction to Number Theory

**Before:**

**After:** **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

**Rationale:** We would like to give priority to students who need this course for their program of study.

---

### Course #42 MAT332H5 Introduction to Nonlinear Dynamics and Chaos

**Before:**

**After:** **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

**Rationale:** We would like to give priority to students who need this course for their program of study.

---

### Course #43 MAT334H5 Complex Variables

Before:

After: **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

Rationale: We would like to give priority to students who need this course for their program of study.

---

### Course #44 MAT344H5 Introduction to Combinatorics

Before:

After: **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

Rationale: We would like to give priority to students who need this course for their program of study.

---

### Course #45 MAT368H5 Vector Calculus

Before:

After: **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

Rationale: We would like to give priority to students who need this course for their program of study.

---

### Course #46 MAT378H5 Introduction to Analysis

Before:

After: **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

Rationale: We would like to give priority to students who need this course for their program of study.

---

### Course #47 MAT382H5 Mathematics for Teachers

Before: The course discusses the Mathematics curriculum (K-12) from the following aspects: the strands of the curriculum and their place in the world of Mathematics, the nature of the proofs, applications of Mathematics, and the connection of Mathematics to other subjects. Limited **enrolment**, priority **for** CTEP **Mathematics** students. [36L, 12T]

After: The course discusses the Mathematics curriculum (K-12) from the following aspects: the strands of the curriculum and their place in the world of Mathematics, the nature of the proofs, applications of Mathematics, and the connection of Mathematics to other subjects. Limited **enrolment**. **The course is open only to students in the MAT major/specialist programs, with** priority **to** CTEP students. [36L, 12T]

Rationale: This course involves student presentations, and to deliver it properly the size of the class must be limited.

---

### Course #48 MAT388H5 Topics in Mathematics

Before:

After: **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

Rationale: This course number is usually used for a one-on-one reading course which we would like to reserve to MAT students.

---

### Course #49 MAT392H5 Ideas of Mathematics

Before: Limited **enrolment**; **priority** is **given** to students **enrolled** in the MAT **Specialist**.

After: Limited **enrolment**. **The course** is **open only** to students in the MAT **major/specialist programs, with priority to students in the specialist program and to CTEP**

**students.**

**Rationale:** This is a writing-intensive course and also involves student presentations. To deliver it properly, the size of the class must be limited.

---

**Course #50 MAT401H5 Polynomial Equations and Fields**

**Before:** Offered in alternate years. With instructor's permission, may be taken as a reading course.

**After:** Offered in alternate years. With instructor's permission, may be taken as a reading course. **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

**Rationale:** We would like to give priority to students who need this course for their program of study.

---

**Course #51 MAT402H5 Classical Geometries**

**Before:** **Offered** in alternate years. With instructor's permission, may be taken as a reading course.

**After:** **Priority is given to students enrolled** in the Mathematics Specialist or Major programs.

**Rationale:** A few years ago the course has become mandatory in the MAT major program and since then it has been offered almost every year.  
We would like to give priority to students who need this course for their program of study.

---

**Course #52 MAT405H5 Introduction to Topology**

**Before:** **With** instructor's permission, may be taken as a reading course.

**After:** **Priority is given to students enrolled in the Mathematics Specialist or Major programs.** **With** instructor's permission, may be taken as a reading course.

**Rationale:** We would like to give priority to students who need this course for their program of study.

---

**Course #53 MAT406H5 Mathematical Introduction to Game Theory**

**Before:** With instructor's permission, may be taken as a reading course.

**After:** **Priority is given to students enrolled in the Mathematics Specialist or Major programs.** With instructor's permission, may be taken as a reading course.

**Rationale:** We would like to give priority to students who need this course for their program of study.

---

**Course #54 MAT478H5 Topics in Mathematics**

**Before:**

**After:** **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

**Rationale:** This course number is usually used for a one-on-one reading course which we would like to reserve to MAT students.

---

**Course #55 MAT488H5 Topics in Mathematics**

**Before:**

**After:** **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

**Rationale:** This course number is usually used for a one-on-one reading course which we would like to reserve to MAT students.

---

**Course #56 MAT492H5 Senior Thesis**

**Before:**

**After:** **Only open to students in the MAT major/specialist programs.**

**Rationale:** This is a one-on-one project that is only offered to MAT students.

---

### Course #57 MAT498H5 Topics in Mathematics

**Before:**

**After:** **Priority is given to students enrolled in the Mathematics Specialist or Major programs.**

**Rationale:** This course number is usually used for a one-on-one reading course which we would like to reserve to MAT students.

---

### Course #58 PHY237H5 The Physics of the Climate System

**Before:** Not offered in **2011-12.**

**After:** Not offered in **2012-13.**

**Rationale:**

---

### Course #59 PHY241H5 Electromagnetism

**Before:** Topics in electricity and magnetism, beginning with vector analysis and culminating in Maxwell's equations. Electric fields and Gauss' law, conductors, capacitors and dielectrics. Magnetic fields, magnetic materials and devices, induction and Faraday's law. Maxwell's equations and electromagnetic waves are introduced.

[24L, **12T**]

**After:** Topics in electricity and magnetism, beginning with vector analysis and culminating in Maxwell's equations. Electric fields and Gauss' law, conductors, capacitors and dielectrics. Magnetic fields, magnetic materials and devices, induction and Faraday's law. Maxwell's equations and electromagnetic waves are introduced.

