UNIVERSITY OF TORONTO

University of Toronto Mississauga

Sciences Curriculum Proposals Report

Meeting Date: March 1, 2022

Prepared: February 26, 2022

Contents

Mathematical and Computational Sciences (UTM), Department of

11 Minor Program Modifications:

Applied Statistics - Major (Science)

Enrolment Requirements:

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

1. STA107H5 or STA256H5(with a minimum grade of 60%);
2. MAT134H5 or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT139H5 or MAT157Y5 or MAT159H5 or MAT233H5; and
3. A minimum cumulative grade point average, to be determined annually.
4. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry.

Completion Requirements:

7.0-7.5 credits are required.

First Year:

1. CSC108H5
2. MAT102H5
3. (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or (MAT137H5 and MAT139H5) or (MAT157H5 and MAT159H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5
4. MAT223H5 or MAT240H5

Second Year:

1. MAT232H5 or MAT233H5 or MAT257Y5
2. STA256H5 and STA258H5 and STA260H5

Higher Years:

1. STA302H5 and STA304H5 and STA305H5
2. 1.0 credit from any 300/400 level STA course or CSC322H5 or (CSC311H5 or CSC411H5) or MAT302H5 or MAT311H5 or MAT332H5 or MAT334H5 or MAT344H5 or (MAT337H5 or MAT378H5)

NOTES:

1. MAT133Y5 is included in the credit count only if the student also completes MAT233H5 (in which case MAT232H5 is not required).
2. ECO220Y5 cannot be substituted for STA256H5 or STA258H5 and/or STA260H5.
3. ECO227Y5 can be substituted for STA256H5 and STA258H5, but not for STA260H5.
4. STA107H5 is highly recommended in first year, but it is not required.
5. MAT337H5 or MAT378H5 is highly recommended for students intending to pursue graduate level studies in statistics.
6. STA246H5 will not be permitted as a pre-requisite for any other 200+ level STA courses. In addition, STA246H5 cannot be used towards any program (s) in Applied Statistics or Mathematics. The course is intended only for students in Computer Science programs who will not need STA256H5 for other program requirements.

Description of Proposed Changes:
1. Entry/program requirement change: to reflect retirement of MAT137Y5 and MAT157Y5, and introduction of 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).
2. Consistent with new language proposed at end of course description for STA246H5, we are adding program note to advise students that this course is not appropriate for Applied Statistics and Math programs. Want to ensure this messaging appears in more than one place.

Rationale:
1. Entry/program requirement change: to reflect retirement of MAT137Y5 and MAT157Y5, and introduction of 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5). see brief description and/or rationale for 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).
2. Additional comment added to program notes to ensure that MCS students know which STA course they should take: STA246H5 or STA256H5. Consistent with new language proposed at end of course description for STA246H5, we are adding program note to advise students that this course is not appropriate for Applied Statistics and Math programs. Want to ensure this messaging appears in more than one place.

Impact:
1. . Entry/program requirement change: see brief description and/or rationale for 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).
2. Students will be better informed and therefore better able to determine the correct STA option, STA256 or STA246, for their program goals.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resource Implications: None.

Applied Statistics - Minor (Science)

Completion Requirements:

4.5 -5.0 credits are required.

First Year: MAT133Y5 or (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or (MAT137H5 and MAT139H5) or (MAT157H5 and MAT159H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5

Higher Years:

1. 1.0 credit made up of any combination of (PSY201H5 and PSY202H5) or (BIO360H5 and BIO361H5) or SOC350H5 or ECO220Y5 or any STA courses other than STA256H5 and STA258H5
2. MAT232H5 or MAT233H5 or MAT257Y5
3. STA256H5 and STA258H5
4. 1.0 additional credit of STA at the 300/400 level

NOTES:

1. ECO220Y5 cannot be substituted for STA256H5 and/or STA258H5 and/or STA260H5.
2. ECO227Y5 can be substituted for STA256H5 and STA258H5, but not for STA260H5.
3. Students who include any of PSY201H5 or PSY202H5 or BIO360H5 or BIO361H5 or SOC350H5 or ECO220Y5 in this program are responsible for ensuring that these courses are completed prior to enrolling in STA256H5 and that all STA course prerequisites and exclusions are met.
4. STA246H5 will not be permitted as a pre-requisite for any other 200+ level STA courses. In addition, STA246H5 cannot be used towards any program (s) in Applied Statistics or Mathematics. The course is

intended only for students in Computer Science programs who will not need STA256H5 for other program requirements.

Description of Proposed Changes:
1. Entry/program requirement change: to reflect retirement of MAT137Y5 and MAT157Y5, and introduction of 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).
2. Consistent with new language proposed at end of course description for STA246H5, we are adding program note to advise students that this course is not appropriate for Applied Statistics and Math programs. Want to ensure this messaging appears in more than one place.

Rationale:
1. Entry/program requirement change: to reflect retirement of MAT137Y5 and MAT157Y5, and introduction of 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5). see brief description and/or rationale for 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).
2. Additional comment added to program notes to ensure that MCS students know which STA course they should take: STA246H5 or STA256H5. Consistent with new language proposed at end of course description for STA246H5, we are adding program note to advise students that this course is not appropriate for Applied Statistics and Math programs. Want to ensure this messaging appears in more than one place.

Impact:
1. Entry/program requirement change: see brief description and/or rationale for 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).
2. Students will be better informed and therefore better able to determine the correct STA option, STA256 or STA246, for their program goals.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resource Implications: None.

Applied Statistics - Specialist (Science)

Enrolment Requirements:

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

1. STA107H5 or STA256H5(with a minimum grade of 60%);
2. MAT137Y5 or MAT139H5 or MAT157Y5 or MAT159H5 ~~MAT134H5~~ (minimum 60%) or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT233H5 (minimum 55%) ; ~~and~~
3. A minimum cumulative grade point average, to be determined annually.
4. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry.

Completion Requirements:

12.0-12.5 credits are required.

First Year:

1. CSC108H5
2. MAT102H5

3. (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or (MAT137H5 and MAT139H5) or (MAT157H5 and MAT159H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5
4. MAT223H5 or MAT240H5

Second Year:

1. MAT232H5 or MAT233H5 or MAT257Y5
2. MAT244H5
3. STA256H5 and STA258H5 and STA260H5

Higher Years:

1. STA302H5 and STA304H5 and STA305H5 and STA348H5
2. 2.0 credits of STA at the 300/400 level STA course
3. 2.0 credits from CSC322H5 or (CSC311H5 or CSC411H5) or MAT302H5 or MAT311H5 or MAT332H5 or MAT334H5 or MAT344H5 or (MAT337H5 or MAT378H5)
4. 1.0 credit of STA

NOTES:

1. MAT133Y5 is included in the credit count only if the student also completes MAT233H5 (in which case MAT232H5 is not required).
2. ECO220Y5 cannot be substituted for STA256H5 or STA258H5 or STA260H5.
3. ECO227Y5 can be substituted for STA256H5 and STA258H5, but not for STA260H5.
4. STA107H5 is highly recommended in first year, but it is not required.
5. MAT337H5 or MAT378H5 is highly recommend for students intending to pursue graduate level studies in statistics.
6. STA246H5 will not be permitted as a pre-requisite for any other 200+ level STA courses. In addition, STA246H5 cannot be used towards any program (s) in Applied Statistics or Mathematics. The course is intended only for students in Computer Science programs who will not need STA256H5 for other program requirements.

Description of Proposed Changes:

1. Entry/program requirement changed to reflect splitting MAT137Y5 and MAT157Y5 into 2 H courses each. MAT137Y5 becomes MAT137H5 + MAT139H5, and MAT157Y5 becomes MAT157H5 + MAT159H5.
2. Note about STA246H5: Consistent with new language proposed at end of course description for STA246H5, we are adding program note to advise students that this course is not appropriate for Applied Statistics and Math programs. Want to ensure this messaging appears in more than one place.

Rationale:

1. Entry/program requirement change: to reflect splitting MAT137Y5 and MAT157Y5 into 2 H courses each. MAT137Y5 becomes MAT137H5 + MAT139H5, and MAT157Y5 becomes MAT157H5 + MAT159H5. see brief description and/or rationale for 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).
2. Additional comment added to program notes to ensure that MCS students know which STA course they should take: STA246H5 or STA256H5. Consistent with new language proposed at end of course description for STA246H5, we are adding program note to advise students that this course is not appropriate for Applied Statistics and Math programs. Want to ensure this messaging appears in more than one place.

Impact:

1. Entry/program requirement change: see brief description and/or rationale for 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).
2. Students will be better informed and therefore better able to determine the correct STA option, STA256 or STA246, for their program goals.

Consultation:

Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resource Implications: None.

Bioinformatics - Specialist (Science)

Completion Requirements:

14.0 credits are required.

First Year:

1. BIO152H5 and BIO153H5
2. CHM110H5 and CHM120H5
3. CSC108H5 and CSC148H5
4. MAT102H5
5. (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or (MAT137H5 and MAT139H5) or (MAT157H5 and MAT159H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5

Second Year:

1. BIO206H5 and BIO207H5
2. CHM242H5
3. CSC207H5 and CSC236H5 and CSC263H5
4. MAT223H5 or MAT240H5

Third Year:

1. MAT232H5 and MAT244H5
2. STA246H5 or STA256H5 or ECO227Y5

Fourth Year:

1. BIO314H5 and BIO372H5 and BIO477H5
2. CSC413H5 or CSC321H5 or CSC411H5 or CSC311H5
3. CSC343H5 and CSC373H5
4. MAT332H5
5. At least 1.0 credit from the following list of recommended courses, of which at least 0.5 credit must be at the 400-level: BIO315H5 or BIO341H5 or BIO370Y5 or BIO371H5 or BIO380H5 or BIO443H5 or BIO481Y5 or CBJ481Y5 or CHM361H5 or CSC310H5 or CSC338H5 or CSC363H5 or JCP410H5 or STA302H5 or STA348H5

NOTES:

1. 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.
2. Students intending to take CHM361H5 as one of their fourth year recommended courses must take CHM243H5 as a prerequisite course.

Rationale:

1.ECO227Y5 can be substituted for STA256H5 or STA246H5
2. Program requirement change: to reflect retirement of MAT137Y5 and MAT157Y5, and introduction of 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).

