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X ADDITIONAL BUSINESS - none

XI ADJOURNMENT

Please call regrets to 204-474-6892 or send to shannon.coyston@umanitoba.ca.

Report of the Senate Committee on Curriculum and Course Changes Submitted to Senate for Concurrence Without Debate

Preamble:

1. The terms of reference for the Senate Committee on Curriculum and Course Changes (SCCCC) are found on the website at: http://www.umanitoba.ca/admin/governance/governing_documents/governance/sen_committees/497.htm. SCCCC is “to recommend to Senate on the introduction, modification or abolition of undergraduate programs, curricula or courses.”
2. Since last reporting to Senate, the Senate Committee on Curriculum and Course Changes (SCCCC) met on October 6, 11, 16, 25, and 27, 2017, to consider curriculum and course changes from Faculties, Colleges, and Schools.
3. The Report outlines course and curriculum changes endorsed by the SCCCC at the meetings noted above.
4. Proposed course deletions, introductions, and modifications, and program modifications are described in detail in the attachment to the Report.

Observations:

1. General

In keeping with past practice, most changes for departments totalling less than ten credit hours are forwarded to Senate for concurrence without debate. This is in accordance with the Senate’s recommendation approved July 3, 1973, that course changes would cease to go to the SPPC when the resource implications are intra-faculty. Deans and Directors are to assess the resource implications to the respective units when course changes are proposed. Major changes in existing programs are to be referred to the SPPC for assessment of resource implications.

2. Courses to be Removed from the List of Written English Courses

ENVR 2270 Environmental Problem Solving and Scientific Thinking (3)
POLS 1500 Introduction to Politics (6)

3. Courses Recommended for the Written English Requirement

ENVR 2810 Environmental Critical Thinking and Scientific Research (3)
POLS 1502 Introduction to Political Studies (3)
POLS 1506 Survey of Political Studies (3)
UKRN 2600 Special Topics in Ukrainian Studies (3)

5. Courses Recommended for the Mathematics Requirement

MATH 1080 Fundamentals of Mathematical Reasoning (3)

MATH 1090 Mathematical Reasoning in Euclidean Geometry

6. **Courses to be Removed from the Recommended Introductory Course (RIC) List**

PHYS 1300 Energy and the Environment (3)
PHYS 1810 General Astronomy 1 (3)
PHYS 1820 General Astronomy 2 (3)
PHYS 1830 Perspectives on the Universe (3)
POLS 1010 Political Ideas and Ideologies (3)
POLS 1040 Global Political Issues (3)
POLS 1070 Law, Politics, and Power in Canada (3)
POLS 1500 Introduction to Politics (6)

7. **Courses Recommended for the Recommended Introductory Course (RIC) List**

ASTR 1810 Introduction to Astronomy: The Magnificent Universe (3)
ASTR 1830 Life in the Universe (3)
MATH 1080 Fundamentals of Mathematical Reasoning (3)
MATH 1090 Mathematical Reasoning in Euclidean Geometry
POLS 1502 Introduction to Political Studies (3)
POLS 1506 Survey of Political Studies (3)

8. **Faculty of Agricultural and Food Sciences**

Agriculture, General

The faculty is proposing the deletion of two (2) courses. The overall number of number of credit hours offered by the faculty would decrease by 7 credit hours.

The faculty is proposing program modifications to the **Bachelor of Science in Agroecology** degree. A requirement for AGECE 4510 would be removed and students would, instead, be required to complete 3 credit hours from Group 4 – Applied Agroecology courses.

Agribusiness and Agricultural Economics

The department is proposing the deletion of two (2) degree courses and the introduction of one (1) course used in the Diploma in Agriculture. The overall number of credit hours offered by the department would decrease by 1 credit hour.

Animal Science

The department is proposing the modification of one (1) course used in the Diploma in Agriculture. There would be no change to the overall number of credit hours in course offerings.

Biosystems Engineering

The department is proposing the deletion of two (2) degree courses and the modification of one (1) course used in the Diploma in Agriculture. The overall number of number of credit hours offered by the department would decrease by 8 credit hours.

Entomology

The department is proposing the modification of one (1) course used in the Diploma in Agriculture. There would be no change to the overall number of credit hours offered by the department.

Plant Science

The department is proposing the deletion of two (2) courses and the modification of six (6) courses used in the Diploma in Agriculture. The overall number of credit hours offered by the department would decrease by 8 credit hours.

Soil Science

The department is proposing the modification of two (2) courses used in the Diploma in Agriculture. There would be no change to the overall number of credit hours offered by the department.

Agriculture, School of

The school is proposing the deletion of five (5) courses, the introduction of eleven (11) courses, and the modification of three (3) courses. The overall number of credit hours offered by the school would increase by 16 credit hours.

The school is proposing program modifications to the following programs:

- **Diploma in Agriculture**
- **Business Management Option**
- **Crop Management Option**
- **Livestock Management Option**
- **General Agriculture Option**

Modifications to the Diploma in Agriculture would involve changes to the program core and to each of the options. The program core would be expanded from 52 to 62 credit hours. The options would be modified to provide students with more choices when selecting from prescribed groupings of elective courses. Students would continue to be required to complete a minimum of 93 credit hours of courses toward the Diploma. The number of credit hours required would vary depending on the courses that students elect to complete as restricted and program electives for their option.

The objectives for the changes would be to ensure that graduates of the Diploma program would have the knowledge and skills required to serve the needs of the agricultural and food industry in 2020 and beyond. The proposed changes would address gaps and duplication in content identified in an informal program review undertaken by the School, which involved consultations with various stakeholders, including faculty, students, industry representatives, and alumni. The expanded program core would provide a strong foundation in agronomy, farm management, and technology. The changes would also expand the program's focus from the farm gate to the global consumer's plate and would provide students with more opportunities to develop and apply higher level decision-making and critical thinking skills.

9. **Faculty of Architecture**

The faculty is proposing the introduction of four (4) courses. The overall number of number of credit hours offered by the faculty would increase by 4 credit hours.

The faculty is proposing a program modification to the **Bachelor of Environmental Design** program that involves the introduction of an optional **Cooperative Education / Integrated Work Program**. Students who elected to complete the program would be required to complete at least two 4-month work terms (EVDS 3800 – Cooperative Education / Integrated Work Term 1 (1), EVDS 3900 – Cooperative Education / Integrated Work Term 2 (1), EVDS 4800 – Cooperative Education / Integrated Work Term 3 (1), and EVDS 4900 – Cooperative Education / Integrated Work Term 4 (1)), in addition to all other requirements for their B.Env.D. degree.

The proposal for a Cooperative Education / Integrated Work Program responds to feedback from a recent Alumni survey and the Undergraduate Student Experience Working Group. It is consistent with the University's strategic priority for inspiring minds thought innovative and quality teaching, by providing experiential education opportunities for students. The Program would meet the provincial definition of a co-operative education program, which would qualify employers for the Manitoba Paid Work Experience Tax Credit.

10. **Faculty of Arts**

Faculty of Arts

Modification of Bachelor of Arts Science Requirement

The faculty is proposing modifications to the list of courses acceptable for use toward the Bachelor of Arts Science Requirement. The subject code ASTR would be added under "Faculty of Science," and GEOG 2540 would be added under "Clayton H. Riddell Faculty of Environment, Earth, and Resources." GEOG 2530 and GEOL 2540 would be removed from the list, as they either are, or would no longer be, offered.

Asian Studies

The department is proposing program modifications to the following programs involving changes to the **Asian Studies List A**, including the removal of GEOG 3590 from the list and a revised course title for HIST 3580:

- **Bachelor of Arts (General Major) in Asian Studies**
- **Minor (Concentration) in Asian Studies**

Canadian Studies

The program is proposing program modifications to the following programs involving modifications to the List of Approved Courses in Canadian Studies, including the removal of several courses that either are, or would no longer be, offered (FRAN 2381, FRAN 3831, FRAN 3841, FRAN 4831, POLS 1070, and POLS 2071) and the addition of two new courses, POLS 1502 and POLS 1506, and POLS 2073 and POLS 2075:

- **Bachelor of Arts (General Major) in Canadian Studies**

- **Bachelor of Arts (Single Honours) in Canadian Studies**
- **Bachelor of Arts (Double Honours) in Canadian Studies**
- **Minor (Concentration) in Canadian Studies**

Catholic Studies

The program is proposing the introduction of one (1) course. The overall number of credit hours offered by the program would increase by 3 credit hours.

The program is proposing program modifications to **Minor (Concentration) in Catholic Studies** involving the addition of the course introduction, CATH 2700, to the List of Approved Courses in Catholic Studies.

Central and East European Studies

The program is proposing modifications to the following programs involving changes to the List of Approved Courses in Central and East European Studies, including the removal of SLAV 2260 and SLAV 2270, as the courses are no longer offered, and the addition of two course introductions, RUSN 2600 and UKRN 2600:

- **Bachelor of Arts (General Major) in Central and East European Studies**
- **Bachelor of Arts (Single Advanced Major) in Central and East European Studies**
- **Bachelor of Arts (Double Advanced Major) in Central and East European Studies**
- **Bachelor of Arts (Double Honours) in Central and East European Studies**
- **Minor (Concentration) in Central and East European Studies**

Economics

The department is proposing the modification of two (2) courses. There would be no change to the overall number of credit hours in course offerings.

The department is proposing modifications to the following programs, as outlined below and detailed in the Report.

The committee noted, in relation to the entrance requirements for the various programs, that the definition used for Cumulative Grade Point Average is not consistent with the University's definition, as set out in the *Grade Point Averages* policy. The Faculty was asked to review its General Academic Regulations and to submit a proposal(s) to modify the entrance requirements, for these and other programs in the Faculty, to Senate.

- **Bachelor of Arts (General Major) in Economics:** The number of 2000- and 3000-level Economics elective courses required in Years 2 and 3 would be revised to require 6 credit hours at the 2000-level or higher, 6 credit hours at the 3000-level or higher, and 3 credit hours from a specified list, including ECON 2350, ECON 2362, ECON 2540, ECON 2550, ECON 2630 (6), ECON 3392, ECON 3692, ECON 3810, ECON 4050.
- **Bachelor of Arts (Single Advanced Major) in Economics:** The modified program would include the two new streams indicated below and would require that students entering the Single Advanced Major select one of the two streams.
 - **Economics and Econometrics Stream**
 - **Economics and Society Stream**

The modified program would have a common set of core courses ((ECON 1010 and ECON 1020) or (ECON 1210 and ECON 1220)) and ECON 2010, ECON 2020, ECON 2040, and ECON 3040.

Students in the Economics and Econometrics Stream, which is intended for students with an interest in mathematical economics, would also be required to complete: (MATH 1500 or MATH 1520), ECON 2030, ECON 3010, ECON 3020, 3 credit hours from (ECON 2350, ECON 2362, ECON 2540, ECON 2550, ECON 3392, ECON 3692, ECON 3810, ECON 4050, ECON 4052), ECON 4822, and an additional 9 credit hours in Economics numbered at the 2000 level or higher.

Students in the Economics and Society Stream would also be required to complete: ECON 3810, ECON 4XXX (ECON 4822 or 6 credit hours in Economics at the 4000 level), 3 credit hours from (ECON 2350, ECON 2362, ECON 2540, ECON 2550), and 6 credit hours from (ECON 3374, ECON 3376, ECON 3392, ECON 3394, ECON 3690, ECON 3692, ECON 3710, ECON 3720, ECON 4050, ECON 4052), and an additional 12 credit hours in Economics numbered at the 2000 level or higher.

Entrance requirements for the Economics and Econometrics Stream and the Economics and Society Stream would include registration in the B.A.(Single Advanced Major) degree with a declared Major in Economics, and either a declared concentration in Economics and Econometrics or Economics and Society, respectively.

- **Bachelor of Arts (Single Honours) in Economics:** The modified program would include the two new streams indicated below and would require that students entering the Single Honours select one of the two streams.
 - **Economics and Econometrics Stream**
 - **Economics and Society Stream**

The modified program would have a common set of core courses ((ECON 1010 and ECON 1020) or (ECON 1210 and ECON 1220)), and (MATH 1500 or MATH 1520), ECON 2010, ECON 2020, ECON 2030, ECON 2040, ECON 3010, ECON 3020, ECON 3040, ECON 3810, ECON 4040, and ECON 4050.

Students in the Economics and Econometrics Stream (Honours), which is intended for students with an interest in mathematical economics, would also be required to complete: ECON 3030, ECON 4010, and ECON 4020, 6 credit hours in Economics numbered at the 2000 level or higher, 6 credit hours in Economics numbered at the 4000 level, a further 12 credit hours in Economics numbered at the 3000 level or higher, and 24 credit hours in ancillary options.

Students in the Economics and Society Stream (Honours) would also be required to complete: 9 credit hours from (ECON 2310 (6), ECON 2630 (6), ECON 3374, ECON 3376, ECON 3392, ECON 3394, ECON 3690, ECON 3692, ECON 3710, ECON 3720), 6 credit hours in Economics numbered at the 2000 level or higher, 6 credit hours in Economics numbered at the 3000 level or higher, 12 credit hours in Economics numbered at the 4000 level, 24 credit hours of ancillary options.

Entrance requirements for the Economics and Econometrics Stream and the Economics and Society Stream would include registration in the B.A.(Single Honours) degree with a declared Major in Economics, and either a declared

concentration in Economics and Econometrics or Economics and Society, respectively.

- **Bachelor of Arts (Double Honours) in Economics:** A requirement for a further 15 credit hours in Economics, with no more than 6 of these credit hours at the 2000 level and at least 6 of these credit hours at the 4000 level would be modified to require instead, a further 9 credit hours in Economics numbered at the 2000 level or higher, and a further 6 credit hours in Economics numbered at the 4000 level.
- The Program Notes would be modified for consistency with proposed program modifications.
- **Bachelor of Arts (Joint Honours) in Economics and Mathematics:** STAT 1150 would replace STAT 1000 as a required course, in Year 1. Program Note 1 would be modified to reflect that, with the department's consent, [STAT 1000 and STAT 2000] may be substituted for STAT 1150 in Year 1. Program Note 2 would be modified to indicate that STAT 1150 could be taken in Year 2 rather than in Year 1.
- **Bachelor of Arts (Joint Honours) in Economics and Statistics:** STAT 1150 would replace STAT 1000 and STAT 2150 would replace STAT 2000 as required courses, in Years 1 and 2, respectively. Year 2 would be modified to require either MATH 2150 or MATH 2720. Program Note 1 would be modified to reflect that, with the department's consent, [STAT 1000 (C) and STAT 2000 (B)] may be substituted for STAT 1150 in Year 1.

English, Film and Theatre

The department is proposing program modifications to the following programs in Theatre and to the Program Notes:

- **Bachelor of Arts (General Major) in Theatre:** THTR 2610 would be removed from the list of alternative requirements for Year 2 or 3, as the course is no longer offered.
- **Bachelor of Arts (Single Advanced Major) in Theatre:** ENGL 2960 would be removed from the list of courses required in Years 2, 3, or 4, and THTR 2610 would be removed from the list of alternative requirements. The number of additional credit hours of THTR courses would be increased from 12 to 15 credit hours.
- **Minor (Concentration) in Theatre:** THTR 2610 would be removed from the list of courses that can contribute to the Minor.
- THTR 2610 would be deleted from Program Note 1.

French, Spanish and Italian

The department is proposing the introduction of two (2) courses. The overall number of credit hours offered by the department would increase by 6 credit hours.

The department is proposing modifications to the following programs, including changes to Italian Studies List A:

- **Bachelor of Arts (General Major) in Italian:** In Year 2, the course introduction ITLN 2200 would be added to the list of alternative requirements. In Year 3, the course introduction ITLN 3780 would be added to the list of alternative requirements.
- **Bachelor of Arts (Single Advanced Major) in Italian:** In Year 2, the course introduction ITLN 2200 would be added to the list of alternative requirements. ITLN 3780 would be added to the list of alternative requirements to be completed in Year 3 or 4.
- ITLN 2200 and ITLN 3780 would be added to the Italian Studies List A.

German and Slavic Studies

The department is proposing the deletion of two (2) courses and the introduction of one (1) course. The overall number of credit hours offered by the department would decrease by 3 credit hours.

The department is proposing program modifications to the **Minor (Concentration) in Polish**, involving the deletion of SLAV 2260 and SLAV 2270 from the list of required courses, leaving a requirement for 12 credit hours in Polish (POLS) courses.

Global Political Economy

The program is proposing a modification to the **Bachelor of Arts (Single Advanced Major) in Global Political Economy**, involving a change to List A. The course title for HIST 3580 would be updated.

History

The department is proposing the deletion of one (1) course and the modification of two (2) courses. The overall number of credit hours offered by the department would decrease by 3 credit hours.

Latin American Studies

The program is proposing program modifications to the **Minor (Concentration) in Latin American Studies**, involving the deletion of SPAN 2540 from the list of alternative requirements, as the course has been deleted.

Philosophy

The department is proposing the deletion of three (3) courses and the modification of three (3) courses. The overall number of credit hours offered by the program would decrease by 9 credit hours.

Political Studies

The department is proposing the deletion of four (4) courses and the introduction of two (2) courses. The overall number of credit hours offered by the program would decrease by 9 credit hours.

Psychology

The department is proposing the modification of one (1) course. There would be no change to the overall number of credit hours in course offerings.

Sociology

The department is proposing the modification of one course. There would be no change to the overall number of credit hours in course offerings.

The department is proposing program modifications to the following programs. In each case, SOC 3660 would be added to the list of 12 credit hours of alternative requirements in Year 3.

- **Bachelor of Arts (General Major) in Criminology**
- **Bachelor of Arts (Single Honours) in Criminology**

Ukrainian Canadian Heritage Studies

The program is proposing program modifications to the following programs, including changes to List A that involve the removal of POLS 1500, which is to be deleted, and the addition of POLS 1502 and POLS 1506:

- **Bachelor of Arts (General Major) in Ukrainian Canadian Heritage Studies**
- **Bachelor of Arts (Single Advanced Major) in Ukrainian Canadian Heritage Studies**
- **Minor (Concentration) in Ukrainian Canadian Heritage Studies**

Women's and Gender Studies

The program is proposing modifications to the following programs, including changes to List A. PSYC 2390 and PSYC 2400 would be removed from the list, as they are no longer offered, and PSYC 2380 and PSYC 3570 would be added:

- **Bachelor of Arts (General Major) in Women's and Gender Studies**
- **Bachelor of Arts (Single Advanced Major) in Women's and Gender Studies**
- **Bachelor of Arts (Double Advanced Major) in Women's and Gender Studies**
- **Bachelor of Arts (Single Honours) in Women's and Gender Studies**
- **Bachelor of Arts (Double Honours) in Women's and Gender Studies**
- **Minor (Concentration) in Women's and Gender Studies**

9. Faculty of Education

The faculty is proposing the closure of its offering of the **Certificate in Teaching English as a Second Language (CTESL)** program. The program had been offered in collaboration with the Division of Extended Education since it was established in 1998. In 2016, the two units had taken a decision to no longer jointly offer the program, given that, over time, the two units had evolved different mandates and directions for the program that had led to distinct programmatic aspects.

Following from the closure of the CTESL program, the faculty is proposing program modifications to the following programs, involving modifications to the academic regulations on Transfer of Credit, to no longer grant transfer credit for CTSL courses

completed as part of the Certificate in Teaching English as a Second Language (CTESL).

- **Bachelor of Education**
- **Post-baccalaureate Diploma in Education**

10. **Faculty of Engineering**

Biosystems Engineering

The department is proposing the deletion of one (1) course. The overall number of credit hours offered by the department would decrease by 4 credit hours.

The department is proposing modifications to the **Bachelor of Science in Engineering (Biosystems)**. In particular, ENVR 2270 will be replaced by ENVR 2810 in the Group C course list for the **Environmental Specialization**. The change would respond to course changes proposed by the Faculty of Environment, Earth, and Resources.

Civil Engineering

The department is proposing the modification of one (1) course. There would be no change to the overall number of credit hours in course offerings.

Electrical and Computer Engineering

The department is proposing the modification of one (1) course. There would be no change to the overall number of credit hours in course offerings.

The department is proposing program modifications to the following programs in response to course changes proposed by the Department of Physics and Astronomy, Faculty of Science :

- **Bachelor of Science in Engineering (Computer Engineering):**
 - Approved Natural Science Electives – Group B list: PHYS 1810, PHYS 1820, PHYS 2380, and PHYS 3180 would be removed from the list and ASTR 1810, ASTR 3180, and PHYS 2386 would be added to the list.
- **Bachelor of Science in Engineering (Electrical Engineering):**
 - Approved Natural Science Electives list: PHYS 1810, PHYS 1820, PHYS 2380, and PHYS 3180 would be removed from the list and ASTR 1810, ASTR 3180, and PHYS 2386 would be added to the list.
 - Electrical Engineering Technical Electives – Group B list: MATH 3340 and PHYS 3640 would be removed from the list and PHYS 4646 would be added to the list.
 - **Engineering Physics Focus Area** - Prescribed Engineering Physics Courses: PHYS 2380 would be removed from the list and PHYS 2386 would be added; Engineering Physics Technical Electives Courses: PHYS 3380, PHYS 3640 and PHYS 3680 would be removed from this list and PHYS 3386, PHYS 4646, and PHYS 4680 would be added.

Mechanical Engineering

The department is proposing the deletion of five (5) courses, introduction of eight (8) courses, and the modification of seven (7) courses. The overall number of credit hours offered by the faculty would increase by 9 credit hours.

The department is proposing modifications to the following programs:

- **Bachelor of Science in Engineering (Mechanical):**
 - In the Program Core, MECH 2112 (5) would replace MECH 2012 (4), the spanned course, MECH 3980 (4), would be replaced by MECH 3982 (2) and MECH 3992 (2), and MECH 4650 (4) would be renumbered and replaced by MECH 3652 (4).
 - Technical Electives in Mechanical Engineering: MECH 4960 and MECH 4970 would be removed from the list, as the courses are proposed for deletion, and MECH 4432, MECH 4482, MECH 4542, and MECH 4582 would be added to the list.
- **Aerospace Option:** The structure of the program would be modified to require that students complete three technical electives in List A before completing two additional technical electives from List B. Courses available in the option would be broadened to include MECH 3582, MECH 4432, MECH 4482, and ENG 4110, which would be added to List B.

Program proposal:

The department is proposing the introduction of a new concentration, the **Aerospace Stream**, which would complement the existing Aerospace Option. The program would provide students with recognition deserved for partial completion of the Aerospace Option, which some students are not able to complete due to timetable and scheduling conflicts. The concentration would be available to all students in the Mechanical Engineering program and successful completion would be assessed at the time of graduation. Students would not be eligible to receive both the Aerospace Option and the Aerospace Stream.

11. Faculty of Environment, Earth, and Resources

Faculty of Environment, Earth, and Resources

The faculty is proposing a modification to the general degree regulations that apply to all programs in the faculty, involving changes to the **Science and Faculty of Arts Course Requirements** that follow from proposed course changes. In particular, GEOG 2530 and GEOG 2540 would be removed from the list of eligible courses offered by the Faculty and GEOG 2930 would be added.

Environment and Geography

The department is proposing the deletion of two (2) courses, the introduction of one (1) course, and the modification of one (1) course. The overall number of credit hours offered by the department would decrease by three (3) credit hours.

The department is proposing program modifications to the following programs, that follow from proposed course changes. In particular, ENVR 2810 would replace GEOG 2530 as a required course in the programs.

- **Bachelor of Arts (Honours) in Geography**
- **Bachelor of Arts (Advanced) in Geography**
- **Bachelor of Science (Honours) in Physical Geography**
- **Bachelor of Science (Honours) in Physical Geography, Cooperative Option**
- **Bachelor of Science (Major) in Physical Geography**
- **Bachelor of Science (Major) in Physical Geography, Cooperative Option**

The department is proposing program modifications to the following programs, that follow from proposed course changes. In particular, ENVR 2810 would replace ENVR 2270 a required course in the programs and as a requirement for entry to the Cooperative programs.

- **Bachelor of Environmental Science (Honours)**
- **Bachelor of Environmental Science (Honours), Cooperative Option**
- **Bachelor of Environmental Science (Major)**
- **Bachelor of Environmental Science (Major), Cooperative Option**
- **Bachelor of Environmental Science (General)**

Geological Science

The department is proposing the deletion of one (1) course and the modification of one (1) course. The overall number of credit hours offered by the department would decrease by four (4) credit hours.

12. Faculty of Health Sciences

The faculty is proposing program modifications to the **Bachelor of Health Studies** program:

- In Year 1, a requirement for ANTH 1210 and ANTH 1220 would be replaced by a requirement for ANTH 1210 or 1220; a requirement for BIOL 1020 and BIOL 1030 would be replaced by a requirement of 6 credit hours of Science Electives, which could be met by completing any courses offered by the Faculty of Science, or specified courses offered by the Faculty of Agricultural and Food Sciences and the Faculty of Environment, Earth, and Resources; FMLY 1012 would be added as a required course.
- In Year 3, a requirement for (PHIL 2740 or GEOG 4290 or SOC 2490) would be modified to require PHIL 2740 and SOC 2490; a requirement for FMLY 3780 or FMLY 3790 would be modified to require both of these courses.
- A requirement for 36 credit hours of program electives, including 12 credit hours of science courses and 24 credit hours of social sciences, would be removed.
- A requirement to complete one of the three 18 credit hour concentrations, as listed below, would be added.
- The faculty is proposing to introduce a Bachelor of Health Studies Electives List, which would replace the Interdisciplinary Health Program Electives, for students registered in the Bachelor of Health Studies program (only) who entered the program in the Fall 2018 and later.

- The revised program would also include the following lists of electives, which correspond to three, proposed concentrations within the program: List A – Health Policy, Planning and Evaluation Concentration – Program Electives; List B – Health Promotion and Education – Program Electives; List C – Family Health – Program Electives.

Program proposals:

The faculty is proposing to introduce three 18- credit hour concentrations within the Bachelor of Health Studies program, as follows. The objectives are to communicate pathways in the program to students, simplify program planning for students and Academic Advisors, and provide an alternate pathway for students in the Bachelor of Human Ecology (Family Social Sciences) program.

- **Health Policy, Planning, and Evaluation Concentration**
 - The concentration would provide students with the knowledge and skills to succeed in health and research careers related to health policy, health program planning and program evaluation.
 - In addition to completing the requirements for the B.H.St., students would complete 18 credit hours from List A - Health Policy, Planning and Evaluation Concentration – Program Electives.
- **Health Promotion and Education Concentration**
 - The concentration would prepare students for work in the area of health promotion and education. It would also provide a pathway for students planning to become Home Economics teachers, to obtain teachable subject areas in human nutritional science and family social science.
 - In addition to completing the requirements for the B.H.St., students would complete 18 credit hours from List B - Health Promotion and Education – Program Electives.
- **Family Health Concentration**
 - The concentration would provide an alternative to the existing Bachelor of Human Ecology (Family Social Sciences) that would allow students to complete a similar course of study but from an interdisciplinary perspective.
 - In addition to completing the requirements for the B.H.St., students would complete 18 credit hours from List C – Family Health – Program Electives.

13. **Faculty of Kinesiology and Recreation Management**

The faculty is proposing the introduction of two (2) courses and the modification of two (2) courses. The overall number of credit hours offered by the faculty would increase by 6 credit hours.

The faculty is requesting that the deletion of PHED 3360 and REC 3200, the introduction of PHED 3362 and REC 3220, and the modification of REC 3850 and REC 4400, which were approved by Senate, January 4, 2017, be postponed from Fall 2018 to Fall 2019.

The faculty is proposing program modifications to the following programs:

- **Bachelor of Kinesiology** – The program would be modified to require that students complete 12 credit hours of Advanced Faculty Electives, to be selected from KIN and/or KPER courses at the 3000- and 4000- level. Also, List A – List of Faculty of Science Electives will be modified in response to course changes proposed by the Department of Physics and Astronomy, Faculty of Science. Specifically, PHYS 1810, PHYS 1820, and PHYS 1830 would be removed and ASTR 1810 and ASTR 1830 would be added.
- **Minor in Recreation Studies** – The program would be modified to reflect recent changes in the faculty, including modifications to the Required Core Courses, to remove PERS 1300, PERS 1400, and REC 3090 and to add KPER 1400 and a requirement for a minimum of 6 credit hours, from a defined list of courses, including REC 2100, REC 2130, REC 2150, REC 2170. Students would continue to be required to complete 6 credit hours from a list of Electives, which would be broadened to include a larger number of REC courses and several KPER courses, as detailed in the attachment to the Report.

The faculty is proposing that the **Minor in Recreation Studies** be open to all University of Manitoba students, including students in the Faculty of Kinesiology and Recreation Management, with the exception of those students registered in the Bachelor of Recreation Management and Community Development degree program.

14. **College of Nursing**

The college is proposing the deletion of fourteen (14) courses and the modification of two (2) courses. The overall number of credit hours offered by the college would decrease by forty-nine (49) credit hours. Courses to be deleted were part of the previous curriculum for the Bachelor of Nursing program, which was recently revised (Senate, May 14, 2015; December 2, 2015), and have been completed by all students who required them for their degree.

15. **Faculty of Science**

Faculty of Science

The faculty is proposing a program modification to the **Bachelor of Science (General)** degree, involving changes to the list of Group A courses that follow from course changes proposed by the Department of Physics and Astronomy. In particular, ASTR 1810 and ASTR 1830 would be added to the eligible Astronomy courses, and PHYS 1810, PHYS 1820, and PHYS 1830 would be removed. Also, round brackets were added to the list of Statistics courses, to add clarity.

Biochemistry

The program is proposing program modifications to the following programs, involving changes to Note 5, to identify COMP 1260 and COMP 1270 as courses that are no longer offered and to add COMP 1500 and COMP 1600 to the list of courses that cannot be used toward a requirement for 12 credit hours of approved electives.

- **Bachelor of Science (Joint Honours) in Biochemistry**
- **Bachelor of Science (Joint Honours) in Biochemistry, Cooperative Option**

- **Bachelor of Science (Joint Major) in Biochemistry**
- **Bachelor of Science (Joint Major) in Biochemistry, Cooperative Option**

Biological Sciences

The department is proposing the deletion of three (3) courses and the modification of one (1) course. The overall number of credit hours offered by the department would decrease by 9 credit hours.

Chemistry

The department is proposing program modifications to the following programs. In particular, Note 2 would be amended to add COMP 1500 and COMP 1600 to the list of courses that cannot be used to satisfy a requirement for 3 credit hours from Mathematics, Statistics, or Computer Science courses.

- **Bachelor of Science (Honours) in Chemistry**
- **Bachelor of Science (Honours) in Chemistry, Cooperative Option**
- **Bachelor of Science (Major) in Chemistry**
- **Bachelor of Science (Major) in Chemistry, Cooperative Option**

Computer Science

The department is proposing the modification of six (6) courses. There would be no change to the overall number of credit hours of course offerings.

The department is proposing program modifications to the following programs, with some changes to take effect in the Fall 2018 and others to take effect in the Fall 2019, as outlined in the documents attached to this Report.

The proposed curriculum changes would result in changes to the academic regulations concerning entrance and graduation from the programs. Revisions to the regulations, which were also reviewed by the Senate Committee on Instruction and Evaluation (October 19, 2017), are included under Item IX (2) on the December 6, 2017 Senate agenda.

- **Bachelor of Science (Honours) in Computer Science**
- **Bachelor of Science (Honours) in Computer Science, Cooperative Option**
 - Year 1 and Program Note 1 would be modified to encourage students to complete MATH 1220 instead of MATH 1300 and to complete MATH 1230 instead of MATH 1500, to better prepare them for the program.
 - Year 2 – COMP 2130 would no longer be required and MATH 1240 would be added as a requirement.
 - Effective for Fall 2019, students would require a minimum grade of “C” in MATH 1700 and a minimum grade of “C+” in (MATH 1220 or MATH 1300) and in (MATH 1230 or MATH 1500) to enter the program. A requirement for 21 credit hours of required electives would be reduced to 18 credit hours. Program Note 1 would be modified to indicate that MATH 1232, MATH 1710 or MATH 1690 (6) could be used in place of MATH 1700.

- **Bachelor of Science (Major) in Computer Science**
- **Bachelor of Science (Major) in Computer Science, Cooperative Option**
 - Year 2 – COMP 2130 would no longer be required and MATH 1240 would be added as a requirement.
 - Effective for Fall 2019, students would require a minimum grade of “C” in MATH 1700 and a minimum grade of “C+” in MATH 1300 and in MATH 1500 to enter the program. A requirement for 21 credit hours of required electives would be reduced to 18 credit hours. Program Note 1 would be modified to indicate that MATH 1232, MATH 1710 or MATH 1690 (6) could be used in place of MATH 1700.

The department is proposing modifications to the following programs. Note 2, which refers to COMP 2130, will be removed, as students in the programs listed above would no longer be required to complete this course, which would be replaced by MATH 1240:

- **Bachelor of Science (Joint Honours) in Computer Science and Mathematics**
- **Bachelor of Science (Joint Honours) in Computer Science and Mathematics, Cooperative Option**
- **Bachelor of Science (Joint Honours) in Computer Science and Statistics**
- **Bachelor of Science (Joint Honours) in Computer Science and Statistics, Cooperative Option**

Mathematics

The department is proposing the introduction of two (2) courses. The overall number of credit hours offered by the department would increase by 6 credit hours.

The department is proposing a program modification to the **Bachelor of Science (Joint Honours) in Mathematics and Economics**, to replace a STAT 1000 with STAT 1150 as a required course. Program Note 1 would be modified to indicate that, with permission of the department, students might be able to substitute STAT 1000 and STAT 2000 for STAT 1150.

Microbiology

The department is proposing modifications to the following programs, which involve the removal of former BOTN and ZOOL courses from the Option List for all Microbiology Programs, as these subject codes have not been used since 2009, when the former Departments of Biology and Zoology were merged to form the Department of Biological Sciences:

- **Bachelor of Science (Honours) in Microbiology**
- **Bachelor of Science (Honours) in Microbiology, Cooperative Option**
- **Bachelor of Science (Major) in Microbiology**
- **Bachelor of Science (Major) in Microbiology, Cooperative Option**

Physics and Astronomy

The department is proposing the deletion of twenty-eight (28) courses, the introduction of twenty-one (21) courses, and the modification of twenty-three (23) courses. The

overall number of credit hours offered by the department would decrease by 33 credit hours.

The department is proposing the introduction of a new subject code, ASTR, for astronomy and astrophysics courses. Currently, courses offered in this subject use the PHYS subject code. This change, together with proposed program modifications, is intended to increase the visibility of courses and programs offered in these areas.

Program modifications:

The department is proposing program modifications to all of its programs, in response to recommendations made in an external review, as outlined below. A transition plan is included with the documents attached to this Report:

- Provide more room for electives, especially in the joint programs
- Introduce a computer programming course
- Give the Astronomy program more structure and visibility
- Revamp and reduce the introductory Astronomy courses
- Reduce observational astronomy to three credit hours
- Revisit the medical and biological physics stream

The department is proposing program modifications to the following programs:

- **Bachelor of Science (Honours) in Physics and Astronomy, Option A**
 - The option is to be renamed from “Option A” to “Astronomy and Astrophysics.”
 - Year 1 - COMP 1012 and ASTR 1810 would be added as required courses; open electives would be reduced from 9 credit hours to 3 credit hours, with ASTR 1830 recommended.
 - Year 2 - ASTR 2070, PHYS 2386, MATH 2720 and PHYS 2496 would be added as required courses, replacing PHYS 2070 (6), PHYS 2380, PHYS 2390 and PHYS 2490, respectively; requirements for PHYS 2260 and PHYS 2610 would be modified to permit students to complete either PHYS 2260 or PHYS 2610; ASTR 2000 and MATH 2090 would be added as required courses.
 - Year 3 – ASTR 3180 and PHYS 3386 would be added as required courses, replacing PHYS 3180 and PHYS 3380, respectively; ASTR 3230 and PHYS 3496 would be added as required courses; MATH 2090 would no longer be required; 3 credit hours of open electives would be amended to recommend ASTR 3070.
 - Year 4 – PHYS 4386, PHYS 4646, and PHYS 4680 would replace PHYS 4390, PHYS 3640, and PHYS 3680, respectively, as required courses; PHYS 4676 and PHYS 4786 would be added as required courses; PHYS 4240 (6) and PHYS 4230 would no longer be required; requirements for (one of PHYS 4010, PHYS 4516, or PHYS 4250) and (two of ASTR 4020, ASTR 4100, ASTR 4200, or ASTR 4400) would be added; a requirement for a 3 credit hour, 4000- level Physics and Astronomy course would be removed; the open electives would be increased from 3 to 6 credit hours.
 - Years 3 and 4 - A requirement for 9 credit hours of 3000 and/or 4000 level Physics and Astronomy courses would be removed.

- **Bachelor of Science (Honours) in Physics and Astronomy, Option B**
 - The option is to be renamed from “Option B” to “Physics.”
 - Year 1 – COMP 1012 would be added as a required course; the open electives would be reduced from 9 credit hours to 6 credit hours.
 - Year 2 – MATH 2720, PHYS 2386, and PHYS 2496 would replace PHYS 2390, PHYS 2380, and PHYS 2490, respectively, as required courses; requirements for PHYS 2260 and PHYS 2610 would be modified to PHYS 2260 or PHYS 2610; MATH 2090 would be added as a required course.
 - Year 3 – PHYS 3386 would replace PHYS 3380 as a required course; PHYS 3496 would be added as a required course; PHYS 3680, PHYS 3660, and MATH 2090 would no longer be required; the open electives would be increased from 3 to 9 credit hours.
 - Year 4 – PHYS 4386 and PHYS 4646 would replace PHYS 4390 and PHYS 3640, respectively, as required courses; PHYS 4680 would be added as a required course, and PHYS 4676 and PHYS 4678, which are options, currently, would become requirements; PHYS 4250, PHYS 4510, PHYS 4520, and PHYS 4590 would no longer be required and PHYS 4672 and PHYS 4674 would no longer be options; a requirement for 6 credit hours of 4000- level Physics courses would be added; the open electives would be increased from 6 to 9 credit hours.
- **Bachelor of Science (Honours) in Physics and Astronomy, Option C**
 - The option is to be renamed from “Option C” to “Medical and Biological.”
 - Year 1 – BIOL 1020, BIOL 1030, and COMP 1012 would be added as required courses; students would complete a requirement for 6 credit hours from the Faculty of Arts, including the W requirement, in Year 1, rather than Year 1 or Year 2; requirements for 6 credit hours from (BIOL 1410, BIOL 1412, or BIOL 2520) and 12 credit hours of open electives, to be completed in Year 1 or 2, would be removed.
 - Year 2 - MATH 2720, PHYS 2386, and PHYS 2496 would replace PHYS 2390, PHYS 2380, and PHYS 2490, respectively, as required courses; MATH 2090 would be added as a required course; PHYS 2260 would no longer be required; requirements for (PHYS 2270 or PHYS 2272) and 6 credit hours of open electives would be added.
 - Year 3 – PHYS 3386 would replace PHYS 3380 as a required course; requirements for PHYS 3496, STAT 1150 and 6 credit hours of open electives, would be added; PHYS 3650, PHYS 3680, and MATH 2090 would no longer be required; Program Note 6 would be added to indicate that STAT 1000 and STAT 2000 can be taken in lieu of STAT 1150.
 - Year 4 – PHYS 4646 would replace PHYS 3640 as a required course; PHYS 4680, (PHYS 4360 or PHYS 4400), and PHYS 4516 would be added as requirements; PHYS 4676 and PHYS 4678, which are options, currently, would be required; PHYS 4560 would no longer be required; a requirement for 9 credit hour of open electives would be added.
 - Years 3 and 4 – Requirements for 3 credit hours from (PHYS 4360, PHYS 4400, ECE 3780) and 15 credit hours of open electives would be removed.

- **Bachelor of Science (Major) in Physics and Astronomy**
 - Year 1 – COMP 1012 would be added as a required course; open electives would be reduced from 9 to 6 credit hours.
 - Year 2 - MATH 2720, PHYS 2386, and PHYS 2496 would replace PHYS 2390, PHYS 2380, and PHYS 2490, respectively, as required courses; open electives would be increased from 12 to 15 credit hours.
 - Year 3 – PHYS 3496 would be added as a required course; open electives would be reduced from 15 to 12 credit hours.
 - Year 4 – PHYS 3386 would replace PHYS 3380 as a required course.
- **Bachelor of Science (General)**
 - Year 1 – PHYS 1050 (C) (or PHYS 1020 (C+)) and PHYS 1070 (C) (or PHYS 1030 (C+)) would be added as required courses.
 - Years 2 and 3 – would be modified to specify that students must complete a minimum of 18 credit hours of 2000-, 3000-, and (or) 4000- level Physics or Astronomy courses, rather than requiring that students select from a list of specific courses.
- **Minor in Physics and Astronomy**
 - Year 1 – PHYS 1030 (C+) would no longer be required, rather students could elect to complete PHYS 1070 (C) (or PHYS 1030 (C+)); a requirement for PHYS 1050 (C) would be modified to require PHYS 1050 (C) (or PHYS 1020 (C+)).
 - Years 2 and 3 – would be modified to specify that students must complete a minimum of 12 credit hours of 2000-, 3000-, and (or) 4000- level Physics or Astronomy courses, rather than requiring that students select from a list of specific courses.

The department is proposing program modifications to the following Joint Honours programs:

- **Bachelor of Science (Joint Honours) in Chemistry and Physics**
 - Year 1 – a requirement for PHYS 1070 (B) would be modified to require either PHYS 1070 (B) or PHYS 1030 (B+); MATH 1300 would be added as a required course; the electives would be reduced from 6 to 3 credit hours.
 - Year 2 - MATH 2720, PHYS 2386, and PHYS 2496 would replace PHYS 2390, PHYS 2380, and PHYS 2490, respectively, as required courses.
 - Year 3 - PHYS 3386 would replace PHYS 3380 as a required course; PHYS 2260 or PHYS 2610 would be required, rather than PHYS 2260 and PHYS 2610; PHYS 3680 would no longer be required; requirements for PHYS 3496 and 3 credit hours of electives would be added.
 - Year 4 – a requirement for CHEM 4710 (6) or both PHYS 4676 and PHYS 4678 would replace a requirement for CHEM 4710 (6) or both PHYS 4672 and PHYS 4674; PHYS 4386 would replace PHYS 4390 as a required course; PHYS 4680 would be added as a required course; a requirement for 6 credit hours of 3000/4000 level Physics courses would be amended to 3 credit hours; a requirement for 6 credit hours of “approved” electives would be amended to require 6 credit hours of electives, and the Program Note associated with the previous requirement would be removed.

- Program Note 1 would be modified to allow MATH 1220 as a substitution for MATH 1300.
 - Program Note 2 would be modified, to advise students to complete PHYS 1050 and PHYS 1070.
 - A new Program Note 3 could be added to indicate that the prerequisite of PHYS 3430, for PHYS 4676, would be waived for students in this program.
- **Bachelor of Science (Joint Honours) in Computer Science and Physics and Astronomy**
 - Year 1 – a requirement for PHYS 1070 (B) would be modified to require either PHYS 1070 (B) or PHYS 1030 (B+); a requirement for COMP 1010 would be amended to require COMP 1010 or COMP 1012.
 - Program Note 1 would be amended to communicate that PHYS 1050 and PHYS 1070 are recommended.
 - Year 2 – MATH 2720, PHYS 2386, and PHYS 2496 would replace PHYS 2390, PHYS 2380, and PHYS 2490, respectively, as required courses; a requirement for PHYS 2260 would be modified to require this course or a Physics elective; Program Note 5 would be added to specify that students would be required to complete either PHYS 2260 or PHYS 2610.
 - Year 3 - PHYS 3386 would replace PHYS 3380 as a required course; PHYS 3496 would be added as a required course; a requirement for PHYS 2610 would be modified to require this course or a Physics elective; Program Note 5 would be modified to specify that students would be required to complete either PHYS 2260 or PHYS 2610; PHYS 3680 would no longer be required.
 - Year 4 – PHYS 4680 would be added as a required course; a requirement for 15 credit hours at the 3000 and 4000 level Honours Physics courses, with at least 6 credit hours at the 4000 level would be decreased to 12 credit hours; a requirement for 3 credit hours of “approved” electives would be amended to require 3 credit hours of electives.
- **Bachelor of Science (Joint Honours) in Mathematics and Physics and Astronomy**
 - The required number of credit hours would be reduced to 120 credit hours, from 129 credit hours.
 - Year 1 – a requirement for PHYS 1070 (B) would be modified to require either PHYS 1070 (B) or PHYS 1030 (B+); STAT 1150 and COMP 1012 would replace STAT 1000 and COMP 1010 as required courses.
 - Year 2 – PHYS 2386 would replace PHYS 2380 as a required course; a requirement for both PHYS 2260 and PHYS 2600 would be replaced by a requirement for PHYS 2260 or PHYS 2610; a requirement for 3 credit hours of Physics would be added.
 - Year 3 – PHYS 3386 would replace PHYS 3380 as a required course; MATH 3320 and PHYS 3680 would no longer be required.
 - Year 4 – MATH 3320, PHYS 4680, and 3 credits of 4000 level Math would be added as requirements; PHYS 3640, PHYS 3660, and PHYS 4390 would no longer be required; a requirement for 6 credit hours from MATH 2030, MATH

2070, MATH 2160, MATH 2170, or any 3000 or 4000 level Mathematics or Physics courses would replace existing requirements for 12 credit hours of the Math courses noted above, with 3 credit hours at the 4000 level, and 3 credit hours from 3000 and 4000 level Physics Honours courses; 6 credit hours of electives would be added as a requirement,

- Program Note 2 would be amended to communicate that PHYS 1050 and PHYS 1070 are recommended.
- Program Note 3 would be amended to indicate the pre- or corequisite of PHYS 2496 for PHYS 3670 is waived for students in this program and to recommend that students complete PHYS 2496 in Year 2 and PHYS 3496 in Year 3.
- Program Note 5 would be amended to indicate that the pre- or corequisite of PHYS 3496 for PHYS 4680 is waived for students in this program and to recommend that students audit PHYS 2496 in Year 2 and PHYS 3496 in Year 3.
- Program Note 7 would be added to indicate that STAT 1000 and STAT 2000 could be completed in lieu of STAT 1150.

Statistics

The department is proposing the modification of two (2) courses. There would be no change to the overall number of credit hours of course offerings.

The department is proposing program modifications to the following programs:

- **Bachelor of Science (Honours) in Statistics**
- **Bachelor of Science (Honours) in Statistics, Cooperative Option**
- **Bachelor of Science (Major) in Statistics**
- **Bachelor of Science (Major) in Statistics, Cooperative Option**
 - Year 2 – a requirement for MATH 2150 would be modified to require MATH 2150 or MATH 2720.
 - Program Note 4 would be deleted.
- **Bachelor of Science (Joint Honours) in Statistics and Economics**
 - Year 1 – STAT 1150 would replace STAT 1000 as a required course.
 - Year 2 – a requirement for MATH 2150 would be modified to require MATH 2150 or MATH 2720.
 - Program Note 1 would be modified to indicate that STAT 1000 and STAT 2000 could be completed in lieu of STAT 1150.

Recommendation

The Senate Committee on Curriculum and Course Changes recommends that curriculum and course changes from the units listed below, including the program proposals indicated, be approved by Senate:

Faculty of Agricultural and Food Sciences

Faculty of Architecture

- **Program proposal:**
 - **Cooperative Education / Integrated Work Program**

Faculty of Arts

- **Program proposal:**
 - **Economics and Econometrics Stream**, in the Bachelor of Arts (Single Advanced Major) in Economics
 - **Economics and Society Stream**, in the Bachelor of Arts (Single Advanced Major) in Economics
 - **Economics and Econometrics Stream**, in the Bachelor of Arts (Single Honours) in Economics
 - **Economics and Society Stream**, in the Bachelor of Arts (Single Honours) in Economics

Faculty of Education

- **Program closure:**
 - **Certificate in Teaching English as a Second Language (CTESL)**

Faculty of Engineering

- **Program proposal:**
 - **Aerospace Stream**, in the Bachelor of Science in Engineering (Mechanical)

Faculty of Environment, Earth, and Resources

Faculty of Health Sciences

- **Program proposals:**
 - **Health Policy, Planning, and Evaluation (concentration)**
 - **Health Promotion and Education (concentration)**
 - **Family Health (concentration)**

Faculty of Kinesiology and Recreation Management

College of Nursing

Faculty of Science

Respectfully submitted,
Professor G. Smith, Chair
Senate Committee on Curriculum and Course Changes

Faculty of Agricultural and Food Sciences

Agriculture, General

Deletions:

Last term offered – Winter 2018:

AGEC 4510 Applications in Agroecology Cr.Hrs. 3	-3.0
AGRI 2200 Principles of Plant and Animal Physiology for Engineers Cr.Hrs. 4	-4.0

Net change in credit hours: -7.0

Program modification:

Modifications to the **Bachelor of Science in Agroecology**, are outlined on the next 5 pages:

APPENDIX I: Supporting Documentation

Proposed Modification to the B.Sc. in Agroecology Degree Program Requirements, Revised Program Chart and Transition Plan

Rationale:

A review of all program courses and those delivered under the AGECE coding was completed. AGECE 4510, Applications in Agroecology, was identified with enrollment of students only from within the Agroecology Program. This means continued enrollment of 4-6 students per year is expected. The program committee believes the resource requirement was excessive for a Faculty member to teach the course to such few students when options for content delivery through other courses are available.

The course description of AGECE 4510 is as follows;

AGECE 4510 - Applications in Agroecology

(Formerly 065.451) Integration of information on ecological principles, agricultural production technology and environmental and socio-economic issues through in-depth studies of issues and problems in agro ecology. Prerequisite: AGECE 3510 (or 065.351).

3.0 Credit hours; no laboratory

The Agroecology Program Committee recommends the removal of AGECE 4510 as a course offering and as a requirement for the B.Sc. in Agroecology degree. In its place, a new restricted elective group (Applied Agroecology) of 3 credit hours from a choice of courses integrating ecological principles to agricultural production, management and the environment is recommended. The proposed degree requirements including the removal of AGECE 4510 and the new Applied Agroecology restricted elective follows.

Undergraduate Academic Calendar Content:

Bachelor of Science (Agroecology)

The Agroecology program provides students with an understanding of the natural processes in the agroecosystem and the impact of agricultural practices on these processes. The program emphasizes three areas: ecological sciences, agricultural production, and the social and economic implications of environmental management. Students will develop an understanding of how to manage natural and agricultural resources in a manner that enhances economic production while maintaining the integrity of natural and agricultural environments. An undergraduate research project is completed during third and fourth years as part of AGECE 3510 and AGECE 4550. Graduates are prepared for careers at the technical

and management levels in government and non-government agencies involved in planning and management of natural and agricultural resources. By appropriate choice of free elective courses, students can prepare for graduate studies.

In addition to the courses prescribed in the faculty core for all students in the Faculty of Agricultural and Food Sciences, the following courses are prescribed for students in the program leading to the B.Sc. Agroecology.