[24L, **16P, 8T**]

**Rationale:** (1) All the physics second-year courses include a lab component except PHY241H5. (2) The theoretical material discussed in this course needs an experimental/application component to strengthen the students' understanding of the subjects involved in the lectures.

---

### Course #60 PHY347H5 Optics

**Before:** 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]

**After:** A comprehensive introduction to the physics of light. Topics may vary but will include: electromagnetic waves and **propagation of light, basic coherence concepts** and the interference of light, **Fraunhofer and Fresnel diffraction, matrix methods in paraxial** optics, **Fresnel equations, polarization and birefringence. Technical applications will** include lasers, optical **fibers** and optical **detectors and displays.** [24L, 16P, 8T]

**Rationale:** The mathematical methods covered in PHY325 will allow more advanced material to be covered in PHY347, and the course description has been revised to reflect this.

---

### Course #61 PHY451H5 Classical Electrodynamics

**Before:** 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]

**After:**

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]

**Rationale:** The only difference is a typo in the second sentence, propogating should be propagating".

---

### Course #62 PSY220H5 Introduction to Social Psychology

**Before:** A survey of classic and contemporary research in social psychology. Topics include attitudes and social cognition, interpersonal relations, group processes, and **ethnic attitudes**. [36L]

**After:** A survey of classic and contemporary research in social psychology. Topics include attitudes and social cognition, interpersonal relations, group processes, and **culture**. [36L]

**Rationale:** This small modification results in a description that more accurately describes the course's content, which is broader than what is conveyed in the current description. This will help students understand how the course fits in the Adjustment and Well being Stream of courses.

---

### Course #63 PSY316H5 Infant Perception and Cognition

**Before:** This course **examines** human perceptual development during the first **2-3** years of life. **Vision and audition** are **emphasized**. **Some topics are: pattern and colour vision, depth perception, infant speech perception**. [36L]

**After:** This course **focuses primarily on** human perceptual **and cognitive** development during the first **2** years of life. **A heavy emphasis is placed on experimental work with normally developing infants. Topics include but are not limited to face recognition, colour and depth perception, auditory localization, object categorization, speech and language processing, learning and memory, intelligence and social influences on development**. [36L]

**Rationale:** This change reflects shifting research interests in the field of developmental psychology. Very few developmental psychologists study perception on its own, and indeed we have not been able to find any other universities that are currently offering a course on perceptual development at the undergraduate level. Unsurprisingly, there are also no recent textbooks suitable for undergraduates published on this relatively narrow topic. This is probably because most contemporary infant researchers study both perception and cognition together. Moreover, there is a growing body of literature demonstrating how the development of infant cognition is closely linked to the social environment of the infant. Thus, it is difficult to discuss recent findings in the area of perception without discussing cognition and the environmental social factors experienced by the infant. By broadening the focus of this course, we hope to better provide the students with a more up to date perspective on the field of infant research.

---

### Course #64 PSY343H5 Theories of Psychotherapy

**Before:** The extension of major theories of personality to treatment (therapy) for personality disorders, and research growing out of the theories. [36L]

**After:** The extension of major theories of personality to treatment (therapy) for personality **and behavioural** disorders, and research **supporting and/or** growing out of the theories. [36L]

**Rationale:** This small modification results in a description that more accurately describes the course's content, which is broader than what is conveyed in the current description. This will help students understand how the course fits into the adjustment and well being stream of courses.

---

### Course #65 STA302H5 Regression Analysis

**Before:** Analysis of the multiple regression model by least squares; statistical properties of the least square analysis, including estimation of error; residual and regression sums of squares; distribution theory under normality of the observations; confidence regions and intervals; tests for normality; variance stabilizing transformations, multicollinearity, variable search methods. [36L, 12T]

**After:** **(Formerly STA331H5)** Analysis of the multiple regression model by least squares; statistical properties of the least square analysis, including estimation of error; residual and regression sums of squares; distribution theory under normality of the observations; confidence regions and intervals; tests for normality; variance stabilizing transformations,

multicollinearity, variable search methods. [36L, 12T]

**Rationale:** Course renumbered.

---

### Course #66 STA305H5 Experimental Design

**Before:** ***This*** course covers topics in the design and analysis of experiments. The topics covered include analysis of variance, randomization, confounding, block designs, factorial designs, orthogonal polynomials and response surface methods. Applications include agricultural experiments, laboratory experiments, and industrial experiments, including quality control techniques. [36L, 12T]

**After:** ***(Formerly STA332H5)******This*** course covers topics in the design and analysis of experiments. The topics covered include analysis of variance, randomization, confounding, block designs, factorial designs, orthogonal polynomials and response surface methods. Applications include agricultural experiments, laboratory experiments, and industrial experiments, including quality control techniques. [36L, 12T]

**Rationale:** Course renumbered.

---

### Course #67 STA441H5 Methods of Applied Statistics

**Before:** Advanced topics in statistics and data analysis with emphasis on applications. Diagnostics and residuals in linear models, introductions to generalized linear models, graphical methods. Additional topics such as random effects models, split plot designs, smoothing and density estimation, analysis of censored data, introduced as needed in the context of case studies. [36L, 12T]