Resource Implications:

None.

Computer Science - Major (Science)

Enrolment Requirements:

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

1. CSC148H5(see minimum grade note below)
2. MAT102H5 (see minimum grade note below)
3. MAT134H5 or MAT136H5 or MAT139H5 or MAT159H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5
4. ISP100H5
5. A cumulative grade point average (CGPA), determined annually. It is never lower than 2.5.
6. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry.

NOTES:

1. The minimum grade required in CSC148H5 and MAT102H5 is determined annually. It is never lower than 60%. Only CSC148H5 and MAT102H5, taken at the UTM campus, will be accepted.
2. Transfer students who have completed any postsecondary studies outside of UTM (including studies at other divisions at the University of Toronto) are not eligible to pursue a Specialist and/or Major in Computer Science at U of T Mississauga.

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

Completion Requirements:

7.5-8.0 credits are required.

First Year:

1. CSC108H5 and CSC148H5 and ISP100H5
2. MAT102H5
3. (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or (MAT137H5 and MAT139H5) or (MAT157H5 and MAT159H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5

Second Year:

1. CSC207H5 and CSC236H5
2. 1.0 credit from the following CSC209H5 or CSC258H5 or CSC263H5
3. MAT223H5 or MAT240H5
4. STA246H5 or STA256H5 or ECO227Y5

Higher Years:

1. 2.0 credits from ~~the following:~~ any 300/400 level CSC courses ~~course (offered at UTM)~~ or GGR335H5 or GGR337H5 or GGR437H5. At least 0.5 credit must come from 400-level courses, and no more than 0.5 credit of GGR courses may count to this requirement.

NOTE: In addition to the course requirements above, students must complete an integrative learning experience. This requirement may be met taking at least one of the following half-courses: CSC318H5 or CSC367H5 or CSC375H5 or CSC409H5 or CSC420H5 or CSC427H5 or CSC477H5 or CSC490H5.

Rationale:
1. We always accept UTSG and UTSC courses to meet our program requirements. We would like to have it remove to avoid student confusion.
2. ECO227Y5 can be substituted for STA256H5 or STA246H5
3. Entry/program requirement change to reflect retirement of MAT137Y5 and MAT157Y5, and introduction of 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).

Resource Implications:
none.

Computer Science - Minor (Science)

Completion Requirements:

4.0 credits are required.

First Year: CSC108H5 and CSC148H5 and MAT102H5

Second Year:
1. CSC207H5 and CSC236H5
2. One of CSC209H5 or CSC258H5 or CSC263H5

Third and Fourth Years: 1.0 credit from any ~~of~~ ~~UTM~~ ~~CSC~~ ~~at~~ ~~the~~ 300/400 level CSC course (~~400-level,~~ except for CSC392H5 and CSC393H5 and CSC492H5 and CSC493H5) or GGR335H5 or GGR337H5 or GGR437H5. No more than 0.5 credit of GGR courses may count to this requirement.

NOTES:
1. 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.
2. Only CSC148H5 and MAT102H5, taken at the UTM campus, will be accepted.

Rationale:
1.We always accept UTSG and UTSC courses to meet our program requirements. We would like to have it remove to avoid student confusion.
2.We accept these courses (GGR335H5, GGR337H5 or GGR437H5) to meet CS major or specialists requirements. We would like to accept 0.5 of them to meet the CS minor program as well.
3.CSC392H5 and CSC393H5 are reading course, they should be excluded.

Resource Implications:
None

Computer Science - Specialist (Science)

Enrolment Requirements:

Limited Enrolment — Enrolment in this program is limited to students with a minimum of 4.0 credits, including the following:
1. CSC148H5(see minimum grade note below)
2. MAT102H5 (see minimum grade note below)

3. MAT134H5 or MAT136H5 or MAT139H5 or MAT159H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5
4. ISP100H5
5. A cumulative grade point average (CGPA), determined annually. It is never lower than 2.5.
6. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry.

NOTES:

1. The minimum grade required in CSC148H5 and MAT102H5 is determined annually. It is never lower than 65%. Only CSC148H5 and MAT102H5, taken at the UTM campus, will be accepted.
2. Transfer students who have completed any postsecondary studies outside of UTM (including studies at other divisions at the University of Toronto) are not eligible to pursue a Specialist and/or Major in Computer Science at U of T Mississauga.

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

Completion Requirements:

11.5-12.5 credits are required.

First Year:

1. CSC108H5 and CSC148H5 and ISP100H5
2. MAT102H5
3. (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or (MAT137H5 and MAT139H5) or (MAT157H5 and MAT159H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5

Second Year:

1. CSC207H5 and CSC209H5 and CSC236H5 and CSC258H5 and CSC263H5
2. MAT223H5 or MAT240H5
3. MAT232H5 or MAT257Y5
4. STA246H5 or STA256H5 or ECO227Y5

Higher Years:

1. CSC311H5 and CSC343H5 and CSC363H5 and CSC369H5 and CSC373H5
2. CSC358H5 or CSC458H5
3. 2.0 ~~2.5~~ credits from ~~the following:~~ any 300/400 level CSC course ~~(offered at UTM)~~ or GGR335H5 or GGR337H5 or GGR437H5. At least 1.0 credit must come from 400-level courses, and no more than 1.0 credit of GGR courses may count to this requirement.

NOTE: In addition to the course requirements above, students must complete an integrative learning experience. This requirement may be met by taking at least one of the following half-courses: CSC318H5 or CSC367H5 or CSC375H5 or CSC409H5 or CSC420H5 or CSC427H5 or CSC477H5 or CSC490H5.

Rationale:

1. We always accept UTSG and UTSC courses to meet our program requirements. We would like to have it remove to avoid student confusion.
2. ECO227Y5 can be substituted for STA256H5 or STA246H5
3. Entry/program requirement change to reflect retirement of MAT137Y5 and MAT157Y5, and introduction of 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).

4. The proposed curricular change involves making CSC311H5, the Introduction to Machine Learning course, a requirement for the CS Specialist POSt. The intent is to align ourselves with what we expect our graduating students with a CS Specialist designation should know in this era of computing. While this course was not required so far in the CS Specialist, in recent years we have experienced the pervasive nature and the rise in the use of Machine Learning techniques in a variety of computational domains. As such, we anticipate that a well-rounded graduate with the CS Specialist designation should gain some exposure to machine learning and the corresponding computational thinking skills. Currently, a large segment of our student population is taking this course already, with some taking even more advanced follow-up courses in the area of Machine Learning. Therefore, adding the introductory machine learning course (CSC311H5) as a requirement for the CS Specialist is both a necessary and a natural step forward.

Resource Implications:
None.

Information Security - Specialist (Science)

Enrolment Requirements:

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

1. CSC148H5(see minimum grade note below);
2. MAT102H5 (see minimum grade note below) ;
3. MAT134H5 or MAT136H5 or MAT139H5 or MAT159H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5;
4. ISP100H5; and
5. A cumulative grade point average (CGPA), determined annually. It is never lower than 2.5.
6. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry.

NOTES:
1. The minimum grade required in CSC148H5 and MAT102H5 is determined annually. It is never lower than 65%. Only CSC148H5 and MAT102H5, taken at the UTM campus, will be accepted.
2. Transfer students who have completed any postsecondary studies outside of UTM (including studies at other divisions at the University of Toronto) are not eligible to pursue a Specialist and/or Major in Computer Science at U of T Mississauga.

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

Completion Requirements:

12.5-13.0 credits are required.

First Year:

1. CSC108H5 and CSC148H5 and ISP100H5
2. MAT102H5
3. (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or (MAT137H5 and MAT139H5) or (MAT157H5 and MAT159H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5
4. MAT223H5 or MAT240H5

Second Year:

1. CSC207H5 and CSC209H5 and CSC236H5 and CSC258H5 and CSC263H5
2. MAT224H5 or MAT240H5
3. MAT232H5 or MAT257Y
4. STA246H5 or STA256H5 or ECO227Y5

Third Year:

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

Fourth Year:

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

NOTES: In addition to the course requirements above, students must complete an integrative learning experience. This requirement may be met by taking at least one of the following half-courses: CSC318H5 or CSC367H5 or CSC375H5 or CSC409H5 or CSC420H5 or CSC427H5 or CSC477H5 or CSC490H5.

Rationale:

1.ECO227Y5 can be substituted for STA256H5 or STA246H5
2.Entry/program requirement change to reflect retirement of MAT137Y5 and MAT157Y5, and introduction of 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).

Resource Implications:

None.

Mathematical Sciences - Major (Science)

Enrolment Requirements:

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

1. MAT102H5(minimum 60%);
2. A minimum 60% grade in MAT134H5 or MAT136H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT139H5 or MAT233H5 or a minimum 50% in MAT157Y5 or MAT159H5; ~~MAT157Y5;~~ and
3. A minimum cumulative grade point average (CGPA), to be determined annually.
4. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry.

Completion Requirements:

8.0 credits are required.

First Year:

1. MAT102H5
2. (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or (MAT137H5 and MAT139H5) or (MAT157H5 and MAT159H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5
3. MAT223H5 or MAT240H5

Second Year:

1. MAT202H5 and MAT244H5
2. [(MAT232H5 or MAT233H5) and MAT236H5] or MAT257Y5
3. MAT224H5 or MAT247H5

Higher Years:

1. MAT301H5 and (MAT334H5 or MAT354H5)
2. MAT337H5 or MAT378H5 or MAT392H5 or MAT405H5
3. MAT305H5 or MAT311H5 or MAT332H5
4. MAT302H5 or MAT315H5 or MAT344H5
5. STA256H5 or 0.5 credit of MAT at the 300/400 level, except MAT322H5
6. 0.5 additional credits in MAT at the 400 level

NOTES:

1. MAT137H5 and MAT139H5 are ~~MAT137Y5 is highly~~ recommended.
2. Mathematical Majors are strongly encouraged to enroll in MAT240H5 followed by MAT247H5.
3. Students enrolled in this program may participate in the PEY program. For more information visit www.pey.utoronto.ca

Rationale:

Entry requirement & program requirement update to reflect splitting MAT137Y5 and MAT157Y5 into 2 H courses each. MAT137Y5 becomes MAT137H5 + MAT139H5, and MAT157Y5 becomes MAT157H5 + MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Impact:

See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:

Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resource Implications:

Little to none. Here is one minor implication and one observation:
Since Y courses do not have Fall final exams, there will be some small additional overhead, say in terms of TA hours, in order to facilitate the additional annual final exams.
The total number of LEC and TUT hours for MAT137Y5 will essentially be split in half with this change, and we do not expect an increased need for instructors or TAs as a result of this change (modulo any efficiencies gained through better timetable planning as a result of the splits).