BSc Agroecology Degree Requirements

Requirements	Credit Hours (CH)
Faculty Core	39
Degree Core	36 33
Restricted Electives	18 21
Free Electives	27
Total Credit Hours	120

Faculty Core Requirements

Course	Course Name	CH
ABIZ 1000	Introduction to Agribusiness Management	3
AGRI 1500	Natural Resources and Primary Agricultural Production	3
AGRI 1510	Production, Distribution & Utilization of Agricultural Products	3
AGRI 2030	Technical Communications	3
BIOL 1020	Biology 1: Principles and Themes	3
BIOL 1030	Biology 2: Biological Diversity, Function and Interactions	3
CHEM 1300	University 1 Chemistry: Structure and Modelling in Chemistry	3
CHEM 1310 or	University 1 Chemistry: An Introduction to Physical Chemistry	3
CHEM 1320	University 1 Chemistry: An Introduction to Organic Chemistry	3
STAT 1000	Basic Statistical Analysis 1	3
ECON 1010	Introduction to Microeconomic Principles	3
ECON 1020	Introduction to Macroeconomic Principles	3
One Math Course of the following:		
MATH 1200	Elements of Discrete Mathematics	
MATH 1210	Techniques of Classical and Linear Algebra	
MATH 1300	Vector Geometry and Linear Algebra	
MATH 1310	Matrices for Management and Social Sciences	
MATH 1500	Introduction to Calculus	
MATH 1520	Introductory to Calculus for Management and Social Sciences	3
One Philosophy Course of the following:		
PHIL 1290	Critical Thinking	
PHIL 2740	Ethics and Biomedicine	
PHIL 2750	Ethics and the Environment	
PHIL 2830	Business Ethics	3
Total Credit Hours		39

Agroecology Degree Core Requirements

Course	Course Name	CH
ABIZ 2390/ ECON 2390	Introduction to Environmental Economics	3
AGEC 2370/ BIOL 2300	Principles of Ecology	3
AGEC 3510	Agroecology	3
AGEC 4510	Applications in Agroecology	3
AGEC 4550	Project in Agroecology	6
ANSC 2500	Animal Production	3
BIOL 3312	Community Ecology	3
CHEM 2770/ MBIO 2770	Elements of Biochemistry 1	3
PLNT 2500	Crop Production	3
PLNT 2520	Genetics	3
SOIL 3600	Soils and Landscapes in Our Environment	3
Total Credit Hours		36 33

Agroecology Restricted Elective Requirements

Group 1 – Agricultural Science		CH
Three courses from the following:		
Any 2000, 3000 or 4000 level course from -		
ANSC	Department of Animal Science	
ENTM	Department of Entomology	
PLNT	Department of Plant Science	9
Group 2 – Land Science		
Two courses from the following:		
Any 3000 or 4000 level course from -		
SOIL	Department of Soil Science	6
Group 3 – Policy and Economics		
One course from the following:		
Any 3000 or 4000 level course from -		
ABIZ	Department of Agribusiness	3
Group 4 – Applied Agroecology *		
One course from the following:		
ANSC 4410	Grassland agriculture: plant, animal and environment	
ENTM 4520	Physiological ecology of insects	
PLNT 3540	Weed science	
PLNT 3560	Organic crop production on the Prairies	
SOIL 4400	Soil ecology	3
*Note that courses from this group are in addition to the Group 1 requirement.		
Total Credit Hours		18 21

Free Electives 27 CH

Suggested Progression of Agroecology Program:

Year 1

Course	Course Name	Credit Hours
AGRI 1500	Natural Resources and Primary Agricultural Production	3
AGRI 1510	Production, Distribution and Utilization of Agricultural Products	3
BIOL 1020	Biology 1: Principles and Themes	3
BIOL 1030	Biology 2: Biological Diversity, Function and Interactions	3
CHEM 1300	University 1 Chemistry: Structure and Modelling in Chemistry	3
CHEM 1310	University 1 Chemistry: An Introduction to Physical Chemistry	
or		
CHEM 1320	University 1 Chemistry: An Introduction to Organic Chemistry	3
STAT 1000	Basic Statistical Analysis 1	3
ECON 1010	Introduction to Microeconomic Principles	3
ECON 1020	Introduction to Macroeconomic Principles	3
One Math Course from the following:		
MATH 1200	Elements of Discrete Mathematics	
MATH 1210	Techniques of Classical and Linear Algebra	
MATH 1300	Vector Geometry and Linear Algebra	
MATH 1310	Matrices for Management and Social Sciences	
MATH 1500	Introduction to Calculus	
MATH 1520	Introductory to Calculus for Management and Social Sciences	3
Total Credit Hours		30

Year 2

Course	Course Name	Credit Hours
ABIZ 1000	Agribusiness Management	3
AGRI 2030	Technical Communications	3
AGEC 2370/	Principles of Ecology	3
BIOL 2300		
ANSC 2500	Animal Production	3
CHEM 2770/	Elements of Biochemistry 1	3
MBIO 2770		
PLNT 2500	Crop Production	3
PLNT 2520	Genetics	3
STAT 1000	Basic Statistical Analysis 1	3
Restricted/Free Electives/Philosophy		6
Total Credit Hours		30

Year 3

Course	Course Name	Credit Hours
ABIZ 2390/	Introduction to Environmental Economics	3
ECON 2390		
AGEC 3510	Agroecology	3
BIOL 3312	Community Ecology	3
SOIL 3600	Soils and Landscapes in Our Environment	3
Restricted/Free Electives/Philosophy		18
Total Credit Hours		30

Year 4

Course	Course Name	Credit Hours
AGEC 4510	Applications in Agroecology	3
AGEC 4550	Project in Agroecology	6
Restricted/Free Electives/Philosophy		21 24
Total Credit Hours		30

Transition plan:

AGRI 4510 will not be offered in 2017/2018. The four students expected to take AGEC 4510 in Winter 2018 have met with the Agroecology Program Advisor prior to registration to select a course from the new restricted elective group 4 in place of AGEC 4510 for the 2017/2018 academic year. This substitution for the 2017/2018 year has been approved by Faculty Council. If the proposed Program Modification for the B.Sc. Agroecology Program is approved by Senate, effective Fall 2018, current and newly admitted Agroecology students would follow the new curriculum for the B.Sc. Agroecology Program.

Agribusiness and Agricultural Economics

Deletions:

Last term offered – Winter 2019:

ABIZ 0680 Agribusiness Management Cr.Hrs. 4	-4.0
ABIZ 0690 Agricultural Finance and Credit Cr.Hrs. 4	-4.0

Introduction:

First term offered – Fall 2019:

ABIZ 0750 Advanced Agricultural Financial Management and Lending Cr.Hrs. 3	+3.0
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This course will offer realistic templates for assessing loan application cases and determining financial need, production feasibility and repayment for lenders. Students will analyze lender portfolios and the financial management of various enterprises. Students will learn to apply financial management concepts in evaluating investment options in farm and agribusiness decision-making. May not be held with ABIZ 0690 or DAGR 0730. Prerequisite: ABIZ 0470.

Net change in credit hours: -1.0

Animal Science

Modification:

Changes Take Effect - Fall 2018:

ANSC 0730 Horse and Stable Management Cr.Hrs. 3	0.0
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Principles of horse production, including breeding, reproductive management, nutrition, behavior, health and general management. Applications to major sections of the horse industry. There will be one or two field trips.

Net change in credit hours: 0.0

Biosystems Engineering

Deletions:

Last term offered – Winter 2019:

BIOE 0400 Farm Power Cr.Hrs. 4	-4.0
BIOE 0690 Water Management Cr.Hrs. 4	-4.0

Modification:

Changes Take Effect - Fall 2018:

BIOE 0222 Precision Agriculture – Technological Tools for Decision Making Cr.Hrs. 4	0.0
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(Lab required) Precision agriculture is a philosophy of agricultural management that has been enabled by modern technology. This course will examine both the technology and the techniques that can be used to improve the efficiency of agricultural operations by decreasing costs, increasing profits, and decreasing hazards to the environment. Students will be introduced to current and emerging technologies for crop, livestock and business management.

Students will have the opportunity to apply data generated from these technologies to support decision making required by farm managers.

Net change in credit hours: -8.0

Entomology

Modification:

Changes Take Effect - Fall 2019:

ENTM 0620 Insect Pest Management Cr.Hrs. 4	0.0
Characteristics, damage, and identification; insecticide use and safety; life histories and control of common Manitoba livestock, field and farmyard insects. General principles of pest management in agriculture will also be discussed.	

Net change in credit hours: 0.0

Plant Science

Deletions:

Last term offered – Winter 2019:

PLNT 0790 Landscape Horticulture Cr.Hrs. 4	-4.0
PLNT 0800 Diversification with Horticultural Crops Cr.Hrs. 4	-4.0

Modifications:

Changes Take Effect - Fall 2018:

PLNT 0410 Crop Production Principles and Practices Cr.Hrs. 4	0.0
(Lab required) This course provides a broad understanding of the principles and practices of crop production. The importance of crop production for western Canada and for worldwide food production. Constraints, challenges and opportunities will be explored. The course will cover crop plant biology and provide an introduction to agronomic management practices for Manitoba crop production. Topics will include crop rotation, cultivar selection, tillage, seeding, fertilizer, pest control, precision agriculture and bio security.	

PLNT 0760 Crop Production Specialization and Innovation Resources Cr.Hrs. 4	0.0
(Lab required) Tools and research to support sound agronomic decision-making for production of cereals, oilseeds, pulses and upcoming innovative special crops in Manitoba. An emphasis on assessing potential of incorporating innovative and specialized crops to achieve economical and ecological benefits. The course will address planning, production and harvesting of special crops as well as product quality, opportunities for processing and marketing. Prerequisite: PLNT 0410 or the former DAGR 0420.	

Changes Take Effect - Fall 2019:

PLNT 0750 Forage and Pasture Management Cr.Hrs. 4	0.0
(Lab required) This course covers for forage crops and the continuum of improved and unimproved pasture land a discussion of production practices including: choice of species and cultivars of forage crops, cultural management including tillage practices, pest control, forage	

harvesting, grazing management and seed production. Prerequisite: PLNT 0410 or the former DAGR 0420.

PLNT 0770 Weed Management Cr.Hrs. 4 0.0
General principles of weed management and pesticide use safety as they relate to weed control. Topics will include weed biology and identification, economic importance, principles of chemical, cultural, mechanical and biological weed management, introduction to herbicides including modes of action and factors influencing their use, selectivity, risks for development of herbicide-resistant weeds and how to mitigate this risk. Prerequisite: PLNT 0410 or the former DAGR 0420.

PLNT 0780 Plant Disease Management Cr.Hrs. 4 0.0
(Lab required) General principles of pest management and pesticide use safety as they relate to plant disease control. Discussion of diseases attacking field and horticultural crops in the prairies including: disease symptoms, cycles, prevention and control. Prerequisite: PLNT 0410 or the former DAGR 0420.

PLNT 0820 Organic Crop Production on the Prairies Cr.Hrs. 3 0.0
Management principles and practices involved in the production of organic field and forage crops with a focus on the Canadian Prairie Region. Prerequisites: PLNT 0410 (or the former DAGR 0420) and SOIL 0420.

Net change in credit hours: -8.0

Soil Science

Modifications:

Changes Take Effect - Fall 2018:

SOIL 0420 Soil Resources and Productivity Cr.Hrs. 4 0.0
(Lab required) Soil formation; soil physical, chemical and biological properties; soil classification systems, maps and reports; soil fertility, crop nutrients, soil sampling and testing; agricultural productivity. A full-day field trip is required.

SOIL 0620 Soil and Water Management Cr.Hrs. 4 0.0
(Lab required) Soil, water and crop management techniques and considerations for: weather and climate risk; variability of soil properties and capability; saline, sodic and acidic soils; soil erosion risk; trace element toxicity; maintenance of soil organic matter. Prerequisite: SOIL 0420.

Net change in credit hours: 0.0

Agriculture, School of

Deletions:

Last term offered – Fall 2017:

DAGR 0420 Introduction to Soils and Crops Cr.Hrs. 4 -4.0

Last term offered – Winter 2018:

DAGR 0680 Management Planning Project 1 Cr.Hrs. 3 -3.0

Last term offered – Winter 2019:

DAGR 0690 Management Planning Project 2 Cr.Hrs. 5 -5.0

DAGR 0730 Case Studies in Institutional Lending 1 Cr.Hrs. 4 -4.0

DAGR 0780 Succession and Estate Planning Cr.Hrs. 2 -2.0

Introductions:

First term offered – Fall 2018:

DAGR 0480 Introductory Farm Management Cr.Hrs. 3 +3.0

Students will be introduced to the various roles that are carried out by farm managers. Students will be required to attend interview sessions outside of scheduled classes with an assigned Farm Management Advisor. The Advisor will support students as they apply their management skills and knowledge to a real farm business or a case farm. There will be one full day field trip. May not be held with the former DAGR 0680.

DAGR 0490 Applied Farm Management Cr.Hrs. 3 +3.0

An introduction to an objectives-driven plan that deals with production and financial management. Students will generate and analyze enterprise budgets and financial statements. Students will be required to attend interview sessions outside of scheduled classes with an assigned Farm Management Advisor. The Advisor will support students as they apply their management skills and knowledge to a real farm business or a case farm. There will be three full day field trips. May not be held with the former DAGR 0680. Prerequisites: DAGR 0480 and ABIZ 0460. Pre- or corequisite: ABIZ 0470.

DAGR 0510 Farm Management Practicum Cr.Hrs. 3 +3.0

Students will have the opportunity for practical hands-on experience and to apply the knowledge they have acquired to intensify study of livestock or crop production management. May not be held with DAGR 0630 when titled "Glenlea." Prerequisite: Consent of the Director of the School of Agriculture.

DAGR 0520 Managing Agricultural Safety Cr.Hrs. 3 +3.0

This course provides introductory information on farm safety. It is designed to raise awareness about safety issues and legislation in the agricultural industry, and get students thinking about safety in their own worksite or on their family farm operations. May not be held with DAGR 0660 when titled "Farm Safety."

DAGR 0530 Agricultural Human Resource Management Cr.Hrs. 3 +3.0

Students will apply processes such as job analysis and design, recruitment and selection, training and development, performance management, and compensation management to develop a comprehensive human resource management plan for an agricultural enterprise. Human Resource legislation will be covered and resources to support human resource management decision making will be identified. Prerequisite: DAGR 0480.

DAGR 0550 Managing Farm Business Transition Cr.Hrs. 3 +3.0

This course is designed to provide students with the tools and knowledge to incorporate transition management into their farm business management planning. Students will be

introduced to family profiles/dynamics, business structures as well as financial and managerial influences that affect farm and business transition options. There will be an application of real farm examples as context to the instructional material. May not be held with DAGR 0660 when titled "Succession/Transition Considerations in Farm Management" or the former DAGR 0780. Prerequisites: ABIZ 0460 and DAGR 0480. Pre- or corequisites: ABIZ 0470 and DAGR 0490.

First term offered – Fall 2019:

DAGR 0540 Exploring New Opportunities in Adding On-Farm Value Cr.Hrs. 4 +4.0
(Lab required) A practical study of the opportunities for farm operators to increase value return for farm products with innovative approaches to production, processing and marketing. Students will learn from case studies the challenges and realities of value chain integration. Students will develop their ability to critically evaluate business plans for farm product enterprises. Prerequisites: ABIZ 0460 and DAGR 0480. Pre- or corequisites: ABIZ 0470 and DAGR 0490.

DAGR 0910 Integrated Sustainable Agri-Food Systems Cr.Hrs. 3 +3.0
The agri-food system encompasses how food is being produced, processed, transported, marketed and consumed. The three pillars of sustainability (economic, social and environmental) will be used to evaluate and improve agricultural sustainability, and will also be applied to the agri-food system (beyond production). Sustainable solutions are unique to each agricultural situation and require long-term thinking and evidence-based decision-making. Focus will be on the balance between food production practices and protecting the natural resources on which agriculture is reliant. There will be a full-day field trip. This course is restricted to students in Year 2 Agriculture Diploma Program.

DAGR 0920 - Current Issues in Agriculture and Food Cr.Hrs. 3 +3.0
The course will present current day and potential future issues facing Canada's agri-food sector. Students will be required to identify and optimize solutions to these issues, with a focus on the roles and responsibilities of farmers, other food producers and agri-food industry members. The impact of these issues on farms and the agri-food industry now and in the future will be emphasized as will the role farmers can play in policy development in response to these issues. The course includes an opportunity for students to engage with several guest speakers from the agri-food community. There will be two or three full-day field trips. This course is restricted to students in Year 2 Agriculture Diploma Program. May not be held with the former DAGR 0690.

DAGR 0980 Farm Management Project 1 Cr.Hrs. 3 +3.0
Development of a comprehensive objectives-driven plan that deals with production and financial management. Students will be required to attend interview sessions outside of scheduled classes with an assigned Farm Management Advisor. The Advisor will support students as they apply their management skills and knowledge to a real farm business or a case farm. There will be two full-day field trips. May not be held with the former DAGR 0690. Prerequisites: ABIZ 0470 and DAGR 0490. Pre- or corequisite: ABIZ 0450. Additionally, students must submit a satisfactory set of financial and production records for the farm they will be basing their project on by July 15th in order to enter DAGR 0980.

DAGR 0990 Farm Management Project 2 Cr.Hrs. 3 +3.0
Refinement of a comprehensive objectives-driven plan that deals with production and financial management. Students will be required to attend interview sessions outside of scheduled classes with an assigned Farm Management Advisor. The Advisor will support students as they apply their management skills and knowledge to a real farm business or a case farm. Students

will present and defend their plan to a panel composed of academics and industry representatives. May not be held with the former DAGR 0690. Prerequisite: DAGR 0980.

Modifications:

Changes Take Effect - Fall 2018:

DAGR 0410 Skills for Agricultural Communication and Decision Making Cr.Hrs. 4 0.0
(Lab required) A course designed to improve critical thinking and abilities in written and oral communication to support student success in their academic careers and as agricultural industry professionals.

DAGR 0630 Special Project Cr.Hrs. 3 0.0
This project allows a student to make practical application of scientific knowledge acquired and/or to intensify the study of a topic of particular interest. A satisfactory report is required to qualify for credit. Prerequisite: Consent of the Director of the School of Agriculture.

Changes Take Effect - Fall 2019:

DAGR 0610 Advanced Communication and Leadership Cr.Hrs. 3 0.0
A course designed to improve leadership potential and develop advanced communication skills for agricultural industry professionals. Prerequisite: DAGR 0410.

Net change in credit hours: +16.0

Program modifications:

Modifications to the following programs are outlined on the next 13 pages:

- **Diploma in Agriculture**
- **Business Management Option**
- **Crop Management Option**
- **Livestock Management Option**
- **General Agriculture Option**

Proposed Changes to Academic Calendar

Current and Revised Charts and Descriptions

4.6 Diploma in Agriculture

Director: Michele Rogalsky

Campus Address/General Office: 160 Agriculture Building

Telephone: (204) 474 9295

The program is designed for those who plan to manage farms or pursue careers in the agricultural and food service and/or value added sectors. Classes begin in late September and end in March to accommodate students with obligations to plant and harvest crops. The program is also designed for those who plan to transfer credits earned from the Agriculture Diploma program to one of the Faculty of Agricultural and Food Sciences' degree programs.

In order to fulfill the requirements for a Diploma in Agriculture in the Faculty of Agricultural and Food Sciences, students must complete the course requirements for the program core and one of the four program options. Program options are available in Business Management, Crop Management, Livestock Management and General Agriculture. Students will select from restricted and program elective courses to fulfill the program's credit hour requirements. Students planning to register for degree courses should contact an Academic Advisor for the Diploma program, to discuss implications for scheduling and graduation, as these courses start earlier in September and end later in April. The minimum number of credit hours required to fulfill the requirements for a Diploma in Agriculture is 93 credit hours and the maximum is 105 credit hours.

Program Core

The **Program Core** curriculum of prescribed courses, common to all students, provides a broad yet integrated education in the production, management and marketing of agricultural **and food** products and the principles of managing a business. Students are taught to use this knowledge to evaluate the technical and economic feasibility of a variety of alternative agricultural practices.

~~Within the program, students are able to specialize in areas of interest. Options are available in Business Management, Crop Management, Livestock Management and General Agriculture. These options are chosen by the student during the first term, first year.~~

Program Core - Prescribed Courses for all Students in these options

First Year, Fall Term

Course No.		Credit Hours
BIOE 0600	Farm Machinery	4
ANSC 0420	Animal Biology and Nutrition	4
ABIZ 0440	Agricultural Economics and Marketing 1	4
ABIZ 0460	Financial Management 1	4

DAGR 0410	Communication and Learning Skills	4
	Skills for Agricultural Communication and Decision Making	
DAGR 0420	Introduction to Soils and Crops	4
DAGR 0680	Management Planning Project 1	
DAGR 0480	Introductory Farm Management	3
PLNT 0410	Crop Production Principles and Practices	4
SOIL 0420	Soil Resources and Productivity	4
Total credit hours		24-23
First Year, Spring Term		
PLNT 0410	Cereal and Oilseed Production Practices	4
SOIL 0420	Soil Productivity and Land Use	4
ABIZ 0470	Financial Management 2	4
DAGR 0680	Management Planning Project 1¹	3
ABIZ 0440	Agricultural Economics and Marketing 1	4
BIOE 0222	Precision Agriculture – Technological Tools for Decision Making	4
DAGR 0490	Applied Farm Management	3
PLANT 0760	Crop Production Specialization and Innovation	4
SOIL 0620	Soil and Water Management	4
Total credit hours		15-23
+ 3 courses, according to option*		
¹continuation of course from fall term		
Second Year, Fall Term		
ABIZ 0450	Agricultural Economics and Marketing 2	4
ENTM 0620	Pest Management and Farm Insects	4
DAGR 0690	Management Planning Project 2	5
DAGR 0910	Integrated Sustainable Agri-Food Systems	3
DAGR 0980	Farm Management Project 1	3
Total credit hours		13-10
+ courses, according to option*		
Second Year, Winter Term		
DAGR 0920	Current Issues in Agriculture and Food	3
DAGR 0990	Farm Management Project 2	3
Total credit hours		6
Total credit hours for prescribed courses Program Core		52-62

NOTE:

~~*These additional courses will consist of those required within an option plus free electives, in accordance with the four options described below:~~

Program Options

In order to accommodate a modest level of specialization, the students will be required to elect one of four options by the end of first term, first year. ~~Each of these four options has a series of required courses. However, within each option there are also unrestricted electives available to the student who wishes to blend training available in two or more option areas to increase the degree of specialization.~~

Business Management Option

This option offers a more in-depth education in business management to those ~~people~~ who intend to manage farms or work as employees, managers and/or business owners in the agricultural **and food service and/or value added** sectors. ~~(agricultural lending, fertilizer, feed and chemical sales, etc.).~~

~~Prescribed Courses for Business Management Option~~

Course No.		Credit Hours
ABIZ 0720	Farm Business Management	4
ABIZ 0690	Agricultural Finance and Credit	4

Restricted Electives – Business Management

Group 1

~~Plus At least two~~ **three courses from** ~~of the following:~~

ABIZ 0680	Agribusiness Management	4
ABIZ 0710	Agricultural Policy	3
ABIZ 0730	Financial Risk Management	3
ABIZ 0720	Farm Business Management	4
ABIZ 1000	Introduction to Agribusiness Management	3
ABIZ 0750	Advanced Agricultural Financial Management and Lending	3

Group 2

~~Plus At least one Biosystems Engineering Course;~~ **course from the following:**

BIOE 0400	Farm Power	4
BIOE 0710	Materials Handling and Electrical Controls	3
BIOE 0690	Water Management	4
BIOE 0700	Agricultural Buildings and Environments	4
BIOE 0600	Farm Machinery	4
ENTM 0620	Insect Pest Management	4
PLNT 0750	Forage and Pasture Management	4
PLNT 0770	Weed Management	4
PLNT 0780	Plant Disease Management	4
PLNT 0820	Organic Crop Production on the Prairies	3
SOIL 0630	Soil Fertility	4

Group 3

At least one course from the following:

DAGR 0520	Managing Agricultural Safety	3
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DAGR 0530	Human Resource Management	3
DAGR 0540	Exploring New Opportunities in Adding On-Farm Value	4
DAGR 0550	Managing Farm Business Transition	3
DAGR 0610	Advanced Communication and Leadership	3
DAGR 0760	Agricultural Law	3

Group 4

At least one course from the following:

ANSC 0670	Beef Cattle Production and Management	4
ANSC 0680	Dairy Cattle Production and Management	4
ANSC 0690	Swine Production and Management	4
ANSC 0700	Poultry Production and Management	4
ANSC 0730	Horse and Stable Management	3

Total prescribed credit hours of **Restricted Electives**, within option **18-19-22**

Plus ~~22-23~~ **9-13** credit hours of **Program Electives**, to complete a minimum of 93 credit hours within the program

Crop Management Option

This option ~~emphasizes soil and crop management. It is designed for people~~ **those** who plan to manage farms where crops are the primary farm enterprise or for those who are interested in careers in ~~industries or businesses~~ **in related agricultural and food service and/or value-added sectors. that provide services to these types of farms (e.g. crop supply businesses).**

~~Prescribed Courses for Crop Management Option~~

Option Core – Crop Management

Course No.		Credit Hours
PLNT 0770	Weed Management	4
PLNT 0780	Plant Disease Management	4
SOIL 0620	Soil Conservation and Management	4
SOIL 0630	Soil Fertility	4
ENTM 0620	Insect Pest Management	4

~~Plus at least one of the following:~~

PLNT 0750	Forage and Pasture Management	4
PLNT 0760	Special Crops	4
PLNT 0800	Diversification With Horticultural Crops	4
PLNT 0820	Organic Crop Production on the Prairies	3

~~Plus one Biosystems Engineering course:~~

BIOE 0400	Farm Power	4
BIOE 0710	Materials Handling and Electrical Controls	3
BIOE 0690	Water Management	4

Restricted Electives – Crop Management

At least two courses from the following:

BIOE 0600	Farm Machinery	4
BIOE 0710	Materials Handling and Electrical Controls	3

PLNT 0750	Forage and Pasture Management	4
PLNT 0820	Organic Crop Production on the Prairies	3
Total credit hours Option Core		16
Total prescribed credit hours of Restricted Electives , within option		22-24 6-8
Plus 17-19 7-9 credit hours of Program Electives , to complete a minimum of 93 credit hours in the program.		

Livestock Management Option

This option ~~emphasizes the principles of livestock production, with some degree of specialized attention to beef, dairy, swine, poultry or horse production. It is designed for people~~ **those** who plan to manage ~~farms~~ **operations** where ~~livestock~~ **animal management and/or** production is the primary enterprise or for those who are interested in ~~the careers in related~~ **agricultural and food service and/or value added sectors** industries that support livestock production (e.g. feed suppliers).

Option Core – Livestock Management

Prescribed Courses for Livestock Management Option

Course No.		Credit Hours
ANSC 0600	Animal Health and Welfare	3
PLNT 0750	Forage and Pasture Management	4
ENTM 0620	Insect Pest Management	4

Restricted Electives – Livestock Management

Group 1

~~Plus~~ **At least one course from** of the following:

ANSC 0670	Beef Cattle Production and Management	4
ANSC 0680	Dairy Cattle Production and Management	4

Group 2

~~Plus~~ **At least one course of from** the following:

ANSC 0690	Swine Production and Management	4
ANSC 0700	Poultry Production and Management	4
ANSC 0730	Horse Production and Management	3

Horse and Stable Management

~~Plus one Biosystems Engineering course:~~

BIOE 0710	Materials Handling and Electrical Controls	3
BIOE 0700	Agricultural Buildings and Environments	4

Group 3

At least one course from the following:

BIOE 0700	Agricultural Buildings and Environments	4
PLNT 0750	Forage and Pasture Management	4

Total credit hours Option Core **7**

Total ~~prescribed~~ credit hours **Restricted Electives**, within option ~~17-19~~**11-12**

Plus ~~22-24~~ **12-13** credit hours of **Program Electives**, to complete a minimum of 93 credit hours in the program.

General Agriculture Option

This option exposes the student to crop and livestock production, business management and biosystems engineering beyond the exposure contained in the core curriculum. It is designed for those people who intend to manage diversified farm operations and for those who desire a **broad** general education in applied agricultural and food sciences. **The flexibility it provides in course selection makes it well suited for those who plan to manage diversified farm operations and for those who intend to pursue careers in the agricultural and food service and/or value added sectors.**

Prescribed Courses for **Restricted Electives** - General Agriculture Option

Course No.	Credit Hours
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Group 1

At least one **course from** of the following:

ANSC 0670	Beef Cattle Production and Management	4
ANSC 0680	Dairy Cattle Production and Management	4
ANSC 0690	Swine Production and Management	4
ANSC 0700	Poultry Production and Management	4
ANSC 0730	Horse Production and Management Horse and Stable Management	3

Group 2

~~Plus~~ At least one **course from** of the following:

PLNT 0750	Forage and Pasture Management	4
PLNT 0760	Special Crops	4
PLNT 0800	Diversification with Horticultural Crops	4
PLNT 0820	Organic Crop Production on the Prairies	3
PLNT 0770	Weed Management	4
PLNT 0780	Plant Disease Management	4

~~Plus at least one of the following:~~

SOIL 0620	Soil Conservation and Management	4
SOIL 0630	Soil Fertility	4

Group 3

~~Plus~~ At least one **course from** of the following:

ABIZ 0680	Agribusiness Management	4
ABIZ 0720	Farm Business Management	4
ABIZ 0710	Agricultural Policy	3
ABIZ 0730	Financial Risk Management	3
ABIZ 0750	Advanced Agricultural Financial Management and Lending	3
ABIZ 1000	Introduction to Agribusiness Management	3

Group 4

~~Plus one Biosystems Engineering course~~ At least one **course from** the following:

BIOE 0400	Farm Power	4
BIOE 0710	Materials Handling and Electrical Controls	3
BIOE 0690	Water Management	4

BIOE 0700	Agricultural Buildings and Environments	4
BIOE 0600	Farm Machinery	4
Group 5		
At least one course from the following:		
ENTM 0610	Insect Pest Management	4
ENTM 0620	Beekeeping	2
Group 6		
At least one course from the following:		
DAGR 0540	Exploring New Opportunities in Adding On-Farm Value	4
FOOD 1000	Food Safety Today and Tomorrow	3
HNSC 1200	Food Facts and Fallacies	3
HNSC 1210	Nutrition for Health and Changing Lifestyles	3
Group 7		
At least one course from the following:		
DAGR 0520	Managing Agricultural Safety	3
DAGR 0530	Human Resource Management	3
DAGR 0550	Managing Farm Business Transition	3
DAGR 0610	Advanced Communication and Leadership	3
DAGR 0630	Special Project	3
DAGR 0760	Agricultural Law	3
Total prescribed credit hours of Restricted Electives , within option		17-20 20-27

Plus ~~21-24~~ **4-11** credit hours of **Program Electives**, to complete a minimum of 93 credit hours in the program.

Program Electives

Students can select program electives to fulfill the program's 93 credit hour requirement. The following Faculty of Agricultural and Food Sciences' courses are approved as program electives for the Agriculture Diploma program. Students may be permitted to use courses offered by other faculties as program electives. Credit for these courses will be granted on the condition that there is not significant overlap of course content. Students planning to register for degree courses should contact an Academic Advisor for the Diploma program, to discuss implications for scheduling and graduation, as these courses start earlier in September and end later in April.

ABIZ 0710	Agricultural Policy	3
ABIZ 0720	Farm Business Management	4
ABIZ 0730	Financial Risk Management	3
ABIZ 0740	Special Topics in Business Management	3
ABIZ 0750	Advanced Agricultural Financial Management and Lending	3
ABIZ 1000	Introduction to Agribusiness Management	3
ABIZ 1010	Economics of World Food Issues and Policies	3
ANSC 0600	Animal Health and Welfare	3

ANSC 0670	Beef Cattle Production and Management	4
ANSC 0680	Dairy Cattle Production and Management	4
ANSC 0690	Swine Production and Management	4
ANSC 0700	Poultry Production and Management	4
ANSC 0720	Special Topics in Livestock Management	3
ANSC 0730	Horse and Stable Management	3
BIOE 0600	Farm Machinery	4
BIOE 0700	Agricultural Buildings and Environments	4
BIOE 0710	Materials Handling and Electrical Controls	3
DAGR 0510	Farm Management Practicum	3
DAGR 0520	Managing Agricultural Safety	3
DAGR 0530	Agricultural Human Resource Management	3
DAGR 0540	Exploring New Opportunities in Adding On-Farm Value	4
DAGR 0550	Managing Farm Business Transition	3
DAGR 0610	Advanced Communication and Leadership	3
DAGR 0630	Special Project	3
DAGR 0660	Special Topics in General Agriculture	3
DAGR 0760	Agricultural Law	3
DAGR 0830	Agriculture Cooperative Education Work Term	2
ENTM 0610	Beekeeping	2
ENTM 0620	Insect Pest Management	4
ENTM 1000	World of Bugs	3
FOOD 1000	Food Safety Today and Tomorrow	3
HNSC 1200	Food: Facts and Fallacies	3
HNSC 1210	Nutrition for Health and Changing Lifestyles	3
PLNT 0750	Forage and Pasture Management	4
PLNT 0770	Weed Management	4
PLNT 0780	Plant Disease Management	4
PLNT 0810	Special Topics in Crop Management	3
PLNT 0820	Organic Crop Production on the Prairies	3
PLNT 1000	Urban Agriculture	3
SOIL 0630	Soil Fertility	4

Detailed Transition Plan

Timelines and Transition Plan

September 2018 is being proposed for first intake of students for the revised program. The final cohort completing the existing program requirements would be admitted for September 2017 and would graduate in May 2019. The effective dates for proposed course introductions, deletions and modifications are included in the following table:

Course Introductions

Course #	Course Title	First Term to be Offered	Course Type for Proposed New Program
ABIZ 0750	Advanced Agricultural Financial Management and Lending	Fall 2019	Restricted Elective for Business Management Option
DAGR 0480	Introductory Farm Management	Fall 2018	Program Core (1 st year)
DAGR 0490	Applied Farm Management	Winter 2019	Program Core (1st year)
DAGR 0510	Farm Management Practicum	Summer 2019	Free Elective
DAGR 0520	Managing Agricultural Safety	Summer 2019	Restricted Elective for Business Management and General Agriculture Options
DAGR 0530	Agricultural Human Resource Management	Summer 2019	Restricted Elective for Business Management and General Agriculture Options
DAGR 0540	Exploring New Opportunities in Adding On-Farm Value	Fall 2019	Restricted Elective for Business Management and General Agriculture Options
DAGR 0550	Managing Farm Business Transition	Summer 2019	Restricted Elective for Business Management and General Agriculture Options
DAGR 0910	Integrated Sustainable Agri-Food Systems	Fall 2019	Program Core (2nd year)
DAGR 0920	Current Issues in Agriculture and Food	Winter 2020	Program Core (2nd year)
DAGR 0980	Farm Management Project 1	Fall 2019	Program Core (2nd year)
DAGR 0990	Farm Management Project 2	Winter 2020	Program Core (2nd year)

Course Deletions

Course #	Course Title	Last Term to be Offered	Course Type for Current Program
ABIZ 0680	Agribusiness Management	Winter 2019	Restricted Elective for Business Management and General Agriculture Options
ABIZ 0690	Agricultural Finance and Credit	Winter 2019	Business Management Option

			Core
BIOE 0400	Farm Power	Winter 2019	Restricted Elective for Business Management, Crop Management and General Agriculture Options
BIOE 0690	Water Management	Winter 2019	Restricted Elective for Management, Crop Management, Business Management and General Agriculture Options
DAGR 0420	Introduction to Soils and Crops	Fall 2017	Program Core (1 st year)
DAGR 0680	Management Planning Project 1	Fall 2017/Winter 2018	Program Core (1 st year)
DAGR 0690	Management Planning Project 2	Fall 2018/Winter 2019	Program Core (2 nd year)
DAGR 0730	Case Studies in Institutional Lending 1	Winter 2019	Free Elective
DAGR 0780	Succession and Estate Planning	Winter 2019	Free Elective
PLNT 0790	Landscape Horticulture	Winter 2019	Free Elective
PLNT 0800	Diversification with Horticultural Crops	Winter 2019	Restricted Elective for Crop Management and General Agriculture Options

Course Modifications

Course #	Course Title (Existing/Revised)	Effective Date	Course Type for Current Program	Course Type for Proposed Program
ANSC 0730	Horse Production and Management /Horse and Stable Management	Fall 2018	Restricted Elective for Livestock Management, and General Agriculture Options	Restricted Elective for Livestock Management, Business Management and General Agriculture Options
BIOE 0222	Precision Agriculture/ Precision Agriculture - Technological Tools for Decision Making	Winter 2019	Free Elective	Program Core (1 st year)
DAGR 0410	Communication and Learning Skills/Skills for Agricultural Communication and Decision Making	Fall 2018	Program Core (1 st year)	Program Core (1 st year)

DAGR 0610	Advanced Communication and Rural Leadership/Advanced Communication and Leadership	Fall 2019	Free Elective	Restricted Elective Business Management and General Agriculture Options
DAGR 0630	Special Project	Fall 2018	Free Elective	Free Elective
ENTM 0620	Pest Management and Farm Insects/Insect Pest Management	Fall 2019	Program Core (2 nd year)	Crop Management and Livestock Management Option Core Restricted Elective Business Management and General Agriculture Options
PLNT 0410	Cereal and Oilseed Production Practices/Crop Production Principles and Practices	Fall 2018	Program Core (1 st year)	Program Core (1 st year)
PLNT 0750	Forage and Pasture Management	Fall 2019	Livestock Management Option Core Restricted Elective Crop Management and General Agriculture Options	Restricted Elective all four Options
PLNT 0760	Special Crops/ Crop Production Specialization and Innovation	Winter 2019	Crop Management and General Agriculture Options	Program Core (1 st year)
PLNT 0770	Weed Management	Fall 2019	Crop Management Option Core	Crop Management Option Core Restricted Electives Business Management and General Agriculture Options
PLNT 0780	Plant Disease Management	Fall 2019	Crop Management Option Core	Crop Management Option Core Restricted Elective Business Management and

				General Agriculture Options
PLNT 0820	Organic Crop Production on the Prairies	Fall 2019	Restricted Elective Crop Management and General Agriculture Options	Restricted Elective Crop Management, Business Management and General Agriculture Options
SOIL 0420 and Productivity	Soil Productivity and Land Use/Soil Resources and Productivity	Fall 2018	Program Core (1 st year)	Program Core (1 st year)
SOIL 0620	Soil Conservation and Management/Soil and Water Management	Winter 2019	Crop Management Option Core	Program Core (1 st year)

Arrangements for Continuing Students

A detailed transition plan has been developed for students admitted to the program prior to September 2018. The plan will enable them to complete the existing curriculum or transition to the revised curriculum. Included are program planning charts that outlines the pathways for continuing/existing students to complete their program.

Course substitutions are proposed for the three program Core courses that will be deleted. The spanned first year core course DAGR 0680 Management Planning Project 1 (3 credit hours) will be substituted with DAGR 0480 Introductory Farm Management (3 credit hours) and DAGR 0490 Applied Farm Management (3 credit hours). The spanned second year core “capstone” course DAGR 0690 Management Planning Project 2 (5 credit hours) will be substituted with DAGR 0980 Farm Management Project 1 (3 credit hours), DAGR 0990 Farm Management Project 2 (3 credit hours) and DAGR 0920 Current Issues in Agriculture and Food (3 credit hours). The first year Core course DAGR 0420 Introduction to Soils and Crops(4 credit hours) will be substituted with PLNT 0760 Crop Production Specialization and Innovation (4 credit hours).

Students in the Crop Management, Livestock Management and General Agriculture Options will be able to meet the course requirements for these options without any course substitutions.

Students in the Business Management Option will substitute the option Core course ABIZ 0690 Agricultural Finance and Credit (3 credit hours) with the proposed new course ABIZ 0750 Advanced Agricultural Financial Management and Lending (3 credit hours).

The restricted elective for the Business Management and General Agriculture Options, ABIZ 0680 Agribusiness Management (4 credit hours), will be substituted with ABIZ 1000 Introduction to Agribusiness Management (3 credit hours) which is offered in several delivery formats and in both fall and winter terms.

Students admitted from September 2014 to September 2018 who do not complete the program requirements by May 2019 will be identified. The Agriculture Diploma program has a five year statute of limitations. The School of Agriculture maintains a database to track Agriculture Diploma students whose program extends from the regular two-year program. The School will notify these students by e-mail of the changes to the curriculum once it is approved and will inform them of the transition plan that has been developed. Students who are on an extended program will receive an individualized e-mail requesting that they meet with an Academic Advisor to review their individual program plan. The proposed changes to the curriculum will be communicated to stakeholders once approved using the School's website and Faculty e-newsletters.

Faculty of Architecture

Introductions:

EVDS 3800 Cooperative Education/Integrated Work Term 1 Cr.Hrs. 1 +1.0

Cooperative education/work assignment in practice, business, industry or government for Faculty of Architecture students. Requires submission of a written report and portfolio covering the work completed during each four-month professional assignment. Students participating in the program must have completed at least 85 credit hours towards a university degree prior to placement. Those registering for this course must have applied for and been accepted into the Faculty of Architecture cooperative stream. Course evaluated on a pass/fail basis.

EVDS 3900 Cooperative Education/Integrated Work Term 2 Cr.Hrs. 1 +1.0

Cooperative education/work assignment in practice, business, industry or government for Faculty of Architecture students. Requires submission of a written report and portfolio covering the work completed during each four-month professional assignment. Students participating in the program must have completed at least 85 credit hours towards a university degree prior to placement. Those registering for this course must have applied for and been accepted into the Faculty of Architecture cooperative stream . Prerequisite: EVDS 3800. Course evaluated on a pass/fail basis.

EVDS 4800 Cooperative Education/Integrated Work Term 3 Cr.Hrs. 1 +1.0

Cooperative education/work assignment in practice, business, industry or government for Faculty of Architecture students. Requires submission of a written report and portfolio covering the work completed during each four-month professional assignment. Students participating in the program must have completed at least 85 credit hours towards a university degree prior to placement. Those registering for this course must have applied for and been accepted into the Faculty of Architecture cooperative stream. Prerequisite: EVDS 3900. Course evaluated on a pass/fail basis.

EVDS 4900 Cooperative Education/Integrated Work Term 4 Cr.Hrs. 1 +1.0

Cooperative education/work assignment in practice, business, industry or government for Faculty of Architecture students. Requires submission of a written report and portfolio covering the work completed during each four-month professional assignment. Students participating in the program must have completed at least 85 credit hours towards a university degree prior to placement. Those registering for this course must have applied for and been accepted into the Faculty of Architecture cooperative stream. Prerequisite: EVDS 4800. Course evaluated on a pass/fail basis.

Net change in credit hours: +4.0

Program modification:

A modification to the **Bachelor of Environmental Design** program that involves the introduction of an optional **Cooperative Education / Integrated Work Program** is outlined on the next two pages.

Calendar Course Description

Undergraduate Academic Calendar 2018-2019 Program Description

Section 6: Environmental Design, Cooperative Education/Integrated Work Program (Coop/I) – 3000 and 4000 Level

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EVDS 3800 Cooperative Education/Integrated Work Term 1 Cr.Hrs. 1

Cooperative education/work assignment in practice, business, industry or government for Faculty of Architecture students. Requires submission of a written report and portfolio covering the work completed during each four-month professional assignment. Students participating in the program must have completed at least 85 credit hours towards a university degree prior to placement. Those registering for this course must have applied for and been accepted into the Faculty of Architecture cooperative stream. Course evaluated on a pass/fail basis.

EVDS 3900 Cooperative Education/Integrated Work Term 2 Cr.Hrs. 1

Cooperative education/work assignment in practice, business, industry or government for Faculty of Architecture students. Requires submission of a written report and portfolio covering the work completed during each four-month professional assignment. Students participating in the program must have completed at least 85 credit hours towards a university degree prior to placement. Those registering for this course must have applied for and been accepted into the Faculty of Architecture cooperative stream. Prerequisite EVDS 3800. Course evaluated on a pass/fail basis.

EVDS 4800 Cooperative Education/Integrated Work Term 3 Cr.Hrs. 1

Cooperative education/work assignment in practice, business, industry or government for Faculty of Architecture students. Requires submission of a written report and portfolio covering the work completed during each four-month professional assignment. Students participating in the program must have completed at least 85 credit hours towards a university degree prior to placement. Those registering for this course must have applied for and been accepted into the Faculty of Architecture cooperative stream. Prerequisite EVDS 3900. Course evaluated on a pass/fail basis.

EVDS 4900 Cooperative Education/Integrated Work Term 4 Cr.Hrs. 1

Cooperative education/work assignment in practice, business, industry or government for Faculty of Architecture students. Requires submission of a written report and portfolio covering the work completed during each four-month professional assignment. Students participating in the program must have completed at least 85 credit hours towards a university degree prior to placement. Those registering for this course must have applied for and been accepted into the Faculty of Architecture cooperative stream. Prerequisite EVDS 4800. Course evaluated on a pass/fail basis.

Program Description

The Faculty of Architecture offers a Cooperative Education/Integrated Work Program (Coop/I) option designed to complement and enrich our academic programs with work experience. The work term/s provide students with practical experience, assistance in financing their education, and guidance for future career specialization.

A student in good academic standing, currently enrolled in the Faculty of Architecture who will have successfully completed 85 credit hours towards a university degree prior to the start of their work placement, may apply to participate in the Coop/I option. The Coop/I program is open to students registered in the Environmental Design Architecture Masters Preparation program. Acceptance to the program will be based on a statement of interest, résumé, portfolio and interview with the Coop/I Program Coordinator and Academic Liaison. Acceptance will be confirmed in writing. Progress of all students through Coop/I option is dependent upon the student obtaining a job placement.

Upon securing a placement, Faculty of Architecture students enroll in the course EVDS 3800 Coop/I Term 1 (and subsequently, EVDS 3900, 4800 and 4900) for the specific work term of employment.

Students participating in the Coop/I option must complete all the degree requirements for their program of study as outlined in the Academic Course Calendar. Depending on the term and length of a Coop/I job placement, timetables may need to be altered to satisfy course/studio prerequisite requirements. This may lengthen the time to program completion. Students should consult with the Coop/I Coordinator, Student Advisor, and Program Head prior to accepting a job placement. The Academic Liaison (ADR) and/or relevant option head will oversee curricular implications.

Students on probation or academic suspension will either be removed from Coop/I option or have their acceptance deferred until they have completed two consecutive terms with an Academic Standing of "Satisfactory". Students on probation are required to meet with a Student Advisor to discuss their program of studies prior to their next registration and when next assessed, must exceed the minimum TGPA (2.0).

Written reports must be completed at the end of each work term. Each successfully completed work term and its corresponding work term report receives a Pass/Fail grade and is rated at one credit hour. Students who successfully complete at least two work terms and the required work term reports will have the Coop/I Option acknowledged on their graduation parchment.

For more information regarding the Cooperative Education/Integrated Work Program option in the Faculty of Architecture see: <http://umanitoba.ca/faculties/architecture/>

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Faculty of Arts

Faculty of Arts

Program modification:

The faculty is proposing modifications to the list of courses acceptable for use toward the Bachelor of Arts Science Requirement, as set out on the next page.

Faculty of Arts

- Modification of Bachelor of Arts Science Requirement

Added material

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5.1.1 Five-subject Field Requirement and Humanities/Social Science/Science Requirement

Sciences

4) Students may complete any combination of the courses listed below adding up to six credit hours to satisfy the Bachelor of Arts Science requirement.

Faculty of Science

All courses offered in these subjects in the Faculty of Science: ASTR, BIOL, CHEM, COMP, FORS, MATH, MBIO, PHYS, STAT;

or courses taught by other faculties that can be used toward the Bachelor of Arts Science requirement:

Faculty of Agricultural and Food Sciences

AGRI 1500, AGRI 1510

ENTM 1000, ENTM 2050

PLNT 1000, PLNT 2500

SOIL 3060, SOIL 3520, SOIL 3600

Clayton H. Riddell Faculty of Environment, Earth, and Resources

ENVR 1000, ENVR 2000

GEOG 1290, GEOG 2200, GEOG 2272, GEOG 2520, ~~GEOG 2530~~, GEOG 2540, GEOG 2541, GEOG 2550, GEOG 2700, GEOG 3390

GEOL 1340, GEOL 1400, GEOL 1410, GEOL 1420, GEOL 2390, GEOL 2440, GEOL 2500, ~~GEOL 2540~~, GEOL 2570, GEOL 3310

Faculty of Engineering

ENG 1440, ENG 1450, ENG 1460

For course titles and descriptions see the relevant faculty entries in this *Calendar*.

Asian Studies

Program modifications:

Modifications to the following programs are set out on the next 2 pages:

- **Bachelor of Arts (General Major) in Asian Studies**
- **Minor (Concentration) in Asian Studies**

Asian Studies

- Modification of List A [used in the General Major and Minor (Concentration)]

Added material

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8.2.2 Asian Studies

List A	Courses Acceptable for Asian Studies Credit	Credit Hours
Course No.		
Faculty of Arts		
Anthropology		
ANTH 2450	Ethnology of China	3
Asian Studies	Asian Languages	
ASIA 1750	Introduction to Korean	6
ASIA 1760	Introduction to Chinese (Mandarin)	6
ASIA 1770	Introduction to Japanese	6
ASIA 1780	Basic Sanskrit	6
ASIA 1790	Basic Hindi-Urdu	6
ASIA 2750	Intermediate Korean	6
ASIA 2760	Intermediate Chinese (Mandarin)	6
ASIA 2770	Intermediate Japanese	6
ASIA 2780	Intermediate Sanskrit	6
ASIA 3750	Advanced Korean	6
ASIA 3760	Advanced Chinese (Mandarin)	6
ASIA 3770	Advanced Japanese	6
ASIA 3780	Advanced Reading in Japanese	3
ASIA 3792	Linguistic Analysis of Japanese	3
Asian Studies	Other Asian courses	
ASIA 1420	Asian Civilizations to 1500 (Same as HIST 1420)	3
ASIA 1430	Asian Civilizations from 1500 (Same as HIST 1430)	3
ASIA 2080	South Asian Civilization	3
ASIA 2570	History, Culture and Society in Chinese Film	3
ASIA 2580	Women in Chinese Film	3
ASIA 2600	Japanese Film	3
ASIA 2610	Modern Chinese Literature in Translation	3
ASIA 2620	Japanese Civilization	3
ASIA 2630	Chinese Civilization	3
ASIA 2650	Premodern Chinese Literature in Translation	3
ASIA 2662	Chinese Diaspora Literature	3
ASIA 2670	Modern Japanese Literature in Translation	3
ASIA 3480	Selected Topics in Asian Studies 1	3
ASIA 3490	Selected Topics in Asian Studies 2	3
ASIA 3520	The Japanese Theatre	3
ASIA 3560	Themes and Genres in Asian Literature	3
ASIA 3600	Japanese Popular Culture	3
English, Film, and Theatre		
FILM 2380	The International Cinema 1 [Acceptable for credit only when the topic is Asia related]	3
FILM 2390	The International Cinema 2 [Acceptable for credit only when the topic is Asia related]	3
History		
HIST 1420	Asian Civilizations to 1500 (Same as ASIA 1420)	3
HIST 1430	Asian Civilizations from 1500 (Same as ASIA 1430)	3
HIST 2050	South Asia Since 1947	3
HIST 2130	Emergence of Modern South Asia: 1757-1947	3
HIST 2410	History of India	6
HIST 2650	Modern China and Japan	6
HIST 2654	History of the People's Republic of China, 1949-Present	3
HIST 3090	Studies in Asian History	3

HIST 3580	Topics in Recent World History-1-[Acceptable for credit only when the topic is Asia related]	3
HIST 3980	Nationalism on the Indian Sub-Continent in the Twentieth Century	3
HIST 4070	Issues in Modern Asian History 1: Selected Topics (M,B)	3
Religion		
RLGN 1322	Introduction to Eastern Religions	3
RLGN 2010	Introduction to Hinduism	3
RLGN 2020	Introduction to Buddhism	3
RLGN 2570	Indian Religious Art and Architecture	3
RLGN 2700	Religions of China and Japan	6
RLGN 3150	Buddhism in East Asia	3
RLGN 3160	Tibetan Religious Traditions	3
RLGN 3210	Indian Philosophy	3
RLGN 3220	Indian Religion and Society	3
RLGN 3260	Indian Buddhism	3
RLGN 3266	Readings in Buddhist Texts	3
RLGN 3270	Guru and Disciple	3
RLGN 3750	Topics in Indian Religious Art and Architecture	3
RLGN 4060	The Yoga Tradition	3
RLGN 4100	Advanced Studies in Buddhism	3
RLGN 4190	Advanced Studies in Hinduism	3
School of Art		
FAAH 1100	Survey of Asian Art	3
FAAH 3230	Chinese Art and Architecture	3
FAAH 3240	Japanese Art and Architecture	3
FAAH 3590	Islamic Art and Architecture	3
Clayton H. Riddell Faculty of Environment, Earth, and Resources		
Geography		
GEOG-3590	Geography of Developing Countries	6

Canadian Studies

Modifications to the following programs are outlined on the next 3 pages:

- **Bachelor of Arts (General Major) in Canadian Studies**
- **Bachelor of Arts (Single Honours) in Canadian Studies**
- **Bachelor of Arts (Double Honours) in Canadian Studies**
- **Minor (Concentration) in Canadian Studies**

Canadian Studies

- Modification of the "List of Approved Courses in Canadian Studies" [used in the General Major, Minor (Concentration), Single Honours, Double Honours]

Added material

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8.3.2.1 List of Approved Courses in Canadian Studies

Courses designated (USB) are offered in French at Université de Saint-Boniface.