**After:** ***(Formerly STA442H5)*** Advanced topics in statistics and data analysis with emphasis on applications. Diagnostics and residuals in linear models, introductions to generalized linear models, graphical methods. Additional topics such as random effects models, split plot designs, smoothing and density estimation, analysis of censored data, introduced as needed in the context of case studies. [36L, 12T]

**Rationale:** Course renumbered.

---

# Changes in Course Name

---

## Course #1 ANT200H5 Prehistoric Archaeology

**Before:** *World Archaeology and Prehistory*

**After:** *Prehistoric Archaeology*

**Rationale:** Y course divided into 2 half courses. ANT200Y5 to be changed to ANT200H5, with new title and description. Change from tutorials to practicals: Due to lack of sufficient lab space, first and second year courses in biological anthropology and archaeology have not been able to conduct proper lab practicals. However, with the new teaching labs planned for next year, and the shift of research materials to the new HSC building, the opening of space in North has allowed us to make this change already in the way the courses are taught, starting 2011 or in some with 2010.  
Y course divided into 2 half courses. ANT200Y5 to be changed to ANT200H5, with new title and description.

---

## Course #2 ANT407H5 Statistics and Archaeological Analyses to Quantitative Methods in Biological Anthropology and Archaeology

**Before:** Statistics and Archaeological Analyses

**After:** Statistics and Archaeological Analyses *to Quantitative Methods in Biological Anthropology and Archaeology*

**Rationale:** Archaeological Analyses is too similar to ANT312 course title. Since ANT312 is a pre-req for ANT407, a different title -more in line with comparable upper level undergraduate offerings at other institutions is necessary.

---

## Course #3 GGR217H5 Fundamentals of Hydrology

**Before:** *The Global Water Cycle*

**After:** *Fundamentals of Hydrology*

**Rationale:** The change in course title and description reflects the change in faculty appointment to this course and the hydrology stream in the Department of Geography. It also better illustrates that this is an introductory course in hydrology meant to be taken in sequence with upper level hydrology-stream courses, as well as for other science majors to develop an appreciation of the hydrosphere.

---

## Course #4 GGR309H5 Wetland Ecosystems

**Before:** *Wetlands: Science, Management and Preservation*

**After:** *Wetland Ecosystems*

**Rationale:** The change in course title and minor change to the course description better reflects the content of the course. The management and preservation topics are not addressed in great enough depth to warrant inclusion in the title. This is a science course exploring wetland ecosystems; this is what the course should be called. The addition of 24 practical hours (from 12 to 36) reflects the need for students to become engaged with wetlands beyond the lectures. Students will make several trips to local wetlands and participate in laboratories, increasing their knowledge breadth. This course has been operated for several years in succession, with increasing enrollments. It no longer needs to be alternated between years.

---

## Course #5 HSC401H5 Health and Science Communication Design

**Before:** *Web-Based* Health and Science Communication Design

**After:** Health and Science Communication Design

**Rationale:** Change in course name and description more accurately reflects the kind of work students do in the course, which now includes, for examples, the design of apps rather than simply web-based media.

---

## Course #6 PSY316H5 Infant Perception and Cognition

**Before:** *Perceptual Development*

**After:** *Infant Perception and Cognition*

**Rationale:**

---

**Course #7 PSY353H5 Developmental Social Neuroscience**

**Before:** Developmental *Psychobiology of* Social *Behaviour*

**After:** Developmental Social *Neuroscience*

**Rationale:** While it can be argued that Psychobiology and Neuroscience are not synonyms, many people now use them interchangeably. Neuroscience has become the more common way to refer to the field at present and social neuroscience in particular is a growing specialization and buzz word.

---

# Courses - Other Changes

---

## Course #1 ANT200H5 Prehistoric Archaeology

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

**After:** Prerequisite: **ANT101H5 Course** Exclusion: **ANT200Y5**

**Rationale:** Y course divided into 2 half courses. ANT200Y5 to be changed to ANT200H5, with new title and description. Change from tutorials to practicals: Due to lack of sufficient lab space, first and second year courses in biological anthropology and archaeology have not been able to conduct proper lab practicals. However, with the new teaching labs planned for next year, and the shift of research materials to the new HSC building, the opening of space in North has allowed us to make this change already in the way the courses are taught, starting 2011 or in some with 2010. To better reflect the course content of a Y course divided into 2 half courses.

---

## Course #2 ANT308H5 Case Studies in Archaeological Botany and Zoology

**Before:** Prerequisite: **ANT200Y5**

**After:** Prerequisite: **ANT(200H5, 201H5)/200Y5**

**Rationale:** Prerequisite update.

---

## Course #3 ANT309H5 Southeast Asian Archaeology

**Before:** Prerequisite: **ANT200Y5**

**After:** Prerequisite: **ANT(200H5, 201H5)/200Y5**

**Rationale:** Prerequisite update.

---

## Course #4 ANT312H5 Archaeological Analysis

**Before:** Prerequisite: **ANT200Y5**

**After:** Prerequisite: **ANT(200H5, 201H5)/200Y5**

**Rationale:** Prerequisite update.

---

## Course #5 ANT313H5 China, Korea and Japan in Prehistory

**Before:** Prerequisite: **ANT200Y5**

**After:** Prerequisite: **ANT(200H5, 201H5)/200Y5**

**Rationale:** Prerequisite update.

---

## Course #6 ANT314H5 Archaeological Theory

**Before:** Prerequisite: **ANT200Y5**

**After:** Prerequisite: **ANT(200H5, 201H5)/200Y5**

**Rationale:** Prerequisite update.

---

## Course #7 ANT317H5 Archaeology of Eastern North America

**Before:** Prerequisite: **ANT200Y5**

**After:** Prerequisite: **ANT(200H5, 201H5)/200Y5**

**Rationale:** Prerequisite update.

---

## Course #8 ANT318H5 Archaeological Fieldwork

**Before:** Prerequisite: **ANT200Y5**  
**After:** Prerequisite: **ANT(200H5, 201H5)/200Y5**  
**Rationale:** Prerequisite update.