Mathematical Sciences - Minor (Science)

Completion Requirements:

4.0 credits in MAT are required, including 1.0 credit of MAT at the 300/400 level.

First Year:

1. MAT102H5
2. (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or (MAT137H5 and MAT139H5) or (MAT157H5 and MAT159H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5

Second Year:

1. MAT223H5 or MAT240H5

2. [MAT232H5 and (MAT202H5 or MAT224H5 or MAT236H5 or MAT240H5 or MAT244H5 or MAT247H5 or CSC236H5)] or MAT257Y5

Higher Years:

1. 1.0 credit of MAT at the 300+ level

NOTES:

1. MAT223H5 may be taken in the first year.
2. Students may replace the combination [(MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or (MAT137H5 and MAT139H5) or (MAT157H5 and MAT159H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5] and MAT232H5 with the combination (MAT133Y5 and MAT233H5)

Rationale:

Program requirement update to reflect splitting MAT137Y5 and MAT157Y5 into 2 H courses each. MAT137Y5 becomes MAT137H5 + MAT139H5, and MAT157Y5 becomes MAT157H5 + MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Impact:

See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:

Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resource Implications:

Little to none. Here is one minor implication and one observation: Since Y courses do not have Fall final exams, there will be some small additional overhead, say in terms of TA hours, in order to facilitate the additional annual final exams. The total number of LEC and TUT hours for MAT137Y5 will essentially be split in half with this change, and we do not expect an increased need for instructors or TAs as a result of this change (modulo any efficiencies gained through better timetable planning as a result of the splits).

Mathematical Sciences - Specialist (Science)

Enrolment Requirements:

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

1. MAT102H5(minimum 65%);
2. MAT137Y5 or MAT139H5 (minimum 60%) or MAT157Y5 or MAT159H5; ~~MAT157Y5;~~ and
3. A minimum cumulative grade point average (CGPA), to be determined annually.
4. All students must complete 4.0 U of T credits before requesting this program. Courses with a grade of CR/NCR will not count as a part of the 4.0 credits required for program entry.

Completion Requirements:

13.5 credits are required.

First Year:

1. CSC108H5 and CSC148H5

2. MAT102H5 and MAT240H5
3. [MAT137Y5 or (MAT137H5 and MAT139H5)] or [MAT157Y5 or (MAT157H5 and MAT159H5)]

Second Year:

1. CSC236H5
2. MAT202H5 and MAT244H5 and MAT247H5 and MAT257Y5
3. STA256H5 and (STA258H5 or STA260H5)

Higher Years:

1. MAT301H5 and (MAT334H5 or MAT354H5) and MAT392H5
2. MAT302H5 or MAT315H5
3. 2.0 additional credit from MAT302H5 or MAT309H5 or MAT311H5 or MAT315H5 or MAT332H5 or (MAT337H5 or MAT378H5) or MAT344H5
4. 1.0 additional credits in MAT at the 400 level (MAT401H5 is recommended)
5. 1.0 additional credits at the 300/400 level in CSC or MAT/STA, except MAT322H5
6. 0.5 additional credits in MAT at the 300+level, except MAT322H5

NOTES :

1. Mathematical Science Specialists are strongly encouraged to enroll in MAT157H5, MAT159H5, ~~MAT157Y5~~ ~~and~~ MAT257Y5, and MAT354H5.
2. Students may replace MAT257Y5 with [(MAT232H5 or MAT233H5) and MAT236H5), but if they do then MAT337H5 AND MAT405H5 are required as part of "Higher Years".
3. Students who do not feel ready for MAT257Y5 in their Second Year, may wish to take MAT232H5 that year, and then take MAT257Y5 in their Third Year.
4. Students enrolled in this program may participate in the PEY program. For more information visit www.pey.utoronto.ca

Description of Proposed Changes:

Entry requirement & program requirement update to reflect splitting MAT137Y5 and MAT157Y5 into 2 H courses each. MAT137Y5 becomes MAT137H5 + MAT139H5, and MAT157Y5 becomes MAT157H5 + MAT159H5.

Rationale:

Entry requirement & program requirement update to reflect splitting MAT137Y5 and MAT157Y5 into 2 H courses each. MAT137Y5 becomes MAT137H5 + MAT139H5, and MAT157Y5 becomes MAT157H5 + MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Impact:

See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:

Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resource Implications:

Little to none. Here is one minor implication and one observation: Since Y courses do not have Fall final exams, there will be some small additional overhead, say in terms of TA hours, in order to facilitate the additional annual final exams. The total number of LEC and TUT hours for MAT137Y5 will essentially be split in half with this change, and we do not expect an increased need for instructors or TAs as a result of this change (modulo any efficiencies gained through better timetable planning as a result of the splits).

6 New Courses:

CSC397H5: Topics in Computer Science

Contact Hours:
Lecture: 24

Description:

Introduction to a topic of current interest in computer science intended for CSC majors and specialists. Content will vary from year to year. The contact hours for this course may vary in terms of contact type (L, T, P) from year to year, but will be between 24-48 contact hours in total. See the UTM Timetable.

Prerequisites:
Appropriate prerequisite requirement(s) will be available on the UTM timetable along with the topic title prior to course registration.

Corequisites:

Exclusions:

Recommended Preparation:

Rationale:
We are seeing increased interest from both instructors and students in special topics courses, to the point where we are running out of special topics courses each year. This will help remedy this and give us the ability to offer as many such courses as needed.
Consultation:

Resources:
None. Topics course.

CSC496H5: Topics in Robotics

Contact Hours:
Lecture: 24

Description:

Introduction to a topic of current interest in robotics intended for CSC majors and specialists. Content will vary from year to year but will always maintain a robotics focus. The contact hours for this course may vary in terms of contact type (L, T, P) from year to year, but will be between 24-48 contact hours in total. See the UTM Timetable.

Prerequisites:
CSC376H5. Additional required prerequisite(s) will be available on the UTM timetable along with the topic title prior to course registration.

Corequisites:

Exclusions:

Recommended Preparation:

Rationale:
Some of our special topics courses these days are in the area of robotics; this is a result of our increased hiring in this area. Students sometimes do not have the prerequisites for special topics robotics courses, and it is hard for them to anticipate such gaps prior to our special topics courses being announced. Having a separate special topics course for robotics will remedy this and clarify messaging to students. CSC376H5 is needed for any advanced study in robotics.
Consultation:

Resources:
None. Topics course.

MAT137H5: Differential Calculus for Mathematical Sciences

Contact Hours:
Lecture: 40 / *Tutorial:* 24

Description:

A conceptual approach to calculus. A focus on theoretical foundations and proofs as well as some emphasis on geometric and physical intuition. Limits and continuity, differentiation, the mean value, extreme value and inverse function theorems. Applications typically include related rates and optimization.

Prerequisites:
Minimum 70% in Grade 12 Advanced Functions (MHF4U) and Minimum 70% in Grade 12 Calculus and Vectors (MCV4U).

Corequisites:

Exclusions:
MAT132H5 or MAT133Y5 or MAT134Y5 or MAT135H5 or MAT137Y5 or MAT135Y5 or MAT157H5 or MAT157Y5 or MAT133Y1 or MAT135Y1 or MAT135H1 or MAT137Y1 or MAT157Y1 or MATA30H3 or MATA31H3 or MATA32H3 or MATA33H3 or MATA35H3 or MATA36H3 or MATA37H3

Recommended Preparation:

Rationale:
o About 5 years ago, we changed two first-year Calculus offerings, MAT134Y5 and MAT135Y5 into two pairs of H courses: MAT132H5+MAT134H5, and MAT135H5+MAT136H5. After years of experience with the change, we have found little to no real downside, but significant upsides for students. For example, students who fail MAT132H5 are students who were likely to fail MAT134Y5 in the past; these students are now able to retake MAT132H5 in the Winter semester and then take MAT134H5 in the Summer in order to 'stay on track'. Those students might attempt to take the double-speed version of MAT134Y5 in the summer to stay on track, resulting in many double-fails. And those that didn't, would be delayed until the following Fall. In any case, failing an H course is less of a blow and something easier to reorganize around, compared to failing a Y course.
o Splitting MAT137Y5 and MAT157Y5 will provide similar benefits to students to the splits of MAT134Y5 and MAT135Y5, but will also introduce some new benefits. For example, a student who takes and barely passes MAT157H5 or MAT137H5 might have struggled to pass the Y-version of these courses, but will now have the option to "drop down" to the second semester Calculus course at the level just below (i.e. to the new MAT139H5 or to MAT136H5, respectively). This would offer real relief to a student 'trapped' in MAT137/157 who wishes they could jump down to the 135/137 level.
o This could also help us retain students in the MAT Major/Specialist programs, by giving a strong student who is interested in pursuing one of these programs an option to stay in an advanced Calculus course (e.g. dropping from MAT159 to MAT139 or 139 to 136) even if they find the higher level course to be too difficult and then gain a better overall cGPA in the year (e.g. a 60 and a 80 in two H courses, versus a 55 in a single Y course), making program entry more likely.
o There could also be a small number of students who do exceptionally well in MAT137H5 or MAT135H%, for example, and will want to 'level up' to MAT139H5 or MAT159H5. While we do not record this as an explicit option in the prerequisites, we would communicate to students that this could be possible with a prerequisite waiver request accompanying a very strong record.
o Overall, this change will allow students much more flexibility to get themselves into the right Calculus courses in first-year, and finish the year strong. We will pair this change with an improved communication strategy to make students aware of their options.
o Beyond benefits to students, there are other benefits in terms of departmental resource allocation planning: MAT137Y5 enrollment typically goes down enough from Fall to Winter, such that an LEC section and

several TUT sections need to be closed in the Winter, and students shifted around etc. With two half-courses, we should be able to plan better and be more flexible in terms of hiring and assigning TAs and instructors. We would also have more flexibility in re-offering, say, MAT137H5 in the Winter and/or offering MAT139H5 in the Summer.