Faculty of Arts

Canadian Studies

CDN 1130	Introduction to Canadian Studies	6
CDN 3730	Canadian Identity: An Interdisciplinary Approach	3
CDN 4410	Seminar in Canadian Studies	6
Anthropology		
ANTH 2040	Native North America: A Sociocultural Survey	3
ANTH 2041	Les Amérindiens de l'Amérique du nord: une étude socioculturelle (USB)	3
ANTH 2640	Manitoba Prehistory	3
ANTH 3461	Ethnologie des Amérindiens de l'Amérique du Nord (USB)	3
ANTH 3500	Peoples of the Arctic	3
ANTH 3501	Peuples de l'Arctique (USB)	3
ANTH 3550	Canadian Subcultures	3
ANTH 3551	Sous-cultures canadiennes (USB)	3
ANTH 3910	Archaeological Field Training	6
Economics		
ECON 1210	Introduction to Canadian Economic Issues and Policies	3
ECON 1211	Introduction aux politiques et aux problèmes économiques canadiens (USB)	3
ECON 2310	Canadian Economic Problems	6
ECON 2311	Les problèmes économiques du Canada (USB)	6
ECON 2350	Community Economic Development	3
ECON 2362	Economics of Gender	3
ECON 3301	Histoire économique du Canada (USB)	6
ECON 3690	Economic Issues of Health Policy	3
ECON 3720	Urban and Regional Economics and Policies	3
English, Film, and Theatre		
ENGL 2270	Canadian Literature	6
ENGL 3270	Studies in Canadian Literature	3
ENGL 3271	Studies in Canadian Literature	3
FILM 2430	The Canadian Film	3
Français (USB)		
FRAN 2834	L'individu et le pays (USB)	3
FRAN 2881	Civilisation canadienne-française (USB)	3
FRAN 3531	Le théâtre québécois (USB)	3
FRAN 3541	Le théâtre de l'Ouest (USB)	3
FRAN 3834	L'époque de la contestation (USB)	3
FRAN 3844	La révolution tranquille et le roman (USB)	3
FRAN 3851	Le théâtre de l'Ouest: poésie, nouvelles (USB)	3
FRAN 3861	Le théâtre de l'Ouest: romans (USB)	3
FRAN 4834	Littérature de l'Acadie et des Cajuns (USB)	3
French, Spanish and Italian		
FREN 2700	Poésie et théâtre canadiens-français (B)	3
FREN 3140	Roman canadien-français (B)	3
FREN 3850	Civilisation canadienne-française (C)	3
History		
HIST 1390	History of Colonial Canada: 1500-1885 (C)	3
HIST 1400	History of the Canadian Nation Since 1867 (C)	3
HIST 1440	History of Canada (C)	6
HIST 1441	Histoire du Canada (USB)	6
HIST 2191	Histoire économique et sociale canadienne du XIXe siècle (USB)	6

HIST 2200	Labour History: Canada and Beyond (C) (Cross-listed with Labour Studies LABR 2200)	3
HIST 2280	Aboriginal History of Canada (C)	6
HIST 2282	Inventing Canada (C)	3
HIST 2286	Modern Canada (C)	3
HIST 2288	History of Social Movements in Canada (C)	3
HIST 2971	Le Canada moderne: de 1921 à nos jours (USB)	6
HIST 3050	Canada since 1945 (C)	6
HIST 3052	Canada since the 1960s (C)	3
HIST 3054	Canada and the United States (C)	3
HIST 3214	Canada's Left: Rebellion and Repression (C) (Cross-listed with Labour Studies LABR 3214)	3
HIST 3250	Canada and the World, 1867 to the Present (C)	6
HIST 3442	Race, Ethnicity, Immigration, and Nation in Canadian History (C)	3
HIST 3572	The History of Women, Gender, and Sexuality in Canada (C)	6
HIST 3690	History of Northern Canada (C)	6
HIST 3721	Histoire du Manitoba (C) (USB)	6
HIST 3730	A History of Western Canada (C)	6
HIST 3780	Studies in Canadian History 1 (C)	3
HIST 3781	Études choisies en histoire du Canada 1 (USB)	3
HIST 3791	Études choisies en histoire du Canada 2 (USB)	3
HIST 3910	The Ukrainians in Canada (C)	3
HIST 4060	Gender History in Canada (C)	6
HIST 4280	Topics in the Cultural History of Canada (C)	6
HIST 4340	Introduction to Archival Science (G)	6
HIST 4680	Social History of Health and Disease in Modern Canada (C)	6
HIST 4890	Canadian Social History (C)	6
Icelandic		
ICEL 2230	Contemporary Icelandic-Canadian Literature	3
ICEL 4440	The Icelanders in Canada	3
Labour Studies		
LABR 2200	Labour History: Canada and Beyond (C) (Cross-listed with History HIST 2200)	3
LABR 3214	Canada's Left: Rebellion and Repression (C) (Cross-listed with History HIST 3214)	3
LABR 3510	Industrial Relations (Cross-listed with Economics ECON 3510)	6
Linguistics		
LING 1360	Languages of Canada	3
Native Studies		
NATV 1200	The Native Peoples of Canada	6
NATV 1220	The Native Peoples of Canada, Part 1	3
NATV 1240	The Native Peoples of Canada, Part 2	3
NATV 1250	Introductory Cree 1	3
NATV 1260	Introductory Cree 2	3
NATV 1270	Introductory Ojibway 1	3
NATV 1280	Introductory Ojibway 2	3
NATV 1290	Introductory Inuktitut	3
NATV 2020	The Métis of Canada	3
NATV 2040	Native Peoples of the Northern Plains	3
NATV 2060	The Native Peoples of the Eastern Woodlands	3
NATV 2070	The Native Peoples of the Subarctic	3
NATV 2080	Inuit Society and Culture	3
NATV 2220	Native Societies and the Political Process	3
NATV 2250	Intermediate Cree	6
NATV 2272	Intermediate Ojibway 1	3
NATV 2274	Intermediate Ojibway 2	3
NATV 2300	Cree Literature	3
NATV 2320	Structure of the Cree Language	3
NATV 2410	Canadian Native Literature	3
NATV 2420	Inuit Literature in Translation	3
NATV 2450	Images of Indians in North American Society	3
NATV 3000	Selected Topics	3
NATV 3240	Native Medicine and Health	3
NATV 3270	The Métis Nation	3
NATV 3280	Aboriginal Peoples and the Canadian Justice System	3
NATV 3300	Native Language Planning and Development	3
NATV 3310	Canadian Law and Aboriginal Peoples	3

NATV 3340	Circumpolar Cultures and Lifestyles	3
NATV 3370	Political Development in the North	3
NATV 3380	Cultural Constructions of Gender in Canadian Aboriginal Societies	3
NATV 4200	First Nations Government	3
NATV 4210	Seminar in Contemporary and Historical Métis Issues	3
NATV 4220	Environment, Economy and Aboriginal People	3
NATV 4230	Traditional Knowledge and Native Studies Research	3
NATV 4240	Arctic Lifestyles	3
NATV 4250	Topics on Aboriginal Identities	3
NATV 4280	Missionaries, Colonialism and Aboriginal Peoples	3
Political Studies		
POLS 1070	Law, Politics and Power in Canada	3
<u>POLS 1502</u>	<u>Introduction to Political Studies</u>	<u>3</u>
<u>POLS 1506</u>	<u>Survey of Political Studies</u>	<u>3</u>
POLS 2070	Introduction to Canadian Government	6
POLS 2071	Introduction au système gouvernemental Canadien (USB)	6
<u>POLS 2073</u>	<u>Introduction à la politique canadienne 1 : État et société (USB)</u>	<u>3</u>
<u>POLS 2075</u>	<u>Introduction à la politique canadienne II : Institutions et politiques publiques (USB)</u>	<u>3</u>
POLS 2561	Questions d'actualité en politique Canadienne (USB)	6
POLS 2571	Initiation à l'administration publique (USB)	6
POLS 3100	Gender and Politics in Canada	3
POLS 3170	The Canadian Charter of Rights and Freedoms	3
POLS 3470	Canadian Public Management	3
POLS 3520	Canadian Foreign and Defence Policy	6
POLS 3670	Canadian Political Parties	3
POLS 3860	Canadian Federalism	3
POLS 3960	Canadian Politics	6
POLS 4070	Advanced Seminar: Canadian Government	3
POLS 4080	Advanced Seminar: Canadian Democracy	3
POLS 4140	Canadian Political Ideas	3
POLS 4150	Indigenous Governance	3
POLS 4180	Provincial Politics in Canada	3
POLS 4190	Manitoba Politics and Government	3
POLS 4660	The State in the Economy	6
POLS 4860	The Canadian Policy Process	6
Religion		
RLGN 2590	Religion and Social Issues	3
RLGN 2591	La religion et les problèmes sociaux (USB)	3
Slavic Studies		
UKRN 2410	Ukrainian Canadian Cultural Experience	3
Sociology		
SOC 2320	Canadian Society and Culture	3
SOC 2321	La société Canadienne et sa culture (USB)	3
SOC 2370	Ethnic Relations	3
SOC 2371	Rapports ethniques (USB)	3
SOC 2531	Sociologie du Manitoba (USB)	6
SOC 2610	Sociology of Criminal Justice and Corrections	3
SOC 2620	The Sociology of Aging	3
SOC 3380	Power, Politics and the Welfare State	3
SOC 3471	Sociologie politique (USB)	3
SOC 3700	Sociology of Law	3
Ukrainian Canadian Heritage Studies		
UCHS 3100	The Ukrainian Arts in Canada	3
School of Art		
FAAH 3260	Canadian Art and Architecture to World War II	3
FAAH 3270	Canadian Art Since World War II	3
FAAH 3430	Inuit Art	3
Clayton H. Riddell Faculty of Environment, Earth, and Resources		
Geography		
GEOG 2570	Geography of Canada (A)	3
GEOG 2900	Geography of Canadian Prairie Landscapes (A)	3
GEOG 3431	Géographie du Canada (USB)	3
GEOG 3481	Particularités de la géographie du Canada (USB)	3

Catholic Studies

Introduction:

CATH 2700 Catholicism and the Paranormal Cr.Hr. 3 +3.0

A critical introduction into the Catholic Church's historical and contemporary reactions to the supernatural with a focus on topics such as apparitions, levitation, ghosts and possession, mystical visions, Eucharistic miracles, bilocation, the occult, stigmata, as well as other unexplained religious phenomena. Students may not hold credit for both CATH 2700 and CATH 2000 when titled "Catholicism and the Paranormal." Prerequisite: [a grade of "C" or better in CATH 1190] or written consent of instructor.

Net change in credit hours: +3.0

Program modification:

Modifications to **Minor (Concentration) in Catholic Studies** are outlined on the next page.

Catholic Studies

- Modification of the "List of Approved Courses in Catholic Studies" [used in the Minor (Concentration)]

Added material

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8.4.2 Catholic Studies

List of Approved Courses in Catholic Studies

Faculty of Arts

Catholic Studies

CATH 1190	Introduction to Catholic Studies	3
CATH 2000	Special Topics in Catholic Studies	3
CATH 2010	Literature and Catholic Culture 1	3
CATH 2020	Literature and Catholic Culture 2	3
CATH 2100	Field Studies in Catholic Culture	6
CATH 2200	Catholicism and Human Sexuality	3
CATH 2300	The Jesuits: Their Legacy and Influence	3
CATH 2400	Mystics, Saints and Sinners: The Quest for Holiness in the Catholic Church	3
CATH 2500	Reshaping the Catholic Landscape in Canada	3
CATH 2600	Pilgrimage and the Localization of Catholic Devotion	3
CATH 2700	<u>Catholicism and the Paranormal</u>	3
CATH 3900	Catholic Social Teaching	3

History

HIST 2180	The History of Catholicism to 1540 (G)	3
HIST 2990	The History of Catholicism since 1540 (G)	3
HIST 2991	Histoire de l'Église catholique depuis 1540 (G)	3

Philosophy

PHIL 2780	Thomas Aquinas	3
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Religion

RLGN 2840	The Second Vatican Council	3
RLGN 2850	Contemporary Issues in Roman Catholicism	3
RLGN 3870	The Thought of Bernard Lonergan	3

School of Art

Art History

FAAH 2060	Medieval to Early Renaissance Art and Architecture	3
FAAH 2070	Renaissance to Baroque Art and Architecture	3
FAAH 3130	Topics in Medieval Art and Architecture	3
FAAH 3140	Topics in Renaissance and Baroque Art and Architecture	3
FAAH 3280	Early Byzantine Art and Architecture	3

Central and East European Studies

Modifications to the following programs are outlined on the next 2 pages:

- **Bachelor of Arts (General Major) in Central and East European Studies**
- **Bachelor of Arts (Single Advanced Major) in Central and East European Studies**
- **Bachelor of Arts (Double Advanced Major) in Central and East European Studies**
- **Bachelor of Arts (Double Honours) in Central and East European Studies**
- **Minor (Concentration) in Central and East European Studies**

Central and East European Studies

- Modification of the "List of Approved Courses in Central and East European Studies" [used in the General Major, Single Advanced Major, Double Advanced Major, Minor (Concentration), Double Honours]

Added material

~~Deleted material~~

8.5.2 Central and East European Studies

List of Approved Courses in Central and East European Studies

Faculty of Arts

Anthropology

ANTH 2060 European Archaeology 3

Economics

ECON 2510 The Economy of Ukraine 3

German and Slavic Studies

GRMN 1300 Masterpieces of German Literature in English Translation (C) 3

GRMN 1310 Love in German Culture in English Translation (C) 3

GRMN 2120 Introduction to German Culture from 1918 to the Present (C) 3

GRMN 2130 Introduction to German Culture from the Beginnings to 1918 (C) 3

GRMN 2510 German Fairy Tales from the Brothers Grimm to Hollywood (C) 3

GRMN 3260 Representations of the Holocaust (B) 3

GRMN 3262 Representations of the Holocaust in English Translation (C) 3

GRMN 3270 Studies in Contemporary German Cinema (C) 3

GRMN 3280 Sex, Gender and Cultural Politics in the German-Speaking World (B) 3

GRMN 3282 Sex, Gender and Cultural Politics in the German-Speaking World in English Translation (C) 3

GRMN 3290 History in Literature in German-Speaking Countries (B) 3

GRMN 3390 German Representations of War (C) 3

GRMN 3392 German Representations of War (B) 3

GRMN 3530 Special Topics in Comparative German and Slavic Studies (C) 3

POL 1900 Love, Heroes and Patriotism in Contemporary Poland 3

POL 2600 Polish Culture until 1918 3

POL 2610 Polish Culture 1918 to the Present 3

RUSN 1400 Masterpieces of Russian Literature in Translation 3

RUSN 1410 Love in Russian Culture in English Translation 3

RUSN 2280 Russian Culture until 1900 3

RUSN 2290 Russian Culture from 1900 to the Present 3

RUSN 2310 Exploring Russia through Film 3

RUSN 2410 Russian Literature after Stalin 3

RUSN 2600 Special Topics in Russian Culture in English Translation 3

RUSN 2740 Literature and Revolution 3

RUSN 3770 Tolstoy 3

RUSN 3780 Dostoevsky 3

~~SLAV 2260 Russia, Ukraine and Poland Cultures in Dialogue 1~~ 3

~~SLAV 2270 Russia, Ukraine and Poland Cultures in Dialogue 2~~ 3

SLAV 3530 Special Topics in Comparative German and Slavic Studies 3

SLAV 3920 Gogol 3

UKRN 2200 Ukrainian Myth, Rites and Rituals 3

UKRN 2600 Special Topics in Ukrainian Studies 3

UKRN 2770 Ukrainian Culture until 1900 3

UKRN 2780 Ukrainian Culture from 1900 to the Present 3

UKRN 2800 Literature and Revolution in Ukraine 3

UKRN 2820 Holodomor and Holocaust in Ukrainian Literature and Culture 3

UKRN 3100 Ukrainian Story Writing Through the Ages 3

UKRN 3300 Literature of Independent Ukraine 3

History

HIST 2240 History of Antisemitism and the Holocaust (E) 6

HIST 2490 History of Russia 6

HIST 2600 Introduction to Ukraine 3

HIST 2610 Making of Modern Ukraine 3

HIST 2660 History of the Soviet Union (E) 3

HIST 2661 Histoire de l'Union soviétique (E) 3

HIST 2840 A History of Russia to 1917 3

HIST 2841	Histoire de la Russie jusqu'en 1917 (E)	3
HIST 3062	German and German-Jewish History, 1618 to the Present (E)	6
HIST 3064	German and German-Jewish History, 1618-1900 (E)	3
HIST 3066	German and German-Jewish History, 1900 to the Present (E)	3
HIST 4300	Problems in Modern Russian and Soviet History	6
Judaic Studies		
YDSH 2320	Yiddish Literature and Language	6
Political Studies		
POLS 3720	Politics, Government and Society in Ukraine	3
POLS 3810	Introduction to Marxism	3
Religion		
RLGN 1350	The History of Eastern Christianity	6
RLGN 2530	Eastern Christianity in the Contemporary World	3
RLGN 3280	Hasidism	3
School of Art		
FAAH 3160	Topics in 20th Century Art (only when topic focuses on Central and Eastern Europe)	3
FAAH 3280	Early Byzantine Art and Architecture	3
FAAH 3290	Later Byzantine Art and Architecture	3
FAAH 4070	Seminar in Art History 1 (when its focus is on Central and Eastern Europe)	3

Students are advised to consult the respective departmental *Calendar* entries for specific information on prerequisites and restrictions.

Economics

Modifications:

ECON 2550 Political Economy 2: Economic Growth and Fluctuations in a Global Economic Environment Cr. Hrs. 3 0.0

A study of the theories, institutions, policies and relations of power in national and global economic society with reference to economic growth, international trade and finance, economic fluctuations, inflation and unemployment. Particular attention will be given to the role of the state in the regulations of macroeconomic activity. Prerequisite: a grade of "C" or better in six credit hours of 1000 level Economics.

ECON 4020 Topics in Advanced Macroeconomic Theory Cr. Hrs. 3 0.0

An intensive review of selected topics in advanced macroeconomic theory. Prerequisite: a grade of "B" or better in ECON 3020 or ECON 2481 or the former ECON 2480 or the former ECON 3800. The course content may vary. Students can earn multiple credits for this course only when the topic subtitle is different.

Net change in credit hours: 0.0

Program modifications:

Modifications to the following programs are outlined on the next 9 pages:

- **Bachelor of Arts (General Major) in Economics**
- **Bachelor of Arts (Single Advanced Major) in Economics**
 - **Economics and Econometrics Stream**
 - **Economics and Society Stream**
- **Bachelor of Arts (Single Honours) in Economics**
 - **Economics and Econometrics Stream**
 - **Economics and Society Stream**
- **Bachelor of Arts (Double Honours) in Economics**
- **Program Notes**

Economics

- Modification of the General Major, Single Advanced Major, Single Honours, Double Honours, and Program Notes

8.9.1 Program Information

General Major Program

For entry to the General ~~or Advanced~~ Major, the prerequisite is a grade of "C" or better in both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220. For students who have taken additional courses toward the Major, then a minimum cumulative GPA of 2.00 is required on all courses including the higher grade of repeated courses and excluding failed courses.

A minimum cumulative GPA of 2.00 in all courses that comprise the Major is required to graduate including the higher grade of repeated courses and excluding failed courses.

Advanced Major Program

For entry to the Advanced Major, the prerequisite is a grade of "C" or better in both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220. For students who have taken additional courses toward the Major, then a minimum cumulative GPA of 2.00 is required on all courses including the higher grade of repeated courses and excluding failed courses.

When entering the four-year Advanced Major program in Economics, students are required to select from one of two available streams: Economics and Econometrics stream or Economics and Society stream. For information on the courses required in the different streams, please review the stream-specific program charts found below in section 8.9.2. Students who decide to switch streams are eligible to do so and are responsible for ensuring that they will meet the specific requirements of the stream they select.

A minimum cumulative GPA of 2.00 in all courses that comprise the Major is required to graduate including the higher grade of repeated courses and excluding failed courses.

Minor (Concentration) Program

For entry to the Minor (Concentration), the prerequisite is a grade of "C" or better in both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220.

Honours Program

For entry to the Honours program, see Section 3: Basic Faculty Regulations for the B.A. General, Advanced and Honours Degree Programs.

When entering the four-year Single Honours program in Economics, students are required to select from one of two available streams: Economics and Econometrics stream or Economics and Society stream. For information on the courses required in the different streams, please review the stream-specific program charts found below in section 8.9.2. Students who decide to switch streams are eligible to do so and are responsible for ensuring that they will meet the specific requirements of the stream they select.

Honours students are advised to select their ancillary options from the following disciplines: Geography, History, Mathematics, Political Studies, Statistics, Sociology, and Philosophy. However, other fields may be selected to satisfy study or career interests.

Preparation for Graduate Studies

Students contemplating graduate work are advised to complete the Honours program. Students who pursue the Economics and Econometrics stream where they will obtain good background knowledge of mathematics, statistics, and econometrics, as well as core theory courses in economics. Students who pursue the Economics and Society stream are advised to confirm what undergraduate econometrics or statistics courses may be necessary for

~~admission to a future Economics graduate program at this or another institution, and plan their optional courses accordingly. have not completed the Honours program must, at minimum, seek to obtain good background in both mathematics and statistics by taking the 3000-level Mathematical Economics and 4000-level Micro, Macro and Econometrics courses required in the Honours program.~~

~~Other~~

~~Combinations of courses for the Major, Minor and Honours programs, other than those listed below, may be permitted by written consent of the department head. Similarly, Honours courses may be taken by students in the General Major or Advanced Major programs with the written consent of the instructor and the department head; an average grade of "B" in all Economics courses is normally required before such consent may be given.~~

~~For information regarding the Canadian Studies program, see Section 8.3; for the Central and East European Studies program, see Section 8.5.~~

CURRENT GENERAL MAJOR PROGRAM: (MODIFIED BELOW)

GENERAL MAJOR^{1,2} TOTAL: 30 CREDIT HOURS			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220	<ul style="list-style-type: none"> ECON 2010, ECON 2020, ECON 2040 An additional 15 credit hours in Economics numbered at the 2000 level or higher, of which at least 6 hours must be from courses numbered at the 3000 level 		

REVISED GENERAL MAJOR PROGRAM:

GENERAL MAJOR¹ TOTAL: 30 CREDIT HOURS			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220	<ul style="list-style-type: none"> ECON 2010, ECON 2020, ECON 2040 3 credit hours from ECON 2350, ECON 2362, ECON 2540, ECON 2550, ECON 2630 (6), ECON 3392, ECON 3692, ECON 3810, ECON 4050 6 credit hours in Economics numbered at the 2000 level or higher 6 credit hours in Economics numbered at the 3000 level or higher 		

CURRENT SINGLE ADVANCED MAJOR PROGRAM: (MODIFIED BELOW)

SINGLE ADVANCED MAJOR TOTAL: 48 CREDIT HOURS			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
<ul style="list-style-type: none"> Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220 MATH 1500 or MATH 1520 	ECON 2010, ECON 2020, ECON 2030, ECON 2040	ECON 3010, ECON 3020, ECON 3040	ECON 4822
An additional 12 credit hours in Economics numbered at the 2000 level or higher			

REVISED SINGLE ADVANCED MAJOR PROGRAM STREAMS:

SINGLE ADVANCED MAJOR - ECONOMICS AND ECONOMETRICS STREAM TOTAL: 48 CREDIT HOURS			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
<ul style="list-style-type: none"> Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220 MATH 1500 or MATH 1520 	ECON 2010, ECON 2020, ECON 2030, ECON 2040	ECON 3010, ECON 3020, ECON 3040	ECON 4822 (6)
<ul style="list-style-type: none"> 3 credit hours from ECON 2350, ECON 2362, ECON 2540, ECON 2550, ECON 3392, ECON 3692, ECON 3810, ECON 4050, ECON 4052 An additional 9 credit hours in Economics numbered at the 2000 level or higher 			
SINGLE ADVANCED MAJOR - ECONOMICS AND SOCIETY STREAM¹ TOTAL: 48 CREDIT HOURS			
<ul style="list-style-type: none"> Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220 	ECON 2010, ECON 2020, ECON 2040	ECON 3040, ECON 3810	ECON 4822 (6) ⁶ or 6 credit hours in Economics at the 4000 level
<ul style="list-style-type: none"> 3 credit hours from ECON 2350, ECON 2362, ECON 2540, ECON 2550 6 credit hours from ECON 3374, ECON 3376, ECON 3392, ECON 3394, ECON 3690, ECON 3692, ECON 3710, ECON 3720, ECON 4050, ECON 4052 An additional 12 credit hours in Economics numbered at the 2000 level or higher 			

CURRENT MINOR (CONCENTRATION): (NO REVISIONS)

MINOR (CONCENTRATION) TOTAL: 18 CREDIT HOURS			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220		An additional 12 credit hours in Economics numbered at the 2000 level or higher	

CURRENT SINGLE HONOURS PROGRAM: (MODIFIED BELOW)

SINGLE HONOURS ^{4, 5, 6, 7}			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
<ul style="list-style-type: none"> Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220 MATH 1500 or MATH 1520 	ECON 2010, ECON 2020, ECON 2030, ECON 2040	ECON 3010, ECON 3020, ECON 3030, ECON 3040, ECON 3810	ECON 4010, ECON 4020, ECON 4040, ECON 4050, ECON 4052
<ul style="list-style-type: none"> A further 24 credit hours in Economics, of which no more than 6 additional hours can be from courses numbered at the 2000 level and at least 6 additional hours must be from courses numbered at the 4000 level 24 credit hours in ancillary options⁵ 			

REVISED SINGLE HONOURS PROGRAM STREAMS:

SINGLE HONOURS – ECONOMICS AND ECONOMETRICS STREAM ^{3,4}			
TOTAL: 72 CREDIT HOURS			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
<ul style="list-style-type: none"> Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220 MATH 1500 or MATH 1520 	ECON 2010, ECON 2020, ECON 2030, ECON 2040	ECON 3010, ECON 3020, ECON 3030, ECON 3040, ECON 3810	ECON 4010, ECON 4020, ECON 4040, ECON 4050
<ul style="list-style-type: none"> 6 credit hours in Economics numbered at the 2000 level or higher 6 credit hours in Economics numbered at the 4000 level A further 12 credit hours in Economics numbered at the 3000 level or higher 24 credit hours in ancillary options⁴ 			
SINGLE HONOURS – ECONOMICS AND SOCIETY STREAM ^{3,4}			
TOTAL: 72 CREDIT HOURS			
<ul style="list-style-type: none"> Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220 MATH 1500 or MATH 1520 	ECON 2010, ECON 2020, ECON 2030, ECON 2040	ECON 3010, ECON 3020, ECON 3040, ECON 3810	ECON 4040, ECON 4050
<ul style="list-style-type: none"> 9 credit hours from ECON 2310 (6), ECON 2630 (6), ECON 3374, ECON 3376, ECON 3392, ECON 3394, ECON 3690, ECON 3692, ECON 3710, ECON 3720 6 credit hours in Economics numbered at the 2000 level or higher 6 credit hours in Economics numbered at the 3000 level or higher 12 credit hours in Economics numbered at the 4000 level 24 credit hours in ancillary options⁴ 			

CURRENT DOUBLE HONOURS PROGRAM: (MODIFIED BELOW)

DOUBLE HONOURS ^{3, 4, 5, 6, 7}	
<ul style="list-style-type: none">• Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220• MATH 1500 or MATH 1520	<ul style="list-style-type: none">• 36 credit hours in Economics courses, to include the following:<ul style="list-style-type: none">- ECON 2010, ECON 2020, ECON 2030, ECON 2040, ECON 3010, ECON 3020, ECON 3040- A further 15 credit hours in Economics, of which no more than 6 additional hours can be from courses numbered at the 2000 level and at least 6 additional hours must be from courses numbered at the 4000 level• At least 36 credit hours in other Honours field• At least 6 credit hours in ancillary options⁵• At least 12 credit hours in free options⁶

REVISED DOUBLE HONOURS PROGRAM:

DOUBLE HONOURS ^{2, 3, 4, 5}	
<ul style="list-style-type: none">• Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220• MATH 1500 or MATH 1520	<ul style="list-style-type: none">• 36 credit hours in Economics courses, to include the following:<ul style="list-style-type: none">- ECON 2010, ECON 2020, ECON 2030, ECON 2040, ECON 3010, ECON 3020, ECON 3040- A further 9 credit hours in Economics numbered at the 2000 level or higher- A further 6 credit hours in Economics numbered at the 4000 level• At least 36 credit hours in other Honours field• At least 6 credit hours in ancillary options⁴• At least 12 credit hours in free options⁵

PROGRAM NOTES:

NOTES:

¹⁺~~In cases where students have been granted three hours of unallocated transfer credit in Economics at the 1000 level, and have achieved additional credits in Economics from The University of Manitoba, and wish to declare Economics as a General Major without having full credit in the former ECON 1200, then the Years 2-3 requirement for a Major in Economics will be ECON 2010, ECON 2020 and ECON 2040, plus an additional 15 credit hours in Economics of which at least 6 hours must be from courses numbered at the 3000 level.~~

^{1,2}Students in the General Major may choose to apply for admission to the Single Advanced Major, Single Honours or Double Honours programs in Economics. Such students are recommended to take MATH 1500 or MATH 1520 as an elective as it ~~is~~ may be a prerequisite to upper level Economics courses in those programs. Students in the Single Advanced Major Economics and Society Stream are strongly encouraged to complete either MATH 1500 or MATH 1520 to satisfy their University Math (M) requirement as it is good preparation for many other optional upper level Economics courses and is required for students who may switch to the Economics and Econometrics Stream or who wish to proceed to either of the Honours Streams.

^{2,3}Students contemplating Double Honours in Economics and Mathematics, or Economics and Statistics are referred to the Economics-Mathematics Joint Honours Program or the Economics-Statistics Joint Honours Program.

^{3,4}Students contemplating graduate work in Economics should refer to the notes above under "Preparation for Graduate Studies".

^{4,5}Ancillary options are to be chosen from courses that are acceptable for credit in the Faculty of Arts (excluding Economics courses).

^{5,6}Free options are to be chosen from courses that are acceptable for credit in the Faculty of Arts (including Economics courses).

⁶Students electing to take ECON 4822 are advised that ECON 3010 (C) is prerequisite to this course.

⁷~~Honours courses: ECON 3030, ECON 3810 and all 4000 level courses.~~

August 25, 2017

TO: Faculty of Arts Executive Committee

FROM: Greg T. Smith, Associate Dean of Arts, Chair Faculty of Arts CPAC

SUBJECT: Transition Plan for Proposed Economics Undergraduate Program Streams

Effective 201890 all new undergraduate students entering a program in the Department of Economics will need to follow the new program requirements for the General, Single Advanced or Single Honours degree. In the case of the Single Advanced program or the Single Honours program, students will be required to select their proposed stream (Economics and Econometrics stream, or Economics and Society stream) upon entry to these programs.

Students already registered in any Economics program prior to 201890 who wish to continue in the current single track programs will be permitted and able to do so.

Students in the current programs who wish to transit to either of the new streams beginning 201890 will be able to do so by declaring their intended program stream.

Since the new programs do not require any new course additions or deletions, we anticipate no problems for students in completing whichever program of study they select. We also believe that from 201890 forward, students who wish to switch from one stream to another will be able to do so with limited need for remedial coursework.

Modifications to the **Bachelor of Arts (Joint Honours) in Economics and Mathematics** program are outlined on the next page.

Economics

- Modification of the Economics-Mathematics Joint Honours and Program Notes

Added material
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8.9.4 Economics-Mathematics Joint Honours Program

YEAR 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS⁷ TOTAL: 120 CREDIT HOURS			
<ul style="list-style-type: none"> Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220 <p>MATH 1220¹, MATH 1230¹, MATH 1232¹, MATH 1240¹</p> <ul style="list-style-type: none"> STAT 1000 <u>STAT 1150^{1,2}</u> COMP 1010² 6 credit hours of electives, which should include the required "Written English" course 	<ul style="list-style-type: none"> ECON 2010, ECON 2020 MATH 2020, MATH 2080, MATH 2090, MATH 2150, MATH 2180 9 credit hours of approved electives 	<ul style="list-style-type: none"> ECON 3010, ECON 3020, ECON 3040² MATH 2030, MATH 2160, MATH 3320, MATH 3340, MATH 3440, MATH 3470, MATH 3472 24 credit hours of approved Economics courses³ 3 credit hours from MATH 2140, MATH 3420, MATH 3460, MATH 4370, or any Mathematics course at the 4000 level 3 credit hours of Mathematics courses at the 3000 or 4000 level 	
30 HOURS	30 HOURS	60 HOURS	
NOTES: <p>¹ Students in this program must achieve a minimum grade of "B" in MATH 1230, MATH 1232, MATH 1220, and MATH 1240. Students are strongly advised to take MATH 1220, MATH 1230, and MATH 1232. The following substitutions are allowed (but not advised), provided the grades indicated in brackets are achieved: MATH 1300 (A) in place of MATH 1220, MATH 1500 (A) in place of MATH 1230, MATH 1700 (A) in place of MATH 1232, MATH 1690 (B) in place of MATH 1230 and MATH 1232. <u>With permission from the department, students may be able to substitute STAT 1000 and STAT 2000 in place of STAT 1150.</u></p> <p>² Some courses may be taken in a different year than indicated; STAT 1000 <u>STAT 1150</u>, COMP 1010, ECON 3040 may be taken in Year 2. The normal prerequisite for ECON 3040 is ECON 2040, which will be waived for students in this program who have completed Year 1.</p> <p>³ Of the 24 credit hours in electives in Economics in Years 3 and 4, no more than 6 credit hours may be at the 2000 level or below and at least 6 credit hours must be at the 4000 level. Students are encouraged to take ECON 4010, ECON 4020 and ECON 4040.</p> <p>⁴ Economics Honours courses: ECON 3030, ECON 3810 and all 4000 level courses.</p>			

Modifications to the **Bachelor of Arts (Joint Honours) in Economics and Statistics** program are outlined on the next page:

Economics

- Modification of the Economics-Statistics Joint Honours and Program Notes

Added material
~~Deleted material~~

8.9.6 Economics-Statistics Joint Honours Program

YEAR 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS³ TOTAL: 120 CREDIT HOURS			
<ul style="list-style-type: none"> • Both ECON 1010 and ECON 1020, or both ECON 1210 and ECON 1220 • MATH 1220¹, MATH 1230¹, MATH 1232¹, MATH 1240¹ • STAT 1000 <u>STAT 1150¹</u> • COMP 1010 • Plus 6 credit hours of electives which should include the required "Written English" course 	<ul style="list-style-type: none"> • ECON 2010, ECON 2020 • STAT 2000, <u>STAT 2150</u>, STAT 2400 • MATH 2030, MATH 2080, MATH 2140 • <u>MATH 2150 or MATH 2720</u> • Plus 6 credit hours of approved Economics electives² 	<ul style="list-style-type: none"> • ECON 3010, ECON 3020 • STAT 3400, STAT 3470, STAT 3480, STAT 3490, STAT 3800 • MATH 2160, MATH 3360 • Plus 3 credit hours of approved Economics electives² 	<ul style="list-style-type: none"> • ECON 4040, ECON 4042 • STAT 4100, STAT 4200, STAT 4520, STAT 4530 • Plus 12 credit hours of approved Economics electives²
30 HOURS	30 HOURS	30 HOURS	30 HOURS
NOTES: ¹ The following substitutions are allowed: MATH 1300 in place of MATH 1220, MATH 1500 in place of MATH 1230, MATH 1700 in place of MATH 1232, <u>STAT 1000 (C) and STAT 2000 (B) in place of STAT 1150</u> . Students must attain specific grade requirements in order to meet the upper level course prerequisites. Consult course descriptions for further information. ² Of the 21 credit hours of electives in Economics in Years 2, 3 and 4, no more than 6 credit hours may be at the 2000 level or below; ECON 2030 and ECON 3040 are recommended in Year 2 or 3. The normal prerequisite for ECON 3040 is ECON 2040, which will be waived for students in this program who have completed Year 1. ³ Economics Honours courses: ECON 3030, ECON 3810 and all 4000 level courses.			

English, Film, and Theatre

Program modifications:

Modifications to the following programs are outlined on the next page:

- **Bachelor of Arts (General Major) in Theatre**
- **Bachelor of Arts (Single Advanced Major) in Theatre**
- **Minor (Concentration) in Theatre**
- Program Notes

English, Film, and Theatre - Theatre

- **Modification to General Major, Single Advanced Major, Minor (Concentration) and Program Notes**

Added material

Deleted material

8.10.10 Theatre

YEAR 1	YEAR 2	YEAR 3	YEAR 4
GENERAL MAJOR¹ TOTAL: 30 CREDIT HOURS			
THTR 1220	<ul style="list-style-type: none">• THTR 2160; THTR 2470 plus 6 credit hours from THTR 2150, THTR 2170, THTR 2180, THTR 2490• 6 credit hours from THTR 2480, THTR 2600, THTR 2610, THTR 3460, THTR 3470, THTR 3610, THTR 3620, THTR 3630, THTR 3640• 3 additional credit hours from Theatre courses specified above and/or from List A		
SINGLE ADVANCED MAJOR^{1, 2} TOTAL: 54 CREDIT HOURS			
THTR 1220; ENGL 1200 or ENGL 1300 or both ENGL 1400 (or the former ENGL 1310) and ENGL 1340	<ul style="list-style-type: none">• THTR 2160; THTR 2470 and ENGL 2960 plus 6 credit hours from THTR 2150, THTR 2170, THTR 2180, THTR 2490• 12 credit hours from THTR 2480, THTR 2600, THTR 2610, THTR 3460, THTR 3470, THTR 3610, THTR 3620, THTR 3630, THTR 3640• 12-15 additional credit hours from Theatre courses specified above and/or from List A		
MINOR (CONCENTRATION)¹ TOTAL: 18 CREDIT HOURS			
THTR 1220	12 credit hours from THTR 2150, THTR 2160, THTR 2170, THTR 2180, THTR 2470, THTR 2480, THTR 2490, THTR 2600, THTR 2610 , THTR 3460, THTR 3470, THTR 3610, THTR 3620, THTR 3630, THTR 3640		
NOTES:			
¹ The content of topics courses (THTR 2600, THTR 2610 , THTR 3470, THTR 3610, THTR 3620) will vary from term to term and may be taken more than once for credit.			
² It is recommended that students complete a three credit hour theory course, specifically THTR 3460.			
³ It is strongly recommended that students enrolled in a Double Advanced Major in Theatre and Film Studies complete THTR 2160.			

French, Spanish and Italian

Introductions:

ITLN 2200 Let's Get Graphic: Italian through Graphic Novels Cr.Hrs. 3 +3.0

In this language course you will learn the four basic skills (speaking, listening, reading and writing) in the context of popular fumetti (graphic novels) in Italian culture. By the end of the course you will be able to describe people, events and situations, in the present, past and future, and you will have acquired the necessary vocabulary to communicate about everyday situations. Prerequisite: [a grade of "C" or better in ITLN 1080] or written consent of department head.

ITLN 3780 A Voyage through the Italian Mind: An Italian Culture Course Cr.Hrs. 3 +3.0

This course aims to portray what it means to be Italian from an Italian's point of view. You will discover the exciting richness of the people, trends and passions, food, and pop culture of Italy, while also exploring the extraordinary contribution that Italy has made to the world. The course will be taught in English and has no prerequisite.

Net change in credit hours: +6.0

Program modifications:

Modifications to the following programs are outlined on the next 2 pages:

- **Bachelor of Arts (General Major) in Italian:**
- **Bachelor of Arts (Single Advanced Major) in Italian**

Department of French, Spanish and Italian – Italian Studies

- Modification of General Major and Single Advanced Major
- Modification of List A [used in the General Major and Single Advanced Major]

Added material
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8.11.11 Italian Studies

Other

All Italian courses except ITLN 1080 and ITLN 3780 are taught in Italian.

YEAR 1	YEAR 2	YEAR 3	YEAR 4
GENERAL MAJOR TOTAL: 30 CREDIT HOURS			
ITLN 1080	ITLN 2080, or <u>6 credit hours selected from</u> ITLN 2090, <u>and</u> ITLN 2100, <u>ITLN 2200</u>	6 credit hours selected from ITLN 3050, ITLN 3060, ITLN 3760, ITLN 3770, <u>ITLN 3780</u>	
	Plus at least 12 credit hours of courses selected from List A		
SINGLE ADVANCED MAJOR TOTAL: 48 CREDIT HOURS			
ITLN 1080	ITLN 2080, or <u>6 credit hours selected from</u> ITLN 2090, <u>and</u> ITLN 2100, <u>ITLN 2200</u>	6 credit hours selected from ITLN 3050, ITLN 3060, ITLN 3760, ITLN 3770, <u>ITLN 3780</u>	
	Plus at least 30 credit hours of courses selected from List A		

List A

Faculty of Arts

Italian

<u>ITLN 2200</u>	<u>Let's Get Graphic: Italian through Graphic Novels</u>	<u>3</u>
ITLN 3050	Italian Through Literature	3
ITLN 3060	Italian Through Film	3
ITLN 3760	Italian Translation Workshop	3
ITLN 3770	Modern Italian Usage	3
<u>ITLN 3780</u>	<u>A Voyage through the Italian Mind: An Italian Culture Course</u>	<u>3</u>

Classics

CLAS 1280	Introduction to Ancient Roman Culture	3
CLAS 2160	Roman History: The Roman Republic, 753-30 BC	3
CLAS 2170	Roman History: The Roman Empire, 30 BC-AD 337	3
CLAS 2622	Latin Literature in Translation	3
CLAS 2680	Roman Art and Archaeology	3
LATN 1080	Introduction to the Reading of Latin 1	3
LATN 1090	Introduction to the Reading of Latin 2	3
LATN 2700	Intermediate Readings in Latin	3
LATN 2720	Selected Readings in Republican and Augustan Poetry	3
LATN 2740	Selected Readings in Republican and Augustan Prose	3
LATN 2780	History of the Latin Language	3
LATN 2800	Readings in Medieval or Renaissance Latin	3
LATN 3740	Roman Comedy	3
LATN 3760	Orations of Cicero	3
LATN 3780	Roman Satire	3
LATN 3800	Lyric and Elegiac Poetry of the Augustan Age	3
LATN 3820	Virgil's Aeneid	3
LATN 3840	Virgil's Eclogues and Georgics	3
LATN 3860	The Roman Historians	3
LATN 3880	Poetry of the Silver Age	3

History		
HIST 2350	Europe 1789-1870 (E)	3
HIST 2360	Europe 1870 to the Present (E)	3
HIST 2370	History of Europe since the French Revolution (E)	6
HIST 2900	Topics in Social History (G) (when taught as "Topic: Italy")	6
HIST 3136	History of Medieval Italy, 568-1300 (D)	3
HIST 3138	History of Medieval Italy, 1300-1500 (D)	3
HIST 3140	Medieval Italy (D)	6
HIST 3680	Europe, 1870-1945 (E)	6
HIST 3682	Europe 1870-1918 (E)	3
HIST 3684	Europe 1918-1945 (E)	3
School of Art		
FAAH 2060	Medieval to Early Renaissance Art and Architecture	3
FAAH 2070	Renaissance to Baroque Art and Architecture	3
FAAH 3130	Topics in Medieval Art and Architecture	3
FAAH 3140	Topics in Renaissance and Baroque Art and Architecture	3
Marcel A. Desautels Faculty of Music		
MUSC 3100	Opera Repertoire	3

German and Slavic Studies

Deletions:

SLAV 2260 Russia, Ukraine and Poland – Cultures in Dialogue 1 Cr.Hrs. 3	-3.0
SLAV 2270 Russia, Ukraine and Poland – Cultures in Dialogue 2 Cr.Hrs. 3	-3.0

Introduction:

UKRN 2600 Special Topics in Ukrainian Studies Cr. Hrs. 3 +3.0

Language of Instruction: English. Study of selected topics in Ukrainian literature or culture. The course content may vary. Students can earn multiple credits for the course only when the topic subtitle is different.

Net change in credit hours: -3.0

Program modifications:

Modifications to the **Minor (Concentration) in Polish** are outline on the next page.

German and Slavic Studies - Polish

- Modification of the Minor (Concentration)

Added material
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8.12.12 Polish

YEAR 1	YEAR 2	YEAR 3	YEAR 4
POLISH MINOR (CONCENTRATION) TOTAL: 18 CREDIT HOURS			
6 credit hours in Polish (POL) courses	12 credit hours in Polish (POL) courses, SLAV 2260, or SLAV 2270		

Global Political Economy

Program modification:

Modifications to the **Bachelor of Arts (Single Advanced Major) in Global Political Economy** the next page.

Global Political Economy

- Modification of "List A" [used in the Single Advanced Major]

Added material

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8.13.2 Global Political Economy

List A

Faculty of Arts

Anthropology		
ANTH 2530	Anthropology of Political Systems	3
ANTH 3750	Anthropological Perspectives on Globalization and the World-System	3
Economics		
ECON 2630	An Introduction to the World's Economies	6
History		
HIST 1370	An Introduction to Modern World History: 1500-1800 (M)	3
HIST 1380	An Introduction to Modern World History: 1800 - Present (M)	3
HIST 1500	An Introduction to Modern World History: 1500 - Present (M)	6
HIST 2670	History of Capitalism (M)	3
HIST 2680	A History of Socialism from the French Revolution to the Present (M)	3
HIST 2730	Modern World History, 1914-1945: The 30 Years' Crisis (G,M)	3
HIST 2732	Modern World History, 1945-1992: The Age of Three Worlds (G,M)	3
HIST 2734	Modern World History, 1980-Present: New World Order? (G,M)	3
HIST 3580	Topics in Recent World History—1 (M)	3
	Acceptable for credit only when the topic is "Global Economic Crises in World History, 1929-Present"	
Political Studies		
POLS 2040	Introduction to International Relations	6
POLS 3250	International Political Economy	3
POLS 3810	Introduction to Marxism	3
Sociology		
SOC 2240	Sociology of Globalization	3
SOC 3380	Power, Politics and the Welfare State	3
SOC 3838	Ecology and Society	3
SOC 3840	Community and Social Reconstruction	3
SOC 3890	Power and Inequality in Comparative Perspective	3

History

Deletion:

HIST 3590 Topics in Recent World History 2 (M) Cr.Hrs. 3 -3.0

Modifications:

HIST 3054 Canada and the United States (C) Cr. Hrs. 3 0.0

This course will undertake a detailed and comprehensive study of Canada's relationship with its neighbour from the eighteenth century to the present. Students may not hold credit for both HIST 3054 and the former HIST 3220. Prerequisite: [a grade of "C" or better in six credit hours of history] or written consent of department head.

HIST 3580 Topics in Recent World History (M) Cr. Hrs. 3 0.0

An in-depth treatment of selected topics in world history since 1945. The content of the course will vary from year to year, and a precise description is available in advance from the History department office. Prerequisite: [a grade of "C" or better in six credit hours of history] or written consent of department head. The course content may vary. Students can earn multiple credits for this course only when the topic subtitle is different.

Net change in credit hours: -3.0

Latin American Studies

Program modification:

Modifications to the **Minor (Concentration) in Latin American Studies** are set out on the next page.

Latin American Studies

- Modification of the Minor (Concentration)

Added material

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8.19.1 Program Information

A Minor (Concentration) in Latin American Studies consists of at least 18 credit hours from a **minimum of two different departments chosen from the following list.**

Faculty of Arts

Anthropology

ANTH 2690 Peoples and Cultures of Contemporary Latin America 3

French, Spanish and Italian

SPAN 2200 Spanish American Culture and Civilization 3

SPAN 2210 Voices and Images of Latin America 3

~~SPAN 2540 Spanish American Literature 2~~ 3

SPAN 2570 Special Studies (Acceptable for credit only when course content is on Latin American studies)¹ 3

SPAN 3080 Contemporary Latin American Novel 3

SPAN 3270 Special Studies (Acceptable for credit only when course content is on Latin American studies)¹ 3

SPAN 3300 Cinema and Literature 3

SPAN 3320 Testimony and Human Rights in Latin America 3

SPAN 3780 Short Fiction in Spanish 3

SPAN 3790 Latin American Cinema and Society 3

History

HIST 2140 Colonial Latin America (A) 3

HIST 2150 Independent Latin America (A) 3

HIST 2900 Topics in Social History (G) (Acceptable for credit only when course content is on Latin American studies)¹ 6

HIST 3020 South America Since 1945 (A) 3

HIST 3040 Mexico, Central America, and Cuba Since 1945 (A) 3

HIST 3110 Topics in History 1 (G) (Acceptable for credit only when course content is on Latin American studies)¹ 3

HIST 3740 Topics in Latin American History (A) 3

HIST 3750 Indigenous Peoples in Modern Latin America (A) 3

HIST 4000 Topics in History (G) (Acceptable for credit only when course content is on Latin American studies)¹ 3

HIST 4150 The Social History of the Latin American State (A) 6

HIST 4870 Contemporary Latin America (A) 6

NOTE:

¹Written consent of program coordinator required to use course in the Minor (Concentration).

For entry to the Minor (Concentration) in Latin American Studies, the prerequisite is a grade of "C" or better in six credit hours from the approved list.