---

## Course #9 ANT320H5 Archaeological Approaches to Technology

**Before:** Prerequisite: **ANT200Y5 Recommended** Preparation: **(ANT204H5, 207H5)/204Y5**  
**After:** Prerequisite: **ANT(200H5, 201H5)/200Y5 Recommended** Preparation: **ANT(204H5, 207H5)/204Y5**  
**Rationale:** Prerequisite update.

---

## Course #10 ANT327H5 Agricultural Origins: The Second Revolution

**Before:** Prerequisite: **ANT200Y5**  
**After:** Prerequisite: **ANT(200H5, 201H5)/200Y5**  
**Rationale:** Prerequisite update.

---

## Course #11 ANT407H5 Statistics and Archaeological Analyses to Quantitative Methods in Biological Anthropology and Archaeology

**Before:** Prerequisite: **ANT200Y5**  
**After:** Prerequisite: **ANT (200H5, 201H5)/200Y5, ANT312H5**  
**Rationale:** Prerequisite update.

---

## Course #12 ANT414H5 People and Plants in Prehistory

**Before:** Prerequisite: **ANT200Y5, 312H5/318H5 or P.I.**  
**After:** Prerequisite: **ANT(200H5, 201H5)/200Y5, 312H5/318H5 or P.I.**  
**Rationale:** Prerequisite update.

---

## Course #13 ANT415H5 Faunal Archaeo-Osteology

**Before:** Prerequisite: **ANT200Y5, 306H5/308H5/312H5/318H5.**  
**After:** Prerequisite: **ANT(200H5, 201H5)/200Y5, 306H5/308H5/312H5/318H5.**  
**Rationale:** Prerequisite update.

---

## Course #14 BIO207H5 Introductory Genetics

**Before:** Prerequisite: BIO152H5, **153H5, 206H5** **Corequisite:**  
**After:** Prerequisite: BIO152H5, 206H5  
**Corequisite: BIO153H5**  
**Rationale:** The content of BIO153H will be helpful, but does not relate as directly to this course as BIO152H does. In most cases, students will still not be able to take this course until their second year because of the BIO206H pre-req; however, moving BIO153H to a co-req would allow some students, such as transfer students, to take the two courses at the same time and not delay them from moving through their program.

---

## Course #15 BIO330H5 Plant Ecology

**Before:** Prerequisite: **BIO205H5 Corequisite: (Recommended): BIO313H5**

**After:** Prerequisite: **BIO204H5, 205H5**  
**Corequisite:**

**Rationale:** Currently, a review of plant physiology is done at the beginning of this course. Adding BIO204H as a pre-req will allow the instructor to remove this part of the course, making room for the instructor to explore current course topics in more depth. This will contribute to better trained ecology students, benefiting our Ecology and Evolution Specialist program.

---

### Course #16 BIO356H5 Major Features of Vertebrate Evolution

**Before:** Prerequisite: **BIO354H5 Corequisite: Recommended** Preparation:

**After:** Prerequisite:  
**Corequisite: BIO210Y5**  
**Recommended** Preparation: **BIO360H5/ STA220H5/ PSY201H5**

**Rationale:** To reflect these changes, the pre-requisites and co-requisites for this course have been amended accordingly.

---

### Course #17 BIO374H5 Biotechnology and Society

**Before:** Prerequisite: **BIO206H5, CHM140Y5**

**After:** Prerequisite: **BIO215H5**

**Rationale:** Change in pre-requisite reflects feedback from students - those that had already completed BIO215H5 before taking this course was much more comfortable with the material. This change will help to ensure students in BIO374H5 have the greatest chance of success.

---

### Course #18 BIO400Y5 Biology Internship

**Before:** Course Exclusion: **ENV400Y5**

**After:** Course Exclusion: **ENV400Y5; BIO481Y5; JCB487Y5**

**Rationale:** Due to constraints on resources, BIO400Y and BIO481Y/ JCB487Y5 can only offer opportunities to a limited number of students. In an effort to ensure that as many students as possible are able to take advantage of these unique opportunities, we ask that students participate in one of these courses, but not more. This is an extension of our 2.0 credit max. rule for ROP and research courses and has been in practice by the Internship Office for many years already.

---

### Course #19 BIO476H5 Molecular Basis of Disease

**Before:** Prerequisite: **BIO310H5, 315H5, 325H5 Recommended** Preparation: **BIO341H5, 372H5**

**After:** Prerequisite: **BIO304H5, 315H5**  
**Recommended** Preparation: **BIO310H5, 341H5, 372H5**

**Rationale:** 1. Addition of BIO304H - BIO304H5 is our Fall animal physiology course. As BIO476H is offered in the Spring, changing the physiology pre-req from BIO310H to BIO304H allows students to take BIO304H and BIO476H in the same academic year.  
2. Removal of BIO325H5 - BIO325H5 was a pre-requisite for one specific module in the course. Next year, this module will be removed so the pre-req is no longer needed. They will have sufficient physio background with BIO304H as a pre-req.