- Regarding the course numberings chosen, we are avoiding "MAT138H5" intentionally to avoid confusion with MAT138H1, which is not a Calculus course. And we wanted the codes for the MAT157 replacement courses (157+159) to match the codes for the MAT137 replacements (137+139) - i.e. both ending in '7' and '9'.
- Instructors of all UTM Calculus courses (and indeed all UTM MAT Teaching faculty, as well as faculty from CSC and STA) have been consulted, and the strong consensus was that this was a good change for students.
- Note that UTSC has for years had two H courses instead of MAT137Y (and does not offer a course comparable to MAT157Y), while UTSG continues to offer MAT137 and MAT157 as Y courses.

Consultation:

Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:

Little to none. Here is one minor implication and one observation:

- Since Y courses do not have Fall final exams, there will be some small additional overhead, say in terms of TA hours, in order to facilitate the additional annual final exams.
- The total number of LEC and TUT hours for MAT137Y5 will essentially be split in half with this change, and we do not expect an increased need for instructors or TAs as a result of this change (modulo any efficiencies gained through better timetable planning as a result of the splits).

MAT139H5: Integral Calculus for Mathematical Sciences

Contact Hours:
Lecture: 40 / *Tutorial:* 24

Description:

A conceptual sequel to MAT137H5. Integration, the fundamental theorem of calculus, sequences and series, power series and Taylor's theorem. Applications typically include approximation, integration techniques, areas and volumes.

Prerequisites:
MAT137H5 or MAT157H5

Corequisites:

Exclusions:
MAT133Y5 or MAT134H5 or MAT134Y5 or MAT135Y5 or MAT136H5 or MAT137H5 or MAT157H5 or MAT157Y5
MAT133Y1 or MAT135Y1 or MAT135H1 or MAT137Y1 or MAT157Y1 or MATA30H3 or MATA31H3 or MATA32H3 or MATA33H3 or MATA35H3 or MATA36H3 or MATA37H3

Recommended Preparation:

Rationale:
o About 5 years ago, we changed two first-year Calculus offerings, MAT134Y5 and MAT135Y5 into two pairs of H courses: MAT132H5+MAT134H5, and MAT135H5+MAT136H5. After years of experience with the change, we have found little to no real downside, but significant upsides for students. For example, students who fail MAT132H5 are students who were likely to fail MAT134Y5 in the past; these students are now able to retake MAT132H5 in the Winter semester and then take MAT134H5 in the Summer in order to 'stay on track'. Those students might attempt to take the double-speed version of MAT134Y5 in the summer to stay on track, resulting in many double-fails. And those that didn't, would be delayed until the following Fall. In any case, failing an H course is less of a blow and something easier to reorganize around, compared to failing a Y course.
o Splitting MAT137Y5 and MAT157Y5 will provide similar benefits to students to the splits of MAT134Y5 and MAT135Y5, but will also introduce some new benefits. For example, a student who takes and barely passes MAT157H5 or MAT137H5 might have struggled to pass the Y-version of these courses, but will now have the option to "drop down" to the second semester Calculus course at the level just below (i.e. to the new MAT139H5 or to MAT136H5, respectively). This would offer real relief to a student 'trapped' in MAT137/157 who wishes they could jump down to the 135/137 level.
o This could also help us retain students in the MAT Major/Specialist programs, by giving a strong student who is interested in pursuing one of these programs an option to stay in an advanced Calculus course (e.g. dropping from MAT159 to MAT139 or 139 to 136) even if they find the higher level course to be too difficult and then gain a better overall cGPA in the year (e.g. a 60 and a 80 in two H courses, versus a 55 in a single Y course), making program entry more likely.
o There could also be a small number of students who do exceptionally well in MAT137H5 or MAT135H%, for example, and will want to 'level up' to MAT139H5 or MAT159H5. While we do not record this as an explicit option in the prerequisites, we would communicate to students that this could be possible with a prerequisite waiver request accompanying a very strong record.
o Overall, this change will allow students much more flexibility to get themselves into the right Calculus courses in first-year, and finish the year strong. We will pair this change with an improved communication strategy to make students aware of their options.
o Beyond benefits to students, there are other benefits in terms of departmental resource allocation planning: MAT137Y5 enrollment typically goes down enough from Fall to Winter, such that an LEC section and several TUT sections need to be closed in the Winter, and students shifted around etc. With two half-courses, we

should be able to plan better and be more flexible in terms of hiring and assigning TAs and instructors. We would also have more flexibility in re-offering, say, MAT137H5 in the Winter and/or offering MAT139H5 in the Summer.

- Regarding the course numberings chosen, we are avoiding "MAT138H5" intentionally to avoid confusion with MAT138H1, which is not a Calculus course. And we wanted the codes for the MAT157 replacement courses (157+159) to match the codes for the MAT137 replacements (137+139) - i.e. both ending in '7' and '9'.
- Instructors of all UTM Calculus courses (and indeed all UTM MAT Teaching faculty, as well as faculty from CSC and STA) have been consulted, and the strong consensus was that this was a good change for students.
- Note that UTSC has for years had two H courses instead of MAT137Y (and does not offer a course comparable to MAT157Y), while UTSG continues to offer MAT137 and MAT157 as Y courses.

Consultation:

Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:

Little to none. Here is one minor implication and one observation:

- Since Y courses do not have Fall final exams, there will be some small additional overhead, say in terms of TA hours, in order to facilitate the additional annual final exams.
- The total number of LEC and TUT hours for MAT137Y5 will essentially be split in half with this change, and we do not expect an increased need for instructors or TAs as a result of this change (modulo any efficiencies gained through better timetable planning as a result of the splits).

MAT157H5: Analysis I

Contact Hours:
Lecture: 36 / *Tutorial:* 24

Description:

A rigorous and proof-intensive introduction to the analysis of single variable real-valued functions for students with a serious interest in mathematics. Topics typically include the construction of the real numbers, the epsilon-delta definition of the limit, continuity, and differentiation.

Prerequisites:
MAT137H5

Corequisites:
MAT102H5 (strongly recommended in the Fall term for students taking MAT157H5 in their first year).

Exclusions:
MAT157Y5 or MAT157Y1 or MATA37H3

Recommended Preparation:

Rationale:
o About 5 years ago, we changed two first-year Calculus offerings, MAT134Y5 and MAT135Y5 into two pairs of H courses: MAT132H5+MAT134H5, and MAT135H5+MAT136H5. After years of experience with the change, we have found little to no real downside, but significant upsides for students. For example, students who fail MAT132H5 are students who were likely to fail MAT134Y5 in the past; these students are now able to retake MAT132H5 in the Winter semester and then take MAT134H5 in the Summer in order to 'stay on track'. Those students might attempt to take the double-speed version of MAT134Y5 in the summer to stay on track, resulting in many double-fails. And those that didn't, would be delayed until the following Fall. In any case, failing an H course is less of a blow and something easier to reorganize around, compared to failing a Y course.
o Splitting MAT137Y5 and MAT157Y5 will provide similar benefits to students to the splits of MAT134Y5 and MAT135Y5, but will also introduce some new benefits. For example, a student who takes and barely passes MAT157H5 or MAT137H5 might have struggled to pass the Y-version of these courses, but will now have the option to "drop down" to the second semester Calculus course at the level just below (i.e. to the new MAT139H5 or to MAT136H5, respectively). This would offer real relief to a student 'trapped' in MAT137/157 who wishes they could jump down to the 135/137 level.
o This could also help us retain students in the MAT Major/Specialist programs, by giving a strong student who is interested in pursuing one of these programs an option to stay in an advanced Calculus course (e.g. dropping from MAT159 to MAT139 or 139 to 136) even if they find the higher level course to be too difficult and then gain a better overall cGPA in the year (e.g. a 60 and a 80 in two H courses, versus a 55 in a single Y course), making program entry more likely.
o There could also be a small number of students who do exceptionally well in MAT137H5 or MAT135H%, for example, and will want to 'level up' to MAT139H5 or MAT159H5. While we do not record this as an explicit option in the prerequisites, we would communicate to students that this could be possible with a prerequisite waiver request accompanying a very strong record.
o Overall, this change will allow students much more flexibility to get themselves into the right Calculus courses in first-year, and finish the year strong. We will pair this change with an improved communication strategy to make students aware of their options.
o Beyond benefits to students, there are other benefits in terms of departmental resource allocation planning: MAT137Y5 enrollment typically goes down enough from Fall to Winter, such that an LEC section and several TUT sections need to be closed in the Winter, and students shifted around etc. With two half-courses, we should be able to plan better and be more flexible in terms of hiring and assigning TAs and instructors. We would

also have more flexibility in re-offering, say, MAT137H5 in the Winter and/or offering MAT139H5 in the Summer.
o Regarding the course numberings chosen, we are avoiding "MAT138H5" intentionally to avoid confusion with MAT138H1, which is not a Calculus course. And we wanted the codes for the MAT157 replacement courses (157+159) to match the codes for the MAT137 replacements (137+139) - i.e. both ending in '7' and '9'.
o Instructors of all UTM Calculus courses (and indeed all UTM MAT Teaching faculty, as well as faculty from CSC and STA) have been consulted, and the strong consensus was that this was a good change for students.
o Note that UTSC has for years had two H courses instead of MAT137Y (and does not offer a course comparable to MAT157Y), while UTSG continues to offer MAT137 and MAT157 as Y courses.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
Little to none. Here is one minor implication and one observation:
o Since Y courses do not have Fall final exams, there will be some small additional overhead, say in terms of TA hours, in order to facilitate the additional annual final exams.
o The total number of LEC and TUT hours for MAT137Y5 will essentially be split in half with this change, and we do not expect an increased need for instructors or TAs as a result of this change (modulo any efficiencies gained through better timetable planning as a result of the splits).

MAT159H5: Analysis II

Contact Hours:
Lecture: 36 / *Tutorial:* 24

Description:

A rigorous and proof-intensive sequel to MAT157H5 for students with a serious interest in mathematics. Topics typically include sequences, series, and integration of single variable real-valued functions.