For entry, continuation and graduation requirements for the General Degree, Advanced Degree and Honours Degree, see Section 3: Basic Faculty Regulations for the B.A. General, Advanced and Honours Degree Programs.

For course descriptions, see departmental listings.

Philosophy

Deletions:

PHIL 2180 Special Topics 2 Cr.Hrs. 3	-3.0
PHIL 4470 Contemporary Issues 2 Cr.Hrs. 3	-3.0
PHIL 4620 Directed Reading in Philosophy 2 Cr.Hrs. 3	-3.0

Modifications:

PHIL 2170 Special Topics Cr. Hrs. 3	0.0
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Topics will vary. Prerequisite: [a grade of "C" or better in three credit hours of philosophy] or [successful completion of 30 hours of university credit]. The course content may vary. Students can earn multiple credits for this course only when the topic subtitle is different.

PHIL 4460 Contemporary Issues Cr. Hrs. 3	0.0
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An intensive study of specially selected topics in contemporary philosophy. The subject matter of the course will vary from year to year. Prerequisite: written consent of department head. The course content may vary. Students can earn multiple credits for this course only when the topic subtitle is different.

PHIL 4610 Directed Reading in Philosophy Cr. Hrs. 3	0.0
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Subject matter will vary from year to year. Prerequisite: written consent of department head. The course content may vary. Students can earn multiple credits for this course only when the topic subtitle is different.

Net change in credit hours: -9.0

Political Studies

Deletions:

POLS 1010 Political Ideas and Ideologies Cr.Hrs. 3	-3.0
POLS 1040 Global Political Issues Cr.Hrs. 3	-3.0
POLS 1070 Law, Politics, and Power in Canada Cr.Hrs. 3	-3.0
POLS 1500 Introduction to Politics Cr.Hrs. 6	-6.0

Introductions:

POLS 1502 Introduction to Political Studies Cr.Hrs. 3	+3.0
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(Lab required) This course introduces students to fundamental concepts in the analysis of political phenomena, as well as problems and issues associated with the exercise of authority and the construction of political legitimacy. Students may not hold credit for POLS 1502 and any of: POLS 1503 or the former POLS 1500 or the former POLS 1501.

POLS 1506 Survey of Political Studies Cr.Hrs. 3	+3.0
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(Lab required) This class introduces students to the academic study of politics. A primary objective of the course is that students will learn to differentiate among the various fields of Political Science including Political Theory, Canadian Politics, Global Politics, Public Administration and International Relations. The course thus prepares students to select coursework within the Political Studies major appropriate to their interests and career goals.

Students may not hold credit for POLS 1506 and any of: the former POLS 1500 or the former POLS 1501.

Net change in credit hours: -9.0

Psychology

Modification:

PSYC 3150 Behaviour Modification Applications Cr. Hrs. 3 0.0

Guidelines for designing, implementing, and evaluating behaviour modification applications are described in detail. Students may also conduct supervised projects in applied areas or in basic behavioural research. Students may not hold credit for PSYC 3150 and any of: PSYC 3151 or the former PSYC 2450 or the former PSYC 2451. Prerequisite: [a grade of "C" or better in PSYC 2440 or PSYC 2441] or written consent of department head.

Net change in credit hours: 0.0

Sociology

Modification:

Changes Take Effect - Summer 2018:

SOC 2290 Introduction to Research Methods Cr. Hrs. 6 0.0

An introduction to quantitative and qualitative scientific methods of investigating social phenomena. The course will include introductions to the assumptions of scientific inquiry, the conceptualization of research problems and basic statistical analysis. Students may not hold credit for both SOC 2290 and SOC 2291. Prerequisite: [a grade of "C" or better in SOC 1200 or the former SOC 1201] or [a grade of "C" or better in both SOC 1211 and SOC 1221].

Net change in credit hours: 0.0

Program modification:

Modifications to the following programs are outlined on the next page:

- **Bachelor of Arts (General Major) in Criminology**
- **Bachelor of Arts (Single Honours) in Criminology**

Sociology - Criminology

- Modification to General Major and Single Honours

Added material

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8.27.4 Criminology

YEAR 1	YEAR 2	YEAR 3	YEAR 4
GENERAL MAJOR TOTAL: 30 CREDIT HOURS			
SOC 1200 or SOC 1211 and SOC 1221	SOC 2290, SOC 2510, SOC 2610	12 credit hours from SOC 3100, SOC 3310, SOC 3400, SOC 3410, <u>SOC 3660</u> , SOC 3700, SOC 3710, SOC 3720, SOC 3740, SOC 3750, SOC 3790, SOC 3830, SOC 3850, SOC 3860, SOC 3880	
SINGLE HONOURS			
SOC 1200 or SOC 1211 and SOC 1221	<ul style="list-style-type: none"> • SOC 2010, SOC 2220, SOC 2290, SOC 2510, SOC 2610 • 12 credit hours in ancillary options¹ 	<ul style="list-style-type: none"> • 3 credit hours of criminology-related theory courses from SOC 3310 or SOC 3700 • 3 credit hours² of criminology or sociology-related theory courses from SOC 3310, SOC 3330, SOC 3350, SOC 3360, SOC 3380, SOC 3390, SOC 3700 • 12 credit hours² from SOC 3100, SOC 3310, SOC 3400, SOC 3410, <u>SOC 3660</u>, SOC 3700, SOC 3710, SOC 3720, SOC 3740, SOC 3750, SOC 3790, SOC 3830, SOC 3850, SOC 3860, SOC 3880 • 12 credit hours in ancillary options¹ 	<ul style="list-style-type: none"> • SOC 4450, SOC 4490, SOC 4570 • 3 credit hours of research methods courses from SOC 3820 or SOC 4580 • 3 credit hours of advanced theory courses from SOC 4460 or SOC 4560 • 12 credit hours in ancillary options¹
NOTES: ¹ Ancillary options are to be chosen from courses that are acceptable for credit in the Faculty of Arts (excluding Sociology courses). ² These courses can include SOC 3310 or SOC 3700 if not already completed as a criminology or sociology-related theory requirement.			

Ukrainian Canadian Heritage Studies

Program modifications:

Modifications to the following programs are outlined on the next page:

- **Bachelor of Arts (General Major) in Ukrainian Canadian Heritage Studies**
- **Bachelor of Arts (Single Advanced Major) in Ukrainian Canadian Heritage Studies**
- **Minor (Concentration) in Ukrainian Canadian Heritage Studies**

Ukrainian Canadian Heritage Studies

- Modification of the "List A" [used in the General Major, Single Advanced Major and Minor (Concentration)]

Added material
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8.28.2 Ukrainian Canadian Heritage Studies

List A

Faculty of Arts

Economics		
ECON 1210	Introduction to Canadian Economic Issues and Policies	3
ECON 1220	Introduction to Global and Environmental Economic Issues and Policies	3
German and Slavic Studies		
UKRN 1230	Ukrainian Language Seminar Abroad	3
UKRN 1310	Introductory Ukrainian	6
UKRN 2260	Ukrainian Culture Seminar Abroad	3
UKRN 2720	Intermediate Ukrainian	6
History		
HIST 1200	An Introduction to the History of Western Civilization (G)	6
HIST 1350	An Introduction to the History of Western Civilization to 1500 (G)	3
HIST 1360	An Introduction to the History of Western Civilization from 1500 (G)	3
HIST 1400	History of the Canadian Nation Since 1867 (C)	3
Political Studies		
POLS 1500	Introduction to Politics	6
<u>POLS 1502</u>	<u>Introduction to Political Studies</u>	<u>3</u>
<u>POLS 1506</u>	<u>Survey of Political Studies</u>	<u>3</u>
POLS 2040	Introduction to International Relations	6
POLS 2070	Introduction to Canadian Government	6
Religion		
RLGN 1322	Introduction to Eastern Religions	3
RLGN 1324	Introduction to Western Religions	3
RLGN 1350	The History of Eastern Christianity	6
Sociology		
SOC 1200	Introduction to Sociology	6
Clayton H. Riddell Faculty of Environment, Earth, and Resources		
Geography		
GEOG 1280	Introduction to Human Geography	3
GEOG 1290	Introduction to Physical Geography	3
School of Art		
FAAH 1030	Introduction to Art 1A	3
FAAH 1040	Introduction to Art 2A	3

Women's and Gender Studies

Program modifications:

Modifications to the following programs are outlined on the next 2 pages:

- **Bachelor of Arts (General Major) in Women's and Gender Studies**
- **Bachelor of Arts (Single Advanced Major) in Women's and Gender Studies**
- **Bachelor of Arts (Double Advanced Major) in Women's and Gender Studies**
- **Bachelor of Arts (Single Honours) in Women's and Gender Studies**
- **Bachelor of Arts (Double Honours) in Women's and Gender Studies**
- **Minor (Concentration) in Women's and Gender Studies**

Women's and Gender Studies

- Modification of List A [used in the General Major, Single Advanced Major, Double Advanced Major, Minor (Concentration), Single Honours and Double Honours]

Added material

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8.29.2 Women's and Gender Studies

List A

Faculty of Arts

Anthropology		
ANTH 3320	Women in Cross-Cultural Perspective	3
ANTH 3321	Femmes, société et cultures (USB)	3
ANTH 3330	Sex and Sexualities	3
Classics		
CLAS 2210	Women in Ancient Greece and Rome	3
Economics		
ECON 2362	Economics of Gender	3
French, Spanish and Italian		
FREN 2680	Littérature féminine française (B)	3
FREN 3860	Études sur Beauvoir (B)	3
German		
GRMN 1310	Love in German Culture in English Translation (C)	3
GRMN 3280	Sex, Gender and Cultural Politics in the German-Speaking World (B)	3
GRMN 3282	Sex, Gender and Cultural Politics in the German-Speaking World in English Translation (C)	3
History		
HIST 2400	History of Human Rights and Social Justice in the Modern World (G,M)	3
HIST 3572	The History of Women, Gender, and Sexuality in Canada (C)	6
HIST 3760	Problems in American History 1	3
	Acceptable for credit only when the topic is "Gender and Sexuality in 20th Century America."	
HIST 3811	Famille, amour et mariage dans la société occidentale, 1500-1800 (E)	6
HIST 4060	Gender History in Canada (C)	6
Native Studies		
NATV 2430	Indigenous Women's Stories	3
NATV 3360	Aboriginal Women of Canada	3
NATV 3380	Cultural Constructions of Gender in Canadian Aboriginal Societies	3
Philosophy		
PHIL 3220	Feminist Philosophy	3
Political Studies		
POLS 3100	Gender and Politics in Canada	3
POLS 3240	Feminist Political Theory	3
Psychology		
PSYC 2390	Psychology of Women	3
PSYC 2400	The Psychology of Sex Differences	3
<u>PSYC 2380</u>	<u>Psychology of Gender</u>	<u>3</u>
<u>PSYC 3570</u>	<u>Psychology of Women</u>	<u>3</u>
Religion		
RLGN 2680	Women and Religion 1	3
RLGN 2690	Women and Religion 2	3
Slavic Studies		
UKRN 3970	Women and Ukrainian Literature	3
Sociology		
SOC 2460	The Family	3
SOC 2461	La famille (USB)	3
SOC 2470	Courtship and Marriage	3
SOC 3770	Women, Health and Medicine	3
SOC 3790	Women, Crime and Social Justice	3
SOC 3810	Sociological Perspectives on Gender and Sexuality	3
SOC 3811	Sociologie de la sexualité et des rôles sexuels (USB)	3

School of Art		
FAAH 2110	Women and Art	3
FAAH 4090	Seminar on Contemporary Issues in Art	3
	Acceptable for credit only when the topic is "Women Artists."	
Clayton H. Riddell Faculty of Environment, Earth, and Resources		
GEOG 4280	Gender and the Human Environment	3
Marcel A. Desautels Faculty of Music		
MUSC 4130	History of Women in Music	3
Faculty of Nursing		
NURS 3330	Women and Health	3

For course descriptions, see departmental listings.

NOTE: List A courses are identified in Aurora Student with the course attribute of "Women's Studies Requirement."

Faculty of Education

Program modifications:

Modifications to the following programs are outlined on the next 3 pages:

- **Bachelor of Education**
- **Post-baccalaureate Diploma in Education**

Program closure:

- **Certificate in Teaching English as a Second Language** (Faculty of Education)

Current Calendar	Revised Calendar
SECTION 1: Degree and Diploma Programs Offered	SECTION 1: Degree and Diploma Programs Offered
1.3.2 Certificate in Teaching English as a Second Language	1.3.2 Certificate in Teaching English as a Second Language
<p>Extended Education, in collaboration with the Faculty of Education, offers a 15 credit hour (200 hour) Certificate in Teaching English as a Second Language (CTESL). Education students may take courses in this program to fulfill elective course requirements of their B.Ed degree. CTESL courses include:</p> <p>EDUB 1606 Teaching ESL Foundational Literacy, Academics & Language (LAL) Students (3) EDUB 1608 Assessment & Testing of EAL/ESL Learners (3) EDUB 1612 Adult ESL and the Canadian Language Benchmarks (3) EDUB 1620 Principles and Procedures of Second Language Teaching (3) EDUB 1640 Teaching ESL Vocabulary and Pronunciation (3) EDUB 1650 Teaching ESL Grammar (3) EDUB 1660 Computers in Second Language Teaching (3) EDUB 1820 Language and Content Instruction of ESL/Bilingual Students (3) EDUB 1860 Practicum in Teaching English as a Second Language (TESL) (3) EDUB 3504 Academic and Professional English for Multilingual Teachers (3) And additional Special Topics courses, as approved. For further information, contact Heather McIntosh at (204) 474-9861 or heather.mcintosh@umanitoba.ca.</p>	<p>Extended Education, in collaboration with the Faculty of Education, offers a 15 credit hour (200 hour) Certificate in Teaching English as a Second Language (CTESL). Education students may take courses in this program to fulfill elective course requirements of their B.Ed degree. CTESL courses include:</p> <p>EDUB 1606 Teaching ESL Foundational Literacy, Academics & Language (LAL) Students (3) EDUB 1608 Assessment & Testing of EAL/ESL Learners (3) EDUB 1612 Adult ESL and the Canadian Language Benchmarks (3) EDUB 1620 Principles and Procedures of Second Language Teaching (3) EDUB 1640 Teaching ESL Vocabulary and Pronunciation (3) EDUB 1650 Teaching ESL Grammar (3) EDUB 1660 Computers in Second Language Teaching (3) EDUB 1820 Language and Content Instruction of ESL/Bilingual Students (3) EDUB 1860 Practicum in Teaching English as a Second Language (TESL) (3) EDUB 3504 Academic and Professional English for Multilingual Teachers (3) And additional Special Topics courses, as approved. For further information, contact Heather McIntosh at (204) 474-9861 or heather.mcintosh@umanitoba.ca.</p>
SECTION 5: Academic Regulations for Bachelor of Education	SECTION 5: Academic Regulations for Bachelor of Education
5.2.2 Transfer of Credit	5.2.2 Transfer of Credit
Students may transfer a maximum of five full courses (30 credit hours) from another recognized university or college Professional Education program toward the After-Degree B.Ed. provided the courses are acceptable to	Students may transfer a maximum of five full courses (30 credit hours) from another recognized university or college Professional Education program toward the After-Degree B.Ed. provided the courses are acceptable to

the program, and they have not been applied to another degree program.	the program, and they have not been applied to another degree program.
Students will not receive advance standing for any Education course which is more than six years old at the point of their admission to the Faculty of Education.	Students will not receive advance standing for any Education course which is more than six years old at the point of their admission to the Faculty of Education.
Courses taken as part of the Certificate in Teaching English as a Second Language (CTESL) or Certificate in Adult and Continuing Education (CACE) through Extended Education, U of M, may receive credit for some coursework. See PBDE 6.5 Transfer of Credit section for a listing of equivalents.	Courses taken as part of the Certificate in Teaching English as a Second Language (CTESL) or Certificate in Adult and Continuing Education (CACE) through Extended Education, U of M, may receive credit for some coursework. See PBDE 6.6 Transfer of Credit section for a listing of equivalents.
Those students who are currently in the program and wish to register for a course at another university or college must complete an application for "Letter of Permission" prior to registering. Further information can be found at http://umanitoba.ca/student/records/forms.html	Those students who are currently in the program and wish to register for a course at another university or college must complete an application for "Letter of Permission" prior to registering. Further information can be found at http://umanitoba.ca/student/records/forms.html
SECTION 6: Post Baccalaureate Diploma in Education	SECTION 6: Post Baccalaureate Diploma in Education
6.6 Transfer of Credit	6.6 Transfer of Credit
Subject to approval by the Faculty, transfer of credit may be granted on the basis of:	Subject to approval by the Faculty, transfer of credit may be granted on the basis of:
- completed university level courses that have not been previously used towards a degree,	- completed university level courses that have not been previously used towards a degree,
- completed M.Ed. courses not used to satisfy requirements for the M.Ed. degree, and	- completed M.Ed. courses not used to satisfy requirements for the M.Ed. degree, and
- the following courses completed through the Certificate in Adult and Continuing Education (CACE), University of Manitoba:	- the following courses completed through the Certificate in Adult and Continuing Education (CACE), University of Manitoba:
AEED 0170 Foundations of Adult Education transferred as EDUA 1570 Foundations of Adult Education (3); AEED 0180 Program Planning in Adult Education transferred as EDUA 1580 Program Planning in Adult Education (3); AEED 0160 Adult Learning and Development transferred as EDUA 1560 Adult Learning and Development (3); AEED 0190 Facilitating Adult Education transferred	AEED 0170 Foundations of Adult Education transferred as EDUA 1570 Foundations of Adult Education (3); AEED 0180 Program Planning in Adult Education transferred as EDUA 1580 Program Planning in Adult Education (3); AEED 0160 Adult Learning and Development transferred as EDUA 1560 Adult Learning and Development (3); AEED 0190 Facilitating Adult Education transferred

as EDUA 1590 Facilitating Adult Education (3).	as EDUA 1590 Facilitating Adult Education (3).
Completion of the CACE certificate is not required to receive individual credit.	Completion of the CACE certificate is not required to receive individual credit.
- a maximum of 15 credit hours completed through the Certificate in Teaching English as a Second Language (CTESL), University of Manitoba from the following: CTSL 0100 Principles and Procedures of Second Language transferred as EDUB 1620 Principles and Procedures of Second Language Teaching (3); CTSL 0102 Teaching ESL Vocabulary and Pronunciation as EDUB 1640 Teaching ESL Vocabulary and Pronunciation (3); CTSL 0104 Teaching ESL Grammar as EDUB 1650 Teaching ESL Grammar (3); CTSL 0120 Practicum in Teaching English as a Second Language (TESL) as EDUB 1860 Practicum in Teaching English as a Second Language (TESL) (3); CTSL 0108 Content-based Second Language Instruction as EDUB 1820 Language and Content Instruction of ESL/Bilingual Students (3); 39306 Computers in Second Language Teaching as EDUB 1660 Computers in Second Language Teaching (3); CTSL 0106 Teaching ESL Literacy as EDUB 1606 Teaching ESL Foundational Literacy, Academics & Language (3); CTSL 0110 Adult ESL & the Canadian Language Benchmarks as EDUB 1612 Adult ESL and the Canadian Language Benchmarks (3); CTSL 0114 Assessment and Teaching of ESL Learners as EDUB 1608 Assessment and Testing of EAL/ESL Learners. Completion of the CTESL certificate is not required to receive individual credit.	-a maximum of 15 credit hours completed through the Certificate in Teaching English as a Second Language (CTESL), University of Manitoba from the following: CTSL 0100 Principles and Procedures of Second Language transferred as EDUB 1620 Principles and Procedures of Second Language Teaching (3); CTSL 0102 Teaching ESL Vocabulary and Pronunciation as EDUB 1640 Teaching ESL Vocabulary and Pronunciation (3); CTSL 0104 Teaching ESL Grammar as EDUB 1650 Teaching ESL Grammar (3); CTSL 0120 Practicum in Teaching English as a Second Language (TESL) as EDUB 1860 Practicum in Teaching English as a Second Language (TESL) (3); CTSL 0108 Content-based Second Language Instruction as EDUB 1820 Language and Content Instruction of ESL/Bilingual Students (3); 39306 Computers in Second Language Teaching as EDUB 1660 Computers in Second Language Teaching (3); CTSL 0106 Teaching ESL Literacy as EDUB 1606 Teaching ESL Foundational Literacy, Academics & Language (3); CTSL 0110 Adult ESL & the Canadian Language Benchmarks as EDUB 1612 Adult ESL and the Canadian Language Benchmarks (3); CTSL 0114 Assessment and Teaching of ESL Learners as EDUB 1608 Assessment and Testing of EAL/ESL Learners. Completion of the CTESL certificate is not required to receive individual credit.

Faculty of Engineering

Biosystems Engineering

Deletion:

BIOE 4630 Pollution Prevention Practices Cr.Hrs. 4

-4.0

Net change in credit hours: -4.0

Program modification:

Modifications to the **Bachelor of Science in Engineering (Biosystems), Environmental Specialization**, are outlined on the next page.

Department of Biosystems Engineering

Environmental Specialization

Students who obtain a grade of “C” or better in the courses listed below will receive a notation of “environmental specialization” on their transcript at the time of graduation.

Group A: Science Electives (choose both courses)

BIOE 2600 Principles of Plant and Animal Physiology for Engineers

SOIL 4060 Physical Properties of Soil

Group B: Biosystems Engineering Design Electives (choose 3 from the list)

BIOE 4460 Air Pollution Assessment and Management

BIOE 4590 Management of By-Products from Animal Production

BIOE 4600 Design of Water Management Systems

BIOE 4620 Remediation Engineering

BIOE 4700 Alternative Building Design

Group C: Complementary Studies (choose 2 from the list)

ABIZ 2390 Introduction to Environmental Economics (or equivalent)

ENVR 1000 Environmental Science 1 – Concepts

ENVR 2000 Environmental Science 2 - Issues

~~ENVR 2270 Environmental Problem Solving and Scientific Thinking~~

ENVR 2810 Environmental Critical Thinking and Scientific Research

ENVR 3160 Environmental responsibilities and the Law

ENVR 3400 Introduction to Environment and Health

ENVR 3750 Green Building and Planning

ENVR 3850 Sustainable Manitoba

ENVR 4050 Ecosystem Management

ENVR 4400 Advanced Issues in Environment and Health

GEOG 2520 Geography of Natural Resources

PHIL 2750 Environmental Ethics

Group D: Free Electives (choose 2 from the list)

(Note: additional courses from Group B or C can be used to fulfill Group D electives.)

AGEC 2370 Principles of Ecology (or equivalent)

CIVL 3690 Environmental Engineering Analysis

CIVL 3700 Environmental Engineering Design

CIVL 4350 Hazardous Waste Treatment

ENVR 2550 Environmental Chemistry

ENVR 3110 Environmental Conservation and Restoration

GEOG 3730 Geographic Information Systems

Note: Special permission may be granted by the Head of Department for courses not appearing on the list for Group C or Group D.

Civil Engineering

Modification:

CIVL 3730 Geotechnical Materials and Analysis Cr. Hrs. 4 0.0
Soil and rock properties: laboratory and field techniques; in situ states of stress and consolidations; constitutive models; stress beneath loaded areas and around tunnels; analysis of simple retaining structures and slopes; stability and settlement of shallow and deep foundations in soil and rock. Prerequisites: (GEOL 1340 or the former GEOL 2250), CIVL 2770, CIVL 2800.

Net change in credit hours: 0.0

Electrical and Computer Engineering

Modification:

ECE 3720 Electric Power and Machines Cr.Hrs. 4 0.0
(Lab required) Principles and applications of electric power, energy conversion and machines. Prerequisite: ECE 2262.

Net change in credit hours: 0.0

Program modifications:

Modifications to the **Bachelor of Science in Engineering (Computer Engineering)** are outlined on the next page.

Natural Science Electives – Computer Engineering

Computer Engineering students are required to complete two (2) Natural Science Electives as part of their program. These courses may be taken anytime during the student's program. One course must be selected from *Group A*. The second may be selected from either *Group A* or *Group B*.

Approved Natural Science Electives – Group A (1 required)

Course		Cr. Hrs.
CHEM 1310	University 1 Chemistry: An Introduction to Physical Chemistry	3
PHYS 2600	Electromagnetic Field Theory	3
PHYS 3630	Electro- and Magnetostatic Theory	3

Approved Natural Science Electives – Group B

Course		Cr. Hrs.
ASTR 1810	Introduction to Astronomy: The Magnificent Universe	3
ASTR 3180	Stars	3
BIOL 1020	Biology 1: Principles and Themes	3
BIOL 1300	Economic Plants	3
BIOL 1410	Anatomy of the Human Body	3
CHEM 1320	University 1 Chemistry: An Introduction to Organic Chemistry	3
ENTM 2050	Introduction to Entomology	3
GEOL 1340	The Dynamic Earth	3
MBIO 1220	Essentials of Microbiology	3
PHYS 1810	General Astronomy 1	3
PHYS 1820	General Astronomy 2: Exotic Stars, Galaxies and Cosmology	3
PHYS 2260	Optics	3
PHYS 2380	Quantum Physics 1	3
PHYS 2386	Introduction to Quantum Mechanics and Special Relativity	3
PHYS 2650	Classical Mechanics 1	3
PHYS 3180	Stars	3
PHYS 3220	Medical Physics and Physiological Measurements	3

Program modifications:

Modifications to the **Bachelor of Science in Engineering (Electrical Engineering)**, including the **Engineering Physics Focus Area** are outlined on the next 3 pages.

Natural Science Electives – Electrical Engineering

Electrical Engineering students are required to complete one Natural Science Elective as part of their program. This course may be taken anytime during the student's program.

Approved Natural Science Electives

Course		Cr. Hrs.
ASTR 1810	Introduction to Astronomy: The Magnificent Universe	3
ASTR 3180	Stars	3
BIOL 1020	Biology 1: Principles and Themes	3
BIOL 1300	Economic Plants	3
BIOL 1410	Anatomy of the Human Body	3
CHEM 1310	University 1 Chemistry: An Introduction to Physical Chemistry	3
CHEM 1320	University 1 Chemistry: An Introduction to Organic Chemistry	3
ENTM 2050	Introduction to Entomology	3
GEOL 1340	The Dynamic Earth	3
MBIO 1220	Essentials of Microbiology	3
PHYS 1810	General Astronomy 1	3
PHYS 1820	General Astronomy 2: Exotic Stars, Galaxies and Cosmology	3
PHYS 2260	Optics	3
PHYS 2380	Quantum Physics 1	3
PHYS 2386	Introduction to Quantum Mechanics and Special Relativity	3
PHYS 2650	Classical Mechanics 1	3
PHYS 3180	Stars	3
PHYS 3220	Medical Physics and Physiological Measurements	3

Electrical Engineering Technical Electives

(7 required) (see Notes 3 and 4)

GROUP A QUALIFIED ENGINEERING DESIGN ELECTIVE COURSES: (3 required)

ECE 4160 Control Engineering	4
ECE 4250 Digital Communications	4
ECE 4290 Microwave Engineering	4
ECE 4830 Signal Processing 2	4
ECE 4370 Power Electronics	4

GROUP B TECHNICAL ELECTIVE COURSES:

ECE 3700 Telecommunication Networks Engineering	4
ECE 3650 Electric Machines	4
ECE 3770 Digital System Design 2	4
ECE 4100 Microelectronic Fabrication	4
ECE 4140 Power Transmission Lines	4
ECE 4180 Introduction to Robotics	4
ECE 4200 Electric Filter Design	4
ECE 4240 Microprocessor Interfacing	4
ECE 4270 Antennas	4
ECE 4280 Engineering Electromagnetics	4
ECE 4300 Electrical Energy Systems 1	4
ECE 4310 Electrical Energy Systems 2	4
ECE 4360 High Voltage Engineering	4
ECE 4390 Engineering Computations 4E	4
ECE 4420 Digital Control	4
ECE 4440 Computer Vision	4
ECE 4520 Simulation & Modelling	4
ECE 4530 Parallel Processing	4
ECE 4540 Wireless Networks	4
ECE 4580 Optoelectronics	4
ECE 4610 Biomedical Engineering and Instrumentation	4
ECE 4740 Digital System Implementation	4
ECE 4850 Contemporary Topics in Electrical and Computer Engineering 1	4
ECE 4860 Contemporary Topics in Electrical and Computer Engineering 2	4
ECE 4870 Contemporary Topics in Electrical and Computer Engineering 3	3
ECE 4880 Contemporary Topics in Electrical and Computer Engineering 4	3
COMP 1020 Computer Science 2	3
COMP 2140 Data Structures and Algorithms	3
COMP 3190 Intro. Artificial Intelligence	3
COMP 4360 Machine Learning	3
MATH 3120 Applied Discrete Mathematics	3
MATH 3340 Complex Analysis 1	3
MATH 3460 Partial Differential Equations	3
PHYS 2260 Optics	3
PHYS 3220 Medical Physics and Physiological Measurement	3
PHYS 3640 Electro- and Magnetodynamics and Special Relativity	3
PHYS 4646 Electro- and Magnetodynamics and Special Relativity	3
PHYS 4590 Advanced Optics	3

Notes:

3. A minimum of 3 electives are required from Group A; the other 4 electives may be taken from either Group A or B unless the student completes a Focus Area.
4. The Department of Electrical and Computer Engineering does not guarantee that all elective courses will be offered every session or that it will be possible to fit courses into all of the many possible timetable combinations of students taking the programs. The term in which an elective course is offered is specified each year in the online timetables on the Department website. There may be a maximum limit set on the number of students allowed to take a particular elective in a session. Similarly, there may be a minimum limit and if registration is below the minimum, the elective will be cancelled and those registered will be required to transfer to another elective before the deadline date for course changes.

The following changes to the *Engineering Physics Focus Area* in Section 4.8.4 of the Calendar are in response to changes proposed by the Department of Physics and Astronomy.

ENGINEERING PHYSICS FOCUS AREA

Requirements:

In the standard Electrical Engineering program, seven Technical Elective Courses and one Natural Sciences Elective are required. To complete Engineering Physics focus area, students are required to take a total of 7 courses as indicated below including the 4 prescribed Engineering Physics courses. Three further courses must be taken from the list of Engineering Physics Elective courses. To complete the program requirements a course must be selected from the technical electives listed in the Electrical Engineering Standard Program.

PRESCRIBED ENGINEERING PHYSICS COURSES:

ECE 4270 Antennas

ECE 4580 Optoelectronics

~~PHYS 2380 Quantum Physics 1~~

PHYS 2386 Introduction to Quantum Mechanics and Special Relativity

PHYS 2650 Classical Mechanics 1

ENGINEERING PHYSICS TECHNICAL ELECTIVE COURSES: (3 required)

ECE 4860 Materials Characterization

PHYS 2260 Optics

PHYS 3220 Medical Physics and Physiological Measurement

~~PHYS 3380 Quantum Physics 2~~

PHYS 3386 Quantum Mechanics 2

PHYS 3430 Honours Physics Laboratory

PHYS 3570 Physics of Materials 1

~~PHYS 3640 Electro- and Magnetodynamics and Special Relativity~~

PHYS 4646 Electro- and Magnetodynamics and Special Relativity

PHYS 3650 Classical Mechanics 2

PHYS 3670 Classical Thermodynamics

~~PHYS 3680 Statistical Mechanics~~

PHYS 4680 Statistical Mechanics

PHYS 4520 Introduction to Solid State Physics

PHYS 4590 Advanced Optics

Mechanical Engineering

Deletions:

MECH 2012 Computer Aided Design and Manufacturing Processes Cr.Hrs. 4	-4.0
MECH 3980 Mechanical Laboratory Cr.Hrs. 4	-4.0
MECH 4650 Machine Design 4M Cr.Hrs. 4	-4.0
MECH 4960 Manufacturing Process 1 Cr.Hrs. 4	-4.0
MECH 4970 Manufacturing Process 2 Cr.Hrs. 4	-4.0

Introductions:

MECH 2112 Fundamentals of Mechanical and Computer Aided Design Cr.Hrs. 5 +5.0
(Lab required) Provide instruction on the application of computer aided design software packages. The students will work in groups in the design and development of a product using CAD packages and digital fabrication technologies. May not be held with CIVL 2830, the former ENG 2020, ENG 2022, MECH 2010, or MECH 2012. Prerequisite: ENG 1430.

MECH 3652 Machine Design Cr.Hrs. 4 +4.0
(Lab required) Stress and failure analysis and the design of machine elements; shafts and couplings, threaded fasteners and power screws, clutches and power transmission components; spur, bevel, worm and helical gears; lubrication, journal and roller bearings. May not be held with MECH 4650. Prerequisites: (MECH 3482 or the former MECH 2120) and (MECH 3502 or the former MECH 3500).

MECH 3982 Mechanical Laboratories in Solid Mechanics Cr.Hrs. 2 +2.0
(Lab required) Laboratory course on topics that compliment and reinforce concepts developed in second and third year mechanical engineering courses in mechanics of solids and structures, and vibrations. May not be held with the former MECH 3980, MECH 4980, or MECH 4990. Prerequisites: (ENG 2030 or ENG 2040 or the former ENG 2010) and (MECH 2222 or the former MECH 2220). Pre- or corequisites: MECH 3420 and (MECH 3502 or the former MECH 3500).

MECH 3992 Mechanical Laboratories in Thermofluids Cr.Hrs. 2 +2.0
(Lab required) Laboratory course on topics that compliment and reinforce concepts developed in second and third year mechanical engineering courses in thermofluids. May not be held with the former MECH 3980, MECH 4980, or MECH 4990. Prerequisites: (ENG 2030 or ENG 2040 or the former ENG 2010), (MECH 2202 or the former MECH 2200), and (MECH 2262 or the former MECH 2260). Pre- or corequisites: MECH 3460 or the former MECH 3470.

MECH 4432 Systems Engineering Cr.Hrs. 4 +4.0
(Lab required) The engineering support process as applied to the entire product life cycle from requirements definition to disposal. Focus on the system as a whole; from the outside, its interaction with its environment and other systems; and from the inside, its design requirements and implementation. May not be held with MECH 4342 when titled "Systems Engineering."
Restricted to students in third year or above.

MECH 4482 Applied Aerospace Instrumentation Cr.Hrs. 4 +4.0
(Lab required) Principles and practices of test and measurement system design and analysis for aerospace applications. Topics include transducers, signal conditioning, data acquisition and analysis, uncertainty analysis, calibration and correlation, system design and maintenance, and piping and instrumentation diagrams, and an introduction to LabVIEW software. This course

may include a field trip component. May not be held with MECH 4322 when titled "Applied Instrumentation." Prerequisites: MECH 3430 and [(MECH 3982 and MECH 3992) or the former MECH 3980 or (MECH 4980 and MECH 4990)].

MECH 4542 Principles of Turbomachinery Cr.Hrs. 4 +4.0
(Lab required) Principles and design of turbomachinery, including fluid dynamics, thermodynamics and engineering applications. A variety of turbomachines are introduced, including hydraulic pumps and turbines, centrifugal compressors and fans, and axial flow compressors and fans. May not be held with MECH 4310 when titled "Turbomachinery." Prerequisites: MECH 2202 (or the former MECH 2200) and MECH 3492 (or the former MECH 3490).

MECH 4582 Vehicle Testing, Condition Monitoring, and Fault Analysis Cr.Hrs. 4 +4.0
(Lab required) General testing and fault diagnostic techniques for ground vehicles including common signal analysis techniques, vibration testing and fault analysis methods. Basic knowledge of vibration based condition monitoring including the basic theory and applications of engineering tools, damage analysis and detection, and modal analysis. May not be held with MECH 4322 when titled "Ground Vehicle Testing Technology." Prerequisite: MECH 3420.

Modifications:

MECH 3170 Project Management Cr.Hrs. 4 0.0
(Lab required) Topics covered include project planning, scheduling, resource allocation, process analysis, layout and control. The course will make use of industrial projects for developing a strong design and analytical approach pertinent to project management. May not be held with the former MECH 4170. Prerequisite: MECH 2112 (or the former MECH 2010 or the former MECH 2012) or CIVL 2830.

MECH 3550 Robotics and Computer Numerical Control Cr.Hrs. 4 0.0
(Lab required) This course builds up a foundation in the area of Computer Aided Manufacturing (CAM) such as computer numerically controlled machine tools and robotics. Intense hands on experience is provided in the laboratory sessions on part programming using Computer Aided Design (CAD) packages and robots to demonstrate application in the area of CAM. Several case studies and manufacturing applications will be discussed. Prerequisite: MECH 2112 (or the former MECH 2010 or the former MECH 2012) or CIVL 2830.

MECH 3562 Introduction to Optimization Cr.Hrs. 4 0.0
(Lab required) The objective of this course is to develop the ability to formulate and analyze problems that will be encountered in a manufacturing system. The skills acquired will allow the students to approach problems from an optimization perspective. The students will be provided experience in related software packages. May not be held with the former MECH 3560. Prerequisites: (MECH 2112 or the former MECH 2010 or the former MECH 2012 or CIVL 2830) and STAT 2220.

MECH 3582 Manufacturing Planning and Quality Control Cr.Hrs. 4 0.0
(Lab required) The course covers topics such as: group technology, just-in-time, computer aided process planning, statistical process control and manufacturing planning and control. Issues related to the integration of several areas that fall within CIM are emphasized. Systems approach is introduced. May not be held with the former MECH 3580. Prerequisite: MECH 2112 (or the former MECH 2010 or the former MECH 2012) or CIVL 2830.

MECH 3592 Simulation Modeling and Facility Planning Cr.Hrs. 4 0.0
(Lab required) The objective of this course is to introduce simulation for manufacturing operations and the concepts of facilities location and layout. The students will learn how to program WITNESS, a simulation language, and through simulation, explore the effects of facility planning; resource availability e.g. machines and quality related problems on manufacturing productivity and timing. May not be held with MECH 3590. Prerequisite: MECH 2112 (or the former MECH 2010 or the former MECH 2012) or CIVL 2830.

MECH 3602 Manufacturing Process Fundamentals Cr.Hrs. 4 0.0
(Lab required) This course will give students hands on experience with numerous manufacturing processes, machines and systems. Using CNC mills, lathes, conventional machine shop equipment and hand tools, the students will manufacture mechanical components, assemble them and troubleshoot any problems. The object is to provide students with hands-on exposure to the application of basic manufacturing process tools. May not be held with MECH 3600. Prerequisite: MECH 2112 (or the former MECH 2012 or the former MECH 2010) or CIVL 2830.

MECH 4860 Engineering Design Cr.Hrs. 5 0.0
(Lab required) Design projects; teams of students prepare written and oral design reports on solutions to specific problems from Manitoba industries; series of seminars by invited speakers. Prerequisite: eligibility for graduation in the current academic year or registered in third year Industrial Cooperative Education Program. Prerequisites: (ENG 2030 or ENG 2040 or the former ENG 2010) and (MECH 3652 or the former MECH 4650).

Net change in credit hours: +9.0

Program modifications:

Modifications to the **Bachelor of Science in Engineering (Mechanical)**, including the **Aerospace Option**, are outlined on the next 3 pages.

Program proposal:

A proposal to introduce an **Aerospace Stream** can also be found within the next 3 pages.

Academic Calendar Content for the Proposed Program Modification

Preliminary Engineering Program - Common to all Engineering Programs. (See Section 4.2 for details.)

Program Core Courses:

Course No.		Credit Hours
CHEM 1310	An Introduction to Physical Chemistry	3
CIVL 4050	Engineering Economics	3
CIVL 4460	Technology, Society, and the Future	3
ECE 3010	Elements of Electric Machines and Digital Systems	4
ENG 2030	Engineering Communication: Strategies for the Profession	3
or		
ENG 2040	Engineering Communication: Strategies, Practice and Design	3
MATH 2120	Introductory Numerical Methods for Engineers	4
MATH 2130	Engineering Mathematical Analysis 1	3
MATH 2132	Engineering Mathematical Analysis 2	3
MATH 3132	Engineering Mathematical Analysis 3	3
MECH 2012	Computer Aided Design and Manufacturing Processes	4
MECH 2112	Fundamentals of Mechanical and Computer Aided Design	5
MECH 2202	Thermodynamics	4
MECH 2222	Mechanics of Materials	4
MECH 2262	Fundamentals of Fluid Mechanics	4
MECH 2272	Engineering Materials 1	4
MECH 3170	Project Management	4
MECH 3420	Vibrations and Acoustics	4
MECH 3430	Measurements and Control	4
MECH 3460	Heat Transfer	4
MECH 3482	Kinematics and Dynamics	4
MECH 3492	Fluid Mechanics and Applications	4
MECH 3502	Stress Analysis and Design	4
MECH 3542	Engineering Materials 2	4
MECH 3652	Machine Design	4
MECH 3980	Mechanical Engineering Laboratory (full year)	4
MECH 3982	Mechanical Laboratories in Solid Mechanics	2
MECH 3992	Mechanical Laboratories in Thermofluids	2
MECH 4650	Machine Design 4M	4
MECH 4860	Engineering Design	5
PHYS 1070	Physics 2: Waves and Modern Physics	3
STAT 2220	Contemporary Statistics for Engineers	3
5 Technical Electives (TE)		4
1 Complimentary Studies Elective (CE)		3

4.10.6 Technical Electives in Mechanical Engineering

MECH 3520	Aerodynamics	4
MECH 3550	Robotics and Computer Numerical Control	4
MECH 3562	Introduction to Optimization	4
MECH 3570	Manufacturing Automation	4
MECH 3582	Manufacturing Planning and Quality Control	4
MECH 3592	Simulation Modelling and Facilities Planning	4
MECH 4900	Mechatronics Systems Design	4
MECH 4162	Thesis (full year course) (See Note 2)	6
MECH 4182	Aerospace Structures: Analysis and Design	4
MECH 4192	Aerospace Materials and Manufacturing Processes	4
MECH 4200	Gas Turbine Propulsion Systems	4
MECH 4240	Design for Manufacturing	4
MECH 4292	IC Engines	4
MECH 4310	Contemporary Topics in Mechanical Engineering 1	4
MECH 4322	Contemporary Topics in Mechanical Engineering 2	4
MECH 4330	Contemporary Topics in Manufacturing Engineering 1	4
MECH 4342	Contemporary Topics in Manufacturing Engineering 2	4
MECH 4350	Topics in Materials 1	4
MECH 4360	Topics in Materials 2	4
MECH 4412	Heating, Venting, and Air Conditioning	4
MECH 4432	Systems Engineering	4
MECH 4452	Aircraft Performance, Dynamics, and Design	4
MECH 4472	Mechanical Vibration	4
MECH 4482	Applied Aerospace Instrumentation	4
MECH 4510	Fundamentals of Finite Element Analysis	4
MECH 4532	Advanced Strength of Materials	4
MECH 4542	Principles of Turbomachinery	4
MECH 4550	Noise Control	4
MECH 4560	Selected Topics in Fluid Mechanics 4M	4
MECH 4582	Vehicle Testing, Condition Monitoring, and Fault Analysis	4
MECH 4620	Corrosion of Metals and Alloys	4
MECH 4672	Advanced Mechanical Design	4
MECH 4680	Energy Conversion Utilization	4
MECH 4692	Renewable Energy	4
MECH 4694	Advanced Topics in Heat Transfer	4
MECH 4702	Design of Thermal Systems	4
MECH 4812	Automotive Engineering	4
MECH 4822	Numerical Heat Transfer in Fluid Flow	4
MECH 4870	Fracture and Failure of Engineering Materials	4
MECH 4900	Mechatronics System Design	4
MECH 4960	Manufacturing Processes 1	4
MECH 4970	Manufacturing Processes 2	4

4.10.2 Aerospace Option

~~Choose all 5 Courses.~~

Complete all 3 TEs in LIST A. Choose the remaining two TEs from LIST B. Some courses in LIST B will be offered in alternating years.

LIST A:

MECH 3520	Aerodynamics	4
MECH 4182	Aerospace Structures Analysis and Design	4
MECH 4192	Aerospace Materials & Manufacturing Processes	4

LIST B:

MECH 4200	Gas Turbine Propulsion Systems	4
MECH 4452	Aircraft Dynamics and Performance	4
MECH 3582	Manufacturing Planning and Quality Control	4
MECH 4482	Applied Aerospace Instrumentation	4
MECH 4432	Systems Engineering	4
ENG 4110	Operational Excellence	4

4.10.3 Aerospace Stream

Choose 3 TEs from the following 5 courses. Choose the remaining two TEs from the same stream, other TEs, or thesis. Some courses will be offered in alternating years.

MECH 3520	Aerodynamics	4
MECH 4182	Aerospace Structures Analysis and Design	4
MECH 4200	Gas Turbine Propulsion Systems	4
MECH 4452	Aircraft Dynamics and Performance	4
MECH 4192	Aerospace Materials & Manufacturing Processes	4

The current Materials Stream, Solid Mechanics Stream and Thermofluids Stream remain unchanged as they appear in the current academic calendar.

Faculty of Environment, Earth, and Resources

Faculty of Environment, Earth, and Resources

Program modification:

The faculty is proposing a modification to the general degree regulations that apply to all programs in the faculty, involving changes to the **Science and Faculty of Arts Course Requirements**, as outlined on the next page.

3.4 Science and Faculty of Arts Course Requirements

Students are required to take 6 credit hours from the Faculty of Arts and 6 credit hours of science coursework.

For course subjects taught by the **Faculty of Arts** refer to the Chapter Faculty of Arts for a complete listing.

Students may complete any combination of the courses listed below adding up to six credit hours to satisfy the 6 credit hours science requirement.

Clayton H. Riddell Faculty of Environment, Earth, and Resources

ENVR 1000, ENVR 2000

GEOG 1290, GEOG 2200, GEOG 2272, GEOG 2520, ~~GEOG 2530~~, GEOG 2540, GEOG 2550, GEOG 2700, **GEOG 2930**, GEOG 3390, GEOG 3730

GEOL 1340, GEOL 1400, GEOL 1410, GEOL 1420, GEOL 2390, GEOL 2440, GEOL 2500, ~~GEOL 2540~~, GEOL 2570, GEOL 3310

Faculty of Science

All courses offered in these subjects in the Faculty of Science: BIOL, CHEM, COMP, FORS, MATH, MBIO, PHYS, STAT;

Faculty of Agricultural and Food Sciences

AGRI 1500, AGRI 1510

ENTM 1000, ENTM 2050

PLNT 1000, PLNT 2500

SOIL 3060, SOIL 3520, SOIL 3600

For course titles and descriptions see the relevant faculty entries in this Calendar.

Environment and Geography

Deletions:

ENVR 2270 Environmental Problem Solving and Scientific Thinking Cr.Hrs. 3	-3.0
GEOG 2530 Introduction to Scientific Geographic Research Cr.Hrs. 3	-3.0

Introduction:

ENVR 2810 Environmental Critical Thinking and Scientific Research Cr.Hrs.3	+3.0
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Course is designed to aid students in the development of a skeptical, scientific approach to thinking about environmental and geographical problems and issues, as well as applying that skepticism and critical thinking to develop well balanced research hypotheses and data collection methods. May not be held with the former ENVR 2270 or the former GEOG 2530. Prerequisites: ENVR 1000 (C) or GEOG 1280 (C) or GEOG 1290 (C); GEOG 1700 (C) or GPE 1700 (C); or consent of department.

Modification:

GEOG 3810 Quantitative Research Methods in Geography (TS) Cr.Hrs.3	0.0
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This course focuses on the quantitative analytical methods available for the interpretation on physical and human geography applications. May not be held with GEOG 3680. Prerequisite: ENVR 2810 or the former GEOG 2530 or STAT 1000 or STAT 1001, or permission of department head.

Net change in credit hours: -3.0

Program modifications:

Modifications to the following programs are outlined on the next 6 pages:

- **Bachelor of Arts (Honours) in Geography**
- **Bachelor of Arts (Advanced) in Geography**
- **Bachelor of Science (Honours) in Physical Geography, Cooperative Option**
- **Bachelor of Science (Major) in Physical Geography**
- **Bachelor of Science (Major) in Physical Geography, Cooperative Option**

Bachelor of Arts in Geography Program Chart

B.A. Geography⁵			
Year 1	Year 2	Year 3	Year 4
HONOURS¹ 120 CREDIT HOURS (69 credit hours in Geography)			
6 credit hours from GEOG 1280, GEOG 1290 and/or GEOG 1700 Plus 6 credit hours of Humanities ⁶ Plus 6 credit hours from the Faculty of Science	GEOG 2200, GEOG 2530 ENVR 2810⁷ 9 credit hours in Geography courses numbered at the 2000- or 3000-level ³	GEOG 3730, GEOG 3810 Plus 18 credit hours in Geography courses numbered at the 2000- or 3000-level ³	GEOG 4660 18 credit hours in Geography courses numbered at the 4000- level
It is recommended that students complete the W course within the first 60 credit hours of courses. Enough elective credit to total 120 credit hours for the program.			
ADVANCED¹ 120 CREDIT HOURS (51 credit hours in Geography)			
6 credit hours from GEOG 1280, GEOG 1290 and/or GEOG 1700 Plus 6 credit hours of Humanities ⁶ Plus 6 credit hours from the Faculty of Science	GEOG 2200, GEOG 2530 ENVR 2810⁷ 9 credit hours in Geography courses numbered at the 2000- or 3000-level ⁴	GEOG 3730, GEOG 3810 Plus 6 credit hours in Geography courses numbered at the 3000-level ⁴	12 credit hours in Geography courses numbered at the 4000- level Plus 6 additional credit hours in Geography at the 2000-level or above
It is recommended that students complete the W course within the first 60 credit hours of courses. Enough elective credit to total 120 credit hours for the program.			
GENERAL² 90 CREDIT HOURS (30 credit hours in Geography)			
6 credit hours from GEOG 1280, GEOG 1290 and/or GEOG 1700 Plus 6 credit hours of Humanities ⁶ Plus 6 credit hours from the Faculty of Science	12 credit hours in Geography courses numbered at the 2000-level ⁴	12 credit hours in Geography courses numbered at the 3000- and/ or 4000- level ⁴	
It is recommended that students complete the W and M courses within the first 60 credit hours of courses. Note: 30 credit hours, with 6 credit hours in each of 5 subject fields, must be completed in the first 60 credit hours. Enough elective credit to total 90 credit hours for the program.			
MINOR 18 CREDIT HOURS			
6 credit hours from GEOG	6 credit hours in Geography	6 credit hours in Geography courses numbered at the 3000-level	

1280, GEOG 1290 and/or GEOG 1700	courses numbered at the 2000-level	
<p>NOTES:</p> <p>¹Entrance into the Honours and Advanced degree programs is summarized in 5.2.1. The courses required in this program will satisfy the University Mathematics requirement.</p> <p>²Entry into the General degree program is summarized in 5.2.1 and 5.2.2.</p> <p>³Among the 2000- and 3000-level courses, at least 6 credit hours must be systematic and at least 6 must be area studies. Systematic courses and area studies courses are listed in Section 5.6.</p> <p>⁴Among the 2000- and 3000-level courses, at least 12 credit hours must be systematic and at least 6 must be area studies. Systematic courses and area studies courses are listed in Section 5.6. Students wishing to transfer from the General to the Advanced degree program are permitted to take either GEOG 2200 and GEOG 3730, or GEOG 2530 in ENVR 2810 either third or fourth year.</p> <p>⁵Equivalent courses offered through Université de Saint-Boniface may be used in lieu of the specified courses identified in the degree program chart. Université de Saint-Boniface courses end in the number "1" (e.g. GEOG 1281).</p> <p>⁶May also satisfy the Faculty of Arts requirement.</p> <p>⁷The former GEOG 2530 may be used in lieu of ENVR 2810.</p> <p>Notes:</p> <ul style="list-style-type: none"> • To fulfil prerequisite requirements, a grade of "C" must be achieved, unless otherwise stated, in any course stipulated as a prerequisite to a further course. • Students should review the current course topics available through GEOG 3740 (6), GEOG 3750 (3), GEOG 3760 (6), GEOG 3770 (3) and GEOG 4670 (3). Also, all courses are not offered every year or every term. The course schedule for the current academic term is available from the Class Schedule. • Students registering in certain courses may be required to participate in field trips or field components and pay a portion of the associated expenses. For details, contact the Department of Environment and Geography general office. 		