---

### Course #20 BIO477H5 Molecular Biology of Gene Expression and Cancer

**Before:** Prerequisite: **BIO370Y5; BIO372H5, P.I. Recommended** Preparation: **BIO315H5; CHM362H5, 371H5**

**After:** Prerequisite: **BIO370Y5/ BIO372H5, P.I.**  
**Recommended** Preparation: **BIO314H5, 315H5**

**Rationale:** 1. The changes in the pre-requisites reflect what has become a common exception that has been made in past years. It will also make it easier for the students in the Bioinformatics Specialist to take the course as they will not have the BIO370Y pre-requisite. We are still retaining permission of instructor in order to remove students to make space for

students in Specialist programs (i.e. Molecular Biology, Bioinformatics, and Biotechnology) who need the course to graduate.

2. The changes in the recommended preparation courses include the addition of 314H (Laboratory in Cell and Molecular Biology) which is a relevant course that has a large molecular biology content. It also includes the removal of the CHM362H and CHM371H Biochemistry courses that while relevant, are not particularly needed to prepare for BIO477H.

---

### Course #21 BIO481Y5 Biology Research Project

**Before:** Course Exclusion:

**After:** Course Exclusion: **BIO400Y5, JCB487Y5**

**Rationale:** Due to constraints on resources, BIO400Y and BIO481Y/ JCB487Y5 can only offer opportunities to a limited number of students. In an effort to ensure that as many students as possible are able to take advantage of these unique opportunities, we ask that students participate in one of these courses, but not more. This is an extension of our 2.0 credit max. rule for ROP and research courses and has been in practice by the Internship Office for many years already.

---

### Course #22 CBJ481Y5 Independent Project in Bioinformatics

**Before:** Corequisite: **CSC290H5**, BIO477H5

**After:** Corequisite: BIO477H5

**Rationale:** BIO477 already satisfies the requirement.

---

### Course #23 CHM211H5 Fundamentals of Analytical Chemistry

**Before:** Prerequisite: MAT134Y5/135Y5/137Y5; **A mark of 60% or higher in CHM140Y5/(110H5,120H5)**

**After:** Prerequisite: MAT134Y5/135Y5/137Y5; **CHM140Y5(minimum grade of 60%)/(110H5,120H5; minimum grade of 60% in CHM120H5)**

**Rationale:** Pre-requisite: Many students struggle with the transition from high school to university. In order to allow them more time to adjust to university life before assessing their eligibility for second year courses, we will consider their mark only from the second first year CHM course, CHM120, rather than both CHM110 and CHM120. We have also rephrased the minimum grade statement to match the other courses and program entries.

---

### Course #24 CHM231H5 Inorganic Chemistry I

**Before:** Prerequisite: MAT134Y5/135Y5/137Y5; **A mark of 60% or higher in CHM140Y5/(110H5,120H5)**

**After:** Prerequisite: MAT134Y5/135Y5/137Y5; **CHM140Y5(minimum grade of 60%)/(110H5,120H5; minimum grade of 60% in CHM120H5)**

**Rationale:** Pre-requisite: Many students struggle with the transition from high school to university. In order to allow them more time to adjust to university life before assessing their eligibility for second year courses, we will consider their mark only from the second first year CHM course, CHM120, rather than both CHM110 and CHM120. We have also rephrased the minimum grade statement to match the other courses and program entries.

---

### Course #25 CHM242H5 Introductory Organic Chemistry I

**Before:** Prerequisite: **A mark of 60% or higher in CHM140Y5/(110H5,120H5)**

**After:** Prerequisite: **CHM140Y5(minimum grade of 60%)/(110H5,120H5; minimum grade of 60% in CHM120H5)**

**Rationale:** Pre-requisite: Many students struggle with the transition from high school to university. In order to allow them more time to adjust to university life before assessing their eligibility for second year courses, we will consider their mark only from the second first year CHM course, CHM120, rather than both CHM110 and CHM120. We have also rephrased the minimum grade statement to match the other courses and program entries.

---

### Course #26 CHM331H5 Inorganic Chemistry II: Advanced Inorganic Chemistry

**Before:** Prerequisite: **CHM231H5 Corequisite:**

**After:** Prerequisite: **CHM231H5, 242H5**  
**Corequisite: CHM243H5**

**Rationale:** Pre-requisite: CHM242H5 (added) - Co-requisite: CHM243H5 (added): The topics covered in the course require some introductory background in organic chemistry, and thus we want to add this prerequisite so that students are not disadvantaged by a lack of an organic chemistry background. CHM243, the second of the two second year organic chemistry courses, can be taken in parallel with this course, and thus has been added as a corequisite rather than a prerequisite.