Prerequisites:
MAT157H5

Corequisites:

Exclusions:
MAT157Y5 or MAT157Y1 or MATA37H3

Recommended Preparation:

Rationale:
o About 5 years ago, we changed two first-year Calculus offerings, MAT134Y5 and MAT135Y5 into two pairs of H courses: MAT132H5+MAT134H5, and MAT135H5+MAT136H5. After years of experience with the change, we have found little to no real downside, but significant upsides for students. For example, students who fail MAT132H5 are students who were likely to fail MAT134Y5 in the past; these students are now able to retake MAT132H5 in the Winter semester and then take MAT134H5 in the Summer in order to 'stay on track'. Those students might attempt to take the double-speed version of MAT134Y5 in the summer to stay on track, resulting in many double-fails. And those that didn't, would be delayed until the following Fall. In any case, failing an H course is less of a blow and something easier to reorganize around, compared to failing a Y course.
o Splitting MAT137Y5 and MAT157Y5 will provide similar benefits to students to the splits of MAT134Y5 and MAT135Y5, but will also introduce some new benefits. For example, a student who takes and barely passes MAT157H5 or MAT137H5 might have struggled to pass the Y-version of these courses, but will now have the option to "drop down" to the second semester Calculus course at the level just below (i.e. to the new MAT139H5 or to MAT136H5, respectively). This would offer real relief to a student 'trapped' in MAT137/157 who wishes they could jump down to the 135/137 level.
o This could also help us retain students in the MAT Major/Specialist programs, by giving a strong student who is interested in pursuing one of these programs an option to stay in an advanced Calculus course (e.g. dropping from MAT159 to MAT139 or 139 to 136) even if they find the higher level course to be too difficult and then gain a better overall cGPA in the year (e.g. a 60 and a 80 in two H courses, versus a 55 in a single Y course), making program entry more likely.
o There could also be a small number of students who do exceptionally well in MAT137H5 or MAT135H%, for example, and will want to 'level up' to MAT139H5 or MAT159H5. While we do not record this as an explicit option in the prerequisites, we would communicate to students that this could be possible with a prerequisite waiver request accompanying a very strong record.
o Overall, this change will allow students much more flexibility to get themselves into the right Calculus courses in first-year, and finish the year strong. We will pair this change with an improved communication strategy to make students aware of their options.
o Beyond benefits to students, there are other benefits in terms of departmental resource allocation planning: MAT137Y5 enrollment typically goes down enough from Fall to Winter, such that an LEC section and several TUT sections need to be closed in the Winter, and students shifted around etc. With two half-courses, we should be able to plan better and be more flexible in terms of hiring and assigning TAs and instructors. We would also have more flexibility in re-offering, say, MAT137H5 in the Winter and/or offering MAT139H5 in the Summer.
o Regarding the course numberings chosen, we are avoiding "MAT138H5" intentionally to avoid confusion

with MAT138H1, which is not a Calculus course. And we wanted the codes for the MAT157 replacement courses (157+159) to match the codes for the MAT137 replacements (137+139) - i.e. both ending in '7' and '9'.

- Instructors of all UTM Calculus courses (and indeed all UTM MAT Teaching faculty, as well as faculty from CSC and STA) have been consulted, and the strong consensus was that this was a good change for students.
- Note that UTSC has for years had two H courses instead of MAT137Y (and does not offer a course comparable to MAT157Y), while UTSG continues to offer MAT137 and MAT157 as Y courses.

Consultation:

Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:

Little to none. Here is one minor implication and one observation:

- Since Y courses do not have Fall final exams, there will be some small additional overhead, say in terms of TA hours, in order to facilitate the additional annual final exams.
- The total number of LEC and TUT hours for MAT137Y5 will essentially be split in half with this change, and we do not expect an increased need for instructors or TAs as a result of this change (modulo any efficiencies gained through better timetable planning as a result of the splits).

29 Course Modifications:

CSC263H5: Data Structures and Analysis

Prerequisites:
CSC207H5 and CSC236H5 and (STA107H5 or STA246H5 or STA256H5 or ECO227Y5)

Rationale:
ECO227Y5 can be substituted for STA256H5 or STA246H5

Resources:
None.

CSC310H5: Information Theory

Prerequisites:
CSC148H5 and MAT223H5 and (STA246H5 or STA256H5 or ECO227Y5)

Rationale:
ECO227Y5 can be substituted for STA256H5 or STA246H5.

Resources:
None.

CSC318H5: The Design of Interactive Computational Media

Prerequisites:
Previous: Any CSC half-course and (CGPA 3.0 or enrolment in CSC specialist or major program)
New: CSC207H5

Exclusions:
CSC318H1 or CSCC10H3

Rationale:
1. CSCC10H3 is equivalent to CSC318H5.
2. Updating the prerequisite requirement for this course. CSC207H5 is the appropriate one.

Resources:
None.

CSC338H5: Numerical Methods

Prerequisites:
CSC148H5 and (MAT134H5 or MAT136H5 or MAT139H5 or MAT159H5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5) and (MAT223H5 or MAT240H5) and (CSC263H5 or 1.0 MAT credit at the 200+ level).

Rationale:

Pre-requisite change to reflect retirement of MAT137Y5 and MAT157Y5, and introduction of 4 new 100-level MAT courses (MAT137H5, MAT139H5, MAT157H5, MAT159H5).

Resources:
None

CSC384H5: Introduction to Artificial Intelligence

Prerequisites:
CSC263H5 and (STA246H5 or STA256H5 or ECO227Y5)

Rationale:
ECO227Y5 can be substituted for STA256H5 or STA246H5.

Resources:
None.

CSC398H5: Topics in Computer Science

Prerequisites:

Previous: A minimum of 8.0 credits and permission of instructor
New: Appropriate prerequisite requirement (s) will be available on the UTM timetable along with the topic title prior to course registration.

Rationale:
Prerequisites will differ according to different topics offer each time. Minimum CGPA is not required.

Resources:
None

CSC420H5: Introduction to Image Understanding

Prerequisites:
CSC263H5 and (CSC338H5 or CGPA 3.5)

Rationale:
In the past few years, the instructor has been regularly allowing students that don't have CSC338H5 but do have a CGPA of 3.5 (or higher) enroll in this course on exception. With student success from this exception, the instructor is proposing to make this a permanent and standard pre-requisite for the course.

Resources:
None.

CSC428H5: Human-Computer Interaction

Prerequisites:

Previous: CSC318H5 and (STA246H5 or STA256H5) and (CSC207H5 or proficiency in Java) and (CGPA 3.0 or enrolment in a CSC subject POSt)
New: CSC318H5 and (STA246H5 or STA256H5 or ECO227Y5)

Rationale:
1. ECO227Y5 can be substituted for STA256H5 or STA246H5.
2. CSC318H5 will require CSC207H5 as pre-requisite in 2023-2024 Calendar.

Resources:
None.

CSC490H5: Capstone Design Course

Prerequisites:

Previous: Permission of the instructor and CGPA 3.0 / enrolment in a CSC Subject POSt.

New: Appropriate prerequisite requirement (s) will be available on the UTM timetable along with the topic title prior to course registration.

Rationale:
Prerequisites will differ according to different topics offer each time. Minimum CGPA is not required.

Resources:
None

CSC497H5: Topics in Computer Science

Prerequisites:

Previous: A minimum of 8.0 credits and permission of instructor

New: Appropriate prerequisite requirement (s) will be available on the UTM timetable along with the topic title prior to course registration.

Rationale:
Prerequisites will differ according to different topics offer each time. Minimum CGPA is not required.

Resources:
None.

CSC498H5: Topics in Computer Science

Prerequisites:

Previous: A minimum of 8.0 credits and permission of instructor

New: Appropriate prerequisite requirement (s) will be available on the UTM timetable along with the topic title prior to course registration.

Rationale:
Prerequisites will differ according to different topics offer each time. Minimum CGPA is not required.

Resources:
None

MAT132H5: Differential Calculus for Life Sciences

Prerequisites: Minimum 70% in Grade 12 Advanced Functions(MHF4U~~)~~ ~~Highly~~ ~~Recommended:~~ ~~Minimum~~ ~~70%~~ ~~in~~ ~~Grade~~ ~~12~~ ~~Calculus~~ ~~and~~ ~~Vectors~~ ~~(MCV4U~~)

Exclusions: ~~MAT135H5~~ ~~or~~ MAT133Y5 or MAT134Y5 or MAT135H5 or MAT135Y5 or MAT137H5 or MAT137Y5 or MAT157H5 or MAT157Y5 or MAT133Y1 or MAT135Y1 or MAT135H1 or MAT137Y1 or MAT157Y1 ~~or~~ ~~MAT157Y5~~ or MATA29H3 or MATA30H3 or MATA31H3 or MATA32H3

Recommended Preparation:

Previous:

New: Highly Recommended: Minimum 70% in Grade 12 Calculus and Vectors (MCV4U)

Rationale:

Updating exclusions to reflect the splitting of MAT137Y5 into MAT137H5, MAT139H5 and MAT157Y5 into MAT157H5, MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:

Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:

None.

MAT133Y5: Calculus and Linear Algebra for Commerce

Prerequisites:

Minimum 70% in Grade 12 Advanced Functions(MHF4U~~).~~ ~~Highly~~ ~~Recommended:~~ ~~Minimum~~ ~~70%~~ ~~in~~ ~~Grade~~ ~~12~~ ~~Calculus~~ ~~and~~ ~~Vectors~~ ~~(MCV4U~~).

Exclusions:

MAT132H5 or MAT134H5 or MAT134Y5 or MAT135H5 or MAT135Y5 ~~MAT136H5~~ or MAT136H5 ~~MAT134Y5~~ or MAT137H5 orMAT137Y5 ~~MAT135Y5~~ or MAT139H5 ~~MAT137Y5~~ or MAT157Y5 or MAT157H5 or MAT159H5 or MAT133Y1 or MAT135Y1 or MAT135H1 or MAT136H1 or MAT137Y1 or MAY157Y1 or MATA30H3 or MATA31H3 or MATA32H3 or MATA33H3 or MATA35H3 or MATA36H3 or MATA37H3

Recommended Preparation:

Previous:

New: Highly Recommended: Minimum 70% in Grade 12 Calculus and Vectors (MCV4U).