5.6 Systematic (HS, PS, TS) and Area Studies (a) Courses

Courses numbered at the 2000- and 3000-level are arranged into Systematics (PS, HS and TS) and Area Studies (a) . B.A. Geography students may specialize in the Physical Geography (PS); Human Geography (HS); Techniques (TS); Area Studies (a) but it is not compulsory for them to do so. B.A. Geography students wishing to specialize in Physical Geography should ~~take-select at least 18 credit hours from optional courses designated as three options (18 credit hours) from courses designated 'PS'.~~ B.A. Geography students wishing to specialize in Human Geography should ~~take-select at least 18 credit hours from optional courses designated as three options (18 credit hours) from courses designated 'HS'.~~ Students should discuss these options with a Riddell Faculty student advisor.

B.A. Geography students wishing to specialize in Applied Geography should include 2000-level courses from GEOG 2200, GEOG 2310, GEOG 2510, GEOG 2520, and ~~GEOG 2530~~ ENVR 2810; and 3000-level courses from GEOG 3200, GEOG 3320, GEOG 3460, GEOG 3730, GEOG 3810M, GEOG 3710, and GEOG 3720.

Courses offered for the current academic term are published in the Class Schedule and can be searched by Attribute Type. To find Systematic (HS, PS, TS) courses search: 'Geography: Human', 'Geography: Physical' or 'Geography: Techniques'. To find Area Studies (a) courses search: 'Geography: Area Studies'.

BSc. Physical Geography Program Chart

Bachelor of Science in Physical Geography^{2,7}			
Year 1	Year 2	Year 3	Year 4
HONOURS¹ 120 CREDIT HOURS			
GEOG 1290, PHYS 1020 ³ , MATH 1500 ⁴ , PHYS 1030 ³ , MATH 1300 ⁴ ; or 6 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ Plus 6 credit hours from the Faculty of Arts	GEOG 2200, GEOG 2300, GEOG 2310, GEOG 2530 , GEOG 2540, GEOG 2550, ENVR 2810¹⁰ , Whichever of, PHYS 1030 ³ , MATH 1300 ⁴ , or 6 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ not yet taken	GEOG 2272 ⁸ , GEOG 3730, GEOG 3810 ⁹ 9 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ not yet taken	GEOG 4660 Enough elective credit to total 120 credit hours for the program
It is recommended that students complete the W course within the first 60 credit hours of courses.			
Plus a Stream approved by a Riddell Faculty student advisor. Honours Stream requirements are as follows: 33 credit hours of 2000- (or higher) level courses, of which 24 credit hours must be at the 3000- or 4000-level.			
HONOURS COOPERATIVE OPTION¹ 120 CREDIT HOURS			
GEOG 1290, PHYS 1020 ³ , MATH 1500 ⁴ , PHYS 1030 ³ , MATH 1300 ⁴ ; or 6 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ Plus 6 credit hours from the Faculty of Arts	GEOG 2200, GEOG 2300, GEOG 2310, GEOG 2530 , GEOG 2540, GEOG 2550, ENVR 2810¹⁰ , ENVR 2900 Whichever of, PHYS 1030 ³ , MATH 1300 ⁴ , or 6 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ not yet taken	GEOG 2272 ⁸ , GEOG 3730, GEOG 3810 ⁹ , ENVR 3900, ENVR 3980, ENVR 3910 9 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ not yet taken	GEOG 4660 ENVR 3990, ENVR 3920 (ENVR 4980 and ENVR 4910 are optional) Enough elective credit to total 120 credit hours for the program
It is recommended that students complete the W course within the first 60 credit hours of courses.			
Plus a Stream approved by a Riddell Faculty student advisor. Honours Stream requirements are as follows: 33 credit hours of 2000- (or higher) level courses, of which 24 credit hours must be at the 3000- or 4000-level.			
MAJOR 120 CREDIT HOURS			

GEOG 1290, PHYS 1020 ³ , MATH 1500 ⁴ , PHYS 1030 ³ , MATH 1300 ⁴ ; or 6 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ Plus 6 credit hours from the Faculty of Arts	GEOG 2200, GEOG 2300, GEOG 2310, GEOG 2530 , GEOG 2540, GEOG 2550, ENVR 2810 ¹⁰ , Whichever of, PHYS 1030 ³ , MATH 1300 ⁴ , or 6 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ not yet taken	GEOG 2272 ⁸ , GEOG 3730, GEOG 3810 ⁹ , 9 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ not yet taken	Enough elective credit to total 120 credit hours for the program.
It is recommended that students complete the W course within the first 60 credit hours of courses.			
Plus a Stream approved by a Riddell Faculty student advisor. Honours Stream requirements are as follows: 30 credit hours of 2000- (or higher) level courses, of which 18 credit hours must be at the 3000- or 4000-level.			
MAJOR COOPERATIVE OPTION 120 CREDIT HOURS			
GEOG 1290, PHYS 1020 ³ , MATH 1500 ⁴ , PHYS 1030 ³ , MATH 1300 ⁴ ; or 6 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ Plus 6 credit hours from the Faculty of Arts	GEOG 2200, GEOG 2300, GEOG 2310, GEOG 2530 , GEOG 2540, GEOG 2550, ENVR 2810 ¹⁰ , ENVR 2900 Whichever of, PHYS 1030 ³ , MATH 1300 ⁴ , or 6 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ not yet taken	GEOG 2272 ⁸ , GEOG 3730, GEOG 3810 ⁹ , ENVR 3900, ENVR 3980, ENVR 3910 9 credit hours from GEOL 1340 ⁵ , COMP 1010, CHEM 1300, CHEM 1310, STAT 1000, STAT 2000, BIOL 1020 ⁶ , BIOL 1030 ⁶ , MATH 1700 ⁴ not yet taken	ENVR 3990, ENVR 3920 (ENVR 4980 and ENVR 4910 are optional) Enough elective credit to total 120 credit hours for the program.
It is recommended that students complete the W course within the first 60 credit hours of courses.			
Plus a Stream approved by a Riddell Faculty student advisor. Honours Stream requirements are as follows: 30 credit hours of 2000- (or higher) level courses, of which 18 credit hours must be at the 3000- or 4000-level.			
MINOR 18 CREDIT HOURS			
GEOG 1290 15 credit hours selected from 2000-, 3000-, or 4000-level courses designated as Physical Geography (PS) or Techniques (TS) courses in the Geography course descriptions defined in sections 5.6 in this <i>Chapter</i> .			
NOTES: 1 Entrance into the degree programs is summarized in 6.2.1 in this <i>Chapter</i> . 2 The courses required in this program will satisfy the University Mathematics requirement.			

3 PHYS 1050 and PHYS 1070 may be used in lieu of PHYS 1020 and PHYS 1030, respectively.

4 MATH 1510 or MATH 1520 may be used in lieu of MATH 1500; or MATH 1690 may be used in place of MATH 1500 (or equivalent) and MATH 1700; or MATH 1310 may be used in lieu of MATH 1300.

5 GEOL 1440 may be used in lieu of GEOL 1340.

6 BIOL 1000 and BIOL 1010 may be used in lieu of BIOL 1020 and BIOL 1030.

7 Equivalent courses offered through Université de Saint-Boniface may be used in lieu of the specified courses identified in the degree program chart. Université de Saint-Boniface courses end in the number 1 (e.g. GEOG 1291).

8 The former GEOG 2440 may be used in lieu of GEOG 2272.

9 The former GEOG 3680 may be used in lieu of GEOG 3810.

10 The former GEOG 2530 may be used in lieu of ENVR 2810.

Note:

To fulfil prerequisite requirements a grade of 'C' must be achieved, unless otherwise stated, in any course stipulated as a prerequisite to a further course.

- Students should review the course topics available for GEOG 3740 (6), GEOG 3750 (3), GEOG 3760 (6), GEOG 3770 (3) *and* GEOG 4670 (3). Also, all courses are not offered every year. The course schedule for the current academic term is available from the Class Schedule.
- Students registering in certain courses may be required to participate in field trips or field components and pay a portion of the associated expenses. For details, contact the Department of Environment and Geography general office.

IMPORTANT: The Honours and Major programs need not be completed in the course order described in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.

Modifications to the following programs are outlined on the next 4 pages:

- **Bachelor of Environmental Science (Honours)**
- **Bachelor of Environmental Science (Honours), Cooperative Option**
- **Bachelor of Environmental Science (Major)**
- **Bachelor of Environmental Science (Major), Cooperative Option**
- **Bachelor of Environmental Science (General)**

7.2.1 Bachelor of Environmental Science Advanced Entry Entrance Requirements

7.2.1 Bachelor of Environmental Science Advanced Entry Entrance Requirements			
Degree Program in B.Env.Sc.	Minimum Number of Credit Hours	Minimum Degree Grade Point Average	Additional Advanced Entry Entrance Requirements
Honours	48	3.25	No failures on entry ¹ ; a grade of 'B' or better in ENVR 1000 and ENVR 2000 as well as a minimum 'C+' in 6 hours of BIOL 1020 ³ , BIOL 1030 ³ or CHEM 1310 ³ and 'C' in the other course.
Honours (Coop) ²	60	3.25	No failures on entry ¹ ; ENVR 2900; students must satisfy the requirements for entrance/continuation in the regular program and (normally) have completed ENVR 1000, ENVR 2000, ENVR 2270 2810 2810 , ENVR 3160, STAT 1000 ³ , STAT 2000 ³ , BIOL 2300 ³ (AGEC 2370), ECON 2390 (ABIZ 2390), BIOL 1020 ³ , BIOL 1030 ³ and one of GEOG 1290 ³ or GEOL 1340.
Majors	24	2.00	12 credit hours in ENVR 1000, ENVR 2000, BIOL 1020 ³ , BIOL 1030 ³ , CHEM 1300 ³ , CHEM 1310 ³ , STAT 1000 ³ , STAT 2000 ³ , MATH 1500 ³ (or MATH 1200 ³ , MATH 1300 ³ , MATH 1310, MATH 1510, MATH 1520), one of GEOG 1290 ³ or GEOL 1340, PHYS 1020 ³ (or PHYS 1050 ³), PHYS 1030 ³ (or PHYS 1070 ³), with a grade of 'C+' or better in six of the 12 credit hours, and a grade of 'C' or better in the remaining six credit hours.
Majors (Coop) ²	60	2.50	ENVR 2900; students must satisfy the requirements for continuation in the regular program and (normally) have completed ENVR 1000, ENVR 2000, ENVR 2270 2810 2810 , ENVR 3160, STAT 1000 ³ , STAT 2000 ³ , BIOL 2300 ³ (AGEC 2370), ECON 2390 (ABIZ 2390), BIOL 1020 ³ , BIOL 1030 ³ , and one of GEOG 1290 ³ or GEOL 1340.
General	48	2.00	
¹ Students may be permitted to enter the program without satisfying all requirements listed. Students should consult with a Student Advisor for further information. ² Students may be permitted to enter the program without satisfying all requirements listed. Students should consult with the Cooperative Education Coordinator for further information. ³ Equivalent courses offered through Université de Saint-Boniface may be used in lieu of the specified course identified in the entrance requirements chart. Université de Saint-Boniface courses end in the number '1' (e.g. CHEM 1301).			

Bachelor of Environmental Science Program Chart

Bachelor of Environmental Science^{1,2}			
Year 1	Year 2	Year 3	Year 4
HONOURS 120 CREDIT HOURS			
ENVR 1000, ENVR 2000, BIOL 1020, BIOL 1030, CHEM 1300, CHEM 1310, MATH 1500 ³ , STAT 1000, ECON 1010 Plus 3 credit hours from the Faculty of Arts ⁴	ENVR 2810⁸ ENVR 2270⁸ , ENVR 3160 ⁹ , BIOL 2300 (or AGECE 2370), ECON 2390 (ABIZ 2390), PHYS 1020 ⁵ , STAT 2000 One of PHYS 1030 ⁵ , MATH 1200, MATH 1300 ⁶ , MATH 1700 ⁶ One of GEOG 1290 or GEOL 1340 (or GEOL 1440)	ENVR 4110, ENVR 4500 Plus 33 credit hours in an approved Focus Area ⁷ Enough elective credit to total 120 credit hours for the program.	
It is recommended that students complete the W course within the first 60 credit hours of coursework.			
HONOURS COOPERATIVE OPTION 120 CREDIT HOURS			
ENVR 1000, ENVR 2000, BIOL 1020, BIOL 1030, CHEM 1300, CHEM 1310, MATH 1500 ³ , STAT 1000, ECON 1010 Plus 3 credit hours from the Faculty of Arts ⁴	ENVR 2810⁸ ENVR 2270⁸ , ENVR 3160 ⁹ , BIOL 2300 (or AGECE 2370), ECON 2390 (ABIZ 2390), PHYS 1020 ⁵ , STAT 2000, ENVR 2900 One of PHYS 1030 ⁵ , MATH 1200, MATH 1300 ⁶ , MATH 1700 ⁶ One of GEOG 1290 or GEOL 1340 (or GEOL 1440)	ENVR 4110, ENVR 4500 Plus 33 credit hours in an approved Focus Area ⁷ ENVR 3900, ENVR 3980, ENVR 3990, ENVR 3910, ENVR 3920 (ENVR 4980 and ENVR 4910 are optional) Enough elective credit to total 120 credit hours for the program.	
It is recommended that students complete the W course within the first 60 credit hours of courses.			
MAJOR 120 CREDIT HOURS			
ENVR 1000, ENVR 2000, BIOL 1020, BIOL 1030, CHEM 1300, CHEM 1310, MATH 1500 ³ , STAT 1000, ECON 1010 Plus 3 credit hours from the Faculty of Arts ⁴	ENVR 2810⁸ ENVR 2270⁸ , ENVR 3160 ⁹ , BIOL 2300 (or AGECE 2370), ECON 2390 (ABIZ 2390), PHYS 1020 ⁵ , STAT 2000 One of PHYS 1030 ⁵ , MATH 1200, MATH 1300 ⁶ , MATH 1700 ⁶	ENVR 4110 Plus 33 credit hours in an approved Focus Area ⁷ Enough elective credit to total 120 credit hours for the program.	

	One of GEOG 1290 or GEOL 1340 (or GEOL 1440)	
It is recommended that students complete the W course within the first 60 credit hours of courses.		
MAJOR COOPERATIVE OPTION 120 CREDIT HOURS		
ENVR 1000 , ENVR 2000 , BIOL 1020 , BIOL 1030 , CHEM 1300 , CHEM 1310 , MATH 1500 ³ , STAT 1000 , ECON 1010 Plus 3 credit hours from the Faculty of Arts ⁴	ENVR 2810 ⁸ ENVR 2270 ⁸ , ENVR 3160 ⁹ , BIOL 2300 (or AGEC 2370), ECON 2390 (ABIZ 2390), PHYS 1020 ⁵ , STAT 2000 , ENVR 2900 One of PHYS 1030 ⁵ , MATH 1200 , MATH 1300 ⁶ , MATH 1700 ⁶ One of GEOG 1290 or GEOL 1340 (or GEOL 1440)	ENVR 4110 Plus 33 credit hours in an approved Focus Area ⁷ ENVR 3900 , ENVR 3980 , ENVR 3990 , ENVR 3910 , ENVR 3920 (ENVR 4980 and ENVR 4910 are optional) Enough elective credit to total 120 credit hours for the program.
It is recommended that students complete the W course within the first 60 credit hours of courses.		
GENERAL 90 CREDIT HOURS		
ENVR 1000 , ENVR 2000 , BIOL 1020 , BIOL 1030 , CHEM 1300 , CHEM 1310 , MATH 1500 ³ , STAT 1000 , ECON 1010 Plus 3 credit hours from the Faculty of Arts ⁴	ENVR 2810 ⁸ ENVR 2270 ⁸ , ENVR 3160 ⁹ , BIOL 2300 (or AGEC 2370), ECON 2390 (ABIZ 2390), PHYS 1020 ⁵ , STAT 2000 One of PHYS 1030 ⁵ , MATH 1200 , MATH 1300 ⁶ , MATH 1700 ⁶ One of GEOG 1290 or GEOL 1340 (or GEOL 1440)	ENVR 4110 Plus 9 credit hours in an approved Focus Area Enough elective credit to total 90 credit hours for the program.
It is recommended that students complete the W course within the first 60 credit hours of courses.		
MINOR 18 CREDIT HOURS		
ENVR 1000 , ENVR 2000	12 credit hours of ENVR courses numbered at the 2000-level or above.	
NOTES: NOTES: ¹ Advanced Entry into the degree programs is summarized in section 7.2.1 of this <i>Chapter</i> . ² The courses required in this program will satisfy the University Mathematics Requirements. ³ MATH 1510 or MATH 1520 may be taken in place of MATH 1500 (or equivalent). ⁴ It is recommended that students consider a selection from List A below when selecting courses from the Faculty of Arts. ⁵ PHYS 1050 and PHYS 1070 may be used in lieu of PHYS 1020 and PHYS 1030 , respectively. ⁶ MATH 1310 and MATH 1710 may be taken in place of MATH 1300 and MATH 1700 (or equivalent), respectively. ⁷ Focus Area courses must include a minimum of 21 credit hours at the 3000- and/or 4000-level. Focus Area performance		

requirements are defined in [section 7.3](#) of this *Chapter*. Information on Focus Areas is available in the [Focus Area Brochure](#).

⁸The former ENVR 2170 or the former ENVR 2270 may be used in lieu of ENVR 2810.

~~⁸The former ENVR 2170 may be used in lieu of [ENVR 2270](#).~~

⁹The former ENVR 2650 may be used in lieu of [ENVR 3160](#).

IMPORTANT: The Honours and Major programs need not be completed in the manner prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.

NOTE:

- To fulfil prerequisite requirements, a grade of 'C' must be achieved, unless otherwise stated, in any course stipulated as a prerequisite to a further course.
- Students should review the current course topics available through [ENVR 2010](#) (1.5), [ENVR 2020](#) (3), [ENVR 3000](#) (3), [ENVR 3010](#) (1.5), [ENVR 3020](#) (3), [ENVR 4000](#) (3), [ENVR 4010](#) (1.5), and [ENVR 4020](#) (3) as well as those offered through [GEOG 3740](#) (6), [GEOG 3750](#) (3), [GEOG 3760](#) (6), [GEOG 3770](#) (3) and [GEOG 4670](#) (3). Also, all courses are not offered every year or every term. The course schedule for the current academic term is available from the **Class Schedule**.
- Students registering in certain courses may be required to participate in field trips or field components and pay a portion of the associated expenses. For details, contact the [Department of Environment and Geography general office](#).
- Equivalent courses offered through Université de Saint-Boniface may be used in lieu of the specified course identified in the program requirements chart. Université de Saint-Boniface courses end in the number '1' (e.g. [CHEM 1301](#)).

Geological Sciences

Deletion:

GEOL 2250 Geology for Engineers Cr.Hrs. 4 -4.0

Modification:

GEOL 1340 The Dynamic Earth Cr.Hrs. 3 0.0

(Lab required) An introduction to dynamics of the Earth's interior and surface that created the environment in which life evolved and that continue to change the world in which people now live. Not to be held with the former GEOL 1440 or the former GEOL 2250. Required for students intending to proceed in further courses in the Geological Sciences.

Net change in credit hours: -4.0

Faculty of Health Sciences

Program modifications:

Modifications to the **Bachelor of Health Studies**, including to the Bachelor of Health Studies Electives List, are outlined on the next 17 pages.

Program proposals:

Proposals to introduce the following three concentrations within the Bachelor of Health Studies program, can also be found within the next 17 pages.

- **Health Policy, Planning, and Evaluation Concentration**
- **Health Promotion and Education Concentration**
- **Family Health Concentration**

Section D – Academic Calendar Content

[NB. content taken from the 2017-2018 academic calendar,
http://umanitoba.ca/student/records/media/2017_2018_Undergraduate_Calendar_Final.pdf]

4.5 Interdisciplinary Health Program

Health Studies Degree (Total credit hours: 120)

~~The curriculum of this program integrates social science concepts, such as sociology and economics with science concepts, such as biology and metabolism. The integration supports the promotion of health by creating a new understanding among graduates of the determinants of health and how these determinants influence the health of individuals, families, and communities, as well as health services. This degree combines knowledge from science and social science disciplines in their content and learning experiences.~~

The Bachelor of Health Studies (BHSt) is a four year interdisciplinary undergraduate program that incorporates social sciences, humanities and science to provide students with an integrative perspective on health. Within the degree, students must complete one of three concentrations, (1) Health Policy, Planning, and Evaluation, (2) Health Promotion and Education, or (3) Family Health.

Health Policy, Planning, and Evaluation: With a focus on policies, management, and evaluation this concentration provides students with an interest in health systems with a broad interdisciplinary perspective in areas such as the social determinants of health, leadership, environmental health, program planning and evaluation, and culture.

Health Promotion and Education: With a focus on promoting health across contexts, this concentration provides students with an interest in influencing individual, community or population health. Using a broad interdisciplinary focus, students can choose courses focusing on education, learning social determinants of health, nutrition, behavior modification, and leadership. This concentration is also be appropriate to lay the foundation for those considering a career as a home economics teacher.

Family Health: The family health concentration is designed to provide a broad understanding of issues facing families in the context of social environments. Students interested in a career working with children, adolescents, and families will be able to apply the interdisciplinary concepts learned through courses available in this concentration to real world situations.

NB. The current Program Chart shown in the Calendar, would be replaced with the revised Program Chart.

Bachelor of Health Studies Degree Program Chart

The Bachelor of Health Studies (B.H.St.) Degree consists of 3 Concentrations from which students must declare at least one. A Concentration is 18 credit hours. Students must choose from one of the following 3 Concentrations:

1. Health Policy, Planning and Evaluation (see Program Electives List A), or
2. Health Promotion and Education (see Program Electives List B), or
3. Family Health (see Program Electives List C).

Students should consult the University Calendar to ensure that they have the appropriate pre- or co-requisites before they attempt to register in a course. A number of courses are cross-listed between departments/faculties. Students are strongly encouraged to seek the advice of Academic Advisor in the Interdisciplinary Health Program in order to plan their programs.

The B.H.St. Electives List would apply only to those students admitted to the B.H.St. degree program in the Fall of 2018 and later. The existing list of IHP electives should be followed by students admitted to the B.H.St. prior to the Fall of 2018.

YEAR 1 ¹	YEAR 2 ¹	YEAR 3 ¹	YEAR 4 ¹
120 Credit Hours			
<ul style="list-style-type: none"> • 30 credit hours • ANTH 1210 or ANTH 1220 • FMLY 1012 • PSYC 1200 • SOC 1200 • STAT 1000 	<ul style="list-style-type: none"> • 30 credit hours • ECON 1210 or ECON 1220 • GMGT 1010 or GMGT 2070 • HEAL 2600 • HMEC 2000 or PSYC 2250 • HNSC 1210 • NATV 1220 or NATV 1240 or NATV 3240 	<ul style="list-style-type: none"> • 30 credit hours • FMLY 3750 • FMLY 3780 • FMLY 3790 • HEAL 3600 • HMEC 3000 • PHIL 2740 • SOC 2490 	<ul style="list-style-type: none"> • 30 credit hours • HEAL 4600 • HEAL 4610
6 credit hours of Science Electives ² 3 credit hours of Concentration Electives	6 credit hours of Concentration Electives		6 credit hours of Concentration Electives 12 credit hours of Program Electives ³ 6 credit hours of Free Electives

	3 credit hours of Program Electives ³ 3 credit hours of Free Electives	3 credit hours of Concentration Electives 6 credit hours of Program Electives ³	
Notes: ¹ Equivalent courses offered through Université de Saint-Boniface may be used in lieu of the specified courses identified in the degree program chart. Université de Saint-Boniface courses end in the number “1” (e.g. SOC 1201). ² See Bachelor of Health Studies electives list for courses that would meet the science requirement. ³ Of the 21 credit hours of program electives, 9 must be at the 3000-4000 level.			

Bachelor of Health Studies Electives list

The B.H.St. Electives List would apply only to those students admitted to the B.H.St. degree program in the Fall of 2018 and later. The existing list of IHP electives should be followed by students admitted to the B.H.St. prior to the Fall of 2018.

The science requirement may be met using any course offered by the Faculty of Science on the approved elective list (see below), in addition to the following courses:

Faculty of Agricultural and Food Sciences

FOOD 4150 Food Microbiology 1
HNSC 1200 Food, Facts and Fallacies
HNSC 2130 Nutrition through the Life Cycle

Clayton H. Riddell Faculty of Environment, Earth and Resources

EER 1000 Earth: A User's Guide
ENVR 1000 Environmental Science 1: Concepts
ENVR 3400 Introduction to Environment and Health
ENVR 4400 Advanced Issues in Environment and Health

Faculty of Agricultural and Food Sciences

ABIZ 1010 Economics of World Food Issues and Policies
ABIZ 3550 Environmental Policy

HNSC 3350 Culture and Food Patterns
HNSC 3870 Food Geographies (cross-listed with GEOG 3870)
HNSC 4290 Food, Nutrition and Health Policies

SOIL 3520 Pesticides: Environment, Economics and Ethics

Faculty of Arts

ANTH 2020 Relatedness in a Globalizing World
ANTH 2040 Native North America: A Sociocultural Survey
ANTH 2240 Plagues and People
ANTH 2300 Anthropology of Childhood
ANTH 2500 Culture, Environment and Technology
ANTH 2510 Anthropology of Economic Systems
ANTH 2550 Culture and the Individual

ANTH 2560 Anthropology of Illness
ANTH 2820 Human Osteology
ANTH 2860 Evolution and Human Diversity
ANTH 2880 Human Evolution
ANTH 2890 Human Population Biology
ANTH 3200 Anthropology of Food
ANTH 3320 Women in Cross-Cultural Perspective
ANTH 3330 Sex and Sexualities
ANTH 3500 Peoples of the Arctic
ANTH 3550 Canadian Subcultures
ANTH 3740 Human Growth and Variation
ANTH 3750 Anthropological Perspectives on Globalization and the World-System
ANTH 4860 Selected Topics in Biological Anthropology

ECON 2310 Canadian Economic Problems
ECON 2350 Community Economic Development
ECON 2362 Economics of Gender
ECON 2410 The Manitoba Economy
ECON 3690 Economic Issues of Health Policy
ECON 3692 Economic Determinants of Health
ECON 4140 Evaluation of Economic Policy and Programs

GPE 1700 Social Justice in the 21st Century: Global Political Economy and Environmental Change

HIST 2280 Aboriginal History of Canada
HIST 2400 History of Human Rights and Social Justice in the Modern World
HIST 3730 A History Western Canada

LABR 1260 Working for a Living
LABR 3060 Workplace Health and Safety
LABR 3070 Labour Relations and Occupational Health and Safety Law

NATV 1220 The Native Peoples of Canada, Part 1
NATV 1240 The Native Peoples of Canada, Part 2
NATV 1250 Introductory Cree 1
NATV 1270 Introductory Ojibway 1
NATV 2020 The Métis of Canada
NATV 2040 The Native Peoples of the Northern Plains
NATV 2060 The Native Peoples of the Eastern Woodlands
NATV 2070 The Native Peoples of the Subarctic
NATV 2080 Inuit Society and Culture
NATV 2100 Aboriginal Spirituality
NATV 2110 Introduction to Aboriginal Community Development
NATV 3100 Aboriginal Healing Ways
NATV 3150 Residential School Literature
NATV 3240 Native Medicine and Health

NATV 3330 Aboriginal People, Science and the Environment

PHIL 1200 Introduction to Philosophy

PHIL 2150 Mind and Body

PHIL 2290 Ethics and Society

PHIL 2740 Ethics and Biomedicine

PHIL 2750 Ethics and the Environment

POLS 2070 Introduction to Canadian Government

POLS 3100 Gender and Politics in Canada

POLS 3160 Human Rights and Civil Liberties

POLS 3860 Canadian Federalism

POLS 4190 Manitoba Politics and Government

POLS 4860 The Canadian Policy Process

PSYC 2250 Introduction to Psychological Research

PSYC 2260 Introduction to Research Methods in Psychology

PSYC 2290 Child Development

PSYC 2360 Brain and Behaviour

PSYC 2440 Behaviour Modification Principles

PSYC 2470 Learning Foundations of Psychology

PSYC 2480 Cognitive Processes

PSYC 2490 Abnormal Psychology

PSYC 2530 Psychology of Personality

PSYC 2540 Social Psychology

PSYC 3070 Adult Development

PSYC 3130 Introduction to Health Psychology

PSYC 3150 Behavioural Modification Applications

PSYC 3160 Perception and Attention

PSYC 3310 Adolescent Development

PSYC 3390 Thinking

PSYC 3430 Sensory Processes

PSYC 3470 Dyadic Relations

PSYC 3490 Individual Differences

PSYC 3580 Language and Thought

PSYC 3630 Psychological Measurement and Assessment

RLGN 1322 Introduction to Eastern Religions

RLGN 1324 Introduction to Western Religions

RLGN 1410 Death and Concepts of the Future

RLGN 1420 Ethics in World Religions

RLGN 1430 Food: Religious Concepts and Practices

RLGN 2060 Religion and Violence

RLGN 2590 Religion and Social Issues

SOC 2320 Canadian Society and Culture
SOC 2330 Social Psychology in Sociological Perspective
SOC 2360 Small Group Interaction
SOC 2370 Ethnic Relations
SOC 2390 Social Organization
SOC 2460 The Family
SOC 2470 Courtship and Marriage
SOC 2490 Sociology of Health and Illness
SOC 2510 Criminology
SOC 2610 Sociology of Criminal Justice and Corrections
SOC 2620 The Sociology of Aging
SOC 2630 Social Change
SOC 3310 Theorizing Crime, Law and Social Justice
SOC 3370 Sociology of Work
SOC 3380 Power, Politics and the Welfare State
SOC 3400 Policing and Crime Prevention
SOC 3540 The Sociology of Health Care Systems
SOC 3660 Sociology of Mental Disorder
SOC 3730 Society and Education
SOC 3750 Institutional Responses to Violence in Family and Intimate Relationships
SOC 3770 Women, Health and Medicine
SOC 3790 Women, Crime and Social Justice
SOC 3810 Sociological Perspectives on Gender and Sexuality
SOC 3820 Qualitative and Historical Methods in Sociology
SOC 3830 Youth, Crime and Society
SOC 3840 Community and Social Reconstruction
SOC 3860 Genocide, Crime and Society
SOC 3890 Power and Inequality in Comparative Perspective

WOMN 1600 Introduction to Women's and Gender Studies in the Social Sciences
WOMN 2000 Feminist Thought
WOMN 2500 Race, Class and Sexuality
WOMN 2560 Women, Science and Technology
WOMN 2600 Sex, Gender, Space and Place
WOMN 2610 Gender, Transport and Social Justice
WOMN 3000 Interdisciplinary Research in Women's and Gender Studies
WOMN 3560 Feminist Perspectives on Violence Against Women

I. H. Asper School of Business

ACC 1100 Introductory Financial Accounting
ACC 1110 Introductory to Managerial Accounting

GMGT 2060 Management and Organizational Theory

HRIR 2440 Human Resource Management

HRIR 3450 Labour and Employment Relations

HRIR 4410 Staffing and Management Development

HRIR 4420 Compensation

LEAD 2010 Learning to Lead

LEAD 3010 Negotiation and Conflict Management

LEAD 4020 Leadership, Power and Politics in Organizations

MIS 2000 Information Systems for Management

MIS 3510 Systems Analysis and Design

MIS 3520 Data Communications and Networking

Clayton H. Riddell Faculty of Environment, Earth and Resources

GEOG 1280 Introduction to Human Geography

GEOG 1290 Introduction to Physical Geography

GEOG 1700 Social Justice in the 21st Century: Global Political Economy and Environmental Change

GEOG 2330 Place, Populations and Mobility: Geographic Perspectives

GEOG 2640 Geography of Culture and Inequality

GEOG 3640 Social Geography of the Environment

GEOG 3870 Food Geographies

GEOG 4280 Gender and the Human Environment

Faculty of Education

EDUA 1560 Adult Learning and Development

EDUA 1570 Foundations of Adult Education

EDUA 1580 Program Planning in Adult Education

EDUA 1590 Facilitating Adult Education

Rady Faculty of Health Sciences

HEAL 1600 Health and Health Professions

HEAL 4500 Injury Prevention Across the Life Course

HMEC 2650 The Social Aspects of Aging

HMEC 4090 Practicum in Human Ecology

Max Rady College of Medicine

BGEN 3020 Introduction to Human Genetics

FMLY 1000 Families in Contemporary Canadian Society
FMLY 1010 Human Development in the Family
FMLY 1012 Introduction to Social Development
FMLY 1420 Family Management Principles
FMLY 2012 Development, Conflict, and Displacement
FMLY 2400 Family Financial Health
FMLY 2500 Diversity and Families
FMLY 2600 Foundations of Childhood Developmental Health
FMLY 2800 Family Violence
FMLY 3012 Theories of Social Development
FMLY 3220 Death and the Family
FMLY 3240 Families in Later Years
FMLY 3330 Parenting and Developmental Health
FMLY 3400 Families as Consumers
FMLY 3470 Selected Studies in the Family I
FMLY 3600 Adolescents in Families and Society
FMLY 3750 Fundamentals of Health Promotion
FMLY 3800 Conflict Resolution in the Family
FMLY 3802 Intimate Partner Violence
FMLY 3806 Children, Violence and Rights
FMLY 4012 Social Development Policies
FMLY 4220 Aging and Risk in a Global Context
FMLY 4300 Field Experience
FMLY 4330 Management of Family Stress
FMLY 4400 Family Economics: Poverty and Wealth
FMLY 4470 Selected Studies in the Family II
FMLY 4480 Work and Family Issues
FMLY 4500 Senior Thesis
FMLY 4604 Children in Adversity
FMLY 4606 A Social Justice Perspective on Indigenous Maternal and Child Health
FMLY 4802 Family Violence Prevention

College of Nursing

NURS 2610 Health and Physical Aspects of Aging
NURS 3330 Women and Health
NURS 3400 Men's Health: Concerns, Issues and Myths
NURS 4520 Professional Foundations 5: Interprofessional and Collaborative Practice

Faculty of Kinesiology and Recreation Management

KIN 2610 Health and Physical Aspects of Aging
KIN 3450 Motor Control and Learning
KIN 4500 Physical Activity and Aging

KPER 1200 Physical Activity, Health and Wellness

KPER 2200 Planning Principles

KPER 3100 Inclusive Physical Activity and Leisure

REC 2650 The Social Aspects of Aging

REC 3220 Program Planning and Evaluation

REC 4250 Leisure and Aging

Faculty of Science

*** any of these courses from the Faculty of Science can be used to satisfy the 6 credit hour science requirement**

BIOL 1000 Biology: Foundations of Life

BIOL 1010 Biology: Biological Diversity and Interaction (NB. 1000/1010 cannot be held with BIOL1020/BIOL1030)

OR

BIOL 1020 Biology 1: Principles and Themes

BIOL1030 Biology 2: Biological Diversity, Function and Interactions

BIOL 1340 The State of the Earth's Environment: Contemporary Issues

BIOL 1410 Anatomy of the Human Body

BIOL 1412 Physiology of the Human Body

BIOL 2520 Cell Biology

BIOL 3290 Medicinal and Hallucinogenic Plants

CHEM 1300 University 1 Chemistry: Structure and Modelling in Chemistry (NOTE: CHEM 1300 is the pre-requisite for CHEM 1310; may not be held with CHEM1301)

CHEM 1310 University 1 Chemistry: An Introduction to Physical Chemistry

CHEM 1320 University 1 Chemistry: An Introduction to Organic Chemistry (NOTE: may not be held with 2210/2220)

CHEM 2210 Introductory Organic Chemistry 1: Structure and Function

CHEM 2220 Introductory Organic Chemistry 2: Reactivity and Synthesis

CHEM 2360 Biochemistry 1: Biomolecules and an Introduction to Metabolic Energy

CHEM 2370 Biochemistry 2: Catabolism, Synthesis, and Information Pathways

CHEM 2770 Elements of Biochemistry 1

CHEM 2780 Elements of Biochemistry 2

MATH 1080 Fundamentals of Mathematical Reasoning (pending Senate approval)

MATH 1090 Mathematical Reasoning in Euclidean Geometry (pending Senate approval)

MATH 1220 Linear Algebra 1

MATH 1230 Differential Calculus

MATH 1300 Vector Geometry and Linear Algebra

MATH 1500 Introduction to Calculus

MBIO 1010 Microbiology 1
MBIO 1220 Essentials of Microbiology
MBIO 1410 Introduction of Molecular Biology
MBIO 2020 Microbiology II
MBIO 2360 Biochemistry 1: Biomolecules and an Introduction to Metabolic Energy
MBIO 2370 Biochemistry 2: Catabolism, Synthesis, and Information Pathways
MBIO 2420 Introductory Virology

PHYS 1020 General Physics 1 (cannot be held with PHYS 1050)
PHYS 1030 General Physics 2
PHYS 1050 Physics 1: Mechanics
PHYS 1070 Physics 2: Waves and Modern Physics

STAT 2000 Basic Statistical Analysis 2

Faculty of Social Work

SWRK 1310 Introduction to Social Welfare Policy Analysis
SWRK 2050 Community and Organizational Theory
SWRK 2080 Interpersonal Communication Skills
SWRK 2110 Emergence of the Canadian Social Welfare State
SWRK 2130 Comparative Social Welfare Systems
SWRK 2650 The Social Aspects of Aging
SWRK 3130 Contemporary Canadian Social Welfare

Students selecting the **Health Policy, Planning, and Evaluation** concentration should choose 18 credit hours from the following courses (list A).

Course
ABIZ 1010 Economics of World Food Issues and Policies
ACC 1100 Introductory Financial Accounting
ANTH 2560 Anthropology of Illness
ECON 3690 Economic Issues of Health Policy
ECON 3692 Economic Determinants of Health
ENVR 3400 Introduction to Environment and Health
ENVR 4400 Advanced Issues in Environment and Health
FMLY 4012 Social Development Policies
GEOG 1280 Introduction to Human Geography
GEOG 1700 Social Justice in the 21st Century: Global Political Economy and Environmental Change
GEOG 2640 Geography of Culture and Inequality
HNSC 1200 Food Facts and Fallacies
HNSC 3350 Cultural and Food Patterns
HNSC 3870 Food Geographies
KIN 2610 Health and Physical Aspects of Aging (also NURS 2610)
KPER 1200 Physical Activity, Health, and Wellness
KPER 2200 Planning Principles
LABR 1260 Working for a Living
LABR 3060 Workplace Health and Safety
LEAD 2010 Learning to Lead
LEAD 3010 Negotiation and Conflict Management
LEAD 4020 Leadership, Power, and Politics in Organizations
NATV 2100 Aboriginal Spirituality
NATV 3100 Aboriginal Healing Ways
POLS 2070 Introduction to Canadian Government
PSYC 2260 Introduction to Research Methods in Psychology
PSYC 2540 Social Psychology
PSYC 3130 Introduction to Health Psychology
REC 3220 Program Planning and Evaluation
SOC 2390 Social Organization
SOC 2490 Sociology of Health and Illness
SOC 2630 Social Change
SOC 3540 The Sociology of Health Care Systems

Course
STAT 2000 Basic Statistical Analysis 2
SWRK 1310 Introduction to Social Welfare Policy Analysis
SWRK 2050 Community and Organizational Theory
SWRK 2080 Interpersonal Communication Skills

Students selecting the **Health Promotion and Education** concentration should choose 18 credit hours from the following courses (List B).

Course
ANTH 2560 Anthropology of Illness
EDUA 1560 Adult learning and Development
EDUA 1570 Foundations of Adult Education
EDUA 1580 Program Planning in Adult Education
EDUA 1590 Facilitating Adult Education
ENVR 3400 Introduction to Environment and Health
ENVR 4400 Advanced Issues in Environment and Health
FMLY 1010 Human Development in the Family
FMLY 1420 Family Management Principles
FMLY 3012 Theories of Social Development
FMLY 4012 Social Development Policies
GEOG 1280 Introduction to Human Geography
GEOG 1700 Social Justice in the 21st Century: Global Political Economy and Environmental Change
GEOG 2640 Geography of Culture and Inequality
HEAL 4500 Injury Prevention Across the Life Course
HMEC 2650 The Social Aspects of Aging
HNSC 1200: Food Facts and Fallacies*
HNSC 2130 Nutrition through the Life Cycle*
HNSC 2150 Composition, Functional and Nutritional Properties of Food
HNSC 2160 Principles of Food Preparation and Preservation
HSNC 3260 Food Quality Evaluation
HNSC 3350 Culture and Food Patterns
HNSC 4270 Sensory Evaluation of Food
HNSC 4290 Food, Nutrition, and Health Policies
HNSC 4310 Nutrition and the Elderly
KIN 2610 Health and Physical Aspects of Aging (also NUR 2610)
KPER 1200 Physical Activity, Health, and Wellness
LABR 1260 Working for a Living
NATV 2100 Aboriginal Spirituality
NATV 3100 Aboriginal Healing Ways
PHIL 2150 Mind and Body
PSYC 2260 Introduction to Research Methods in Psychology
PSYC 2360 Brain and Behaviour
PSYC 2440 Behaviour Modification Principles
PSYC 2470 Learning Foundations of Psychology

Course
PSYC 2480 Cognitive Processes
PSYC 3130 Introduction to Health Psychology
RLGN 1430 Food: Religious Concepts and Practices
SOC 2620 The Sociology of Aging
SOC 2630 Social Change
SOC 3540 The Sociology of Health Care Systems
SOC 3730 Society and Education
STAT 2000 Basic Statistical Analysis 2*
SWRK 2050 Community and Organizational Theory
SWRK 2080 Interpersonal Communication Skills

Note: *Students considering a career as a Home Economics teacher through the Faculty of Education after degree program should consult with an academic advisor in the Faculty of Education. Some courses (marked with an asterisk) may be required for completion of higher level courses in the 'teachable subject areas' in foods and nutrition and family social sciences, and will require careful program planning.

Students selecting the **Family Health** concentration should choose 18 credit hours from the following courses (list C).

Course
FMLY 1000 Families in Contemporary Canadian Society
FMLY 1010 Human Development in the Family
FMLY 1420 Family Management Principles
FMLY 2012 Development, Conflict and Displacement
FMLY 2400 Family Financial Health
FMLY 2500 Diversity and Families
FMLY 2600 Foundations of Childhood Developmental Health
FMLY 2800 Family Violence
FMLY 3012 Theories of Social Development
FMLY 3220 Death and the Family
FMLY 3240 Families in the Later Years
FMLY 3330 Parenting and Developmental Health
FMLY 3400 Families as Consumers
FMLY 3470 Selected Studies in the Family I
FMLY 3600 Adolescents in Families and Society
FMLY 3800 Conflict Resolution in the Family
FMLY 3802 Intimate Partner Violence
FMLY 3806 Children, Violence and Rights
FMLY 4012 Social Development Policies
FMLY 4300 Field Experience
FMLY 4330 Management of Family Stress
FMLY 4400 Family Economics: Poverty and Wealth
FMLY 4470 Selected Studies in the Family II
FMLY 4480 Work and Family Issues
FMLY 4500 Senior Thesis
FMLY 4604 Children in Adversity

Course
FMLY 4606 A Social Justice Perspective on Indigenous Maternal and Child Health
FMLY 4802 Family Violence Prevention
HEAL 4500 Injury Prevention Across the Life Course

Faculty of Kinesiology and Recreation Management

Introductions:

KIN 4070 Developmental and Movement Disorders Cr.Hrs. 3 +3.0

This course is designed to provide the student with an understanding of neuroscience as it relates to motor control and learning through consideration of foundational content in how the central and peripheral nervous systems contribute to movement control and the contributions of sensory feedback. The role of the nervous system for motor function will be explored through an understanding of a selection of developmental and acquired neurological disorders. Students will have an opportunity to examine the application of a selection of the content and theories to the study of a sample of neurological and/or developmental disorders. May not be held with the former PERS 4200 when titled "Developmental and Movement Disorders." Prerequisite: KPER 2700 (C), or the former KIN 3450 (C), or permission of the instructor.

KIN 4370 Physiology of Exercise in Extreme Environments Cr.Hrs. 3 +3.0

Learn how humans exercise and work under five environmental extremes: heat, cold, hypobaria (altitude), hyperbaria (under water) and microgravity (space). After learning how each environment limits exercise and poses health risks, students will then apply knowledge of exercise physiology to determine how training and acclimatization can mitigate these limitations to maximize performance. Knowledge attained in this course will be valuable professionally (e.g., providing training for athletes in heat and cold), for personal recreation (e.g., mountaineering, SCUBA diving), or research (e.g., microgravity). May not be held with KPER 4000 or the former PERS 4200 when titled "Physiology of Exercise in Extreme Environments." Prerequisite: KIN 3470 (C).

Modifications:

KIN 3400 Therapeutic Modalities Cr.Hrs. 3 0.0

(Lab required) This course will concentrate on the use of therapeutic modalities commonly utilized in the profession of Athletic Therapy. It will introduce the student to various thermal, mechanical, and electromagnetic agents used for therapeutic purposes. May not be held with the former PT 2720. Prerequisite: BIOL 1412.

PHED 3102 Aboriginal Song and Dance Cr.Hrs. 3 0.0

An introduction to a variety of traditional and culturally relevant Aboriginal songs and dances representative of Canada's Aboriginal peoples, including First Nations, Metis and Inuit, taught using western and traditional teaching styles with an emphasis on hands-on learning. May not be held with the former PERS 4200 when titled "Aboriginal Song and Dance." A fieldwork fee is attached to the course.

Net change in credit hours: +6.0

Program modifications:

Modifications to the **Bachelor of Kinesiology** are outlined on the next 2 pages.

Faculty of Kinesiology and Recreation Management – Program Changes

Revisions to:

- Bachelor of Kinesiology, Bachelor of Kinesiology (Athletic Therapy), Bachelor of Physical Education, and Bachelor of Recreation Management and Community Development Programs

Key: **New Material**

~~Deleted Material~~

Program Requirements: Bachelor of Kinesiology

Year 1 - University 1: 30 credit hours

Course No.	Credit Hours
BIOL 1410 Anatomy of the Human Body	3
BIOL 1412 Physiology of the Human Anatomy	3
KPER 1200 Physical Activity, Health and Wellness	3
KPER 1500 Foundations of Physical Education and Kinesiology	3
PSYC 1200 Introduction to Psychology	6
STAT 1000M Basic Statistical Analysis 1	3
Faculty of Science Courses from List A	6
Elective	3

Year 2: 30 credit hours

Course No.	Credit Hours
KPER 2120 Academic Skills in Kinesiology and Recreation Management	3
KPER 2170 History of Physical Activity and Leisure	3
KPER 2200 Planning Principles	3
KPER 2320 Human Anatomy	3
KPER 2330 Biomechanics	3
KPER 2350 Introduction to Research	3
KPER 2540 Psychology of Sport and Physical Activity	3
KPER 2700 Motor Control and Learning	3
Elective	6

Year 3: 30 credit hours

Course No.	Credit Hours
KPER 3100 Inclusive Physical Activity and Leisure	3
KPER 3460 Sociology of Physical Activity and Leisure	3

KPER 3470 Exercise Physiology	3
KPER 3510 Physical Activity and Aging	3
KPER 3512 Principles of Fitness Training	3
Faculty Elective	6
Elective	9

Year 4: 30 credit hours

Course No.	Credit Hours
KPER 4020 Philosophy of Physical Activity and Leisure	3
KPER 4100 Current Issues	3
Advanced Faculty Electives*	12
Faculty Elective (any)	15 3
Elective	9

***Advanced Faculty Electives can be chosen from KIN or KPER courses at the 3000- or 4000-level.**

List A: List of Faculty of Science Electives.

ASTR 1810 Introduction to Astronomy: The Magnificent Universe (3)

ASTR 1830 Life in the Universe (3)

BIOL 1020 Biology1: Principles and Themes (3)

BIOL 1030 Biology 2: Biological Diversity and Interactions (3)

CHEM 1300 University 1 Chemistry: Structure and Modelling in Chemistry (3)

CHEM 1310 University 1 Chemistry: An Introduction to Physical Chemistry (3)

CHEM 1320 University 1 Chemistry: An Introduction to Organic Chemistry (3)

COMP 1010 Introductory Computer Science (3)

COMP 1020 Introductory Computer Science 2 (3)

MATH 1200 Elements of Discrete Mathematics (3)

MATH 1300 Vector Geometry and Linear Algebra (or equivalent) (3)

MATH 1500 Introduction to Calculus (or equivalent) (3)

MATH 1700 Calculus 2 (or equivalent) (3)

MBIO 1010 Microbiology 1 (3)

~~— PHYS 1810 General Astronomy 1: Lights, Stars and Planets (3)~~

~~— PHYS 1820 General Astronomy 2: Exotic Stars, Galaxies and Cosmology (3)~~

~~— PHYS 1830 Perspective on the Universe (3)~~

PHYS 1020 General Physics 1 (or equivalent) (3)

PHYS 1030 General Physics 2 (or equivalent) (3)

Modifications to the **Minor in Recreation Studies** are outlined on the next 2 pages.

Faculty of Kinesiology and Recreation Management – Program Changes

Revisions to:

- Minor in Recreation Studies

Key: **New Material**

~~Deleted Material~~

4.6 Minor in Recreation Studies (123)

To qualify for and declare the Minor in Recreation Studies, students must achieve a grade of “C” or better in **KPER 1400** the two introductory courses ~~PERS 1300 and PERS 1400~~. A student must obtain approval and declare the minor with their home faculty for access into advanced REC courses.