---

### Course #27 CHM333H5 Bioinorganic Chemistry

**Before:** Prerequisite: **CHM231H5** **Corequisite:**

**After:** Prerequisite: **CHM231H5, 242H5**  
**Corequisite: CHM243H5**

**Rationale:** Pre-requisite: CHM242H5 (added) - Co-requisite: CHM243H5 (added): The topics covered in the course require some introductory background in organic chemistry, and thus we want to add this prerequisite so that students are not disadvantaged by a lack of an organic chemistry background. CHM243, the second of the two second year organic chemistry courses, can be taken in parallel with this course, and thus has been added as a corequisite rather than a prerequisite.

---

### Course #28 CSC108H5 Introduction to Computer Programming

**Before:** Course Exclusion: **CSC148H5**, 150H1

**After:** Course Exclusion: **CSC120H1, 148H5**, 150H1

**Rationale:** CSC120H1 was introduced recently, and it was added to the exclusion list of CSC108H1. This change brings CSC108H5 into agreement with the corresponding StG course.

---

### Course #29 CSC321H5 Introduction to Neural Networks and Machine Learning

**Before:** Prerequisite: **CSC207H5/270H5**, 290H5; **MAT223H5/248Y5**; STA257H5

**After:** Prerequisite: **CSC148H5**, 290H5; **MAT134Y5/135Y5/137Y5, 223H5**; STA257H5

**Rationale:** The prerequisites have been modified to remove CSC207 (replaced by CSC148). The instructor believes that the language used in the course (MATLAB) can be learned with Python experience and that larger-scale software design experience is not required.

---

### Course #30 CSC338H5 Numerical Methods

**Before:** Prerequisite: **CSC207H5/270H5, 290H5; (MAT134Y5/135Y5/137Y5)/(MAT133Y5, 233H5), MAT223H5.**

**After:** Prerequisite: **CSC148H5, 290H5/MAT202H5; MAT134Y5/135Y5/137Y5, 223H5**

**Rationale:** The instructor has also requested replacement of the 207 prereq for 148 to match the prerequisites of the equivalent downtown course. Since the course work is completed in Matlab rather than Java, experience with a scripting language (like the one taught in CSC108 and 148) is sufficient. We are also introducing an alternate writing requirement to make the course more accessible students in mathematics.

---

### Course #31 ECO227Y5 Quantitative Methods in Economics

**Before:** Prerequisite: ECO100Y5(70%); MAT133Y5 **(63%)/134Y5/135Y5(60%)/137Y5(55%)**

**After:** Prerequisite: ECO100Y5(70%); MAT133Y5 **(80%)/134Y5/135Y5(63%)/137Y5(60%)**

**Rationale:** Adjusted required MAT marks in advanced level ECO courses 206Y5, 208Y5 and 227Y5 to ensure success in Specialist programs and maintain consistency.

---

### Course #32 ERS319H5 Earth Resources

**Before:** Prerequisite: **ERS202H5/203H5**

**After:** Prerequisite: **ERS201H5**

**Rationale:** Change course hours from [24L, 36P] to [24L, 48P] The extra hours reflect field-work already being done; this is instructor-led and outdoors, so it does not increase TA hours or staff hours, and does not require any room booking. Pre-requisite: Both ERS202 (Dynamic Earth) and ERS203 (Rock Forming Processes) require ERS201 (Earth Materials) as a prereq, but the instructor of ERS202 does not always enforce the requirement. This can allow students to enrol in ERS319 without the necessary background in rocks and minerals from ERS201, if they come by way of ERS202.

---

### Course #33 FSC300H5 Forensic Identification

**Before:** Prerequisite: FSC239Y5; **CHM140Y5**

**After:** Prerequisite: FSC239Y5; **FSC271H5**

**Rationale:** FSC300H5 is a course requirement for ALL FSC Programs including the FSC ANT and FSC PSY Specialist. Due to curriculum changes made last year, CHM140Y5/(CHM 110H5, 120H5), which has always been required by ALL FSC Programs is no longer a required course for the FSC ANT and FSC PSY Specialist Programs. Therefore, as our Programs currently require completion of a high number of credits (Specialist Programs: 16 credits; Major: 9 credits) we are replacing one of the current prerequisites, CHM140Y5/(CHM 110H5, 120H5) with FSC271H5 Ethics and Professionalism in Forensic Science, a course currently required in ALL other FSC Programs. FSC271H5 is a more discipline appropriate prerequisite and complements the current listed prerequisite of FSC239Y -Intro to Forensic Science and it also alleviates the need to add an additional (1.0) full credit requirement to the FSC ANT & FSC PSY Specialists programs.

---

### Course #34 FSC481Y5 Internship in Forensic Science

**Before:** Prerequisite: Enrolment in Forensic Science Specialist or Major and permission of instructor.

**After:** Prerequisite: Enrolment in Forensic Science Specialist or Major ; **STA220H5, STA221H5 / BIO360H5, BIO361H5 / PSY201, PSY202H5** and permission of instructor.

**Rationale:** We are adding the statistics courses required in all our FSC Programs as prerequisites to FSC481Y5Y to ensure students enrolling into the course have the necessary statistics background prior to beginning this research course, enhancing the overall student learning experience.