Enrolment Limits:

This course cannot be used for the specialist or major programs in Mathematics, Statistics or Computer Science, except in combination with MAT233H5. Restricted to students admitted into Management or Commerce.

Rationale:

Updating exclusions to reflect splitting of MAT137Y5 into MAT137H5, MAT139H5 and MAT157Y5 into MAT157H5, MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:

Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:

None.

MAT134H5: Integral Calculus for Life Sciences

Prerequisites:
MAT132H5 or MAT135H5 or MAT137H5 or MAT157H5 or MAT135H1 or MATA29H3 or MATA30H3 or MATA31H3

Exclusions:
MAT133Y5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT139H5 or MAT133Y1 or MAT135Y1 or MAT136H1 or MAT136H5 or MAT137Y1 or MAT157Y1 or MAT157Y5 or MAT159H5 or MATA33H3 or MATA35H3 or MATA36H3 or MATA37H3

Rationale:
Updating pre-requisites and exclusions to reflect the splitting of MAT137Y5 into MAT137H5 and MAT139H5 and MAT157Y5 into MAT157H5 and MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

MAT135H5: Differential Calculus

Prerequisites:
Minimum 70% in Grade 12 Advanced Functions(MHF4U~~)~~ ~~Highly~~ ~~Recommended:~~ ~~Minimum~~ ~~70%~~ ~~in~~ ~~Grade~~ ~~12~~ ~~Calculus~~ ~~and~~ ~~Vectors~~ ~~(MCV4U~~)

Exclusions:
MAT132H5 or MAT133Y5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT137H5 or MAT133Y1 or MAT135Y1 or MAT135H1 or MAT137Y1 or MAT157Y1 or MAT157Y5 or MAT157H5 or MATA29H3 or MATA30H3 or MATA31H3 or MATA32H3

Recommended Preparation:
Previous:
New: Highly Recommended: Minimum 70% in Grade 12 Calculus and Vectors (MCV4U)

Rationale:
Updating exclusions to reflect splitting of MAT137Y5 into MAT137H5 and MAT139H5 and MAT157Y5 into MAT157H5 and MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

MAT136H5: Integral Calculus

Prerequisites:

MAT132H5 or MAT135H5 or MAT137H5 or MAT157H5 or MAT135H1 or MATA29H3 or MATA30H3 or MATA31H3

Exclusions:
MAT133Y5 or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT139H5 or MAT133Y1 or MAT135Y1 or MAT136H1 or MAT134H5 or MAT137Y1 or MAT157Y1 or MAT157Y5 or MAT159H5 or MATA33H3 or MATA35H3 or MATA36H3 or MATA37H3

Rationale:
Updating course requisites to reflect the splitting of MAT137Y5 into MAT137H5 and MAT139H5 and MAT157Y5 into MAT157H5 and MAT159H5.See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

MAT202H5: Introduction to Discrete Mathematics

Prerequisites: MAT102H5 and(MAT134H5 ~~or MAT136H5~~ or MAT134Y5 or MAT135Y5 or MAT136H5 or MAT137Y5 or MAT139H5 or MAT157Y5 or MAT159H5 or MAT233H5)

Rationale:
Updating pre-requisites to reflect splitting MAT137Y5 into MAT137H5, MAT139H5; and MAT157Y5 splitting into MAT157H5, MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

MAT232H5: Calculus of Several Variables

Prerequisites:
MAT134H5 ~~or MAT136H5~~ or MAT134Y5 or MAT135Y5 or MAT136H5 or MAT137Y5 or MAT139H5 or MAT157Y5 or MAT159H5

Exclusions:
MAT233H5 or MAT235Y1 or MAT237Y1 ~~or MAT257Y1~~ or MAT257Y5 or MAT257Y1 or MATB41H3

Rationale:
Updating pre-requisites to reflect splitting of MAT137Y5 into MAT137H5, MAT139H5; and MAT157Y5 into MAT157H5, MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

MAT233H5: Calculus of Several Variables

Prerequisites:
MAT134H5 ~~or MAT136H5~~ or MAT134Y5 or MAT135Y5 or MAT136H5 or MAT137Y5 or MAT139H5 or MAT157Y5 or MAT159H5 or 65% in MAT133Y5

Rationale:
Updating pre-requisites to reflect the splitting of MAT137Y5 into MAT137H5, MAT139H5; and MAT157Y5 into MAT157H5, MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

MAT244H5: Differential Equations I

Prerequisites:
(MAT134H5 or MAT134Y5 ~~MAT136H5~~ or MAT135Y5 ~~MAT134Y~~ or MAT136H5 ~~MAT135Y~~ or MAT137Y5 or MAT139H5 or MAT157Y5 or MAT159H5 or MAT233H5)and (MAT223H5 or MAT240H5).

Rationale:
Updating pre-requisites to reflect the splitting of MAT137Y5 into MAT137H5, MAT139H5; and MAT157Y5 into MAT157H5, MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

MAT257Y5: Analysis II

Title:
Analysis III ~~II~~

Description:
A rigorous and proof-intensive ~~theoretical second~~ course in multivariable calculus for students with a serious interest in mathematics. Topology of metric spaces; ~~R^n;~~ compactness, functions and continuity, the extreme value theorem. Derivatives; inverse and implicit function theorems, maxima and minima~~, Lagrange multipliers~~. Integration; Fubini's theorem, partitions of unity, change of variables~~. Differential forms~~. Integration ~~Manifolds in R^n; integration~~ on manifolds; Stokes' theorem ~~for differential forms and classical versions~~. ~~[72L, 48T]~~
Note:MAT257Y5 will be accepted anywhere where MAT232H5 or MAT236H5 are accepted.
~~accepted.~~

Prerequisites:
(MAT157Y5 or MAT159H5) and MAT240H5

Rationale:
The current course description is not as accurate as it could be about the topics covered, and the expectations of students. Also, with the split of MAT157Y5 into MAT157H5 + MAT159H5, the course title needed to be adjusted. Impact to students: Students will have more clarity about what is covered currently in the course.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

MAT315H5: Introduction to Number Theory

Prerequisites:
MAT102H5 and [~~(~~(MAT134H5 ~~or MAT136H5~~ or MAT134Y5 or MAT135Y5 or MAT136H5 or MAT137Y5 or MAT139H5 or MAT157Y5 or MAT159H5~~)~~ or(MAT133Y5 and MAT233H5~~)~~)] and (MAT224H5 or MAT240H5) and MAT301H5

Rationale:
Updating pre-requisites to reflect the splitting of MAT137Y5 into MAT137H5, MAT139H5; and MAT157Y5 into MAT157H5, MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

MAT354H5: Complex Analysis

Prerequisites:
MAT257Y5 or[(MAT137Y5 or MAT139H5 or MAT157Y5 or MAT159H5)and(MAT202H5 or MAT240H5 or MAT337H5) and (MAT232H5 or MAT233H5)]

Rationale:
Updating pre-requisites to reflect splitting of MAT137Y5 into MAT137H5, MAT139H5; and MAT157Y5 into MAT157H5, MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

MAT382H5: Mathematics for Teachers

Prerequisites:
(Minimum 60% in ~~(~~MAT134H5 ~~or MAT136H5~~ or MAT134Y5 or MAT135Y5 or MAT136H5 or MAT137Y5 or MAT139H5 or MAT157Y5 or MAT159H5 or MAT233H5)and [minimum 60% in MAT102H5 and(MAT223H5 or MAT240H5)] and 0.5 ~~at least one~~ additional credit of MAT ~~half-course~~ at the 200+ level.

Rationale:
Updating pre-requisites to reflect the splitting of MAT137Y5 into MAT137H5, MAT139H5; and MAT157Y5 into MAT157H5, MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

MAT392H5: Ideas of Mathematics

Prerequisites:

Previous: Completion of the second-year requirements for the Major and Specialists Programs in Mathematical Sciences.
New: MAT202H5 and MAT244H5 and (MAT236H5 or MAT257H5) and (MAT224H5 or MAT247H5)

Rationale:
Currently the prerequisites are listed as "Completion of the second-year requirements for the Major and Specialists Programs in Mathematical Sciences." We would like to make this list explicit. This will mean that coding of the prerequisites for this course will not have to be updated if/when the program requirements for the MAT Major/Specialist change in the future (e.g. we recently added MAT236H5/MAT257Y5 as a requirement for both programs.)

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

STA246H5: Computational Probability and Statistics

Description:
This course covers probability including its role in statistical and computational modeling. Topics include classical and computational perspectives on cumulative, mass and distribution functions, random variables, expectation, limiting results, the normal distribution. Computational topics include generating and sampling random numbers, combinatorial objects and probability functions for simulation and statistical analysis. Additional techniques include resampling, hypothesis testing, model fit and cross validation. IMPORTANT NOTE: STA246H5 will not be permitted as a pre-requisite for any other 200+ level STA courses. In addition, STA246H5 cannot count towards any program (s) in Mathematics or Applied Statistics. The course is intended only for students in Computer Science programs who will not need STA256H5 for other program requirements.