Required Core Courses for the Minor in Recreation Studies (12 credit hours):

- **KPER 1400 Concepts of Recreation and Leisure (3 credit hours)**
- ~~PERS 1300 Introduction to Leisure Travel (3 credit hours)~~
- ~~PERS 1400 Concepts of Recreation and Leisure (3 credit hours)~~
- **REC 2400 Management and Marketing of Leisure Services (3 credit hours)**
- ~~REC 3090 Sustainable Nature-Based Tourism (3 credit hours)~~
- **A minimum of 6 credit hours from the following:**
 - **REC 2100 Introduction to Leisure Travel (3 credit hours)**
 - **REC 2130 Introduction to Outdoor and Land-Based Education (3 credit hours)**
 - **REC 2150 Introduction to Therapeutic Recreation (3 credit hours)**
 - **REC 2170 Introduction to Sport Management (3 credit hours)**

Electives** (Choose 6 credit hours from the following):

- **REC 3090 Sustainable Nature-Based Tourism (3 credit hours)**
- **REC 3170 Sport and Development in Community (3 credit hours)**
- **REC 3310 Cultural Tourism (3 credit hours)**
- **REC 3770 Indigenous Perspectives on Land-Based Education (3 credit hours)**
- **REC 4060 Person Centred Leisure Education (3 credit hours)**
- **REC 4072 Advanced Marketing of Leisure Services (3 credit hours)**
- **REC 4120 Recreational Travel and Tourism (3 credit hours)**
- **REC 4250 Leisure and Aging (3 credit hours)**
- **REC 4350 Parks and Protected Areas Planning, Management: Field Studies (3 credit hours)**
- **REC 4400 The Administration of Special Events (3 credit hours)**
- **REC 4720 Wilderness Adventures (3 credit hours)**
- **REC 4770 Indigenous Recreation and Wellbeing (3 credit hours)**

- KPER 4000 Special Topics (3 credit hours)
- KPER 4110 The Olympics and the Global Sporting Event (3 credit hours)
- KPER 4320 Sport and the Body (3 credit hours)
- KPER 4340 Sport, Film and Society (3 credit hours)

****Students may count REC 2100, REC 2130, REC 2150, and REC 2170 to fulfil the electives requirements if they have not already counted these courses above. That is, students may elect to take all 12 credit hours of required elective courses in lieu of taking 6 credit hours required elective courses and 6 credit hours of electives.**

~~Electives (Choose 6 credit hours from the following):~~

~~REC 4090 Sustainable Nature-Based Tourism Planning, Management and Research (3 credit hours)~~

~~REC 4170 Sport Management (3 credit hours)~~

~~REC 4250 Leisure and Aging (3 credit hours)~~

~~REC 4400 The Administration of Special Events (3 credit hours)~~

~~REC 4350 Parks and Protected Areas Planning and Management (6 credit hours) (Summer Session Travel Study—Instructor Permission Required)~~

~~PERS 4200 Special Topics (3 credit hours)~~

****External students may complete up to 12 credit hours from the Recreation Studies Minor course list without declaring the minor. Students who declare the minor must take the minimum 18 credit hours but will be allowed to take up to 30 hours from the above courses.**

Note: No minor in Physical Education or Kinesiology is offered.

College of Nursing

Deletions:

NURS 3210 Nursing Research Methods Cr.Hrs. 3	-3.0
NURS 3280 Nursing Skills Laboratory Cr.Hrs. 2	-2.0
NURS 3290 Health Restoration in Nursing Cr.Hrs. 6	-6.0
NURS 3300 Clinical Nursing Practice III Cr.Hrs. 3	-3.0
NURS 3310 Health Maintenance in Nursing Cr.Hrs. 6	-6.0
NURS 3320 Clinical Nursing Practice IV Cr.Hrs. 3	-3.0
NURS 4220 Law and Ethics in Nursing Practice Cr.Hrs. 3	-3.0
NURS 4250 Palliative Nursing Care Cr.Hrs. 3	-3.0
NURS 4260 Nursing Care in Mental Health and Illness Cr.Hrs. 3	-3.0
NURS 4270 Clinical Nursing Practice V Cr.Hrs. 4	-4.0
NURS 4310 Nursing Leadership Practices and Issues Cr.Hrs. 4	-4.0
NURS 4420 Health Promotion in the Community Cr.Hrs. 3	-3.0
NURS 4430 Clinical Nursing Practice 6 Cr.Hrs. 3	-3.0
NURS 4440 Prevention of Illness Cr.Hrs. 3	-3.0

Modifications:

NURS 2540 Nursing Practice 1 Cr. Hrs. 2 0.0

This course enables students to demonstrate clinical competence by applying the theoretical knowledge, psychomotor skills and health assessment skills covered in Year 1 Term 1 courses in the practice setting. Pre- or corequisites: NURS 2500, NURS 2510, NURS 2518 (or the former NURS 2512), NURS 2520 and NURS 2530. Registration is normally restricted to students in Year 2 of the program. This course is graded on a pass/fail basis.

NURS 2542 Nursing Practice 2 Cr. Hrs. 0.0

This course enables students to demonstrate clinical competence by applying the theoretical knowledge, psychomotor skills and health assessment skills covered in Year 1 Term 2 courses in the practice setting. May not be held with NURS 2190. Pre- or corequisites: NURS 2514, NURS 2522 (or the former NURS 2516), and NURS 2532. This course is graded on a pass/fail basis.

Net change in credit hours: -49.0

Faculty of Science

Faculty of Science

Program modification:

Modifications to the Bachelor of Science (General) are outlined on the next 2 pages.

3.2 B.Sc. (General) Degree Academic Regulations

B.Sc. General Academic Regulations¹

Introductory Level Science courses (24 credit hours): Students must select 6 credit hours from each of 3 areas listed below (18 credit hours) in Group A. Additionally, students must select 6 credit hours from any courses listed in Group A and/or Group B.

NOTE: No more than 6 credit hours may be selected from any single subject area for use toward the 24 credit hours of introductory course requirements.

Group A:

Astronomy: ~~six credit hours chosen from PHYS 1810, PHYS 1820, PHYS 1830~~ **ASTR 1810 and ASTR 1830**

Biology: BIOL 1020 and BIOL 1030

Chemistry: CHEM 1300 and CHEM 1310

Computer Science: COMP 1010 (or COMP 1012²) and COMP 1020

Mathematics: six credit hours chosen from:

MATH 1200¹

3 credit hours from MATH 1210¹ MATH 1220¹ or MATH 1300¹ (or equivalent),

3 credit hours from MATH 1230 or MATH 1500 (or equivalent),

3 credit hours from MATH 1232 or MATH 1700 (or equivalent),

MATH 1240

Microbiology: MBIO 1010 and MBIO 2020

Physics: PHYS 1020 or PHYS 1050; and PHYS 1030 or PHYS 1070

Statistics: ((STAT 1000⁴ or STAT 2220³) and STAT 2000⁴) or (STAT 1150⁴ and STAT 2150⁴)

Group B:

BIOL 1410, FORS 2000.

Notes:

1. MATH 1210 is intended for Engineering students and may not be held for credit with MATH 1200, MATH 1220 or MATH 1300.

2. COMP 1012 is intended for Engineering students and may not be held for credit with COMP 1010.

3. STAT 2220 is intended for Engineering students and may not to be held for credit with STAT 1000 or STAT 1150.

4. It is recommended that students intending to complete their advanced level Science subjects in Statistics or Mathematics choose STAT 1150 and STAT 2150, rather than STAT 1000 and STAT 2000. STAT 1000 and STAT 2000 may not be held for credit with STAT 1150.

Biochemistry

Program modifications:

Modifications to the following programs are outlined on the next 2 pages:

- **Bachelor of Science (Joint Honours) in Biochemistry**
- **Bachelor of Science (Joint Honours) in Biochemistry, Cooperative Option**
- **Bachelor of Science (Major) in Biochemistry**
- **Bachelor of Science (Major) in Biochemistry, Cooperative Option**

4.2.2 Biochemistry Programs (offered Jointly by the Departments of Chemistry and Microbiology)

4.2.2 Biochemistry Programs (offered Jointly by the Departments of Chemistry and Microbiology)			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS 120 CREDIT HOURS			
CHEM 1300, CHEM 1310 BIOL 1020, BIOL 1030 PHYS 1050 (or PHYS 1020), PHYS 1070 (or PHYS 1030) MATH 1500 ¹ , MATH 1700 ¹	CHEM 2210, CHEM 2220, CHEM 2260 (CHEM 2280), CHEM 2360, CHEM 2370, CHEM 2400, CHEM 2470 MBIO 1010 ⁶ , MBIO 2020	CHEM 3570 MBIO 3410, MBIO 3450, MBIO 3460	CHEM 4360, CHEM 4620, CHEM 4630, CHEM 4700 MBIO 4540
In Year 1 or Year 2 the following must be completed: 6 credit hours from the Faculty of Arts including the University Written English "W" requirement ² 3 credit hours chosen from COMP, MATH, or STAT ⁵		21 credit hours selected from the list of Microbiology and Chemistry optional courses (listed above). 12 credit hours selected from the Faculty of Science ⁵	
30 Hours	30 Hours	30 Hours	30 Hours
JOINT HONOURS COOPERATIVE OPTION³ 120 CREDIT HOURS			
CHEM 1300, CHEM 1310 BIOL 1020, BIOL 1030 PHYS 1050 (or PHYS 1020), PHYS 1070 (or PHYS 1030) MATH 1500 ¹ , MATH 1700 ¹	CHEM 2210, CHEM 2220, CHEM 2260 (CHEM 2280), CHEM 2360, CHEM 2370, CHEM 2400, CHEM 2470 MBIO 1010 ⁶ , MBIO 2020	CHEM 3570 MBIO 3410, MBIO 3450, MBIO 3460	CHEM 4360, CHEM 4620, CHEM 4630 MBIO 4540
In Year 1 or Year 2 the following must be completed: 6 credit hours from the Faculty of Arts including the University Written English "W" requirement ² 3 credit hours chosen from COMP, MATH, or STAT ⁵		24 credit hours selected from the list of Microbiology and Chemistry Optional courses listed above. 12 credit hours selected from the Faculty of Science ⁵ Work Terms: MBIO 3980, MBIO 3990, MBIO 4980 and/or MBIO 4990	
30 Hours	30 Hours	30 Hours	30 Hours
JOINT FOUR YEAR MAJOR (Including Cooperative Option)^{3,4} 120 CREDIT HOURS			
CHEM 1300, CHEM 1310 BIOL 1020, BIOL 1030 PHYS 1050 (or PHYS 1020), PHYS	CHEM 2210, CHEM 2220, CHEM 2260 (CHEM 2280), CHEM 2360, CHEM 2370, CHEM 2400, CHEM 2470	CHEM 3570 MBIO 3410 One of: MBIO 3450, MBIO 3460, MBIO 4540	CHEM 4630 One of: CHEM 4620, CHEM 4360, CHEM 4370

1070 (or PHYS 1030)	MBIO 1010 ⁶ , MBIO 2020		
MATH 1500 ¹ , MATH 1700 ¹			
In Year 1 or Year 2 the following must be completed:	24 credit hours of Microbiology and Chemistry (minimum 6 credit hours from each dept.). Of these 24 credit hours, at least 12 hours must be 4000 level courses.		
6 credit hours from the Faculty of Arts including the University Written English "W" requirement ²	21 credit hours of approved electives ⁵		
3 credit hours chosen from COMP, MATH, or STAT ⁵	Work Terms (if Co-op Selected):		
	MBIO 3980, MBIO 3990, MBIO 4980 and / or MBIO 4990		
NOTES:			

¹ MATH 1230 or MATH 1510 or MATH 1520 may be taken in place of MATH 1500; MATH 1232 or MATH 1710 may be taken in place of MATH 1700; MATH 1690 may be taken in place of MATH 1500 and MATH 1700.

² As there are no open electives in Year 2 of the program, students should complete the university written English requirement in Year 1. If not completed in Year 1, a "W" course must be completed prior to Year 3 in addition to the required Year 2 courses.

³ IMPORTANT: Students in the cooperative programs must ensure that they are able to satisfy the prerequisites for all 3000 and 4000 level courses they plan to take.

⁴ The four year Major program need not be completed in the manner prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.

⁵ MATH 1010, MATH 1020, the former MATH 1190, **the former** COMP 1260, **the former** COMP 1270, **COMP 1500, and COMP 1600** may not be chosen to satisfy this requirement

⁶ MBIO 1010 can be taken in Year 1 after BIOL 1020.

(Letters in brackets indicate minimum prerequisite standing for further study.)

Biological Sciences

Deletions:

BIOL 4250 Principles of Plant Pathology Cr.Hrs. 3	-3.0
BIOL 4340 Aquaculture Cr.Hrs. 3	-3.0
BIOL 4390 Principles of Wildlife Management Cr.Hrs. 3	-3.0

Modification:

BIOL 3452 Environmental Plant Physiology Cr.Hrs. 3	0.0
(Lab required) A physiological study of plant-environment interactions with emphasis on the development of strategies to survive abiotic stresses including heat, cold, drought, flooding, shade, excess light and UV light. The unique mechanisms used by plants (including the fascinating carnivorous species) to obtain nutrients in deficient environments will also be covered. May not be held with the former BOTN 3010. Prerequisite: one of BIOL 3400, the former BIOL 3450, the former BOTN 2020, PLNT 3400, or the former PLNT 3500 (C) or consent of the department.	

Net change in credit hours: -9.0

Chemistry

Program modification:

Modifications to the following programs are outlined on the next 2 pages:

- **Bachelor of Science (Honours) in Chemistry**
- **Bachelor of Science (Honours) in Chemistry, Cooperative Option**
- **Bachelor of Science (Major) in Chemistry**
- **Bachelor of Science (Major) in Chemistry, Cooperative Option**

4.5.2 Chemistry Program Charts

YEAR 1	YEAR 2	YEAR 3	YEAR 4
HONOURS³ (incl. Co-operative Option if selected) 120 CREDIT HOURS			
CHEM 1300, CHEM 1310 (B) PHYS 1050 (or PHYS 1020), PHYS 1070 MATH 1500 ¹ , MATH 1700 ¹	CHEM 2210, CHEM 2220, CHEM 2260 (CHEM 2280), CHEM 2290, CHEM 2400, CHEM 2470, CHEM 2860 (CHEM 2360)	CHEM 3400, CHEM 3590	CHEM 4610 (6), CHEM 4710 (6)
In Year 1 or Year 2 the following must be completed: 6 credit hours from the Faculty of Arts, which should include the required "W" course 3 credit hours from Mathematics, Statistics or Computer Science courses ² 12 credit hours of approved electives in years one and two		Sufficient credit hours (18) from the 2000, 3000 and 4000 level Chemistry ³ courses not yet taken to total a minimum of 63 credit hours of Chemistry courses at the 1000-4000 level. These credit hours may make up part of a focus area. 9 credit hours of non-Chemistry ⁵ courses which are part of a designated focus area ³ . If no Focus Area is selected, students must choose 9 credit hours of Chemistry courses. 15 credit hours of approved electives in years three and four ⁴	
		Work Terms (if Co-op selected): CHEM 3980, CHEM 3990	Work Terms (if Co-op selected): CHEM 4980 and/or CHEM 4990
30 Hours	30 Hours	30 Hours	30 Hours

NOTES:

1. MATH 1230, MATH 1510 or MATH 1520 may be taken in place of MATH 1500; MATH 1232 or MATH 1710 may be taken in place of MATH 1700; MATH 1690 may be taken in place of MATH 1500 and MATH 1700.

2. MATH 1010, MATH 1020, the former MATH 1190, MATH 1191, **COMP 1500**, **COMP 1600**, the former COMP 1260 and the former COMP 1270 may not be used to satisfy this requirement.

3. Students may elect to complete the requirements set out in one of the Chemistry focus areas. If a student opts for one of the focus areas, they should consult with the Department of Chemistry and a Science Academic Advisor for information regarding specific course requirements for each focus area.

4. Elective courses should be selected in consultation with the Department of Chemistry and/or a Faculty of Science Academic Advisor.

5. Not all Focus Areas include non-Chemistry courses. Some Focus Areas are all Chemistry courses. Refer to the description of each Focus Area for more information.

(Letters in brackets indicate minimum prerequisite standing for further study. The number 6 in brackets indicates a 6 credit hour course.)

4-YEAR MAJOR ^{3,4} (incl. Co-operative Option if selected) 120 CREDIT HOURS (comprising courses listed in chart below, and electives ⁵)			
CHEM 1300, CHEM 1310 (C+)	CHEM 2210, CHEM 2220, CHEM 2260 (CHEM 2280), CHEM 2290, CHEM 2400, CHEM 2470, CHEM 2860 (CHEM 2360)	CHEM 3400, CHEM 3590	CHEM 4610 (6)
PHYS 1050 (or PHYS 1020 (C+)), PHYS 1070			
MATH 1500 ¹ , MATH 1700 ¹			
In Year 1 or Year 2 the following must be completed:		Sufficient credit hours (18) from the 2000, 3000 and 4000 level Chemistry ³ courses not yet taken to total a minimum of 57 credit hours of Chemistry courses at the 1000-4000 level. These credit hours may make up part of a focus area.	
6 credit hours from the Faculty of Arts, which should include the required "W" course.			
3 credit hours from Mathematics, Statistics or Computer Science courses ²		9 credit hours of non-Chemistry courses ⁶ which are part of a designated focus area ³ . (Note: If no Focus Area is selected, students must choose 9 credit hours of Chemistry courses.)	
		Work Terms (if Co-op selected):	Work Terms (if Co-op selected):
		CHEM 3980, CHEM 3990	CHEM 4980 and/or CHEM 4990
30 Hours	30 Hours	30 Hours	30 Hours

NOTES:

1. MATH 1230, MATH 1510 or MATH 1520 may be taken in place of MATH 1500; MATH 1232 or MATH 1710 may be taken in place of MATH 1700; MATH 1690 may be taken in place of MATH 1500 and MATH 1700.

2. MATH 1010, MATH 1020, the former MATH 1190, MATH 1191, **COMP 1500**, **COMP 1600**, the former COMP 1260 and the former COMP 1270 may not be used to satisfy this requirement.

3. Students may elect to complete the requirements set out in one of the Chemistry focus areas. If a student opts for one of the focus areas, they should consult with the Department of Chemistry and a Science Academic Advisor for information regarding specific course requirements for each focus area.

4. IMPORTANT: The four year Major program need not be completed in the manner prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.

5. Elective courses should be selected in consultation with the Department of Chemistry and/or a Faculty of Science Academic Advisor.

6. Not all Focus Areas include non-Chemistry courses. Some Focus Areas are all Chemistry courses. Refer to the description of each Focus Area for more information.

(Letters in brackets indicate minimum prerequisite standing for further study. The number 6 in brackets indicates a 6 credit hour course.)

Computer Science

Modifications:

COMP 2080 Analysis of Algorithms Cr.Hrs. 3 0.0

Methods of analyzing the time and space requirements of algorithms. Average case and worst case analysis. Models of computation. Prerequisites: MATH 1240 (C), MATH 1241 (C) or COMP 2130 (C); and one of COMP 2140 or the former COMP 2061 (C). STAT 1000 or STAT 1001 or STAT 1150 is strongly recommended.

COMP 2160 Programming Practices Cr.Hrs. 3 0.0

(Lab required) Introduction to issues involved in real-world computing. Topics will include memory management, debugging, compilation, performance, and good programming practices. Prerequisite: COMP 1020 (C+) or COMP 1021 (C+).

COMP 2280 Introduction to Computer Systems Cr.Hrs. 3 0.0

(Lab required) Data representation and manipulation, machine-level representation of programs, assembly language programming, and basic computer architecture. Not available to students who have previously completed ECE 3610. Prerequisites: COMP 2140 (C), COMP 2160 (C), and one of MATH 1240 (C), MATH 1241 (C) or COMP 2130 (C).

COMP 4140 Introduction to Cryptography and Cryptosystems Cr.Hrs. 3 0.0

Description and analysis of cryptographic methods used in the authentication and protection of data. Classical cryptosystems and cryptanalysis, the Advanced Data Encryption Standard (ADES) and Public-key cryptosystems. Prerequisite: one of MATH 1240 (C), MATH 1241 (C) or COMP 2130 (C). Students must be registered in Computer Engineering or fourth year of a Major or Honours program in the Department of Computer Science.

COMP 4300 Computer Networks Cr.Hrs. 3 0.0

(Lab required) This course examines the principles of computer networks, including network architectures, algorithms, protocols, and performance. May not be held with the former COMP 3720 or the former COMP 4720 or ECE 3700. Prerequisite: COMP 2280 (C) and COMP 3010 (C).

COMP 4420 Advanced Design and Analysis of Algorithms Cr.Hrs. 3 0.0

Algorithm design with emphasis on formal techniques in analysis and proof of correctness. Computational geometry, pattern matching, scheduling, numeric algorithms, probabilistic algorithms, approximation algorithms and other topics. Prerequisites: COMP 3170 (C) and (STAT 1000 (C) or STAT 1001 (C) or STAT 1150 (C)).

Net change in credit hours: 0.0

Program modifications:

Modifications to the following programs are outlined on the next 4 pages:

- **Bachelor of Science (Honours) in Computer Science**
- **Bachelor of Science (Honours) in Computer Science, Cooperative Option**
- **Bachelor of Science (Major) in Computer Science**
- **Bachelor of Science (Major) in Computer Science, Cooperative Option**

4.6.2 Computer Science

4.6.2 Computer Science Program Charts – Fall 2018 Entry to Computer Science

YEAR 1	YEAR 2	YEAR 3	YEAR 4
HONOURS ^{2,3,4,5} (Including Cooperative Option if selected) ² 120 CREDIT HOURS			
COMP 1010, COMP 1020(B) (MATH 1220 ¹ (C) or MATH 1300 ¹ (C)) (MATH 1230 ¹ (C) or MATH 1500 ¹ (C))	COMP 2080, COMP 2130 ¹ , COMP 2140, COMP 2150, COMP 2160, COMP 2280, MATH 1240¹	COMP 3030, COMP 3170, COMP 3350, COMP 3370, COMP 3430	COMP 4620 and 21 credit hours of 4000 level Computer Science courses
In Year 1 and / or Year 2 the following must be completed: STAT 1000 (C) or STAT 1150 (C) 6 credit hours from the Faculty of Arts, which should include the required 3 credit hour "W" course. 21 credit hours of approved elective courses ^{3,4}		21 credit hours of approved electives ^{3,5} Work Terms (if Co-op Selected): COMP 2980, COMP 3980, COMP 4980 must be completed prior to the last academic term	
30 Hours	30 Hours	30 Hours	30 Hours
FOUR YEAR MAJOR ^{2,3,4,5} (Including Cooperative Option if Selected) ² 120 CREDIT HOURS			
COMP 1010, COMP 1020(C+) MATH 1300(C) ¹ and MATH 1500(C) ¹	COMP 2080, COMP 2130 ¹ , COMP 2140, COMP 2150, COMP 2160, COMP 2280, MATH 1240¹	COMP 3350, COMP 3370, COMP 3430, COMP 4620 18 credit hours of 3000 or 4000 level Computer Science courses of which 6 credit hours must be at the 4000 level	
In Year 1 or Year 2 the following must be completed: STAT 1000 (C) or STAT 1150 (C) 6 credit hours from the Faculty of Arts, which should include the required 3 credit hour "W" course. 21 credit hours of approved electives ^{4,5}		30 credit hours of approved electives ^{3,5} Work Terms (if Co-op Selected): COMP 2980, COMP 3980, COMP 4980 must be completed prior to the last academic term	
THREE YEAR GENERAL (90 CREDIT HOURS)			
COMP 1010, COMP 1020	18 credit hours of 2000, 3000, and (or) 4000 level Computer Science courses (subject to the Faculty requirement that of the 36 credit hours to be in the two advanced level Science areas, at least 6 credit hours must be at the 3000/4000 level.)		
MINOR			
COMP 1010, COMP 1020	COMP 2140 Plus a minimum of 9 credit hours from 2000 and (or) 3000 level Computer Science courses.		
NOTES:			
¹ MATH 1210 or MATH 1211, MATH 1220 or MATH 1310 may be taken in place of MATH 1300; MATH 1230, MATH 1510, MATH 1520, or MATH 1690 (6) may be taken in place of MATH 1500. Honours			

students are encouraged to take MATH 1220 instead of MATH 1300 and to take MATH 1230 instead of MATH 1500 to better prepare them for later, higher-level studies. A grade of “C” or better is required in each of the two 3-credit hour courses of Mathematics used as prerequisite to COMP 2130. Students who have previously completed COMP 2130 may use it in lieu of MATH 1240.

² Entry to the Honours Cooperative Option and four year Major Cooperative Option is at the end of second year. Employment terms follow 3A (September-December), 3B (May-August) and 4A (January-April). Students in the Cooperative Option must complete three employment terms and receive a passing grade in COMP 2980, COMP 3980 and COMP 4980 prior to the last academic term.

³ Additional information on how students may select their courses can be found at the beginning of this section.

⁴ IMPORTANT: The Honours and four year Major degree need not be completed in the order prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program. Students in the Cooperative Option should be aware that while other arrangements are possible, they may jeopardize their chances of obtaining employment by selecting such arrangements. Students should discuss their planned sequence of courses with the department prior to making adjustments to the sequence above.

⁵ IMPORTANT: A maximum of 90 credit hours of computer science, statistics and mathematics courses can be included in a Major or Honours program.

Effective for entry to Computer Science Programs in Fall 2019:

YEAR 1	YEAR 2	YEAR 3	YEAR 4
HONOURS ^{2,3,4,5} (Including Cooperative Option if selected) ² 120 CREDIT HOURS			
COMP 1010, COMP 1020 (B) (MATH 1220 ¹ (C) (C+) or MATH 1300 ¹ (C) (C+)) (MATH 1230 ¹ (C) (C+) or MATH 1500 ¹ (C) (C+)) MATH 1700¹ (C)	COMP 2080, COMP 2140, COMP 2150, COMP 2160, COMP 2280, MATH 1240 ¹	COMP 3030, COMP 3170, COMP 3350, COMP 3370, COMP 3430	COMP 4620 and 21 credit hours of 4000 level Computer Science courses
In Year 1 and / or Year 2 the following must be completed:		21 credit hours of approved electives ^{3,5}	
STAT 1000 (C) or STAT 1150 (C) 6 credit hours from the Faculty of Arts, which should include the required 3 credit hour “W” course. 24 18 credit hours of approved elective courses ^{3,4}		Work Terms (if Co-op Selected): COMP 2980, COMP 3980, COMP 4980 must be completed prior to the last academic term	
30 Hours	30 Hours	30 Hours	30 Hours
FOUR YEAR MAJOR ^{2,3,4,5} (Including Cooperative Option if Selected) ² 120 CREDIT HOURS			

COMP 1010, COMP 1020 (C+)	COMP 2080, COMP 2140, COMP 2150, COMP 2160, COMP 2280, MATH 1240 ¹	COMP 3350, COMP 3370, COMP 3430, COMP 4620
MATH 1300 (C) (C+) ¹ and MATH 1500 (C) (C+) ¹ and MATH 1700¹ (C)		18 credit hours of 3000 or 4000 level Computer Science courses of which 6 credit hours must be at the 4000 level
In Year 1 or Year 2 the following must be completed:		30 credit hours of approved electives ^{3,5}
STAT 1000 (C) or STAT 1150 (C)		Work Terms (if Co-op Selected):
6 credit hours from the Faculty of Arts, which should include the required 3 credit hour “W” course.		COMP 2980, COMP 3980, COMP 4980 must be completed prior to the last academic term
24 18 credit hours of approved electives ^{4,5}		
THREE YEAR GENERAL (90 CREDIT HOURS)		
COMP 1010, COMP 1020	18 credit hours of 2000, 3000, and (or) 4000 level Computer Science courses (subject to the Faculty requirement that of the 36 credit hours in the two advanced level Science areas, at least 6 credit hours must be at the 3000/4000 level.)	
MINOR		
COMP 1010, COMP 1020	COMP 2140	
	Plus a minimum of 9 credit hours from 2000 and (or) 3000 level Computer Science courses.	
NOTES:		
¹ MATH 1210 or MATH 1211, MATH 1220 or MATH 1310 may be taken in place of MATH 1300; MATH 1230, MATH 1510, MATH 1520, or MATH 1690 (6) may be taken in place of MATH 1500; MATH 1232, MATH 1710 or MATH 1690 (6) may be taken in place of MATH 1700. Honours students are encouraged to take MATH 1220 instead of MATH 1300 and to take MATH 1230 instead of MATH 1500 to better prepare them for later, higher-level studies. Students who have previously completed COMP 2130 may use it in lieu of MATH 1240.		
² Entry to the Honours Cooperative Option and four-year Major Cooperative Option is at the end of second year. Employment terms follow 3A (September-December), 3B (May-August) and 4A (January-April). Students in the Cooperative Option must complete three employment terms and receive a passing grade in COMP 2980, COMP 3980 and COMP 4980 prior to the last academic term.		
³ Additional information on how students may select their courses can be found at the		

beginning of this section.

⁴ **IMPORTANT:** The Honours and four-year Major degree need not be completed in the order prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program. Students in the Cooperative Option should be aware that while other arrangements are possible, they may jeopardize their chances of obtaining employment by selecting such arrangements. Students should discuss their planned sequence of courses with the department prior to making adjustments to the sequence above.

⁵ **IMPORTANT:** A maximum of 90 credit hours of computer science, statistics and mathematics courses can be included in a Major or Honours program.

Modifications to the following programs are outlined on the next page:

- **Bachelor of Science (Joint Honours) in Computer Science and Mathematics**
- **Bachelor of Science (Joint Honours) in Computer Science and Mathematics, Cooperative Option**

4.6.3 Computer Science - Mathematics Joint Honours Program (including Co-op if selected)

The departments of Computer Science and Mathematics offer a joint Honours program for in-depth study in both Computer Science and Mathematics.

Honours Requirements

To enter the Joint Honours Computer Science-Mathematics program, the student must have a minimum grade of "B" in each of COMP 1020, either MATH 1232 or MATH 1690 (or a minimum grade of "A" in MATH 1700), and have satisfied the Faculty of Science requirements for entry to the honours program. It is recommended that STAT 2150 be completed in Year 1 as an elective.

YEAR 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS (Including Cooperative Option if selected) 120 CREDIT HOURS			
COMP 1010 and COMP 1020(B)		COMP 3030, COMP 3170, COMP 3370, COMP 3430	
MATH 1220 ¹ , MATH 1230 ¹ , MATH 1232 ¹ , MATH 1240		Three of: COMP 3010, COMP 3020, COMP 3290, COMP 3350, COMP 3380, COMP 3190, COMP 3440, COMP 3490, COMP 3820	
STAT 1150 ¹	COMP 2080 ² , COMP 2140, COMP 2160, COMP 2280	Three of: COMP 4020, COMP 4140, COMP 4180, COMP 4190, COMP 4290, COMP 4300, COMP 4340, COMP 4350, COMP 4360, COMP 4380, COMP 4490, COMP 4510, COMP 4580, COMP 4690, COMP 4710	
6 credit hours from the Faculty of Arts, which should include the required 3 credit hour "W" course ²	MATH 2020, MATH 2080, MATH 2090, MATH 2150, MATH 2180	MATH 2030, MATH 2160, MATH 3320, MATH 3440, MATH 3470, MATH 3472	
6 3 credit hours of electives	3 credit hours of approved electives	9 credit hours from MATH 2070, MATH 2170, any 3000 or 4000 level Mathematics courses, of which at least 3 credit hours must be 4000 level	
		3 credit hours of electives	
	Work Term (if Co-op Selected) ³² :	Work Term (if Co-op Selected) ³² :	Work Term (if Co-op Selected) ³² :
	COMP 2980	COMP 3980	COMP 4980
30 Hours	30 Hours	30 Hours	30 Hours

NOTES:

¹ Students are strongly advised to take MATH 1220, MATH 1230 and MATH 1232. The following substitutions are allowed (but not advised), provided the grades indicated in brackets are achieved: MATH 1300 (A) in place of MATH 1220, MATH 1500 (A) or MATH 1510 (A) in place of MATH 1230, MATH 1700 (A) or MATH 1710 (A) in place of MATH 1232, MATH 1690 (B) in place of MATH 1230 and MATH 1232. With permission from the department, students may be able to substitute STAT 1000 and STAT 2000 in place of STAT 1150.

² ~~Students in this program will not take COMP 2130. COMP 2130 is waived as a prerequisite for students in this program.~~

³² When chosen, the Cooperative Option work terms (2980, 3980, 4980) will normally be completed during the Summer Terms following years 2, 3, and 4 respectively.

(Letters in brackets indicate minimum prerequisite standing for further study. The number 6 in brackets indicates a 6 credit hour course.)

Modifications to the following programs are outlined on the next 2 pages:

- **Bachelor of Science (Joint Honours) in Computer Science and Statistics**
- **Bachelor of Science (Joint Honours) in Computer Science and Statistics, Cooperative Option**

4.6.5 Computer Science – Statistics Joint Honours Program

YEAR 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS 120 credit hours (comprising courses listed in chart below, and electives)			
COMP 1010, COMP 1020 (B) STAT 1150 ¹ , STAT 2150 MATH 1220 ¹ , MATH 1230 ¹ , MATH 1232 ¹ , MATH 1240 Plus 6 credit hours from the Faculty of Arts, which could include the required 3 credit hour “W” course.	COMP 2080 ² , COMP 2140, COMP 2150, COMP 2160, COMP 2190 STAT 2400 MATH 2080, MATH 2150 6 credit hours of electives.	COMP 3170, COMP 3380 STAT 3050, STAT 3400, STAT 3470, STAT 3480, STAT 3800 9 credit hours of electives ⁴³ including 3 credit hours from 3 rd year COMP.	STAT 4100, STAT 4520, STAT 4530 21 credit hours of electives including 6 credit hours from 4 th year COMP ³² , 3 credit hours from 3 rd year COMP and 6 credit hours from 4 th year STAT courses
30 Hours	30 Hours	30 Hours	30 Hours
JOINT HONOURS COOPERATIVE OPTION ³⁴ 120 CREDIT HOURS (comprising courses listed in chart below, and electives)			
COMP 1010, COMP 1020(B) STAT 1150 ¹ , STAT 2150 MATH 1220 ¹ , MATH 1230 ¹ , MATH 1232 ¹ , MATH 1240 Plus 6 credit hours from the Faculty of Arts, which could include the required 3 credit hour “W” course.	COMP 2080 ² , COMP 2140, COMP 2150, COMP 2160, COMP 2190, STAT 2400 (B), MATH 2080, MATH 2150 6 credit hours of electives.	COMP 3170, COMP 3380 STAT 3050, STAT 3400, STAT 3470, STAT 3480, STAT 3800 9 credit hours of electives ⁴³ including 3 credit hours from 3 rd year COMP	STAT 4100, STAT 4520, STAT 4530 21 credit hours of electives including 6 credit hours from 4th year COMP ³² , 3 credit hours from 3rd year COMP and 6 credit hours from 4th year STAT courses.
	COMP 2980 ⁵⁴	COMP 3980 ⁵⁴	COMP 4980 ⁵⁴
30 Hours	30 Hours	30 Hours	30 Hours
NOTES:			
¹ MATH 1510 (B) or MATH 1500 (B) may be taken in place of MATH 1230; MATH 1300 (B) may be taken in place of MATH 1220; MATH 1710 (B) or MATH 1700 (B) may be taken in place of MATH 1232. STAT 1000 (C) and STAT 2000 (B) may be taken in place of STAT 1150.			
² COMP 2130 is waived as a prerequisite for students in this program.			

³² COMP 4710 and COMP 4380 are suggested if offered.

^{4,3} The following courses are suggested: COMP 3350, COMP 3020, COMP 3490, STAT 3490, STAT 4630, STAT 4690.

⁵⁴ The work terms COMP 2980, COMP 3980 and COMP 4980 will be completed in the summers following Year 2, Year 3 and Year 4, respectively and must be completed by the last academic term.

Mathematics

Introductions:

MATH 1080 Fundamentals of Mathematical Reasoning Cr.Hrs. 3 +3.0
(Lab required) Logic, reasoning, problem solving, introduction to set theory, mathematical induction, introduction to number theory, bases of arithmetic and the standard algorithms, working with fractions and functions. The course is recommended for students intending to become early or middle years school teachers. This course cannot be used as part of an Honours, Major, General or Minor program in the mathematical sciences. Prerequisite: Pre-Calculus Mathematics 40S or the former Mathematics 40S (300) or a minimum grade of 65% in Applied Mathematics 40S or a grade of "C" or better in MSKL 100 offered by Extended Education.

MATH 1090 Mathematical Reasoning in Euclidean Geometry Cr.Hrs. 3 +3.0
(Lab required) Introduction to Euclidean geometry with emphasis on mathematical reasoning. Perimeter, area, volume, triangle congruence, parallel lines and quadrilaterals, similarity, circles, coordinate geometry or transformation geometry. The course is recommended for students intending to become early or middle years school teachers. This course cannot be used as part of an Honours, Major, General or Minor program in the mathematical sciences. Prerequisite: MATH 1080.

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Net change in credit hours: +6.0

Program modification:

Modifications to the **Bachelor of Science (Joint Honours) in Mathematics and Economics** are outlined on the next page.

4.9.2.9 Mathematics – Economics Joint Honours Program

The Department of Mathematics along with the Department of Economics (Faculty of Arts) offer a joint Honours program for students wishing in depth study in Mathematics and Economics. For Economics course listings, refer to the Faculty of Arts chapter in the Calendar.

To enter the Joint Honours Mathematics - Economics program, the student must have a minimum grade of "B" in: ECON 1010 and ECON 1020 (or ECON 1210 and ECON 1220), either MATH 1232 or MATH 1690 (or a minimum grade of "A" in MATH 1700) and have satisfied the Faculty of Science requirements for entry to the honours program.

YEAR 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS 120 CREDIT HOURS			
Both ECON 1010, ECON 1020, or both ECON 1210 and ECON 1220	ECON 2010, ECON 2020	ECON 3010, ECON 3020, ECON 3040 ³²	
MATH 1220 ¹ , MATH 1230 ¹ , MATH 1232 ¹ , MATH 1240	MATH 2020, MATH 2080, MATH 2090, MATH 2150, MATH 2180	MATH 2030, MATH 2160, MATH 3320, MATH 3340, MATH 3440, MATH 3470. MATH 3472	
STAT 4000 ³ STAT 1150 ^{1,2}		24 credit hours of approved Economics courses ³	
COMP 1010 ³²		3 credit hours from MATH 2140, MATH 3420, MATH 3460, MATH 4370, or any Mathematics course at the 4000 level.	
6 credit hours of electives, including the required "W" course.	9 credit hours of approved electives	3 credit hours of Mathematics courses at the 3000 or 4000 level.	
30 Hours	30 Hours	30 Hours	30 Hours

NOTES:

¹ Students are strongly advised to take MATH 1220, MATH 1230 and MATH 1232. The following substitutions are allowed (but not advised), provided the grades indicated in brackets are achieved: MATH 1300 (A) in place of MATH 1220, MATH 1500 (A) or MATH 1510 (A) in place of MATH 1230, MATH 1700 (A) or MATH 1710 (A) in place of MATH 1232, MATH 1690 (B) in place of MATH 1230 and MATH 1232. **With permission from the department, students may be able to substitute STAT 1000 and STAT 2000 in place of STAT 1150.**

² Some courses may be taken in a different year than indicated; ~~STAT 1000~~ **STAT 1150**, COMP 1010, ECON 3040 may be taken in Year 2. The normal prerequisite for ECON 3040 is ECON 2040 [or the former ECON 3170 (018.317)], which will be waived for students in this program who have completed Year 1.

³ Of the 24 credit hours in electives in Economics in Years 3 and 4, no more than 6 credit hours may be at the 2000 level or below and at least 6 credit hours must be at the 4000 level. Students are encouraged to take ECON 4010, ECON 4020 and ECON 4040.

Microbiology

Program modifications:

Modifications to the following programs are outlined on the next 4 pages:

- **Bachelor of Science (Honours) in Microbiology**
- **Bachelor of Science (Honours) in Microbiology, Cooperative Option**
- **Bachelor of Science (Major) in Microbiology**
- **Bachelor of Science (Major) in Microbiology, Cooperative Option**

Option List for All Microbiology Programs:

Agroecology: AGE 2370

Biological Sciences:

BIOL 2242 (BOTN 2010), BIOL 2260 (BOTN 2210), BIOL 2261, BIOL 2300 (BOTN 2370, ZOOL 2370), BIOL 2301 (BOTN 2371, ZOOL 2371), BIOL 2380 (BOTN 2180, ZOOL 2180), BIOL 2381, BIOL 2410 (ZOOL 2530), BIOL 2411 (ZOOL 2531), BIOL 2420 (ZOOL 2540), BIOL 2421 (ZOOL 2541), BIOL 3260 (BOTN 2290), BIOL 3290 (BOTN 3280), BIOL 3291, BIOL 3330 (BOTN 3250), BIOL 3370 (ZOOL 3500), BIOL 3400 (BIOL 3450), BIOL 3452 (BOTN 3010), BIOL 3460 (ZOOL 3530), BIOL 3462 (ZOOL 3540), BIOL 3470, BIOL 3472, BIOL 3500 (BOTN 3460), BIOL 3501, BIOL 3542 (BIOL 2540), BIOL 3560 (ZOOL 3060), BIOL 3561, BIOL 4242 (BOTN 4130), BIOL 4244 (BOTN 4160), BIOL 4246 (BOTN 4050), BIOL 4250 (BOTN 4210), BIOL 4430 (BOTN 4120), BIOL 4480 (ZOOL 4600), BIOL 4540 (ZOOL 4150), BIOL 4542 (ZOOL 4270), BIOL 4544 (BIOL 3540), BIOL 4556, BIOL 4560 (ZOOL 4140)

Chemistry:

CHEM 2260 (CHEM 2280), CHEM 2290, CHEM 2400 (CHEM 2380), CHEM 2470, CHEM 3390, CHEM 3590, CHEM 3570, CHEM 4590, CHEM 4360, CHEM 4370, CHEM 4620, CHEM 4630 CHEM 4670

Environmental Science: ENVR 2180

Food Sciences: FOOD 4150, FOOD 4280

General Agriculture: AGRI 2180

Pharmacology: PHAC 4030, PHAC 4040

Plant Science: PLNT 3400

Statistics: STAT 2000 or STAT 2150

NOTE: Other suitable options may be selected with permission of the department.

4.10.2 Microbiology Program Charts

4.10.2 Microbiology			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
HONOURS⁶ 120 CREDIT HOURS			
MBIO 1010 ⁵ BIOL 1020, BIOL 1030 CHEM 1300, CHEM 1310	MBIO 2020, MBIO 2360 (CHEM 2360), MBIO 2370 ³ (CHEM 2370) ³ BIOL 2500, BIOL 2520 CHEM 2210, CHEM 2220	MBIO 3010, MBIO 3030, MBIO 3280, MBIO 3410, MBIO 3470	MBIO 4020, MBIO 4440, MBIO 4480, MBIO 4530 (6), and one of: MBIO 4600, MBIO 4610 or MBIO 4672.
In Year 1 or Year 2 the following must be completed: 3 credit hours of Mathematics or Physics chosen from: MATH 1200 ¹ , MATH 1300 ¹ , MATH		18 credit hours of Microbiology courses including credit hours at the 4000 level	

1500 ¹ , PHYS 1020 or PHYS 1050		9 credit hours chosen from Microbiology courses or from the option list (see below)	
STAT 1000 or STAT 1150			
6 credit hours from the Faculty of Arts, which should include the required “W” course.			
9 credit hours of approved electives			
3 credit hours from Microbiology or from the option list			
30 Hours	30 Hours	30 Hours	30 Hours
HONOURS COOPERATIVE OPTION ^{6, 7} 120 CREDIT HOURS			
MBIO 1010 ⁵ BIOL 1020, BIOL 1030 CHEM 1300, CHEM 1310	MBIO 2020, MBIO 2360 (CHEM 2360), MBIO 2370 ³ (CHEM 2370) ³ BIOL 2500, BIOL 2520 CHEM 2210, CHEM 2220	MBIO 3010 ⁷ , MBIO 3030, MBIO 3280, MBIO 3410 ⁷ , MBIO 3470	MBIO 4020; MBIO 4440, MBIO 4480, and one of: MBIO 4600, MBIO 4610 or MBIO 4672.
In Year 1 or Year 2 the following must be completed:		24 credit hours of Microbiology courses including 3 credit hours at the 4000 level	
3 credit hours of Mathematics or Physics from MATH 1200 ¹ , MATH 1300 ¹ , MATH 1500 ¹ , PHYS 1020 or PHYS 1050		9 credit hours chosen from Microbiology courses or from the option list (see below)	
STAT 1000 or STAT 1150		Work Terms:	
6 credit hours from the Faculty of Arts, which should include the required “W” course		MBIO 3980, MBIO 3990, MBIO 4980 and/or MBIO 4990	
9 credit hours of approved electives			
3 credit hours chosen from Microbiology courses or from the option list (see below)			
30 Hours	30 Hours	30 Hours	30 Hours
FOUR –YEAR MAJOR (Including Co-op) ^{4, 6, 7} 120 CREDIT HOURS			
MBIO 1010 ⁵ BIOL 1020, BIOL 1030 CHEM 1300, CHEM 1310	MBIO 2020, MBIO 2360 (CHEM 2360), MBIO 2370 ³ (CHEM 2370) ³ BIOL 2500, BIOL 2520 CHEM 2210, CHEM 2220	MBIO 3010 ⁷ , MBIO 3030, MBIO 3410 ⁷	

In Year 1 or Year 2 the following must be completed:		24 credit hours of Microbiology courses ² including 15 credit hours at the 4000 level
3 credit hours of Mathematics or Physics from MATH 1200 ¹ , MATH 1300 ¹ , MATH 1500 ¹ , PHYS 1020 or PHYS 1050		9 credit hours of Microbiology courses ² or courses chosen from the option list (see below)
STAT 1000 or STAT 1150		18 credit hours of approved electives
6 credit hours from the Faculty of Arts, which should include the required "W" course		Work Terms:
12 credit hours of approved electives		MBIO 3980, MBIO 3990, MBIO 4980 and/or MBIO 4990
THREE YEAR GENERAL (90 CREDIT HOURS)		
MBIO 1010	18 credit hours of 2000, 3000, and (or) 4000 level Microbiology courses (subject to the Faculty requirement that of the 36 credit hours in the two advanced level Science areas, at least 6 credit hours must be at the 3000/4000 level.)	
MINOR		
MBIO 1010 (C)	12 credit hours of Microbiology at the 2000 and (or) 3000 level	
CHEM 1300, CHEM 1310(C)		
BIOL 1020, BIOL 1030 (C)		
BIOCHEMISTRY - Joint Microbiology and Chemistry Programs: See Section 4.2 Biochemistry		
BIOTECHNOLOGY – Joint Microbiology and Chemistry Programs: See Section 4.4 Biotechnology		
NOTES:		
¹ MATH1220 or MATH 1310 may be taken in place of MATH 1300; MATH 1230, MATH 1510, MATH 1520 or MATH 1690 may be taken in place of MATH 1500. MATH 1240 may be taken in place of MATH 1200.		
² MBIO 4530 may be selected only by special permission.		
³ It is strongly recommended that MBIO 2370 (CHEM 2370) be completed prior to Year 3 as it is prerequisite to many upper level MBIO courses.		
⁴ IMPORTANT: The four year Major program need not be completed in the manner prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.		
⁵ MBIO 1010 may be completed in either year 1 or year 2. It is recommended that it be completed in first year.		
⁶ MBIO 1220 and MBIO 1410 cannot be used to satisfy course requirements in a Major or Honours		

program.

⁷ Students in the Co-operative Option must complete MBIO 3010 and MBIO 3410 before their first employment term.

(The number 6 in brackets indicates a 6 credit hour course.)

Option List for All Microbiology Programs:

Biological Sciences:

BIOL 2242 (BOTN-2010), BIOL 2260 (BOTN-2210), BIOL 2261, BIOL 2300 (BOTN-2370, ZOOL-2370), BIOL 2301 (BOTN-2371, ZOOL-2371), BIOL 2380 (BOTN-2180, ZOOL-2180), BIOL 2381, BIOL 2410 (ZOOL-2530), BIOL 2411 (ZOOL-2531), BIOL 2420 (ZOOL-2540), BIOL 2421 (ZOOL-2541), BIOL 3260 (BOTN-2290), BIOL 3290 (BOTN-3280), BIOL 3291, BIOL 3330 (BOTN-3250), BIOL 3370 (ZOOL-3500), BIOL 3450 (BOTN-2020), BIOL 3452 (BOTN-3010), BIOL 3460 (ZOOL-3530), BIOL 3462 (ZOOL-3540), BIOL 3470, BIOL 3472, BIOL 3500 (BOTN-3460), BIOL 3501, BIOL 3542 (BIOL-2540), BIOL 3560 (ZOOL-3060), BIOL 3561, BIOL 4242 (BOTN-4130), BIOL 4244 (BOTN-4160), BIOL 4246 (BOTN-4050), BIOL 4250 (BOTN-4210), BIOL 4430 (BOTN-4120), BIOL 4480 (ZOOL-4600), BIOL 4540 (ZOOL-4150), BIOL 4542 (ZOOL-4270), BIOL 4554 (BIOL-3540), BIOL 4556, BIOL 4560 (ZOOL-4140)

Chemistry:

CHEM 2260 (CHEM-2280), CHEM 2290, CHEM 2400 (CHEM-2380), CHEM 2470, CHEM 3390, CHEM 3590, CHEM 3570, CHEM 4590, CHEM 4360, CHEM 4370, CHEM 4620, CHEM 4630, CHEM 4670

Environmental Science: ENVR 2180

Food Sciences: FOOD 4150, FOOD 4280

General Agriculture: AGRI 2180, AGECE 2370

Pharmacology: PHAC 4030, PHAC 4040

Statistics: STAT 2000 or STAT 2150

NOTE: Other suitable options may be selected with permission of the department.

Physics and Astronomy

Deletions:

PHYS 1300 Energy and the Environment Cr.Hrs. 3	-3.0
PHYS 1810 General Astronomy 1 Cr.Hrs. 3	-3.0
PHYS 1820 General Astronomy 2 Cr.Hrs. 3	-3.0
PHYS 1830 Perspectives on the Universe Cr.Hrs. 3	-3.0
PHYS 2060 Fundamentals of Physics in Radiation Therapy Cr.Hrs. 3	-3.0
PHYS 2070 Observational Astronomy Cr.Hrs. 6	-6.0
PHYS 2090 Radiation Protection in Radiation Therapy Cr.Hrs. 3	-3.0
PHYS 2150 Radiation Biology Cr.Hrs. 3	-3.0
PHYS 2250 Introductory Modern Physics Cr.Hrs. 3	-3.0
PHYS 2280 Physical Topics for Biologists B Cr.Hrs. 3	-3.0
PHYS 2380 Quantum Physics 1 Cr.Hrs. 3	-3.0
PHYS 2700 Concepts of Physical Science to 1900 Cr.Hrs. 3	-3.0
PHYS 2710 Concepts of Physical Science from 1900 Cr.Hrs. 3	-3.0
PHYS 3180 Stars Cr.Hrs. 3	-3.0
PHYS 3360 Intermediate Modern Physics Cr.Hrs. 6	-6.0
PHYS 3380 Quantum Physics 2 Cr.Hrs. 3	-3.0
PHYS 3640 Electro- and Magnetodynamics and Special Relativity Cr.Hrs. 3	-3.0
PHYS 3660 Classical Mechanics 3 Cr.Hrs. 3	-3.0
PHYS 3680 Statistical Mechanics Cr.Hrs. 3	-3.0
PHYS 3800 Topics in Astronomy Cr.Hrs. 6	-6.0
PHYS 4020 General Relativity II: Applications and Cosmology Cr.Hrs. 3	-3.0
PHYS 4230 The Phenomenology of Galaxies Cr.Hrs. 3	-3.0
PHYS 4240 Astronomy Project Cr.Hrs. 6	-6.0
PHYS 4390 Quantum Physics 3 Cr.Hrs. 3	-3.0
PHYS 4510 Introduction to Nuclear Physics Cr.Hrs. 3	-3.0
PHYS 4560 Applied Nuclear Science Cr.Hrs. 3	-3.0
PHYS 4672 Physics Laboratory A Cr.Hrs. 3	-3.0
PHYS 4674 Physics Laboratory B Cr.Hrs. 3	-3.0

Introductions:

ASTR 1810 Introduction to Astronomy: The Magnificent Universe Cr.Hrs. 3 +3.0
(Lab required) This introductory astronomy course surveys our magnificent Universe. The topics covered in this course outline the properties of stars and planets that can be observed and the physics necessary to interpret these observations. It also includes an introduction to galaxies and cosmology. Using lectures and laboratory sections, it provides an astronomy background and introduction to the scientific method. It ranges from introductory physical background to considering current research problems. This course is taught with algebra and trigonometry used frequently. May not be held with the former PHYS 1810. Prerequisites: (one of Physics 40S, PHYS 0900 (P), or equivalent) and (70 % or better in one of Pre-calculus Mathematics 40S, Applied Mathematics 40S, or equivalent). It is strongly recommended that students attain a minimum of 70% as the average of their marks in Physics 40S and Pre-calculus Mathematics 40S.