---

### Course #35 GGR315H5 Physical Hydrology

**Before:** Prerequisite: **GGR214H5/217H5/227H5/P.I.**

**After:** Prerequisite: **GGR214H5/217H5**

**Rationale:** The minor change to the course description reflects the advanced nature of the subject matter. The addition of 24 practical hours (from 12 to 36) reflects the need for students to become engaged with field and lab research in hydrology. Students will conduct weekly assignments outdoors and in the lab setting, in addition to a term-long field monitoring project all of which will significantly increasing their connection to the subject matter. The removal of GGR227H5 from the list of prerequisites is necessary to ensure students have the required prior knowledge for the course. Either 214 or 217 provides the background. This course has been operated for several years in succession, with increasing enrollments. It no longer needs to be alternated between years.

---

### Course #36 GGR407H5 Ecohydrology

**Before:** Prerequisite: **GGR315H5/376H5/P.I.**

**After:** Prerequisite: **GGR315H5 or GGR217H5 and one of GGR305H5/307H5/309H5/315H5/BIO311H5/BIO330H5**

**Rationale:** The change in course description better reflects to students what is meant by ecohydrology. The previous description referred to watershed water and solute cycling, a different area in the advanced treatment of hydrology. The addition of 36 practical hours will allow students to engage in group and individual research projects (including the collection of data) as part of the course requirements. The change from 24 lecture hours to 24 seminar hours reflects how the course operates. The addition of several alternative prerequisites is intended to broaden the pool of students eligible for this course. The change in content allows for greater exploration of ecological interactions with hydrology. Students without 315, but an introduction to hydrology (217) and additional ecological and soil science courses would do well.

---

### Course #37 HSC200H5 Imaging Technologies for Scientific Visual Communication

**Before:** Course Exclusion:

**After:** Course Exclusion: **HSC302H5**

**Rationale:** HSC302H5 was previously the 'introductory' HSC course for the BMC minor. Last year, the program introduced HSC200H5 which will now serve as our basic introductory course to digital technology and will be a pre-requisite for the majority of the senior BMC courses. As HSC200H5 will contain some of the content that used to be in HSC302H5, students that have already completed it should not take HSC200H5. This will only effect the current cohort of students as those that are entering the BMC minor program as of last year must take HSC200H5 before taking 300-level HSC courses.

---

### Course #38 HSC300H5 Written Communication for Health Care

**Before:** Prerequisite: BIO152H5 **and WRI203H5/ENG205H5**

**After:** Prerequisite: BIO152H5

**Rationale:** WRI203H5 was previously a pre-requisite for this course to ensure that science students had some writing experience before entering this course. With the course changes in BIO152H5 (i.e. the introduction of the literacy project), will provide them with the needed writing instruction for this course.

---

### Course #39 HSC301H5 Data and Information Visualization

**Before:** Prerequisite: **CCT101H5/BIO152H5/ANT101H5**

**After:** Prerequisite: **HSC200H5**

**Rationale:** HSC200H5 will be our new introductory course to digital technology. Our 300-level HSC courses in this area will build directly from this introductory course. Removing the previous pre-requisites and adding HSC200H5 will ensure that all students entering the 300-level HSC courses have the same background and are able to move on to more advanced projects.

---

### Course #40 HSC302H5 Biocommunication Visualization

**Before:** Prerequisite: **BIO204H5/BIO206H5/BIO210H5/BIO210Y5/ANT203Y5**

**After:** Prerequisite: **HSC200H5**

**Rationale:** HSC200H5 will be our new introductory course to digital technology. Our 300-level HSC courses in this area will build directly from this introductory course. Removing the previous pre-requisites and adding HSC200H5 will ensure that all students entering the 300-level HSC courses have the same background and are able to move on to more advanced projects.

---

### Course #41 HSC401H5 Health and Science Communication Design

**Before:** Prerequisite: **CCT260H5/BIO152H5/ANT101H5**

**After:** Prerequisite: **HSC200H5**

**Rationale:** HSC200H5 will be our new introductory course to digital technology. Our 300/400-level HSC courses in this area will build directly from this introductory course. Removing the previous pre-requisites and adding HSC200H5 will ensure that all students entering the 300/400-level HSC courses have the same background and are able to move on to more advanced projects.

---

### Course #42 JCP221H5 Thermodynamics and Kinetics

**Before:** Prerequisite: MAT134Y5/135Y5/137Y5; **CHM140Y5/(110H5,120H5) (minimum 60%)/PHY135Y5/(136H5,137H5)** (minimum 60%)

**After:** Prerequisite: MAT134Y5/135Y5/137Y5; **CHM140Y5(minimum grade of 60%)/(110H5,120H5; minimum grade of 60% in CHM120H5)/PHY135Y5/(136H5,137H5)** (minimum 60%)

**Rationale:** Pre-requisite: Many students struggle with the transition from high school to university. In order to allow them more time to adjust to university life before assessing their eligibility for second year courses, we will consider their mark only from the second first year CHM course, CHM120, rather than both CHM110 and CHM120.

---

### Course #43 MAT212H5 Modeling with Differential Equations in Life Sciences and Medicine

**Before:** Corequisite: **MAT223H5**  
**After:** Corequisite: **MAT223H5, 232H5**  
**Rationale:** Multivariable calculus is important background for differential equations; it is required as a corequisite or prerequisite in other flavours of differential equations course in all campuses; it is important in this course too.

---

#### Course #44 MAT232H5 Calculus of Several Variables

**Before:** Corequisite:  
**After:** Corequisite: **MAT223H5**  
**Rationale:** Linear algebra is necessary to understand multivariable calculus. Within MAT232 there is not enough time to properly include enough of this required background.