Prerequisites:

CSC148H5 and(MAT134H5 ~~or MAT136H5~~ or MAT134Y5 or MAT135Y5 or MAT136H5 or MAT137Y5 or MAT139H5 or MAT157Y5 or MAT159H5 or a minimum 65% ~~65%+~~ in MAT133Y5)

Exclusions:
STA256H5 or STA237H1 or STA247H1 or STA257H1 ~~or ECO227Y5~~ or STAB52H3 or ECO227Y5

Rationale:
1. Additional comment added to course description to ensure that MCS students know which STA course they should take: STA256H5 or STA246H5.
2. Change to prerequisites: Since MAT137Y5 will be splitting into MAT137H5, MAT139H5; and MAT157Y5 will be splitting into MAT157H5, MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

STA256H5: Probability and Statistics I

Prerequisites:
MAT134H5 ~~or MAT136H5~~ or MAT134Y5 or MAT135Y5 or MAT136H5 or MAT137Y5 or MAT139H5 or MAT157Y5 or MAT159H5 or a minimum 65% ~~65%+~~ in MAT133Y5

Exclusions:
~~STA246H5 or~~ STA257H1 or ECO227Y5 or ~~ECO227Y5or~~ STAB52H3

Rationale:
1. Exclusion change: The two courses are not equivalent. The overlap between the two courses do not exceed 25%. Removing this exclusion will help the students who may consider taking STA256H5 after taking STA246H5.
2. Prereq change: Since MAT137Y5 will be splitting into MAT137H5, MAT139H5; and MAT157Y5 will be splitting into MAT157H5, MAT159H5. See rationale under Course Proposals for MAT137H5, MAT139H5, MAT157H5, MAT159H5.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

STA360H5: Introduction to Bayesian Statistics

Prerequisites:
STA246H5 or STA258H5 or STA260H5 or STA238H1 or STA255H1 or ECO227Y5 or ECO227Y1
~~or STA260H5 or STA246H5~~

Rationale:
Students from other campuses may not have a course equivalent to STA258H5. STA260H5 will be a preferable prerequisite for this course.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

STA413H5: Estimation and Testing

Exclusions:
STA452H1 or STA442H1 or STAC58C3

Rationale:
Based on consultation with St. G and UTSC, important that these courses which have significant overlap are added for calendar accuracy.

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Resources:
None.

2 Retired Courses:

MAT137Y5: Calculus

Rationale:
See rationale under Course Proposals for MAT137H5, MAT139H5. This course to be retired since the material will be split into two new courses (MAT137H5, MAT139H5).

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

MAT157Y5: Analysis I

Rationale:
See rationale under Course Proposals for MAT157H5, MAT159H5. This course to be retired since the material will be split into two new courses (MAT157H5, MAT159H5).

Consultation:
Within MCS with MAT, STA and CSC Faculty Advisors and MAT, CSC Associate Chairs. Discussed 9-Feb-22.

Psychology (UTM), Department of

4 Minor Program Modifications:

Exceptionality in Human Learning - Specialist (Science)

Completion Requirements:

13.0-14.5 credits are required, including at least 5.0 300/400-level credits of which 1.5 must be at the 400-level.

First Year: PSY100Y5; (ANT101H5, ANT102H5)/(BIO152H5, BIO153H5)/1.0 credit from BIO202H5, BIO205H5, BIO206H5, BIO207H5/SOC100H5

Second Year:

1. PSY201H5/ECO220Y5/ECO227Y5/SOC350H5/STA215H5/STA218H5/STA220H5/
2. PSY210H5, PSY240H5
3. 0.5 credit from the following: PSY202H5 (or equivalent), PSY270H5, PSY274H5, PSY280H5, PSY290H5

Higher Years:

1. 3.0 credits from the following: PSY310H5, PSY311H5, PSY312H5, PSY313H5, PSY314H5, PSY315H5, PSY316H5, PSY317H5, PSY318H5, PSY319H5, PSY321H5, PSY325H5, PSY331H5, PSY333H5, PSY340H5, PSY341H5, PSY343H5, PSY344H5, PSY346H5, PSY353H5, PSY374H5, PSY376H5, PSY384H5, PSY391H5, PSY392H5, PSY393H5, JLP384H5, JLP388H5
2. PSY442Y5 and at least 0.5 credit from the following: PSY400Y5, PSY403H5, PSY404H5, PSY405H5, PSY406H5, PSY410H5, PSY415H5, PSY440H5, PSY474H5, PSY495H5, PSY499H5, JLP481H5
3. One of the following:
    a. 2.0 credits from: ANT202H5, ANT203H5, ANT204H5, ANT205H5, ANT206H5, ANT207H5, ANT211H5, ANT212H5, ANT214H5, ANT215H5, ANT220H5, ANT241H5 ~~ANT241Y5~~, ANT306H5, ANT322H5, ANT331H5, ANT332H5, ANT333H5, ANT334H5, ANT335H5, ANT337H5, ANT338H5, ANT341H5, ANT350H5, ANT352H5, ANT362H5, ANT364H5, ANT365H5, ANT401H5, ANT403H5, ANT434H5, ANT437H5, ANT460H5, ANT461H5, ANT462H5
    b. 2.5 credits from: SOC205H5, SOC209H5, SOC211H5, SOC216H5, SOC219H5, SOC224H5, SOC227H5, SOC240H5, SOC244H5, SOC263H5, SOC275H5, SOC304H5, SOC307H5, SOC310H5, SOC316H5, SOC323H5, SOC332H5, SOC333H5, SOC341H5, SOC352H5, SOC356H5, SOC359H5, SOC371H5, SOC375H5, SOC380H5, SOC456H5, SOC457H5
    c. 2.0 credits from: BIO202H5, BIO205H5, BIO206H5, BIO207H5, BIO210Y5, BIO315H5, BIO341H5, BIO370Y5, BIO371H5, BIO372H5, BIO375H5, BIO380H5, BIO403H5, BIO407H5, BIO434H5, BIO443H5, BIO476H5, BIO477H5; ANT202H5, ANT203H5, ANT331H5, ANT332H5, ANT333H5, ANT334H5
4. 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, CHM243H5, CHM341H5, CHM345H5, CHM347H5, CHM361H5, CHM362H5
    ENG - ENG234H5, ENG384H5
    FRE - FRE225Y5, FRE355H5
    HIS - HIS310H5, HIS326Y5, HIS338H5
    LIN - LIN101H5, LIN102H5, LIN200H5, LIN256H5, LIN258H5, LIN358H5, LIN380H5
    JAL - JAL253H5, JAL355H5

PHL - PHL243H5, PHL244H5, PHL255H5, PHL267H5, PHL271H5, PHL272H5, PHL274H5, PHL277Y5, PHL282H5, PHL283H5, PHL290H5, PHL350H5, PHL355H5, PHL357H5, PHL358H5, PHL367H5, PHL370H5, PHL374H5, PHL376H5
RLG - RLG314H5
WGS - Any course

Rationale:
addition of proposed JLP courses.
correction of ANT241H5. Previously listed as Y courses, but this is inconsistent with how the course is currently offered.

Resource Implications:
None.

Neuroscience - Specialist (Science)

Completion Requirements:

11.5-12.0 credits are required, including at least 3.0 credits at the 300/400 level and 1.0 credit at the 400 level.

First Year: PSY100Y5; BIO152H5, BIO153H5; CHM110H5, CHM120H5; (MAT132H5, MAT134H5)/(MAT135H5, MAT136H5)/MAT134Y5/MAT135Y5/MAT137Y5/MAT157Y5

Second Year:
1. (PSY201H5, PSY202H5)/(STA220H5, STA221H5)/(STA215H5, BIO360H5) or equivalent
2. BIO202H5; BIO206H5; BIO207H5; PSY290H5
3. one of the following: PSY210H5, PSY270H5, PSY274H5, PSY280H5

Third Year: 1.0 credit from each of the following three areas:
a. Behavioural Neuroscience area: BIO318Y5, BIO320H5, BIO328H5, PSY316H5, PSY318H5, PSY346H5, PSY352H5, PSY353H5, PSY354H5, PSY355H5, PSY368H5, PSY369H5, PSY385H5, PSY389H5, PSY391H5, PSY392H5, PSY393H5, PSY395H5, PSY397H5, PSY398H5
b. Molecular/Cellular Biology area: BIO314H5, BIO315H5, BIO341H5, BIO347H5, BIO372H5, BIO407H5, BIO476H5, PSY355H5, PSY392H5
c. Neurobiology area: BIO304H5, BIO310H5, BIO380H5, BIO404H5, BIO409H5, PSY318H5, PSY346H5, PSY369H5, PSY393H5, PSY397H5

Fourth Year:
1. One seminar from the following: BIO403H5, BIO404H5, BIO406H5, BIO407H5, BIO408H5, PSY472H5, PSY480H5, PSY490H5, PSY495H5
2. One thesis/research project from the following: BIO481Y5, PSY400Y5, PSY403H5/PSY404H5/PSY405H5/PSY406H5/PSY499H5

NOTES:
1. In second year, students are encouraged to consider taking the following courses depending on their planned course of study:
- BIO202H5 - required for several courses in the Neurobiology area.
- PSY210H5 - required for several courses in the Behavioural Neuroscience area.

2. Students interested in taking PSY400Y5 in their last year are advised to take PSY309H5 in their third year.

Rationale:
Addition of new course, PSY368H5.

Consultation:
Psychology undergraduate curriculum committee

Resource Implications:
None.

Psychology - Major (Science)

Completion Requirements:

6.5-7.0 credits in Psychology are required, including 2.0 at the 300/400 level.

First Year: PSY100Y5

Higher Years:

1. PSY201H5/ECO220Y5/ECO227Y5/SOC350H5/STA215H5/STA218H5/STA220H5
2. PSY210H5, PSY290H5
3. one of the following: PSY270H5, PSY274H5, PSY280H5
4. one of the following: PSY220H5, PSY230H5, PSY240H5
5. 1.5 credits from the following courses: 0.5 credit must be taken from each group:
    a. Biological Bases of Behaviour: PSY318H5, PSY346H5, PSY351H5, PSY352H5, PSY353H5, PSY354H5, PSY355H5, PSY362H5, PSY372H5, PSY391H5, PSY392H5, PSY393H5, PSY395H5, PSY397H5, PSY398H5; BIO304H5, BIO310H5, BIO318Y5, BIO328H5
    b. Perception/Cognition/Communication: PSY312H5, PSY315H5, PSY316H5~~, PSY360H5~~, PSY362H5, PSY371H5, PSY372H5, PSY374H5, PSY376H5, PSY384H5, PSY385H5, PSY387H5, PSY393H5, PSY397H5, JLP384H5, JLP388H5
    c. Developmental/Abnormal/Social/Personality: PSY310H5, PSY311H5, PSY312H5, PSY313H5, PSY314H5, PSY315H5, PSY316H5, PSY317H5, PSY318H5, PSY320H5, PSY321H5, PSY324H5, PSY325H5, PSY327H5, PSY328H5, PSY330H5, PSY331H5, PSY333H5, PSY340H5, PSY341H5, PSY343H5, PSY344H5, PSY345H5, PSY346H5, PSY353H5
6. 1.5 additional credits in Psychology. At least 0.5 must be at the 300/400 level

NOTE: A single course can be used to satisfy only one Psychology program requirement.