ASTR 1830 Life in the Universe Cr.Hrs. 3 +3.0
This descriptive, general interest course explores the topic of life in the universe. Some of the following topics will be covered. (1) Some astronomy fundamentals (gravity, light). (2) The solar system (an introduction to the solar system, the formation of the solar system, the origin of life

on Earth, extremophiles, the conditions needed for life, possible locations for life in the solar system). (3) Exoplanets (discovery methods, properties of detected Exoplanets, the Habitable Zone). (4) Star system formation (pre-stellar disks, planetary migration). (5) The Interstellar medium (nebulae, molecular clouds). (6) Our Milky Way galaxy as an environment for life and the Drake Equation. (7) The Search for Extra Terrestrial Intelligence (SETI). This course is qualitative with simple arithmetic and trigonometry used occasionally. May not be held with the former PHYS 1830.

ASTR 2000 Foundations of Astrophysics Cr.Hrs. 3 +3.0

This course covers the foundations of astrophysics, with emphasis on the core physical principles and processes that govern astronomical phenomena. The course emphasizes how the physics of matter, radiation, gravity, magnetic fields, and the interaction between light and matter can be used to understand a range of astrophysical phenomena, including fundamental processes, fascinating energetic objects, and topics at the forefront of modern research. Prerequisites: (a grade of "C" or better in one of PHYS 1070, PHYS 1071, or PHYS 2152) or (a "C+" or better in PHYS 1030 or PHYS 1031) and (a "C" or better in one of MATH 1232, MATH 1690, MATH 1700, MATH 1701, MATH 1710, or the former MATH 1730) or permission of the department. ASTR 1810 is recommended.

ASTR 2070 Observational Astronomy Techniques Cr.Hrs. 3 +3.0

(Lab required) Students will learn the basic astronomy tools and practical concepts pertaining to observational astronomy. Lecture topics include spectroscopy, the optics of mirrors and lenses relevant to telescopes, types of telescopes, and factors that affect the quality of astronomical observations. The practical aspects include observational project development, and hands-on telescope experience using the University of Manitoba's Ewen Campus Observatory (ECO) and the Glenlea Astronomical Observatory (GAO) as well as smaller 8-inch portable telescopes. May not be held with the former PHYS 2070. Prerequisites: (a "C" or better in one of PHYS 1070, PHYS 1071, or PHYS 2152) or (a "C+" or better in PHYS 1030 or PHYS 1031) and (a "C" or better in one of MATH 1232, MATH 1690, MATH 1700, MATH 1701, MATH 1710, or the former MATH 1730) and (one of ASTR 1810, the former PHYS 1810, ASTR 1830, the former PHYS 1830, or ASTR 2000) or permission of the department.

ASTR 3070 Observational Astronomy Project Cr.Hrs. 3 +3.0

(Lab required) Students will learn to develop and execute an observational research project. Students will choose their research topic with the constraint that the data be collected using the University of Manitoba's Astronomical Observatory at Glenlea Astronomical Observatory and the Ewen Campus Telescopes. The optical observational data will be supplemented by archival data from professional research telescopes such as the Hubble Space Telescope, Chandra X-ray Observatory and others. The course covers the determination of observational constraints, the use of filters, methods of data analysis, and interpretation of results. The research project will be written into a report and presented. Not to be held with the former PHYS 2070. Prerequisite: ASTR 2070 or permission of the department.

ASTR 3180 Stars Cr.Hrs. 3 +3.0

This course provides an overview of the physics of stars, including all phases of stellar evolution: from star formation, to the main-sequence phase, to star death, to the formation of degenerate or compact remnants such as white dwarfs, neutron stars and black holes. Topics include radiative transfer, stellar structure and atmosphere, nuclear fusion, stellar evolution, degenerate stars, and other exotic forms of compact stellar remnants. May not be held with the former PHYS 3180. Prerequisite: ASTR 2000 or permission of the department.

ASTR 3230 The Phenomenology of Galaxies Cr.Hrs. 3 +3.0

This course investigates galaxies from the perspective of recent observational data, exploring characteristics that theories have yet to explain. Topics include sources of their radiation, such as stars, gas and dust; their structure and kinematics, which indicate the existence of dark matter; and their formation and evolution, which has implications for cosmological studies. May not be held with the former PHYS 4230. Prerequisite: ASTR 2000 or permission of the department. ASTR 2070 or ASTR 3180 is recommended.

ASTR 4020 Cosmology and Black Holes Cr.Hrs. 3 +3.0

Topics include static solutions of Einstein's equations, gravitational waves, static models for stars (white dwarfs, neutron stars), dynamic models for stars (Birkhoff theorem, black holes), and cosmology (Robertson-Walker metric, Friedmann equations). Further topics discussed in the course are cosmic inflation, dark matter and energy, as well as large-scale structure of the universe. May not be held with the former PHYS 4020. Prerequisite: PHYS 4010.

ASTR 4100 High-Energy Astrophysics Cr.Hrs. 3 +3.0

This course provides an overview of the field of high-energy astrophysics and of high-energy missions, with emphasis on X-ray and gamma-ray astrophysical sources and relevant radiation processes. Radiation and high-energy processes include synchrotron radiation, bremsstrahlung, Inverse Compton scattering, pion decay, and particle acceleration. Astrophysical sources include accreting compact objects, supernovae and their remnants, gamma-ray bursts, and clusters of galaxies. The course can include topics relevant to nuclear astrophysics and will train students in writing observing proposals for high-energy facilities. May not be held with PHYS 4300 when the topic is "High-Energy Astrophysics." Prerequisites: (PHYS 2386 or the former PHYS 2380) and PHYS 2600 and PHYS 3670. ASTR 2000 is recommended.

ASTR 4200 Radio Astronomy Cr.Hrs. 3 +3.0

This course will provide an introduction to observational radio astronomy and processes in radio astrophysics. Topics will include: an introduction to radio astronomy; basic radiative transfer; blackbody radiation and radiation from an accelerated charge; radio telescopes, receivers, and interferometers; thermal continuum sources (e.g., HII regions); non-thermal continuum sources (e.g., radio galaxies); pulsars; and spectral-line sources (e.g., the 21 cm line, radio recombination lines, and rotational energy transitions in simple molecules). May not be held with PHYS 4300 when the topic taught is "Radio Astronomy." Prerequisites: (PHYS 2386 or the former PHYS 2380) and PHYS 2600 and PHYS 3670. ASTR 2000 is recommended.

ASTR 4400 Magnetohydrodynamics, Astrophysical Plasmas, and the Interstellar Medium Cr.Hrs. 3 +3.0

This course develops a theoretical understanding of interstellar magnetic fields for a diverse range of astrophysical objects, processes, and phenomena. The theoretical aspects of magnetohydrodynamics (MHD), including waves, shocks, instabilities, and turbulence are discussed. MHD and plasma physics are applied to the magneto-ionic interstellar medium of our galaxy, including supernova remnants. Magnetic fields in molecular clouds and cores are examined, with emphasis on their role in star formation. The course also develops a theoretical foundation for the physics of cosmic ray diffusion and acceleration. Prerequisites: PHYS 3630 and PHYS 3670.

PHYS 2010 Computational Modeling of Natural and Human-Created Systems Cr.Hrs. 3 +3.0

This course uses computer simulations to explore emergent behavior in simple models of natural phenomena, traffic, financial systems, and human behavior. The goal of the course is to show how computational modeling can be applied to exciting interdisciplinary problems

spanning a wide range of human knowledge, beyond what is normally considered to be physics. Prerequisites: (one of COMP 1012, COMP 1013, COMP 1010, or COMP 1011) and (one of PHYS 1020, PHYS 1021, PHYS 1050, or PHYS 1051) and (one of MATH 1220, MATH 1300, MATH 1301, or the former MATH 1310) and (one of MATH 1230, MATH 1500, MATH 1501, MATH 1510, MATH 1520, the former MATH 1530, or MATH 1690).

PHYS 2272 Physics for Medicine and Biology Cr.Hrs. 3 +3.0

An intermediate course in physics with relevant applications to Medical and Biological Physics. The course will cover key topics in mechanics, fluid dynamics, exponential growth and decay, equilibrium and entropy, modeling of transport by drift and diffusion, and electricity and magnetism, as applied to the human condition; Linear and nonlinear feedback, regression and the Fourier series for signal and image analysis will also be covered. May not be held with PHYS 2270 or the former PHYS 2271. Prerequisites: (a grade of "C" or better in one of PHYS 1070, PHYS 1071, or PHYS 2152) or (a grade of "C+" or better in one of PHYS 1030 or PHYS 1031) and (a grade of "C" or better in one of MATH 1232, MATH 1690, MATH 1700, MATH 1701, MATH 1710, or the former MATH 1730).

PHYS 2386 Introduction to Quantum Mechanics and Special Relativity Cr.Hrs. 3 +3.0

The first in a sequence of three courses on quantum mechanics, which also includes an introduction to the theory of special relativity. The topics covered include Einstein's postulates of special relativity, the Lorentz transformation, relativistic kinematics and dynamics and four-vectors, kinetic theory of gases, cavity radiation and normal modes, Planck's quantization postulate and the Schrodinger theory of quantum mechanics. Special emphasis is placed on the derivation of the time dependent and time independent Schrodinger equation and its solutions in one dimension. May not be held with the former PHYS 2380. Prerequisites: (a "C" or better in one of PHYS 1070, PHYS 1071, or PHYS 2152) or (a "C+" or better in PHYS 1030 or PHYS 1031) and (a "C" or better in one of MATH 1232, MATH 1690, MATH 1700, MATH 1701, MATH 1710, or the former MATH 1730).

PHYS 2496 Mathematical Physics 1 Cr.Hrs. 3 +3.0

This course provides a continuation of the mathematics required for both the Honours and Major programs in Physics and Astronomy. Topics include sequences and series of functions, distributions, ordinary differential equations, Fourier series and transforms, and an introduction to probability and statistics. May not be held with PHYS 2490. Prerequisite: one of PHYS 2390, MATH 2720, MATH 2721, MATH 2130, MATH 2150, or MATH 2151.

PHYS 3386 Quantum Mechanics 2 Cr.Hrs. 3 +3.0

The second in the sequence of three courses on quantum mechanics which includes mathematical Hilbert space formalism, solutions of the Schrodinger equation in three dimensions with a special emphasis on central potentials, spin, angular momentum, ladder operators, Clebsch-Gordon coefficients and time-independent perturbation theory. May not be held with the former PHYS 3380. Prerequisites: (PHYS 2386 or the former PHYS 2380) and (one of PHYS 2496, PHYS 2490, or MATH 3132). PHYS 3496 is recommended.

PHYS 3496 Mathematical Physics 2 Cr.Hrs. 3 +3.0

This course provides a continuation of the mathematics required for both the Honours and Major programs in Physics and Astronomy. Topics include complex analysis, generalized coordinate systems, Sturm-Liouville theory and generalized orthogonal functions, partial differential equations, and applications in physics. Prerequisite: PHYS 2496 or PHYS 2490. MATH 2090 or the former MATH 2300 is recommended.

PHYS 4386 Quantum Mechanics 3 Cr.Hrs. 3 +3.0

The third in the sequence of three courses on quantum mechanics which includes systems of identical particles, variational methods, time-dependent perturbation theory and scattering theory. May not be held with the former PHYS 4390. Prerequisites: (PHYS 3386 or the former PHYS 3380) and (PHYS 3496 or PHYS 2490).

PHYS 4516 Introduction to Nuclear and Particle Physics Cr.Hrs. 3 +3.0

Bulk properties of the atomic nucleus; nuclear models, nuclear disintegration; alpha-decay, gamma transitions, and beta-decay; scattering formalism and experiments; evidence for quark structure and properties of the hadrons (neutrons, protons, mesons); basic introduction to QCD; basic intro to the weak interaction and neutrino physics; basic introduction to the standard model. May not be held with the former PHYS 4510. Prerequisites: (PHYS 3386 or the former PHYS 3380) and (PHYS 4646 or the former PHYS 3640).

PHYS 4646 Electro - and Magnetodynamics and Special Relativity Cr.Hrs. 3 +3.0

Topics covered will include time dependent Maxwell's equations, Ohm's and Faraday's Law, electromagnetic waves, potential and fields, radiation, and special relativity including the Lorentz transformations. May not be held with the former PHYS 3640. Prerequisites: PHYS 3630 or ECE 3590. Pre- or corequisite: one of PHYS 3496, PHYS 2490, or MATH 3132.

PHYS 4680 Statistical Mechanics Cr.Hrs. 3 +3.0

Principles of statistical mechanics and their applications. Topics include phase space, Liouville and Poincare theorem, statistical ensembles, entropy, ideal classical gas, photon gas, Fermi gas, Bose-Einstein condensation, models of magnetism, and phase transitions. May not be held with the former PHYS 3680. Prerequisites: (PHYS 2386 or the former PHYS 2380) and PHYS 3670. Pre- or corequisite: PHYS 3496 or PHYS 2490.

Modifications:

PHYS 1030 General Physics 2 Cr.Hrs. 3 0.0

(Lab required) Discover how physics is the basis of the hi-tech world we live in and how we live in it. Learn how to use simple, intuitive physics concepts that are described using little math and no calculus to understand a diversity of topics including how electricity is made, what drives the greenhouse effect, what makes a diamond sparkle, lasers, LASIC eye surgery and the workings of the human eye. This course, together with its prerequisite PHYS 1020, is recommended for students seeking either a single comprehensive course in Physics, or entry into health science programs. May not be held with PHYS 1031, the former PHYS 1410, or the former PHYS 1420. Prerequisite: one of PHYS 1020, PHYS 1021, PHYS 1050, or PHYS 1051.

PHYS 1050 Physics 1: Mechanics Cr.Hrs. 3 0.0

(Lab required) It's rocket science! Mechanics is the science of describing (Kinematics) and explaining (Dynamics) motion. The basic concepts of calculus together with laws of conservation of momentum and energy are used to develop the tools required to describe, analyze and predict the outcomes of linear and rotational motion in simple mechanical systems. A brief introduction to the Einstein theory of special relativity provides a taste of modern approaches to this subject. This course develops a strong scientific foundation for students considering a program of study in engineering or the physical sciences. May not be held with PHYS 1020, PHYS 1021, PHYS 1051, the former PHYS 1410, or the former PHYS 1420. Prerequisite: one of Physics 40S (60% or better), PHYS 0900 (pass), or equivalent. Pre- or

corequisite: one of MATH 1230, MATH 1500, MATH 1501, MATH 1510, MATH 1520, the former MATH 1530, or MATH 1690.

PHYS 1070 Physics 2: Waves and Modern Physics Cr.Hrs. 3 0.0

(Lab required) At the heart of modern communications, waves and oscillations are key to understanding the world around us from subatomic scales to biology, traffic flow, the stock market, climate change and the cosmos itself. Learn about the mysterious quantum world, the basis of the latest nanotechnology, where particles are waves and waves are particles. Explore Bohr's model of the atom and discover Heisenberg's Uncertainty Principle. This calculus based course addresses the underlying concepts for all modern science and engineering. This course, like Physics 1 (PHYS 1050), is intended for students considering a program in the physical sciences. May not be held with PHYS 1071, the former PHYS 1410, the former PHYS 1420, or PHYS 2152. Prerequisites: (a grade of "C" or better in PHYS 1050 or PHYS 1051) or (a grade of "B" or better in PHYS 1020 or PHYS 1021) and (a grade of "C" or better in one of MATH 1230, MATH 1500, MATH 1501, MATH 1510, MATH 1520, or the former MATH 1530). Pre- or corequisite: one of MATH 1232, MATH 1700, MATH 1701, MATH 1690, MATH 1710, or the former MATH 1730. Recommended for entry into the Honours programs (with a grade of "B").

PHYS 2270 Introductory Physics for Life Sciences: Fundamentals and Applications Cr.Hrs. 3 0.0

Physical topics with a relation to biology are discussed. Radiative transfer of energy, boundary layers, heat conduction, diffusion, mass transport, and the use of radioactive materials in biology are considered. May not be held with PHYS 2271 or PHYS 2272. Prerequisite: (a grade "C" or better in PHYS 1050 or PHYS 1051) or (a "C+" or better in PHYS 1020 or PHYS 1021) or permission of the department.

PHYS 2350 Energy Sources: Physical Aspects Cr.Hrs. 3 0.0

A detailed investigation of the physical aspects of energy production and utilization. Critical comparison of the various energy sources including solar, nuclear, fossil, and wind will be emphasized. The physics of energy collection, production, storage, and distribution will be discussed in the context of thermodynamics, radiation, solid state and nuclear physics. Prerequisite: (a grade of "C" or better in one of PHYS 1070, PHYS 1071, or PHYS 2152) or (a "C+" or better in PHYS 1030 or PHYS 1031) or permission of the department.

PHYS 2650 Classical Mechanics 1 Cr.Hrs. 3 0.0

The first in a sequence of two courses on intermediate to advanced level mechanics. Topics include inertial and non-inertial reference frames, Newton's second law in cylindrical and spherical coordinates, oscillations, motion of a projectile with air resistance, rotational motion of rigid bodies, as well as gravitation and central force motion. Prerequisite: (a "C" or better in one of PHYS 1070, PHYS 1071, or PHYS 2152) or (a "C+" or better in PHYS 1030 or PHYS 1031). Pre- or corequisite: one of PHYS 2496, PHYS 2490, or MATH 3132.

PHYS 3220 Medical Physics and Physiological Measurement Cr.Hrs. 3 0.0

This course will introduce the core subject areas of Medical Physics, in particular the physics of physiology and of radiology. The mechanics of body systems and the theory, medical applications and safety issues relating to the production, use, detection and measurements of electromagnetic radiation (both ionizing and non-ionizing) will be included. It will also cover Medical imaging (Ultrasound, CT and MRI) and will provide the student with an understanding of the physics underlying neurological, audiological, respiratory and vascular function and measurements. Prerequisite: (a grade of "C" or better in one of PHYS 1070, PHYS 1071, or

PHYS 2152) or (a "C+" or better in PHYS 1030 or PHYS 1031) or permission of the department. PHYS 2270 or PHYS 2272 is recommended.

PHYS 3430 Honours Physics Laboratory Cr.Hrs. 6 0.0
Six hours per week. This is a hands-on course of experimental essentials of modern physics. Prerequisites: one of PHYS 2260, PHYS 2261, PHYS 2610, or ECE 2160, or permission of the department.

PHYS 3570 Physics of Materials 1 Cr.Hrs. 3 0.0
Introduction to the physics of materials. Solids within the elastic limit: stress and strain tensors, elastic constants. Liquids: continuity equation, Bernoulli, Euler and Navier-Stokes equations. Pre- or corequisite: PHYS 3386 or the former PHYS 3380.

PHYS 3630 Electro - and Magnetostatic Theory Cr.Hrs. 3 0.0
Material covered will include electrostatics (i.e. Gauss' Law, Laplace and Poisson equations) and magnetostatics (Lorentz force, Maxwell equations) as well as the properties of electrostatic fields in matter and magnetism in materials. Prerequisites: PHYS 2600 and (one of PHYS 2496, PHYS 2490, or MATH 3132) or permission of the department. PHYS 3496 is recommended.

PHYS 3650 Classical Mechanics 2 Cr.Hrs. 3 0.0
The second in a sequence of two courses on intermediate to advanced level mechanics. Topics include calculus of variations, Lagrangian and Hamiltonian dynamics, canonical equations using Poisson brackets, nonlinear oscillations and chaos, coupled oscillations, and the wave equation in continuous media. Prerequisite: PHYS 2650. Pre- or corequisite: one of PHYS 3496, PHYS 2490, or MATH 3132.

PHYS 3670 Classical Thermodynamics Cr.Hrs. 3 0.0
An introduction to the laws of classical equilibrium thermodynamics and their applications. Prerequisite: one of PHYS 2496, PHYS 2490, or MATH 3132.

PHYS 4010 General Relativity and Gravitation Cr.Hrs 3 0.0
The course briefly covers Newtonian gravity, special relativity and Minkowski space, before moving on to relativistic electrodynamics with the focus on the energy-momentum tensor, relativistic hydrodynamics, non-inertial reference frames and the principle of equivalence, Riemannian geometry and curved space-time, the principle of covariance and Einstein's field equations, linearized field equations and gravitational waves, as well as Schwarzschild's solution with the application to a static black hole. Prerequisite: PHYS 3650 and (PHYS 3496 or PHYS 2490) or permission of the department. Pre- or corequisite: PHYS 4646 or the former PHYS 3640.

PHYS 4250 Computational Physics Cr.Hrs. 3 0.0
Application of numerical methods and programming skills to model a variety of physics problems on a computer. Topics include differential equations, boundary value and eigenvalue problems, special functions, and Monte Carlo methods, with examples from classical, quantum, and statistical mechanics. Prerequisites: (one of COMP 1012, COMP 1013, COMP 1010, or COMP 1011) and (PHYS 3496 or PHYS 2490) or permission of the department.

PHYS 4300 Topics in Physics Cr.Hrs. 3 0.0
Topics will vary depending upon student needs and interests, and will include specialized topics not available in regular course offerings. Prerequisite: PHYS 3386 or the former PHYS 3380, or permission of the department.

PHYS 4360 Medical Radiation Physics Cr.Hrs. 3 0.0
The relevant physics of the production and interaction of radiation beams used in both diagnostic and therapeutic medicine will be covered. Such beams included X- and g-rays, particle beams, visible and I.R. radiation, microwaves, and ultrasound. Prerequisite: PHYS 3220 or the former PHYS 4560 or permission of the department.

PHYS 4400 Medical Imaging Cr.Hrs. 3 0.0
Fundamental principles of image formation, analysis of the characteristics of medical images, parametric description of image quality; application to transmission radiography. Prerequisite: PHYS 3220 or permission of the department.

PHYS 4520 Introduction to Solid State Physics Cr.Hrs. 3 0.0
An introduction to the following topics as they relate to the properties of solids: crystal structure and lattice energy; lattice vibrations; specific heat; free-electron gas; electronic band structure; metals, semiconductors and insulators. Prerequisites: (PHYS 3386 or the former PHYS 3380) and (PHYS 4680 or the former PHYS 3680).

PHYS 4590 Advanced Optics Cr.Hrs. 3 0.0
Light as a classical electromagnetic wave, optical fields in media, interference by wavefront and amplitude splitting, diffraction, diffraction theory of image formation, spatial filtering and image processing, coherence theory. Prerequisites: (PHYS 2260 or PHYS 2261) and (PHYS 4646 or the former PHYS 3640).

PHYS 4600 Lasers and Applications Cr.Hrs. 3 0.0
Light and atoms: semi-classical theory, principles of laser operation and properties of laser light, polarization optics, Gaussian beam optics, laser spectroscopy. Prerequisites: (PHYS 2260 or PHYS 2261) and (PHYS 3386 or the former PHYS 3380).

PHYS 4620 Advanced Classical Mechanics Cr.Hrs. 3 0.0
Canonical invariants and Lagrange and Poisson brackets. Hamilton-Jacobi theory, action-angle variables, normal modes of vibration. Prerequisites: PHYS 3650 and PHYS 3496.

PHYS 4676 Honours Thesis - Proposal and Preparation Cr.Hrs. 3 0.0
For students in term 1 of their final year in Honours. The student will prepare a proposal for the undergraduate thesis and demonstrate the feasibility of the project under the supervision of a faculty member. The results of the study will be presented (in written and oral form) to an examining committee during the term. Both experimental and theoretical topics are acceptable. A grade of C (based on the presentations) is required to proceed to the next course which forms the final stage of the honours thesis. May not be held with the former PHYS 4670 or the former PHYS 4672. Prerequisites: PHYS 3430 and permission of the department.

PHYS 4678 Honours Thesis - Dissertation Cr.Hrs. 3 0.0
For students in term 2 of their final year in Honours. The student will complete the work needed and produce an undergraduate thesis under the supervision of a faculty member. The grade will be based on the examining committee's evaluation of a progress report (presented mid-term) and an evaluation of the thesis manuscript and oral presentation at the end of term. Both experimental and theoretical topics are acceptable. May not be held with the former PHYS 4670, the former PHYS 4672, or the former PHYS 4674. Prerequisite: permission of the department.

Net change in credit hours: -33.0

Program modifications

Modifications to the following programs are outlined on the next 3 pages:

- **Bachelor of Science (Honours) in Physics and Astronomy, Option A**
 - The option is to be renamed from “Option A” to “Astronomy and Astrophysics”
- **Bachelor of Science (Honours) in Physics and Astronomy, Option B**
 - The option is to be renamed from “Option B” to “Physics”
- **Bachelor of Science (Honours) in Physics and Astronomy, Option C**
 - The option is to be renamed from “Option C” to “Medical and Biological”
- **Bachelor of Science (Major) in Physics and Astronomy**
- **Bachelor of Science (General)**
- **Minor in Physics and Astronomy**

4.11.2 Physics and Astronomy Program Charts

4.11.2 Physics and Astronomy			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
HONOURS Option A: Astronomy and Astrophysics¹ 120 CREDIT HOURS			
PHYS 1050 (or PHYS 1020) and PHYS 1070 (B)(or PHYS 1030 B+) ² MATH 1300 ² , MATH 1500 ² , MATH 1700 ² ASTR 1810 COMP 1012⁵ 6 credit hours of from the Faculty of Arts ARTS including the "W" requirement.	PHYS 2070 (6), PHYS 2260, PHYS 2380, PHYS 2390, PHYS 2490, PHYS 2600, PHYS 2610, PHYS 2650, PHYS 2386, PHYS 2496 PHYS 2260 or PHYS 2610 ASTR 2000, ASTR 2070 MATH 2090, MATH 2720	PHYS 3180, PHYS 3380, PHYS 3386, PHYS 3430 (6), PHYS 3496, PHYS 3630, PHYS 3650, PHYS 3670 MATH 2090 ASTR 3180, ASTR 3230	PHYS 3680, PHYS 3640, PHYS 4230, PHYS 4240 (6), PHYS 4390 PHYS 4386, PHYS 4646, PHYS 4676, PHYS 4678, PHYS 4680 One of PHYS 4010, PHYS 4516, or PHYS 4250 Two of ASTR 4020, ASTR 4100, ASTR 4200, ASTR 4400 A 3 credit hour, 4000 level Physics and Astronomy course
-	-	9 credit hours of 3000 and/or 4000 level Physics and Astronomy courses.	
9 3 credit hours of open electives (PHYS 1810 and PHYS 1820 are highly recommended). ASTR 1830 is recommended .	3 credit hours of open electives ³ .	3 credit hours of open electives ³ . (ASTR 3070 is recommended)	3 6 credit hours of open electives ³ .
HONOURS Option B: Physics¹ 120 CREDIT HOURS			
PHYS 1050 (or PHYS 1020) and PHYS 1070(B) (or PHYS 1030 B+) ² MATH 1300 ² , MATH 1500 ² , MATH 1700 ² COMP 1012⁵ 6 credit hours of from the Faculty of Arts ARTS including the "W" requirement.	PHYS 2260 or PHYS 2610, PHYS 2380, PHYS 2386, PHYS 2390, PHYS 2490, PHYS 2496, PHYS 2600, PHYS 2610, PHYS 2650 MATH 2090, MATH 2720	PHYS 3380, PHYS 3386, PHYS 3430 (6), PHYS 3650, PHYS 3670, PHYS 3680, PHYS 3496 PHYS 3630 PHYS 3660 MATH 2090	PHYS 3640, PHYS 4250, PHYS 4390, PHYS 4510, PHYS 4520, PHYS 4590 6 credit hours⁴ chosen from: PHYS 4672, PHYS 4674, PHYS 4676, PHYS 4678, PHYS 4386, PHYS 4646, PHYS 4680 6 credit hours of 4000-level Physics
9 6 credit hours of open	9 credit hours of open	3 9 credit hours of open electives ³	6 9 credit hours of open

electives	electives ³	electives ³	
HONOURS Option C: Medical and Biological¹ 120 CREDIT HOURS			
PHYS 1050 (or PHYS 1020), PHYS 1070 ² (B) (or PHYS 1030 B+)	PHYS 2260, PHYS 2380 PHYS 2386, PHYS 2390, PHYS 2490 PHYS 2496 , PHYS 2600, PHYS 2610, PHYS 2650,	PHYS 3380 PHYS 3386 , PHYS 3430 (6), PHYS 3650 , PHYS 3670, PHYS 3680 , PHYS 3630, PHYS 3220, PHYS 3496	PHYS 3640 PHYS 4646, PHYS 4680 , PHYS 4250, PHYS 4560 , PHYS 4360 or PHYS 4400, PHYS 4516
MATH 1300 ² , MATH 1500 ² , MATH 1700 ²		MATH 2090	
BIOL 1020, BIOL 1030	PHYS 2270 or PHYS 2272	STAT 1150⁶	6 credit hours ⁴ chosen from:
COMP 1012⁵	MATH 2090, MATH 2720	6 credit hours of open electives	PHYS 4672, PHYS 4674, PHYS 4676, PHYS 4678
6 credit hours from the Faculty of Arts including the “W” requirement	6 credit hours of open electives		9 credit hours of open electives
The following can be completed in Year 1 or Year 2:		3 credit hours chosen from: PHYS 4360, PHYS 4400, ECE 3780	
6 credit hours of ARTS including the “W” requirement		15 credit hours of open electives ³	
6 credit hours chosen from: BIOL 1410, BIOL 1412, BIOL 2520			
12 credit hours of open electives³			
30 Hours	30 Hours	30 Hours	30 Hours
FOUR YEAR MAJOR 120 CREDIT HOURS			
PHYS 1050 (C+)(or PHYS 1020(B)), PHYS 1070 ^{2,54} (C+) (or PHYS 1030 (B))	PHYS 2260 or PHYS 2610 ⁵⁴ , PHYS 2380 PHYS 2386, PHYS 2390, PHYS 2490 PHYS 2496 , PHYS 2600	PHYS 2650 ⁵⁴ , PHYS 3670, PHYS 3496	PHYS 3380 PHYS 3386 , PHYS 3430 (6), PHYS 3630
MATH 1300 ² , MATH 1500 ² , MATH 1700 ²		MATH 2090	3 credit hours of 3000 level Physics and Astronomy
COMP 1012⁵	MATH 2720	6 credit hours of 3000 level Physics and Astronomy	3 credit hours of 4000 level Physics and Astronomy
6 credit hours from the Faculty of Arts including the required “W” course			
9 6 credit hours of open electives	12 15 credit hours of open electives³	15 12 credit hours of open electives³	12 credit hours of open electives ³
30 Hours	30 Hours	30 Hours	30 Hours
THREE YEAR GENERAL (90 CREDIT HOURS)			
PHYS 1050 (C) (or PHYS 1020 (C+)) and PHYS 1070 (C) (or PHYS 1030 (C+))	A minimum of 18 credit hours must be chosen from this list: PHYS 2070, PHYS 2210 (or the former PHYS 2200), PHYS 2250, PHYS 2260, PHYS 2270, PHYS 2280, PHYS 2350, PHYS 2380, PHYS 2700, PHYS 2710, PHYS 3180, PHYS 3380, PHYS 3800, PHYS 4230. of 2000, 3000, and (or) 4000 level Physics or Astronomy courses (Subject to the Faculty requirement that of the 36 hours of advanced level courses, at least 6 credit hours must be chosen from the 3000 and (or) 4000 level.)		
MINOR			
PHYS 1050 (C) and PHYS	A minimum of 12 credit hours from PHYS 2070, PHYS 2210 (or the former PHYS 2200),		

1070 (C) (or PHYS 1020 (C+)) and PHYS 1030 (C+))	PHYS 2250, PHYS 2260, PHYS 2270, PHYS 2280, PHYS 2350, PHYS 2380, PHYS 2700, PHYS 2710, PHYS 3180, PHYS 3380, PHYS 3800. of 2000, 3000, and (or) 4000 level Physics or Astronomy courses.
PHYS 1050 (C) (or PHYS 1020 (C+)) and PHYS 1070 (C) (or PHYS 1030 (C+))	
JOINT HONOURS: PHYSICS – CHEMISTRY refer to section 4.5.3	
JOINT HONOURS: PHYSICS – COMPUTER SCIENCE (including Co-operative Option) refer to section 4.6.4	
JOINT HONOURS: PHYSICS – MATHEMATICS refer to section 4.9.3	

NOTES:

¹ Students must achieve a minimum grade of “C” in all courses contributing to the Honours program.

² **PHYS 1050 and PHYS 1070 are recommended.** MATH 1220 may be taken in place of MATH 1300; MATH 1230 or MATH 1510 or MATH 1520 may be taken in place of MATH 1500; MATH 1232 or MATH 1710 may be taken in place of MATH 1700; MATH 1690 may be taken in place of MATH 1500 and MATH 1700.

³ Although they are not required courses in the Physics programs, MATH 2080, ~~MATH 2150~~, MATH 2180, and MATH 3340 are ~~highly~~ recommended electives for the Physics Honours and Four Year Major degrees, ~~and should be taken when possible.~~

⁴ ~~The selection of these 6 credit hours must be made in consultation with the Departmental Program Advisor.~~

⁵⁴ Students who do not take PHYS 1070 or PHYS 1030 in Year 1 ~~should~~ **must** postpone PHYS 2600 until Year 3. PHYS 2260, PHYS 2610 and PHYS 2650 may be taken in Year 2 or Year 3 if the respective prerequisites are met.

⁶⁵ Students who have already taken COMP 1010 before joining the ~~program~~ **program** may count COMP 1010 in lieu of COMP 1012. However, students who have not taken COMP 1010 before entering the program must then take COMP 1012.

⁶ **Students may take STAT 1000 and STAT 2000 in lieu of STAT 1150.**

IMPORTANT: The Honours and four year Major program need not be completed in the manner prescribed in the chart above. The chart indicates the recommended arrangement of the required courses and is meant to be a guide around which students can plan their program (Letters in brackets refer to minimum prerequisite standing required for further study. The number 6 in brackets indicates a 6 credit hour course).

Modifications to the **Bachelor of Science (Joint Honours) in Chemistry and Physics** are outlined on the next page.

4.5.5 Chemistry - Physics Joint Honours Program

YEAR 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS² 120 CREDIT HOURS			
CHEM 1300 (B), CHEM 1310 (B) PHYS 1050 (B) (or PHYS 1020 (B+) ²), PHYS 1070 (B) (or PHYS 1030 (B+)) MATH 1300 , MATH 1500 ¹ (B), MATH 1700 ¹ (B) 6 credit hours from the Faculty of Arts, which should include the required "W" course 6 3 credit hours of electives	CHEM 2210, CHEM 2220, CHEM 2260 (CHEM 2280), CHEM 2290, CHEM 2400 or CHEM 2470 PHYS 2390 MATH 2720 , PHYS 2380 PHYS 2386 , PHYS 2490 PHYS 2496 , PHYS 2600, PHYS 2650	12 credit hours from whichever of CHEM 2400 or 2470 not taken and any of CHEM 2860 (CHEM 2360 /MBIO 2360), CHEM 2370 (MBIO 2370) or 3000 / 4000 level Chemistry courses PHYS 2260, or PHYS 2610, PHYS 3380 PHYS 3386 , PHYS 3630, PHYS 3670, PHYS 3680 PHYS 3496 3 credit hours of electives	CHEM 4610 (6) CHEM 4710 (6) or both PHYS 4672 PHYS 4676³ and PHYS 4674 PHYS 4678 PHYS 4390 PHYS 4386 , PHYS 4680 6 3 credit hours of 3000 / 4000 level Physics courses 3 credit hours of 3000 / 4000 level Chemistry courses 6 credit hours of approved electives ³
30 Hours	30 Hours	30 Hours	30 Hours

NOTES:

1. **MATH 1220 may be taken in place of MATH 1300**; MATH 1230 or MATH 1510 or MATH 1520 may be taken in place of MATH 1500; MATH 1232 or MATH 1710 may be taken in place of MATH 1700; MATH 1690 may be taken in place of MATH 1500 and MATH 1700.

2. ~~PHYS 1020 may be used in place of PHYS 1050; PHYS 1070 is required in the Chemistry and Physics Joint Honours program.~~ **Students are advised to take PHYS 1050 and PHYS 1070.**

3. ~~Elective courses should be selected in consultation with the Department of Chemistry and/or a Faculty of Science Academic Advisor.~~

3. The prerequisite of PHYS 3430 is waived for students in this program.

(Letters in brackets indicate minimum prerequisite standing for further study. The number 6 in brackets indicates a 6 credit hour course.)

Modifications to the **Bachelor of Science (Joint Honours) in Computer Science and Physics and Astronomy** are outlined on the next 2 pages.

4.6.4 Computer Science – Physics & Astronomy Joint Honours Program

The departments of Computer Science and Physics & Astronomy offer a joint Honours program for in-depth study in both Computer Science and Physics & Astronomy.

To enter the Joint Honours Computer Science-Physics and Astronomy program, the student must have a minimum grade of “B” in each of PHYS 1050 (or “B+” in PHYS 1020), PHYS 1070 (or **B+ in PHYS 1030**), MATH 1300, MATH 1500, MATH 1700 (or any equivalent), COMP 1010 (or **COMP 1012**) and COMP 1020, and a minimum DGPA of **3.00**. Students must complete a minimum of 9 credit hours per term in each Fall and Winter term.

To continue in the Honours program, students must maintain a minimum Degree- DGPA of 3.00, complete a minimum of 9 credit hours during each Fall and Winter term (or equivalent for students in the Co-operative option).

To graduate with the Honours degree, a student must obtain a minimum DGPA of 3.00 and present a minimum grade of “C” in each course that contributes to the degree

The departments must approve a student’s Honours program each session. Students must also obtain departmental approval for any and all revisions to their program.

YEAR 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS (Including Cooperative Option if selected) 120 CREDIT HOURS			
PHYS 1050 (B) (or PHYS 1020 (B+)) and PHYS 1070 ¹ (B) (or PHYS 1030 (B+))	PHYS 2260 or Physics elective⁵ , PHYS 2380 PHYS 2386 , PHYS 2390, PHYS 2490 PHYS 2496 , PHYS 2650	PHYS 2600, PHYS 2610 or Physics elective⁵ , PHYS 3380 PHYS 3386 , PHYS 3670, PHYS 3680 PHYS 3496	PHYS 4680
COMP 1010 or COMP 1012 , COMP 1020 (B)	MATH 2720	COMP 2190, COMP 3170, COMP 3430	15 12 credit hours of 3000 and 4000 level Honours Physics courses, with at least 6 credit hours at the 4000 level
MATH 1300 ² (B), MATH 1500 ² (B), MATH 1700 ² (B)	COMP 2080, COMP 2130, COMP 2140, COMP 2160, COMP 2280	6 credit hours of 3000 and / or 4000 level Computer Science courses	12 credit hours of 3000 or 4000 level courses from Computer Science, with at least 9 credit hours at the 4000 level by the end of Year 4
6 credit hours from the Faculty of Arts, which must include the required 3 credit hour “W” course ³			3 credit hours of approved electives
3 credit hours of electives	Work Term (if Co-op Selected):	Work Term (if Co-op Selected):	Work Term (if Co-op Selected):
	COMP 2980 ⁴	COMP 3980 ⁴	COMP 4980 ⁴
30 Hours	30 Hours	30 Hours	30 Hours

NOTES:

¹ ~~PHYS 1030 is not suitable for entry to the Honours program. Students must also take PHYS 1070 if they have already taken PHYS 1030. Students can hold credit for both PHYS 1030 and PHYS 1070.~~ **PHYS 1050 and PHYS 1070 are recommended.**

² MATH 1220 or MATH 1310 may be taken in place of MATH 1300; MATH 1230, MATH 1510 or MATH 1520 may be taken in place of MATH 1500; MATH 1232 or MATH 1710 may be taken in place of MATH 1700; MATH 1690 may be taken in place of MATH 1500 and MATH 1700.

³ As there are no **open** electives in Year 2 of the program, students should complete the University written English requirement in Year 1. If not completed in Year 1, a “W” course must be completed prior

to Year 3 in addition to the required Year 2 courses.

⁴ When chosen, the Cooperative Option work terms (2980, 3980, 4980) will normally be completed during the Summer Terms following years 2, 3, and 4 respectively.

⁵ **Students are required to take at least one of PHYS 2260 or PHYS 2610.**

Modifications to the **Bachelor of Science (Joint Honours) in Mathematics and Physics and Astronomy** are outlined on the next 2 pages.

4.9.2.8 Mathematics – Physics and Astronomy Joint Honours Program

Honours Requirements

To enter the Joint Honours Mathematics – Physics Honours program the student must have a minimum grade of “B” in: MATH 1232 or MATH 1690 (or a minimum grade of “A” in MATH 1700), PHYS 1050 (or “B+” in PHYS 1020) and PHYS 1070 (**or “B+” in PHYS 1030**).

To continue in the Honours program, students must maintain a minimum DGPA of 3.00, complete a minimum of 9 credit hours each Fall and Winter Term.

To graduate with the B. Sc. Honours degree, a student must achieve a minimum DGPA of 3.00 and a minimum grade of “C+” in each of the Honours Program Specific courses⁶, and a minimum grade of “C” on all remaining courses that contribute to the **129 120** credit hours of the degree.

YEAR 1	120	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS 129 CREDIT HOURS (129 credit hours) (120 credit hours)				
MATH 1220 ¹ , MATH 1230 ¹ , MATH 1232 ¹ (B), MATH 1240 PHYS 1050 (B) (or PHYS 1020 (B+)) ² and PHYS 1070 (B) (or PHYS 1030 (B+)) STAT 1000 STAT 1150 ⁷ COMP 1010 COMP 1012 6 credit hours from the Faculty of Arts, which should include the required “W” course ⁴	PHYS 2260 or PHYS 2610 , PHYS 2380 PHYS 2386 , PHYS 2600, PHYS 2640, PHYS 2650 ³ 3 credit hours of Physics MATH 2020, MATH 2080, MATH 2090, MATH 2150, MATH 2180	MATH 3320, MATH 3340, MATH 3440, MATH 3460, MATH 3470, MATH 3472 PHYS 3670 ³ , PHYS 3680, PHYS 3650 ^{3,5} , PHYS 3630, PHYS 3380 PHYS 3386 ³ 3 credit hours from 3000 and 4000 level Physics Honours courses	MATH 3320, MATH 3322, 3 credit hours of 4000 level Math PHYS 3430 (6), PHYS 4680 ⁵ PHYS 3640 ⁵ , PHYS 3660, PHYS 4390 6 credit hours from the Department of Mathematics or the Department of Physics & Astronomy: MATH 2030, MATH 2070, MATH 2160, MATH 2170, or any 3000 or 4000 level Mathematics or Physics courses 6 credit hours of electives 12 credit hours from: MATH 2030, MATH 2070, MATH 2160, MATH 2170, or any 3000 or 4000 level Mathematics courses, of which 3 credit hours must be at the 4000 level 3 credit hours from 3000 and 4000 level Physics Honours courses	
30 Hours	30 Hours	36 30 Hours	33 30 Hours	

NOTES:

¹ Students are strongly advised to take MATH 1220, MATH 1230 and MATH 1232. The following substitutions are allowed (but not advised), provided the grades indicated in brackets are achieved: MATH 1300 (A) in place of MATH 1220, MATH 1500 (A) or MATH 1510 (A) in place of MATH 1230, MATH 1700 (A) or MATH 1710 (A) in place of MATH 1232, MATH 1690 (B) in place of MATH 1230 and MATH 1232.

² ~~PHYS 1030 is not suitable for entry to the program. Students must also take PHYS 1070 if they have~~

already taken PHYS 1030. Students can hold credit for both PHYS 1030 and PHYS 1070. **Students are advised to take PHYS 1050 and PHYS 1070.**

³ The corequisite **or prerequisite** of PHYS 2490 **PHYS 2496** is waived **for students in this program**. It is recommended that students audit PHYS 2390 and PHYS 2490 in second year **PHYS 2496 in second year and PHYS 3496 in third year.**

⁴ As there are no **open** electives in Year 2 of the program, students should complete the university written English requirement in Year I. If not completed in Year I, a "W" course must be completed prior to Year 3 in addition to the required Year 2 courses.

⁵ The prerequisite of PHYS 2490 **Pre-or corequisite of PHYS 3496** is waived **for students in this program**. **It is recommended that students audit PHYS 2496 in second year and PHYS 3496 in third year.**

⁶ The Honours Program Specific courses consists of all the Physics and Astronomy courses listed in the program chart, with the exception of PHYS 1020, ~~phys~~ **PHYS 1050, PHYS 1030** and PHYS 1070.

⁷ **Students may take STAT 1000 and STAT 2000 in lieu of STAT 1150.**

(Letters in brackets indicate minimum prerequisite standing for further study. The number 6 in brackets indicates a 6 credit hour course.)

Transition Plan

All the new programs are designed so that the current students can continue in the new program counting the current courses that they have already taken instead of their replacement courses: e.g. PHYS 2390 counts instead of MATH 2720, PHYS 2490 instead of PHYS 2496, etc. Table 3 below lists the current courses that could be used instead of the new required courses in the program charts during the transition period. The students already in the program will be asked to talk to an advisor in the Department of Physics and Astronomy to help them navigate through the revised program. The fact that the new programs allow for more flexibility for the students will make the transition easier.

Table 3: Physics and Astronomy, Mapping Courses Between the New and Current Programs

New Programs	Current Programs
ASTR1810 Introduction to Astronomy: The Magnificent Universe ↔	PHYS1810 General Astronomy 1
ASTR2070 Observational Astronomy Techniques ↔	PHYS 2070 (6CU) Observational Astronomy
ASTR2000 Foundations of Astrophysics	may be waived (with permission of the Department) for students who have finished second year in the current program
ASTR3180 Stars ↔	PHYS3180 Stars
ASTR3230 The Phenomenology of Galaxies ↔	PHYS4230 The Phenomenology of Galaxies
ASTR4100 High-Energy Astrophysics ↔	(currently given as special topics PHYS4300)
ASTR4200 Radio Astronomy ↔	(currently given as special topics PHYS4300)
ASTR4020 Cosmology and Black Holes ↔	PHYS4020 GR II: Applications and Cosmology
ASTR4400 Magnetohydrodynamics, Astrophysical Plasmas and the Interstellar Medium ↔	No substitute is needed
COMP 1012 Computer Programming for Scientists and Engineers	may be waived (with permission of the Department) as a required course and as a prerequisite for PHYS 4250 for students who have finished second year in the current program
PHYS 2272 Physics for Medicine and Biology ↔	PHYS 2270 Physical Topics for Biologists A
MATH 2720 Multivariable Calculus ↔	PHYS 2390 Theoretical Physics 1
PHYS2496 Mathematical Physics 1 ↔	PHYS 2490 Theoretical Physics 2
PHYS3496 Mathematical Physics 2	may be waived (with permission of the Department) for students who have finished third year in the current program
PHYS2386 Intro to Quantum Mechanics and Special Relativity ↔	PHYS2380 Quantum Physics 1
PHYS3386 Quantum Mechanics 2 ↔	PHYS3380 Quantum Physics 2
PHYS4386 Quantum Mechanics 3 ↔	PHYS4390 Quantum Physics 3
PHYS4646 Electro- and Magnetodynamics and Special Relativity ↔	PHYS3640 Electro- and Magnetodynamics and Special Relativity
PHYS4680 Statistical Mechanics ↔	PHYS 3680 Statistical Mechanics
PHYS4516 Introduction to Nuclear and Particle Physics ↔	PHYS4510 Introduction to Nuclear Physics

Statistics

Modifications:

STAT 2400 Introduction to Probability I Cr.Hrs. 3 0.0

(Lab required) Basic probability, discrete distributions including binomial, hypergeometric, geometric and Poisson, joint distributions, applications involving discrete random variables. This course is not available to any student who has previously obtained credit for the former STAT 3500. Prerequisites: STAT 1150 (C), STAT 2000 (B), or STAT 2001 (B); and MATH 1232 (C), MATH 1690 (C), MATH 1700 (B), MATH 1701 (B), MATH 1710 (B), or the former MATH 1730 (B).

STAT 3470 Statistical Methods for Research Workers 1 Cr.Hrs. 3 0.0

Linear regression, multiple regression, correlation analysis, introduction to one way analysis of variance, some related topics. May not be held with STAT 3000 or the former STAT 3120. Prerequisite: STAT 2150 (C). Pre- or corequisite: STAT 3400 or the former STAT 3500.

Net change in credit hours: 0.0

Program modifications:

Modifications to the following programs are outlined on the next 2 pages:

- **Bachelor of Science (Honours) in Statistics**
- **Bachelor of Science (Honours) in Statistics, Cooperative Option**
- **Bachelor of Science (Major) in Statistics**
- **Bachelor of Science (Major) in Statistics, Cooperative Option**

**STATISTICS PROGRAMS MODIFICATIONS
EFFECTIVE FALL TERM 2018**

PROPOSED CHANGES TO THE B.Sc. HONOURS & MAJOR PROGRAMS IN STATISTICS

4.13.2 Statistics Program Charts

4.13.2 Statistics			
YEAR 1	YEAR 2	YEAR 3	YEAR 4
HONOURS (Including Co-operative Option) 120 CREDIT HOURS (comprising courses listed in chart below, and electives)			
STAT 1150 ¹ MATH 1220 ¹ , MATH 1230 ¹ , MATH 1232 ¹ , MATH 1240	STAT 2400 MATH 2030, MATH 2080, (MATH 2150 or MATH 2720)	STAT 3050, STAT 3400 ⁴ , STAT 3470, STAT 3480, STAT 3800	STAT 4100, STAT 4200, STAT 4520, STAT 4530
The following courses must be taken in Year 1 or Year 2: COMP 1010, STAT 2150 (B), 6 credit hours from the Faculty of Arts, which should include the required "W" course		15 credit hours chosen from: STAT 3170, STAT 3380, STAT 3490, STAT 4170, STAT 4580, STAT 4590, STAT 4600, STAT 4630, STAT 4690, STAT 4700 with at least 9 credit hours at the 4000 level. 6 credit hours chosen from: MATH 2140, MATH 2160, MATH 2180, MATH 3340, MATH 3440, MATH 3460, MATH 3470, MATH 3472 12 credit hours of approved elective courses - including courses to be chosen from an area of application outlined in note 2 below. ²	
21 credit hours of elective courses - including courses to be chosen from an area of application outlined in note 2 below. ²		Co-op Requirements: STAT 3980	Co-op Requirements: STAT 3990, STAT 4980, STAT 4990 (if a 4th work term selected)
30 Hours	30 Hours	30 Hours	30 Hours
HONOURS DOUBLE MINIMUM 120 CREDIT HOURS By arrangement with the departments concerned			

FOUR YEAR MAJOR⁵⁴ (Including Co-operative Option) 120 CREDIT HOURS (comprising courses listed in chart below, and electives)			
STAT 1150 ¹ MATH 1220 ¹ , MATH 1230 ¹ , MATH 1232 ¹ , MATH 1240	STAT 2400 MATH 2030, MATH 2080, (MATH 2150 or MATH 2720)	STAT 3050, STAT 3400 ⁴ , STAT 3470, STAT 3480, STAT 3800	STAT 4100, STAT 4200, STAT 4520, STAT 4530

The following courses must be taken in Year 1 or Year 2: COMP 1010, STAT 2150 (C+), 6 credit hours from the Faculty of Arts, which should include the required "W" course 21 credit hours of elective courses - including courses to be chosen from an area of application outlined in note 3 below. ³		15 credit hours chosen from: STAT 3170, STAT 3380, STAT 3490, STAT 4170, STAT 4580, STAT 4590, STAT 4600, STAT 4630, STAT 4690, STAT 4700 6 credit hours chosen from: MATH 2140, MATH 2160, MATH 2180, MATH 3340, MATH 3440, MATH 3460, MATH 3470, MATH 3472 12 credit hours of elective courses - including courses required for the chosen area of application outlined in note 3 below. ³	
		Co-op Requirements: STAT 3980	Co-op Requirements: STAT 3990, STAT 4980, STAT 4990 (if a 4th work term is selected)
		30 Hours	30 Hours
30 Hours	30 Hours	30 Hours	30 Hours

NOTES:

¹ The following substitutes are allowed: MATH 1300 (B) in place of MATH 1220; MATH 1500 (B) or MATH 1510 (B) in place of MATH 1230; MATH 1700 (B) or MATH 1710 (B) in place of MATH 1232; MATH 1690 (C) in place of MATH 1230 and MATH 1232; STAT 1000 (C) and STAT 2000 (B) in place of STAT 1150.