---

#### Course #45 MAT233H5 Calculus of Several Variables

**Before:** Prerequisite: MAT134Y5/135Y5/137Y5 or **80%** in MAT133Y5 **Corequisite:**  
**After:** Prerequisite: MAT134Y5/135Y5/137Y5 or **75%** in MAT133Y5  
**Corequisite: MAT223H5**  
**Rationale:** This is a bridging course that allows students who took Calculus for Commerce, MAT133, to continue to higher level courses in MAT and STA. Linear algebra is necessary to understand multivariable calculus. Within MAT233 there is not enough time to properly include enough of this required background.  
  
In practice we have already been allowing students who got a mark of 75% on MAT133. This requirement suffices for succeeding in MAT233.

---

#### Course #46 MAT302H5 Introduction to Algebraic Cryptography

**Before:** Course Exclusion:  
**After:** Course Exclusion: **CSC322H5**  
**Rationale:** We would like to give priority to students who need this course for their program of study. MAT302 is an existing course being taught by a computer science faculty member. Cross-listing that course in computer science makes it possible for CSC students in all programs (not just the information security program) to take the course for CSC credit.

---

#### Course #47 MAT368H5 Vector Calculus

**Before:** Prerequisite: MAT102H5, 232H5/233H5  
**After:** Prerequisite: MAT102H5, **223H5**, 232H5/233H5  
**Rationale:** We would like to give priority to students who need this course for their program of study.  
  
Linear algebra is necessary to understand multivariable calculus. Within MAT368 there is not enough time to properly include enough of this required background.

---

#### Course #48 MAT378H5 Introduction to Analysis

**Before:** Prerequisite: MAT102H5, (223H5, 224H5)/248Y5, **212H5/242H5/258Y5**  
**After:** Prerequisite: MAT102H5, (223H5, 224H5)/248Y5, **212H5/242H5/258Y5, 232H5**  
**Rationale:** We would like to give priority to students who need this course for their program of study.  
  
MAT232 was a hidden prerequisite and is being made explicit.

---

#### Course #49 MAT405H5 Introduction to Topology

**Before:** Prerequisite: MAT102H5, 224H5, **232H5/233H5, 301H5**

**After:** Prerequisite: MAT102H5, 224H5, **232H5/233H5 and at least one MAT half-course at the 300+ level with a mark of at least 65%.**

**Rationale:** We would like to give priority to students who need this course for their program of study.

The specific content of MAT301 is not necessary for MAT405. But MAT405 requires high mathematical maturity, which would can be obtained through any of our 300 level courses.

---

### Course #50 PHY325H5 Mathematical Physics

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

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

**Rationale:** The material covered in the three second year PHY courses is specifically used as a source of example topics in PHY325, whereas the material in JCP221 is not used directly.

---

### Course #51 PHY347H5 Optics

**Before:** Prerequisite: PHY241H5, **245H5**

**After:** Prerequisite: PHY241H5, **245H5, 325H5**

**Rationale:** Pre-requisite: A new Mathematical Physics course (PHY325H5) is now being offered (as of fall 2011), and this should be a prerequisite for this course on optics. The mathematical methods covered in PHY325 will allow more advanced material to be covered in PHY347, and the course description has been revised to reflect this.

---

### Course #52 PSY316H5 Infant Perception and Cognition

**Before:** Prerequisite: PSY201H5/equivalent, **210H5/213H5, 280H5**

**After:** Prerequisite: PSY201H5/equivalent, **210H5/270H5/280H5**

**Rationale:** This change reflects shifting research interests in the field of developmental psychology. Very few developmental psychologists study perception on its own, and indeed we have not been able to find any other universities that are currently offering a course on perceptual development at the undergraduate level. Unsurprisingly, there are also no recent textbooks suitable for undergraduates published on this relatively narrow topic. This is probably because most contemporary infant researchers study both perception and cognition together. Moreover, there is a growing body of literature demonstrating how the development of infant cognition is closely linked to the social environment of the infant. Thus, it is difficult to discuss recent findings in the area of perception without discussing cognition and the environmental social factors experienced by the infant. By broadening the focus of this course, we hope to better provide the students with a more up to date perspective on the field of infant research.

---

### Course #53 SOC350H5 Quantitative Analysis I

**Before:** Prerequisite: **SOC100H5/101Y5, 200Y/(SOC221H5, 222H5)**

**After:** Prerequisite: **SOC100H5, 221H5, 222H5**

**Rationale:** We made the change from Y to H courses in 2006 and no longer need the reference to Y courses on the books.

---

### Course #54 STA107H5 An Introduction to Probability and Modelling

**Before:** Course Exclusion: **STA257H5**

**After:** Course Exclusion: **STA257H5; ECO227Y5**

**Rationale:** ECO227Y5 is accepted as equivalent to STA257H5+STA258H5, and STA257H5 is exclusion to STA107H5

---

### Course #55 STA431H5 Structural Equation Models

**Before:** Prerequisite: **STA258H5/ECO327Y5/STA302H1/STA302H5**

**After:** Prerequisite: **STA258H5**

**Rationale:**

STA258H is a prerequisite for STA302H and STA331H. STA257H + STA258H = ECO227Y which is prerequisite for ECO327Y , but content of the 300 level courses in not necessary prerequisite material for STA431H; this course is offered in alternate years.

---