Rationale:
Inclusion of proposed courses (JLP384H5, JLP388H5)
Removal of PSY360H5. No longer offered or listed in calendar.

Consultation:
Psychology undergraduate curriculum committee

Resource Implications:
None

Psychology - Specialist (Science)

Completion Requirements:

10.0-10.5 credits in Psychology are required.

First Year: PSY100Y5

Second Year:

1. PSY201H5 and PSY202H5 (or equivalent)
2. PSY210H5 and PSY290H5
3. PSY270H5 or PSY274H5 or PSY280H5
4. PSY220H5 or PSY230H5 or PSY240H5
5. 0.5 additional PSY credit at the 200-level

Third Year:

1. PSY309H5
2. One laboratory course from the following: PSY319H5 or PSY329H5 or PSY368H5 or PSY369H5 or PSY379H5 or PSY389H5
3. 3.0 credits from the following courses (with a min. 0.5 credit from each grouping):
    a. **Biological Bases of Behaviour:** PSY318H5, PSY346H5, PSY351H5, PSY352H5, PSY353H5, PSY354H5, PSY355H5, PSY362H5, PSY372H5, PSY391H5, PSY392H5, PSY393H5, PSY395H5, PSY397H5, PSY398H5; BIO304H5, BIO310H5, BIO318Y5, BIO328H5
    b. **Perception/Cognition/Communication:** PSY312H5, PSY315H5, PSY316H5~~, PSY360H5~~, PSY362H5, PSY371H5, PSY372H5, PSY374H5, PSY376H5, PSY384H5, PSY385H5, PSY387H5, PSY393H5, PSY397H5, JLP384H5, JLP388H5
    c. **Developmental/Abnormal/Social/Personality:** PSY310H5, PSY311H5, PSY312H5, PSY313H5, PSY314H5, PSY315H5, PSY316H5, PSY317H5, PSY318H5, PSY320H5, PSY321H5, PSY324H5, PSY325H5, PSY327H5, PSY328H5, PSY330H5, PSY331H5, PSY333H5, PSY340H5, PSY341H5, PSY343H5, PSY344H5, PSY345H5, PSY346H5, PSY353H5

Fourth Year:

1. PSY400Y5 or PSY403H5 or PSY404H5 or PSY405H5 or PSY406H5 or PSY499H5
2. 1.0 credit from the following courses: PSY402H5 or PSY410H5 or PSY415H5 or PSY420H5 or PSY424H5 or PSY430H5 or PSY435H5 or PSY440H5 or PSY442Y5 or PSY471H5 or PSY480H5 or PSY490H5 or PSY495H5 or JLP481H5 or BIO403H5 or BIO407H5 or STA441H5

NOTE: A single course can be used to satisfy only one Psychology program requirement.

Rationale:
Addition of new proposed courses (PSY424H5, JLP384H5, JLP388H5, JLP481H5)
removed PSY360H5. haven't offered it in years. No longer in calendar.

Resource Implications:
None

5 New Courses:

JLP384H5: Speech Communication

Contact Hours:
Lecture: 24 / ***Tutorial:*** 12
Description:

Imagine an animal species where one creature can generate thoughts in other creatures' minds simply by causing the air molecules around them to vibrate. Although this sounds exotic, it is what we as humans do every time we speak and listen. In this course, we explore the perception and production of spoken language from an interdisciplinary perspective. Sample topics include perceptual and cognitive aspects of speech communication, speech signal acoustics, audio-visual speech integration, speech sound articulation, artificial speech recognition, multilingualism, and contextual influences on speech communication. Through laboratory exercises, students will replicate classic experimental findings and gain hands-on experience with acoustic and behavioural data analysis

Prerequisites:
(PSY201H5 or LIN228H5) and one of LIN229H5 or LIN288H5 or LIN318H5 or PSY270H5 or PSY274H5 or PSY280H5 or PSY374H5

Corequisites:

Exclusions:
LIN328H5 and PSY384H5 and PLID50H3

Recommended Preparation:

Rationale:
There is substantial overlap between two courses currently taught in Language Studies (LIN328H5, Speech Perception) and Psychology (PSY384, Speech Perception and Production). This JLP course will allow students to take the course in either department, giving them the flexibility to take the course when it works best for them. This JLP course will replace the current above mentioned LIN and PSY courses.

Consultation:
Department of Language Studies (UTM) and Department of Psychology (UTM) faculty have met several times and discussed these proposals. The curriculum committees from both departments have also reviewed the proposals. Students in both disciplines were informally polled and look forward to enrolling in JLP courses at UTM.

Resources:
Resource Implication Form submitted for review.

JLP388H5: Bilingualism and Multiple Language Acquisition

Contact Hours:
Lecture: 24 / *Tutorial:* 12

Description:
What are the linguistic and psychological implications of knowing more than one language? This course will explore topics such as the bilingual brain, the nature of bilingual language input, effects of age-of-acquisition and language similarity, the status of heritage languages, schooling in a second language (for example French Immersion programs), and research methodologies used in the study of bilingualism. Bilingual/multilingual corpora will be examined.

Prerequisites:
LIN288H5 or PSY274H5 or PSY315H5

Corequisites:

Exclusions:
FRE388H5 and JFL388H5 and LIN388H5 and PSY376H5

Recommended Preparation:

Rationale:
Linguistics and Psychology overlap significantly in the areas of language acquisition. We identified PSY376H5 and LIN388H5 to have similar content and appeal to a similar population of students in both departments. As students in both Linguistics and Psychology manifest a strong interest in the topic of Bilingualism, this JLP course will allow them to take an interdisciplinary course, showcasing the main topics in this field. Courses with language acquisition content are in high demand in both departments. This JLP course will replace the current above mentioned LIN and PSY courses.

Consultation:
Both the Department of Language Studies (UTM) and Department of Psychology (UTM) faculty have met several times and discussed these proposals. The curriculum committees from both departments have reviewed and approved the proposals.

Resources:
Resource Implication Form submitted for review.

JLP481H5: Topics in Developmental Psycholinguistics

Contact Hours:
Seminar: 36

Description:
How do children's language comprehension and production abilities differ from adults? What can research on language acquisition tell us about why language looks the way it does? Developmental psycholinguists use experimental techniques to explore a range of topics in the area of child language comprehension and production. Drawing on cutting-edge interdisciplinary research, we will explore contemporary issues and debates in this area.

Prerequisites:
(LIN288H5 or PSY274H5) and 1.0 credit from the following list: LIN318H5 or LIN328H5 or LIN329H5 or LIN332H5 or LIN385H5 or LIN418H5 or LIN421H5 or PSY315H5 or PSY374H5 or PSY384H5 or any JLP course.

Corequisites:

Exclusions:

Recommended Preparation:

Rationale:
Linguistics and Psychology overlap significantly in the areas of language acquisition and language processing. With the significant overlap in research interests among certain faculty working in the LIN and PSY programs, this JLP course will allow students from both programs/departments to take an interdisciplinary capstone course, showcasing the fruitful research that obtains in this field, a course, which, if offered jointly, could be offered more frequently (by up to four faculty in rotation), giving students more flexibility to take the course in a year that works best for them.
Courses with psycholinguistic and language acquisition content are in high demand in both departments.

Consultation:
Department of Language Studies (UTM) and Department of Psychology (UTM) faculty have met several times and discussed these proposals. The curriculum committees from both departments have also reviewed the proposals. Students in both disciplines were informally polled and look forward to enrolling in JLP courses at UTM.

Resources:
Resource Implication Form submitted for review.

PSY368H5: Neuroimaging Laboratory

Contact Hours:
Practical: 36

Description:
In this course, you will become familiar with theory and principles underpinning approaches to measuring the brain. The course will focus on techniques used in human neuroscience research. Students will gain skills relevant to the processing, visualization, analysis, interpretation, and reporting of brain data.

Prerequisites:
PSY201H5 and PSY202H5 and PSY290H5

Corequisites:

Exclusions:

Recommended Preparation:

Rationale:
The Neuroscience Specialist program has generated increased demand for research-based courses in this area. The proposed lab course could accommodate many of the students in need of research course credits and would broaden the neuroscience education and training available to students. I have appended a brief overview of the schedule for a structural MRI workshop currently being run in my lab. There are three IRP students participating in the workshop as a sort of practice run for a possible lab course. The course would follow a similar plan as the workshop.

Briefly, students would begin by learning basic skills (e.g., command line coding) needed to process data as well as background information about the brain imaging technique(s) being focused on in the course. Subsequently, in a step-by-step fashion, students will learn to: organize their data for analysis, select and use tools to process brain data, identify and correct errors/distortions in the data/images, derive brain metrics from the data, perform group-level analyses (e.g., comparing brains of two groups) on various brain metrics, and interpret and report their observations. Throughout the term, students would have required readings that explain the background and development of methods/techniques, forums explaining how to implement the use of data processing and analysis tools, and would prepare reports pertaining to how they processed/analyzed data and the outcome.

Consultation:
Consultation with Psychology department and approval from Psychology undergraduate curriculum committee.

Resources:
I have already acquired the resources needed to launch this course. To offer a structural neuroimaging lab, I plan to use data gathered for my lab's MRI studies and/or publicly available MRI data. A high-powered computer appropriate for working with MRI data is needed and I have already procured one for the purposes of teaching via the Autonomy Fund. Students can access this computer in-person or remotely.

PSY424H5: Special Topics in Well-Being

Contact Hours:
Seminar: 36

Description:
In depth examination of selected topics in well-being. Topics change periodically. The contact hours for this course may vary in terms of contact type (L, S, T, P) from year to year, but will always be 36 hours in total. See the UTM Timetable.

Prerequisites:
PSY320H5 or PSY321H5 or PSY324H5 or PSY325H or PSY327H5 or PSY331H5 or PSY343H5 or PSY340H5 or PSY333H5 or PSY341H5 or PSY344H5 or PSY345H5 or PSY346H5 or PSY442Y5

Corequisites:

Exclusions:

Recommended Preparation:

Rationale:

Consultation:

Resources:
Resource Implication Form submitted