² Of the electives chosen as part of the Honours Degree, 18 credit hours are to be selected from one department which represents a field of application such as: Actuarial Mathematics, Biological Sciences, Microbiology, Economics, Psychology or Sociology. (Mathematics and Computer Science are excluded from this list.) In consultation with the department, combinations of courses from a coherent area of studies may be selected.

³ Of the electives chosen as part of the Major Degree, 15 credit hours must be selected from either, Computer Science and Mathematics, or from one of the following departments: Actuarial Mathematics, Biological Sciences, Microbiology, Economics, Psychology, or Sociology.

⁴ ~~STAT 3400 has a pre or co-requisites of MATH 2150 or MATH 2720. Therefore students who wish to take STAT 3400 should consider taking MATH 2150 or MATH 2720 in YEAR 2.~~

⁵⁴ IMPORTANT: The four year Major program need not be completed in the manner prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.

(Letters in brackets indicate minimum prerequisite standing for further study)

Modifications to the **Bachelor of Science (Joint Honours) in Statistics and Economics** are outlined on the page.

STATISTICS PROGRAM MODIFICATIONS EFFECTIVE FALL TERM 2018

PROPOSED CHANGES TO STATISTICS- ECONOMICS JOINT HONOURS PROGRAM

4.13.5 Statistics - Economics Joint Honours Program

The Department of Statistics along with the Department of Economics (Faculty of Arts) offer a Joint Honours program for students wishing in depth study in Statistics and Economics. For Economics course listings, refer to the Faculty of Arts chapter in the Calendar.

Students will normally take ~~STAT 2000~~ **STAT 2150** and ~~STAT 2400~~ in second year and enter Honours in Year 3.

To enter the Joint Honours Statistics Economics program in the Faculty of Science, the student must have a minimum grade of "B" in both of ECON 1010 and ECON 1020 (or ECON 1210 and ECON 1220) and ~~STAT 2400~~ **STAT 2150**; and have satisfied the Faculty of Science requirements for entry to the honours program. Students are strongly encouraged to take MATH 1220, MATH 1230, MATH 1232 and MATH 1240 in Year 1.

To continue in the Joint Honours Statistics Economics program in the Faculty of Science, a minimum DGPA of 3.00 is required.

To graduate with the B.Sc. Joint Honours Statistics Economics degree from the Faculty of Science, a student must achieve a minimum DGPA of 3.00, and a minimum grade of "C" in each course that contribute to the 120 credit hours of the degree.

YEAR 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS 120 CREDIT HOURS			
Both ECON 1010 and ECON 1020 or both ECON 1210 and ECON 1220 STAT 4000 STAT 1150¹ MATH 1220 ¹ , MATH 1230 ¹ , MATH 1232 ¹ , MATH 1240 COMP 1010	ECON 2010, ECON 2020 STAT 2000 STAT 2150 , STAT 2400 MATH 2030, MATH 2080, MATH 2140, MATH 2150 or MATH 2720	ECON 3010, ECON 3020 STAT 3400, STAT 3470, STAT 3480, STAT 3490, STAT 3800 MATH 2160, MATH 3360	ECON 4040, ECON 4042 STAT 4100, STAT 4200, STAT 4520, STAT 4530,
6 credit hours of electives including the required "W" course.	6 credit hours of approved Economics electives ²	3 credit hours of approved Economics electives ²	12 credit hours of approved Economics electives ²
30 Hours	30 Hours	30 Hours	30 Hours

NOTES:

¹ The following substitutes are allowed: MATH 1300 in place of MATH 1220, MATH 1500 in place of MATH 1230, MATH 1700 in place of MATH 1232, **STAT 1000 (C) and STAT 2000 (B) in place of STAT 1150**. Students must attain specific grade requirements in order to meet the upper level course prerequisites. Consult course descriptions for further information.

² Of the 21 credit hours of electives in Economics in Years 2, 3 and 4, no more than 6 credit hours may be at the 2000 level or below; ECON 2030 and ECON 3040 are recommended in Year 2 or 3. The normal prerequisite for ECON 3040 is ECON 2040, which will be waived for students in this program who have completed Year 1.

(Letters in brackets indicate minimum prerequisite standing for further study. ~~The number 6 in brackets indicates a 6 credit hour course.~~)

REPORT OF THE SENATE COMMITTEE ON AWARDS

Preamble

Terms of reference for the Senate Committee on Awards include the following responsibility:

On behalf of Senate, to approve and inform Senate of all new offers and revised offers of awards that meet the published guidelines presented to Senate on November 3, 1999, and as thereafter revised by Senate. Where, in the opinion of the Committee, acceptance is recommended for new offers and revised offers which do not meet the published guidelines or which otherwise appear to be discriminatory under the policy on the *Non-Acceptance of Discriminatory Awards*, such offers shall be submitted to Senate for approval. (Senate, October 7, 2009)

Observations

At its meeting of October 24, 2017, the Senate Committee on Awards approved 5 new offers, 5 revised offers, and the withdrawal of 3 awards, as set out in Appendix A of the *Report of the Senate Committee on Awards* (dated October 24, 2017).

Recommendations

On behalf of Senate, the Senate Committee on Awards recommends that the Board of Governors approve 5 new offers, 5 revised offers, and the withdrawal of 3 awards as set out in Appendix A (dated October 24, 2017). These award decisions comply with the published guidelines of November 3, 1999, and are reported to Senate for information.

Respectfully submitted,

Dr. Phil Hultin
Chair, Senate Committee on Awards

SENATE COMMITTEE ON AWARDS

Appendix A October 24, 2017

1. NEW OFFERS

Dentistry Class of 2001 Legacy Prize

The Dentistry Class of 2001 has established an endowment fund at the University of Manitoba, to recognize the academic achievements of students following their first year in the College of Dentistry. When funds are available, the Manitoba Scholarship and Bursary Initiative may make a contribution to the award. Each year, the available annual income will be used to offer one prize to an undergraduate student who:

- (1) was enrolled full-time in the College of Dentistry, in the year the prize was tenable;
- (2) has achieved a minimum degree grade point average of 3.0;
- (3) has shown the most improvement throughout the course Dental Anatomy (currently numbered RSTD 1520).

Improvements in numerical grades, perseverance in learning the skills/anatomy in dental anatomy, good attitude towards learning, and dedication to improvement of one's learning all demonstrate an overall dedication towards improving skills in this course.

The Dean of the College of Dentistry (or designate) will name the selection committee for this prize, which will include the course coordinator.

This agreement may be amended by the mutual consent of the donor (or designate) and the University of Manitoba. All amendments shall be in writing. In the absence of the donor (or designate), and providing all reasonable efforts have been made to consult, the Board of Governors of the University of Manitoba has the right to modify the terms of the award if, because of changed conditions, it becomes necessary to do so. Such modifications shall confirm as closely as possible to the expressed intention of the donor in establishing the award.

FASO (Faculty of Agriculture and Food Sciences Students' Organization) Bursary

Undergraduate students in the Faculty of Agricultural and Food Sciences will make an annual contribution valued at \$5,000 to the University of Manitoba. The purpose of the award is to support undergraduate students pursuing studies in the Faculty of Agriculture and Food Sciences. Beginning in 2017-2018 and ending in 2020-2021, at least five bursaries, valued at \$1,000 each will be offered annually to undergraduate students who:

- (1) are enrolled full-time (minimum 60% course load) in the Faculty of Agricultural and Food Sciences at the University of Manitoba;
- (2) have achieved a minimum degree grade point average of 2.0;
- (3) have demonstrated financial need on the standard University of Manitoba bursary application form.

The Dean of the Faculty of Agricultural and Food Sciences (or designate) will name the selection committee for this award.

This agreement may be amended by the mutual consent of the donor (or designate) and the University of Manitoba. All such amendments shall be in writing. In the absence of the donor (or designate), and providing all reasonable efforts have been made to consult, the Board of Governors of the University of Manitoba has the right to modify the terms of this award if, because of changed conditions, it becomes

necessary to do so. Such modification shall conform as closely as possible to the expressed intention of the donor in establishing the award.

Lorne H. Mensforth Bursary in Mechanical Engineering

In memory of Lorne H. Mensforth, B.Sc. (M.E.)/52, his wife Jean H. Mensforth has established an endowment fund at the University of Manitoba, with initial gifts totaling \$164,400. The Manitoba Scholarship and Bursary Initiative has made a contribution to the fund. The purpose of the fund is to support undergraduate students pursuing studies in Mechanical Engineering in the Faculty of Engineering. Beginning in the 2017-2018 academic year, the available annual income from the fund will be used to offer at least three bursaries with a minimum value of \$3,000 each, to undergraduate students who:

- (1) are enrolled full-time (minimum 60% course load) in the third year of study in the Department of Mechanical Engineering in the Faculty of Engineering;
- (2) have achieved a minimum degree grade point average of 2.0;
- (3) have demonstrated financial need on the standard University of Manitoba bursary application form.

The selection committee will be the Scholarships, Bursaries, and Awards Committee of the Faculty of Engineering.

This agreement may be amended by the mutual consent of the donor (or designate) and the University of Manitoba. All such amendments shall be in writing. In the absence of the donor (or designate), and providing all reasonable efforts have been made to consult, the Board of Governors of the University of Manitoba has the right to modify the terms of this award if, because of changed conditions, it becomes necessary to do so. Such modification shall conform as closely as possible to the expressed intention of the donor in establishing the award.

M. David R. Brown Memorial Scholarship in Actuarial Studies

In memory of David Brown (B.Comm. [Hons]/56), the Principals at Eckler Ltd. have established an endowment fund with a generous contribution of \$60,000 at the University of Manitoba in 2017. The fund will be used to provide renewable scholarships for students pursuing Actuarial Studies. Beginning in 2019–2020, the available annual income from the fund will be used to offer one scholarship to an undergraduate student who:

- (1) is enrolled full-time (minimum 80% course load) at the University of Manitoba in a program leading to either:
 - a) a Bachelor of Commerce (Honours) with a declared major in Actuarial Mathematics through the I.H. Asper School of Business, or
 - b) a Bachelor of Science (Honours) in Actuarial Mathematics or Statistics–Actuarial Mathematics (single or joint Honours program) through the Faculty of Science;
- (2) has achieved a minimum degree grade point average of 3.5;
- (3) demonstrates involvement in extracurricular activities.

Candidates will be required to provide information indicating how they meet criterion (3) by submitting a statement (maximum 500 words).

The scholarship is renewable at the value initially offered in each applicable year(s) of study at the University of Manitoba provided that the recipient continues to meet criteria (1) and (2) listed above.

In the event that the recipient is no longer eligible, a new student who meets the above criteria may be selected. This award may only be held by one student in any given year.

The selection committee shall be jointly named by the Dean of the I.H. Asper School of Business (or designate) and the Dean of the Faculty of Science (or designate) and will include the Director of the Warren Centre for Actuarial Studies and Research (or designate).

This agreement may be amended by the mutual consent of the donor (or designate) and the University of Manitoba. All such amendments shall be in writing. In the absence of the donor (or designate), and providing all reasonable efforts have been made to consult, the Board of Governors of the University of Manitoba has the right to modify the terms of this award if, because of changed conditions, it becomes necessary to do so. Such modification shall conform as closely as possible to the expressed intention of the donor in establishing the award.

Penny Stevenson Brydon Memorial Scholarship in Nursing

In memory of Penny Stevenson Brydon, Walter Stevenson has generously established an endowment fund at the University of Manitoba in 2017. The Manitoba Scholarship and Bursary Initiative will match 50% of the interest earned beginning in 2018-2019 and ending during the 2021-2022 academic year. The purpose of the fund is to reward the academic achievements of graduate students pursuing studies in a doctoral program in the College of Nursing. Beginning in 2018-2019, the available annual interest from the fund will be used to offer one scholarship to a graduate student who:

- (1) is enrolled full-time in the Faculty of Graduate Studies, in any doctoral program delivered by the College of Nursing at the University of Manitoba;
- (2) has achieved a minimum grade point average of 3.5 based on previous 60 credit hours (or equivalent) of study.

Eligible students may apply for this scholarship on or before April 1st of each year. Applicants will be required to submit a letter of application (maximum 500 words) outlining their academic achievements and a copy of their transcript.

In any given year, any unspent revenue from the fund will be used top up this award.

The Vice-Provost (Graduate Education) and Dean of the Faculty of Graduate Studies (or designate) will ask the Dean of the College of Nursing (or designate) to name the selection committee for this award.

This agreement may be amended by the mutual consent of the donor (or designate) and the University of Manitoba. All such amendments shall be in writing. In the absence of the donor (or designate), and providing all reasonable efforts have been made to consult, the Board of Governors of the University of Manitoba has the right to modify the terms of this award if, because of changed conditions, it becomes necessary to do so. Such modification shall conform as closely as possible to the expressed intention of the donor in establishing the award.

2. AMENDMENTS

A.G. Robinson Memorial Scholarship

The following amendments were made to the terms of reference for the A.G. Robinson Memorial Scholarship:

- The numbered criteria were revised to:
 - (1) *is enrolled in the Faculty of Graduate Studies, in a Master's or Doctoral program delivered by the Department of Entomology;*
 - (2) *has achieved a minimum grade point average of 3.5 based on the previous 60 credit hours (or equivalent of study;*
 - (3) *has received the highest overall percentage grade in either:*

- (a) *Advanced Entomology 1 (currently numbered ENTM 7150) for M.Sc. students; or*
- (b) *Advanced Entomology (currently numbered ENTM 7220) for Ph.D. students.*
- The tie breaking paragraph was revised to:
In the event of a tie, the highest percentage grade in the research/grant proposal and oral presentation on the research/grant proposal assignments of the course will be used to break the tie. If no student is considered qualified for the scholarship, all of the interest will be returned to the principal. The award selection process for this scholarship will occur in April each year.
- The selection committee paragraph was revised to:
The Vice-Provost (Graduate Education) and Dean of the Faculty of Graduate Studies (or designate) will ask the Awards Committee of the Faculty of Agricultural and Food Sciences to name the selection committee for this award, which will include course instructor listed in criterion (3) and the Chair of the Entomology graduate program
- The standard Board of Governors statement was added.

Marcel A. Desautels Faculty of Music Scholarship

The following amendments were made to the terms of reference for the Marcel A. Desautels Faculty of Music Scholarship:

- The name of the award has been changed to: *Marcel A. Desautels Faculty of Music Undergraduate Scholarship*
- The minimum degree grade point average for (2)(b) was revised to 3.0.
- The standard Board of Governors statement was updated.

Sigga Christianson Houston Travel Award

The following amendments were made to the terms of reference for the Sigga Christianson Houston Travel Award:

- The following sentences in the preamble were revised to:
The fund will be used to offer travel bursaries for medical students who will participate in a summer early exposure program or a clinical elective in a remote northern community within Canada, or an underserved location internationally. The available annual interest from the fund will be used to offer one or more travel awards for undergraduate students who:
- Criteria (2) and (3) were revised to read:
(2) will participate in a summer early exposure program or a clinical elective in a remote northern community within Canada or a clinical elective in an underserved location internationally, ,
(3) have applied for elective travel support;
- Criterion (4) was removed:
(4) have demonstrated financial need on the standard University of Manitoba bursary application form.
- The standard Board of Governors statement was updated.

Simon and Sarah Israels Graduate Thesis Prize

The following amendments were made to the terms of reference for the Simon and Sarah Israels Graduate Thesis Prize:

- The Manitoba Institute of Cell Biology has been changed to the Research Institute in Oncology and Hematology (RIOH) throughout the terms of reference.
- The paragraph relating to the structure of the student selection committee has been removed from the terms of reference and will be advertised internally.
- The following paragraph was revised to:
The recipient of the prize will normally be expected to present a seminar in RIOH at a suitable time, in the current award year. The Cell Biology section of RIOH will be responsible for organizing the seminar.
- The selection committee paragraph was revised to:
The Vice-Provost (Graduate Education) and Dean of the Faculty of Graduate Studies (or designate) will ask the Senior Scientists from RIOH to name the selection committee for this award.
- The standard Board of Governors statement was added.

William J. Hill Memorial Award

The following amendments were made to the terms of reference for the William J. Hill Memorial Award:

- The preamble was revised to:
In memory of William John (Bill) Hill (B.Sc. '67) his family, friends, and associates have established a trust fund at the University of Manitoba. The Manitoba Scholarship and Bursary Initiative has made a contribution to this fund. Each year, the available annual interest will be used to offer one scholarship to an undergraduate student who:
- The numbered criteria were revised to:
 - (1) *is enrolled full-time (minimum 80% course load) in any of the Bachelor of Science in Geological Sciences programs in the Clayton H. Riddell Faculty of Environment, Earth, and Resources at the University of Manitoba*
 - (2) *has achieved a minimum degree grade point average of 3.5;*
 - (3) *has demonstrated high potential as a practical geologist/geophysicist at Field Courses;*
 - (4) *has been active in departmental activities and student organizations.*
- The following sentences were removed:
If, in the judgment of the selection committee, there is no suitable candidate in any given year, that year's interest earnings will be returned to the capital of the fund. The fund supporting this award will be reviewed regularly and, if earnings or further contributions permit, the value of the award may be increased.

- The selection committee paragraph was revised to:
The selection committee for this award will be named by the Awards and Honours Committee of the Clayton H. Riddell Faculty of Environment, Earth, and Resources.
- The standard Board of Governors statement was updated.

3. WITHDRAWALS

Allister B. Hickson Scholarship for Supply Chain Management

This award is being withdrawn at the request of the donor.

Arthritis Society Bursary in Occupational Therapy

This award is being withdrawn at the request of the donor.

Arthritis Society Bursary in Physical Therapy

This award is being withdrawn at the request of the donor.

IN MEMORIAM

Dr. Walter Bushuk

Professor Emeritus, Faculty of Agricultural and Food Sciences
Department of Food and Human Nutritional Sciences

The Faculty of Agricultural and Food Sciences has learned of the passing of Walter Bushuk on October 14, 2017 at age 88 in Winnipeg, MB.

Walter Bushuk was born on January 2, 1929 in Poland and emigrated with his family to Canada in 1939. They settled on an 80-acre farm in Garland, MB, where, at the age of 10, Walter began his Canadian education knowing only a few words of English. He went on to earn a B.Sc. (Hons.) and M.Sc. in biochemistry at the University of Manitoba and a Ph.D. in physical chemistry at McGill University.

Dr. Bushuk's professional career included positions at the Canadian Grain Commission's Grain Research Laboratory, Ogilvie Flour Mills and the Canadian International Grains Institute. He joined the University of Manitoba in 1966 as the Faculty's first professor of cereal chemistry. In addition to teaching and research spanning the departments of Plant Science and Food Science, he held senior administrative positions at the University, including Head of Department of Plant Science, Associate Vice-President (Research Administration) and Head of Department of Food Science. Dr. Bushuk retired in 1993, but continued research as Professor Emeritus in Food Science.

Dr. Bushuk has long been considered one of the world's outstanding cereal scientists and a leading authority in dough rheology, protein composition and structure, and breadmaking quality. His pioneering work on the relationship between dough strength and gluten protein composition and structure over 40 years ago is still widely cited today. He, together with his students and scientific colleagues, published over 300 scientific and technical articles and edited several books. Over 40 scientists from 27 countries came to Winnipeg to train with him. Dr. Bushuk was most proud of the legacy of these students, who are now spread around the world working on cereal science.

Dr. Bushuk also played a leading role in wheat variety development in western Canada. His research findings benefited Canadian wheat breeding programs and wheat producers, and for many years he served as a wheat quality expert on the Expert Committee on Grain Quality (now the Prairie Grain Development Committee), which facilitates recommendations for variety registration of wheat and other grains. Over the years he volunteered his services as a consultant for organizations such as the Canadian International Development Agency and Canadian Executive Services Overseas.

In recognition of his research achievements, Dr. Bushuk received many international awards,

including an Honorary LL.D. (Poznan, Poland), three international scientific medals, and fellowships from five scientific societies, including The Royal Society of Canada (F.R.S.C.) and the Osborne Medal from the American Association of Cereal Chemists. He was honoured by the University of Manitoba Alumni Association with the Alumni Jubilee Award. In 2001, his postgraduate students and research colleagues held a one-day symposium at the AACC annual meeting and published a commemorative book, *Wheat Quality Elucidation: The Bushuk Legacy*, in his honour. In 2003, he was appointed Member of the Order of Canada for outstanding lifetime contributions in research and teaching. Dr. Bushuk attributed much of his success in scientific research to the unfailing love and support of his wife Jean and other members of his family.

On the occasion of a recognition reception in 2003 for Dr. Bushuk's induction into the Order of Canada, Dr. Harry Sapiirstein, one of Dr. Bushuk's students and now a Professor in the Department of Food and Human Nutritional Sciences, noted:

"I don't know a person more dedicated to his or her profession, nor one with as much insight on the research end or people in general. I think Walter is one of those few individuals who sees things very clearly. Walter has a sixth sense when it came to concentrating on the grain science issues of the day and their strategic importance. His success in research and grantmanship, which is a matter of record, reflects this very well. But beyond this, Walter is a people's person. While Walter liked to let his students work at a distance and put their own efforts into their research projects, you always knew that he was dedicated to what you were doing and to your success. For those of us in the fortunate position of having had you as a mentor, colleague and friend, we will be always grateful for the support and opportunities you gave us, and I'm sure you will always be remembered by all your students with great respect and affection."

Dr. Bushuk is survived by his wife of 62 years, Jean, along with sons Darrell and Donald and their families.



UNIVERSITY
OF MANITOBA

Office of the President

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DATE: October 10, 2017

TO: Jeff Leclerc
University Secretary

FROM: David T. Barnard, Ph.D.
President and Vice-Chancellor

RE: Suspension of Admissions to the Biotechnology Major – B.Sc. (Hons.), B.Sc. (Maj.)

The recommendation to suspend admissions to the Biotechnology major (B.Sc. Honours, B.Sc. Major) was brought forward for consultation with Senate on June 21, 2017 and the Board of Governors on September 26, 2017, with no significant concerns being raised. Under the Admissions Targets Policy, it is the President who approves changes to, or the introduction of, enrolment limits following consultation and discussion with the dean or director, Senate and the Board of Governors.

As a result, admissions to the Biotechnology major should be suspended for the Fall 2018 intake pending approval by the province under the provincial Program of Study regulations. I would request that you proceed accordingly.

Cc: Dr. Janice Ristock, Provost and Vice-President (Academic)
Dr. David Collins, Vice-Provost (Integrated Planning and Academic Programs)
Dr. Stefi Baum, Dean, Faculty of Science
Mr. Jeff Adams, Executive Director, Enrolment Services
Mr. Neil Marnoch, Registrar
Mr. Randy Roller, Executive Director, Office of Institutional Analysis
Ms. Cassandra Davidson, Academic Programs Specialist

October 19, 2017

Report of the Senate Committee on Instruction and Evaluation RE: Teaching and Course Evaluation Review Committee Terms of Reference

Preamble:

1. The terms of reference for the Senate Committee on Instruction and Evaluation (SCIE) can be found at:
http://umanitoba.ca/admin/governance/governing_documents/governance/sen_committees/502.html.
2. At its meeting on October 19, 2017 SCIE approved the attached terms of reference for the Teaching and Course Evaluation Review Committee.

Observations:

1. Currently teaching and course evaluations are conducted using the Students' Evaluation of Educational Quality (SEEQ) instrument, which was recognized and approved by Senate on November 6, 1996. The last review of the SEEQ instrument occurred in 2007, with Senate approving the recommendation to continue using SEEQ on October 3, 2007. A review of SEEQ is being initiated by the Office of the Provost, through the Senate Committee on Instruction and Evaluation, as it has been 10 years since the last review.
2. The Teaching and Course Evaluation Review Committee terms of reference, as attached to this Report, outlines the mandate, provides context, outlines the areas for the committee to consider and address, and states the membership of the committee.
3. The Centre for the Advancement of Teaching and Learning will provide administrative and research support to the committee.
4. The Senate Committee on Instruction and Evaluation will recommend possible faculty members to participate as members of the Teaching and Course Evaluation Review Committee.
5. The Teaching and Course Evaluation Review Committee will meet monthly and provide interim reports to the Senate Committee on Instruction and Evaluation every six months. It is anticipated that the review of SEEQ will require approximately 12 to 18 months to complete, with recommendations being provided upon completion.

Respectfully submitted,

Dr. Diane Hiebert-Murphy, Chair
Senate Committee on Instruction and Evaluation

Teaching and Course Evaluation Review Committee

The Teaching and Course Evaluation Review Committee is accountable to and provides recommendations to the Senate Committee on Instruction and Evaluation.

Mandate

Provide strategic and operational recommendations to the Senate Committee on Instruction and Evaluation (SCIE) regarding teaching and course evaluations at the University of Manitoba.

Definition and Background

Teaching and course evaluations are currently provided by the SEEQ instrument that was recognized and approved by Senate in 1996. Extant literature about the theory, applicability, and instruments relating to evaluation of teaching and courses has expanded since 1996, as has the local knowledge about the application, management, and reporting of the SEEQ. The last review of the use of the SEEQ instrument at the University of Manitoba occurred in 2007. As a result, an opportunity for a holistic review of current practices and needs, as well as the determination of new or improved instruments, methods, and utilization is timely.

Terms of Reference

Review the current method for evaluating teaching and courses at the University of Manitoba and make recommendations for the continuation of the current method or the implementation of alternate methods.

Areas to consider and address:

- Purpose of the evaluation of teaching and courses
- Who within the UM community is best to complete these evaluations and through what method(s)?
- Do certain methods of evaluation disadvantage particular groups of instructors?
- What existing evidence-based instruments might meet the needs of UM?
- What policies, procedures, or collective agreement considerations are required to support the evaluation of teaching and courses?
- What administrative and technical processes or tools are required to support the collection and reporting of teaching and course evaluations?

Other areas of consideration may be added following the first meeting of the Review Committee and approval by SCIE.

Membership

- Vice-Provost (Academic Affairs), Co-Chair
- Executive Director, Centre for the Advancement of Teaching and Learning, Co-Chair
- Three faculty members appointed by SCIE
- One Dean appointed by the Provost
- Team Lead – Research, Evaluation, and Innovation, CATL
- One undergraduate student appointed by UMSU
- One graduate student appointed by GSA

The Centre for the Advancement of Teaching and Learning will provide administrative and research assistant support to the committee.

Timeline and Reporting

It is expected that the Review Committee will meet monthly and provide interim reports to SCIE every six months. It is anticipated that the work of the Review Committee will require approximately 12-18 months to complete, with a series of recommendations provided at that time.

PRESIDENT'S REPORT: December 6, 2017

GENERAL

The University of Manitoba officially began construction of the Campus Day Care Centre expansion at a ground-breaking ceremony on October 5. When complete, the day care will have up to 52 new spaces and new programming that will advance reconciliation. This project received \$600,000 of capital funding from the Province of Manitoba. Through the Front and Centre campaign, the Graduate Students' Association provided \$300,000 and the University of Manitoba Students' Union gave \$2.4 million.

The University of Manitoba hosted *The Journey Toward a Reconciled Education System*, the 3rd annual Building Reconciliation Forum from November 8 – 9, 2017. This forum, which takes place in response to the calls to action from the Truth and Reconciliation Commission of Canada, brought together more than 350 leaders from universities, colleges and Indigenous communities to pursue meaningful and lasting institutional change. At the closing of the conference, the University of Victoria was announced as the host of the 4th annual Building Reconciliation Forum, which will focus on Indigenous language revitalization and economic growth of Indigenous communities.

Seven finalist teams presented their solutions at the Grand Finale of the Game Changer competition on November 14, 2017. The teams presented solutions to a diverse range of problems ranging from how to provide better mental health care to marginalized groups to how to use artificial intelligence to assist us in sustainable development. Team Hour Off presented a solution to the question, "With technology filling all our free time, how can we reclaim boredom as a productive or creative force?" and was selected as this year's winning team.

Drs. Adele Perry (History) and Michael Matthews (Desautels Faculty of Music) were elected Fellows of the Royal Society of Canada (RSC), the country's most esteemed association of scholars and scientists. Perry is internationally recognized for her award-winning research on the history of colonialism in Canada and beyond. Matthews has been a significant, important figure in Canadian music, composing more than 100 works, including three symphonies, an opera, five concerti and four string quartets. The two professors are among 89 new Fellows elected for 2017, bringing the university's total to 47.

Professors Tracie Afifi (Community Health Sciences) and Salah Mahmud (Community Health Sciences, Pharmacy) have been elected as members of the RSC's College of New Scholars, Artists and Scientists. Afifi's research program investigates child maltreatment: its effects on a child's mental and physical health, what factors provide children with resilience to its harms, and what interventions work to halt the maltreatment. Mahmud holds a Canada Research Chair in Pharmacoepidemiology and Vaccine Evaluation and leads research that will develop cost effective ways to prevent and treat some cancers and common infections.

The College is Canada's first national multidisciplinary recognition system, which honours emerging and productive academics for their contributions to society, with an emphasis on those who take interdisciplinary approaches to their research. Afifi and Mahmud join five other University of Manitoba faculty who have been elected members of the RSC College.

The new Fellows and Members will be inducted in Winnipeg at the RSC's annual Celebration of Excellence, November 23-26.

A search has been launched for directors for the founding Board of UM Properties GP Inc., which will develop the former Southwood Golf Course land, consistent with the principles articulated in the Visionary (re)Generation Master Plan: connected; a destination, sustainable; a community; an example of Indigenous design and planning; and transformative. The mixed-use community that will be constructed will meet the University's future needs in a way that recognizes the Indigenous reality of Manitoba, integrates with surrounding communities, and supports environmental and resource sustainability.

ACADEMIC MATTERS

- Cary Miller, department head, native studies, was elected as the Secretary for the American Society for Ethnohistory.
- Mike Harlos, family medicine, received the Canadian Hospice and Palliative Care Association's Award of Pediatric Excellence.
- Cheryl Rockman-Greenberg, pediatrics and child health, biochemistry and medical genetics, will be inducted into the Canadian Medical Hall of Fame in the spring of 2018. The pediatrician and geneticist has advanced the understanding of rare genetic disorders. She helped to establish the first clinical lab specializing in the use of DNA testing to diagnose genetic disorders.
- Jonathon Bellas, medicine and medical director of the Master of Physician Assistant Studies program received the 2017 Physician Assistant Educator of the Year Award from the Canadian Physician Assistant Education Association and the Canadian Association of Physician Assistants.
- Kendra Rieger, nursing student, became the first PhD graduate of the College of Nursing.
- Zacharie Raymond Fowler, business student, is a recipient of a Governor General's Academic Silver Medal.
- The newly formed Faculty of Agricultural and Food Sciences mentorship program for women held their kick-off event in October. This is the first of four formal events planned for the 40 mentors and 20 students participating in this year's program, which is sponsored by the Natural Sciences and Engineering Research Council of Canada and Chair for Women in Science and Engineering-Prairies.
- The 36th annual Aggie Bedpush raised over \$5100 for the Children's Rehabilitation Foundation.
- The Decolonizing Lens is a monthly film series sponsored by the Margaret Laurence Endowment Fund, Women's and Gender Studies, and the National Centre for Truth and Reconciliation. In September new films by Tasha Hubbard and Sonya Ballantyne, *"Birth of a Family"*, and Sonya Ballantyne's *"New Project"* were showcased. In October, *"Intervening the Image: Short Works and Lecture"* by Kent Monkman were presented.
- Students and staff from the College of Nursing participated in the annual Every Child Matters, Orange Shirt Day, in honour of residential survivors. Participants wore orange T-shirts for an Awareness Walk from the Helen Glass Centre for Nursing to the National Centre for Truth and Reconciliation (NCTR) on the Fort Garry campus. Nursing students delivered a pledge to the NCTR.

The pledge states that students will practice culturally safe nursing care and will ally *“with Indigenous children, youth and their families to create an environment that supports, affirms and celebrates all peoples.”*

- Dr. Alan Bernstein, president and Chief Executive Officer (CEO) of the Canadian Institute for Advanced Research was this year’s guest at the annual Dr. Patrick Choy Distinguished Lectureship event. Dr. Bernstein gave a lecture entitled, *“A golden age for health research: How Canada can best contribute.”*
- The Rady Faculty of Health Sciences held its annual Bug Day in October. This event attracts more than 1200 interprofessional healthcare providers and students, as well as the general public to learn more about infection prevention and control, public health and infectious diseases.
- An awareness campaign on academic integrity was held in October with this year’s theme, *“Be Honest, Be Real, Be You – Show Your Integrity.”*

RESEARCH MATTERS

- Distinguished Professor Emeritus Henry G. Friesen, was appointed a Distinguished Fellow by the Canadian Academy of Health Sciences (CAHS), the highest honour awarded by the Academy. This is in recognition of his accomplishments which are considered of such high distinction that only a select few are worthy of this designation. No more than one Distinguished Fellow can be elected in any given year, and there can be no more than ten CAHS Distinguished Fellows at any time.

Friesen discovered and successfully isolated and purified the human pituitary hormone prolactin and determined that excessive circulating prolactin caused infertility. This observation laid the groundwork for other investigators and resulted in the development of an antagonist drug, bromocriptine, to treat this cause of infertility.

His influence on academic medicine has gone far beyond his own field of research. In 1991, he was appointed president of the Medical Research Council of Canada (MRC), the pre-eminent leadership position in Canadian medical research. He led the transformation of the MRC to the Canadian Institutes of Health Research to support the breadth of health research in Canada. The Canadian Medical Discoveries Fund, the Canadian Breast Cancer Initiative, the Canadian Health Services Research Foundation and the partnership between the Council and the pharmaceutical industry are some of the other outgrowths of Dr. Friesen’s imaginative leadership and determination.

In the mid-1990s, he chaired a working group that led to the creation of the Canadian Health Services Research Foundation, and in 2000, he was appointed the founding chair of Genome Canada, the federal government’s lead corporation supporting genomics research in Canada and served in that role for five years.

In 1998, the University of Manitoba awarded Dr. Friesen an honorary doctor of science degree, and also recognized Friesen’s achievements through the creation of the Henry G. Friesen Endowed Chair in Metabolic and Endocrine Diseases.

- Dr. Marc Del Bigio (Pathology), Canada Research Chair in Developmental Neuropathology and research scientist at the Children's Hospital Research Institute of Manitoba was elected a Fellow of the CAHS. He received the honour in recognition of his achievements in pediatric and developmental neuropathology. He is a world expert in the diagnosis of pediatric disorders of the nervous system and a highly sought out educator who has won numerous awards including the 2014 Mentor of the Year by the Royal College of Physicians and Surgeons of Canada.

Fellows are chosen by their peers based on their demonstrated leadership, creativity, distinctive competencies and commitment to advancing academic health sciences. The University of Manitoba now has 27 Fellows of the CAHS.

- Minister of Science, Kirsty Duncan, was at the University of Manitoba on October 12 with Dr. Roseann Runte, President and CEO of the Canada Foundation for Innovation (CFI) to announce the results of the CFI Innovation Fund competition. Four University of Manitoba professors were awarded funding totaling \$1.2 million:
 - Malcolm Xing (Mechanical Engineering, Biochemistry & Medical Genetics) received \$360,000 to set up the Biomaterials and Nanomedicine Laboratory.
 - Physics and Astronomy Professors Stefi Baum, Christopher O'Dea and Samar Safi-Harb received \$365,280 as collaborating partners with the University of Toronto led project titled Unlocking the Radio Sky with Next-Generation Survey Astronomy.
 - Andrew Frederiksen (Geological Sciences) received \$350,000 as a collaborating partner on the project led by Dalhousie University to develop a National Facility for Seismic Imaging.
 - Evelyn Forget (Community Health Sciences) received \$137,987 for the CRDCN Transition to High Performance Computing: Liberating Data for Research and Policy project led by McMaster University.
- Sixty-eight PIs were awarded a total of \$1,918,470.51 from various sponsors. Those awarded more than \$25,000 are:

PI	Sponsor	Title	Awarded
Barber, David (Centre for Earth Observation Science)	Mitacs Inc.	An investigation on the detection of oil-based pollutant spills in ice-infested Arctic waters utilizing active microwave remote sensing	\$45,000
Cattini, Peter (Physiology & Pathophysiology)	Mitacs Inc.	Genetic profiling of disease progression in myeloma	\$30,000
Dolinsky, Vernon (Pharmacology and Therapeutics)	Research Manitoba	Epigenetic biomarkers and the mechanistic basis of childhood obesity	\$73,500
Entz, Martin (Plant Science)	Ostara Nutrient Recovery Technologies Inc.	Struvite as a phosphorous source in	\$45,000

		organic grain and forage production	
Hensel, Jennifer (Psychiatry)	Health Sciences Centre	Program of mental health service development and improvement	\$75,000
Klassen, Terry (Pediatrics and Child Health)	Research Manitoba	Innovation in pediatric clinical trials	\$600,000
Kuzyk, Zou (Geological Sciences)	Dalhousie University	Canadian Ocean Acidification Research Network extension (COARp)	\$31,600
Mai, Sabine (Physiology & Pathophysiology)	Research Manitoba	Characterization of DNA-poor space in haematological malignancies	\$36,750
Mai, Sabine (Physiology & Pathophysiology)	CancerCare Manitoba	Characterization of DNA-poor space in haematological malignancies	\$36,750
Mundy, Christopher (Centre for Earth Observation Science)	Research Manitoba	Southampton Island Marine Ecosystem Project (SIMEP)	\$35,100
Ominski, Kimberly (Animal Science)	Mitacs Inc.	Impact of feeding and vaccination strategies on carcass outcomes in beef cattle	\$30,000
Russell, Kelly (Pediatrics and Child Health)	Canadian Traumatic Brain Injury Research Consortium (CTRC)	The effect of individually tailored sub-maximal exercise prescription in adolescent physiological post-concussion disorder: A multi-institutional randomized controlled trial	\$60,000
Snider, Carolyn (Emergency Medicine)	Children's Hospital Foundation of Manitoba Inc.	Impact of an emergency department violence intervention program (EDVIP) for youth on resilience, violence risk, repeat injury, substance abuse, and mental health	\$35,000
Yao, Xiao-Jian (Medical Microbiology)	Laval University	Development of a safe, effective and clinically	\$35,000

		acceptable VSF-based HIV vaccine	
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ADMINISTRATIVE MATTERS

- The Copyright Advisory Committee was briefed on possible copyright options pending the outcome of the Access Copyright v. York University litigation. The Committee decided to maintain the status quo while reviewing current practices and guidelines. The Copyright Office reviewed broad areas (Course Packs, Learning Management Systems, Alternatives to Fair Dealing, Fair Dealing Guidelines, Licenses, Permissions & Record Keeping, and Safeguards for Monitoring Compliance).
- Human Resources and Student Affairs announced the launch of the “Success Through Wellness” grants on October 18, 2017. Valued at up to \$10,000 each, they are open to students, staff and faculty for projects that support the campus mental health strategy. These grants will fund projects that engage the campus community and promote positive mental health and wellbeing.
- On August 28, 2017, Learning & Organizational Development launched its fall staff development calendar offering over 50 workshops between September 15 and December 15, 2017. Topics range from supervisory skills, to project management and providing excellent service.
- The University is participating in the Canadian Network for the Advancement of Research Industry and Education (CANARIE) national information security project.
- A new sidewalk and building entrance snow clearing plan has been developed for the Fort Garry Campus identifying primary entrance and fire exits for each building. The new plan, a combined effort between Caretaking and General Services, is to ensure entrances and main walking paths are cleared quickly after a snowfall.
- Implementation of the Sustainable Transportation Strategy continues with conversion of the University’s Fort Garry staff bike fleet into a winter bike fleet to support intercampus commuting. Secure bike parking facilities have been installed at the William Norrie Centre to support active transportation opportunities for staff and students at the Fort Garry campus.
- Results from pedestrian and cycling counters installed on the access points into campus from the south (Kings Drive) and north ends of campus (Southwood Lands) are being used to strategically plan pedestrian and cycling improvements. With approximately 900 people daily accessing the University from Kings Drive, crosswalk improvements and path widening have been undertaken to provide safer access onto campus.
- The President of the General Assembly challenged the world’s universities to undertake real action on the UN Sustainable Development Goals, ensuring that students are engaged on the goals through research, teaching, and studies. In support, the Office of Sustainability (OOS) ran an awareness campaign September 18 through the end of October under the UN’s banner of the ‘The World’s Largest Lesson’ to introduce the UN Sustainable Development Goals (SDGs). The 17 Global Goals focus on accomplishing three big things by 2030: end extreme poverty, fight inequality and injustice and tackle climate change. For five weeks, @SustainableUofM (Facebook, Instagram and Twitter)

highlighted the work of various individuals and groups at the U of M that were working toward the 17 goals. Groups like PACA (Poverty Awareness & Community Action Workshops), Leaf Rapids Service-Learning Experience, and Careers that Fight Climate Change Mentorship Program were highlighted to showcase how individuals and groups tackle poverty, inequality, injustice, and climate change on campus and in our communities.

- Throughout October 2017, the Office of Sustainability (OOS) organized a variety of events, workshops and walks for the university community with the goal of increasing awareness of sustainability and individual actions. Trashless Tuesday's, a weekly event, celebrated students who were reducing their waste on campus by using reusable coffee mugs, water bottles and dishware. In partnership with the UMCycle Bike Kiosk, two winter cycling workshops and a Fix a Flat Workshop were held on Fort Garry and Bannatyne campuses. In support of experiential learning, OOS partnered with Clayton Riddell to host 4 workshops; Foraging & Wild Edibles, Tree Audit, Plant Walk and Campus Cleanup. In total, there were 135 participants spread out throughout the four workshops. OOS participated in the Health Sciences Centre Wellness Fair on October 19, 2017, and engaged in discussions about sustainability practices with approximately 200 people at the Bannatyne campus. Sustainability Month was also the start of the monthly Green Flicks film series in partnership with the Graduate Students' Association. The last event of Sustainability Month on October 31st linked sustainability principles to social issues with a tour and discussion hosted by the National Centre for Truth & Reconciliation.
- In conjunction with 127 universities across North America and one of seven Canadian universities, on October 26, 2017 the University of Manitoba hosted the Inconvenient Sequel: Truth to Power with a live streamed Q&A with Al Gore, former Vice-President of the United States. The event was presented by the Office of Sustainability in partnership with Clayton H. Riddell Faculty of Environment, Earth, and Resources, Natural Resource Institute, Society for Earth Sciences and Environmental Students, Climate Change Connection and Green Action Centre, and resulted in the University earning a year of screening rights to show the film on campus.

EXTERNAL MATTERS

- For the period of April 1, 2017 to October 20, 2017, the University has raised \$17,895,957.96 towards the 2017/2018 fiscal year.
- As of October 20, 2017, we have raised \$299,027,384 in philanthropic gifts towards our cumulative campaign goal for 2017/2018 of \$305 million. We are continuing discussions with the provincial government regarding a \$150 million commitment towards our \$500 million goal for the Front and Centre campaign.
- Significant gifts in the last reporting period include:
 - Variety - The Children's Charity of Manitoba has continued its support of the Children's Dental Outreach Program with a gift of \$100,000
 - BMO Financial Group visited the University on October 4 to announce a \$1 million investment to advance Indigenous education and empower the next generation of leaders. Over ten years, the gift will establish the BMO Financial Group Indigenous Scholarship, which will support the outstanding students recognized as Indigenous Leaders of Tomorrow by the University of Manitoba.

- University of Manitoba alumni returned to their alma mater September 11-17 to reconnect with friends and celebrate the faculties that brought them together. During the more than 30 events that took place, University grads were able to build upon their memories of campus by seeing exciting new developments firsthand and celebrating the achievements of current students.
- On the evening of September 14, alumni and University of Manitoba community members were invited to explore state-of-the-art rehearsal spaces at the grand opening of the new addition to the Taché Arts Complex and enjoyed live musical performances by students, faculty and alumni. The 60,000 square foot home for music, theatre and fine arts will provide much-needed space for the Desautels Faculty of Music. During the event University of Manitoba alumnus and honorary degree recipient Marcel Desautels [BA(LatPh)/1955, LLB/1959, LM/1965, LLD/1999] and voice professor Robert McLaren performed 'O Sole Mio' to a standing-room-only crowd. Also honoured that evening was philanthropist, arts supporter and University of Manitoba honorary degree recipient Dr. Bonnie Buhler [LLD/2016], who announced \$1 million to support graduate students in music.
- New to this year's Homecoming celebrations was the Brown and Gold Brunch hosted by Chancellor Harvey Sexter and President David Barnard. More than 200 alumni, faculty, students and friends celebrated their reunion with fellow classmates and commemorated the University of Manitoba's 140th birthday as they enjoyed musical performances and heard inspiring stories from students and alumni. Current students were seated at each table to share with alumni their areas of study and thoughts on the exciting developments taking place on campus. The Autonomous Agents Laboratory made up of undergraduate and graduate students were on hand displaying their award-winning humanoid robots that demonstrated archery, weightlifting, long jump and basketball.
- President David Barnard represented the University at "Day on the Hill" in Ottawa hosted by Universities Canada. President Barnard met with Senator Pat Bovey; David Lametti, Parliamentary Secretary to the Minister of Innovation, Science and Economic Development; Helene Laurendeaux, the Deputy Minister of Indigenous Affairs; Ralph Goodale, Canada's Minister of Public Safety; Deputy Clark Andrea Lyon, Deputy Minister University Champion; and the Manitoba Liberal Caucus.
- The Alumni Forum was held on Saturday, November 4. As per the 2012 agreement between the Alumni Association Inc. and the University of Manitoba, we host an alumni forum every three years. The focus of the forum was "Our story begins with you," where we asked alumni to share how they would describe the University of Manitoba to others, their perceptions and stories about their time at the University, and evaluate and comment on the University's identity, and creative expression and approach.

Report of the Senate Executive Committee

Preamble

The Executive Committee of Senate held its regular monthly meeting on the above date.

Observations

1. Speaker for the Executive Committee of Senate

Professor Mary Brabston will be the Speaker for the Executive Committee for the December meeting of Senate.

2. Vacancy on the Senate Committee on Nominations

The report of the University Secretary on the Senate Committee on Nominations is attached (Appendix A). Members of the Senate Committee of Nominations are nominated by the Senate Executive Committee and elected by Senate. Senate Executive has made a recommendation on a nomination for one vacancy, for a member representing Music and the School of Art, who is a Senator.

3. Comments of the Executive Committee of Senate

Other comments of the Executive Committee accompany the report on which they are made.

Recommendation:

The Senate Executive Committee recommends:

THAT the following nomination to the Senate Committee on Nominations be approved by Senate for the balance of a term ending May 31, 2018:

- a) Professor Paul Hess (new appointment), representing Music and School of Art.**

Respectfully submitted,

Dr. David Barnard, Chair
Senate Executive Committee
Terms of Reference:

http://umanitoba.ca/admin/governance/governing_documents/governance/sen_committees/477.htm

Vacancies on the Senate Committee on Nominations

At the July 1977 meeting of Senate, Senate approved without debate area representations for the Senate Committee on Nominations. The representation was amended in July 1991 to include the Libraries, in June 2005 to include the Clayton H. Riddell Faculty of Environment, Earth and Resources, and in October 2014 to take into account the Faculty of Health Sciences.

The current membership is as follows:

Agricultural and Food Sciences & Environment, Earth and Resources	Dean Karin Wittenberg*	2018
Architecture & Engineering	Prof. Witold Kinsner*	2019
Arts	Prof. Pamela Perkins	2020
Education, Kinesiology and Recreation Management & Extended Education	Prof. Sandra Kouritzin*	2018
Health Sciences (2)	Prof. Marie Edwards Prof. Barbara Shay*	2019 2020
Libraries & Student Affairs	Ms Vera Keown	2019
Management, Law & Social Work	Prof. Robert Biscontri*	2020
Music & School of Art	TBD	2018
Science	Prof. Helen Cameron	2018
Students (2)	Ms Sarah Blanchard Mr. Shahriar Bagheri	2018 2018

* denotes member of Senate presently or at time of appointment

A replacement is required for the member representing Music and School of Art for the balance of a term ending May 31, 2018.

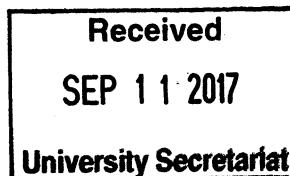
The composition of the Senate Committee on Nominations calls for ten members of the academic staff, the majority of whom are to be members of Senate. Since five of the remaining academic members currently on the Committee are Senators or were Senators at the time of appointment, the replacement must be a member of Senate at the time of election to the Senate Committee on Nominations.




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TO: Senate Committee on Curriculum and Course Changes

FROM: Dr. Jonathan Black-Branch, Dean 
Faculty of Law

DATE: September 11, 2017

SUBJECT: Faculty of Law Council Approval of JD Curriculum Reform

The current Law curriculum was adopted by Faculty Council in 1982. Since then there have been no substantive changes other than minor *ad hoc* amendments, but the basic structure of the curriculum remains unaltered. Since that time there have been numerous changes to legal education as well as new requirements by the Canadian Federation of Law Societies for all approved Common Law degree programs across Canada under its Implementation Report 2011.

Responding to such developments and the general need to modernize the JD program, the Faculty of Law has tabled and approved an Academic Innovation Report as well as a report on Experiential Education 2015.

During an extensive consultation process with Faculty and students throughout 2016-17, the Dean presented the proposed curriculum reform to Academic Affairs which was discussed, debated and adopted at Faculty Council (Thursday, April 6, 2017).

Specifically, the Curriculum Proposal was presented at Faculty Council and unanimously adopted in an Open Session of the Meeting of the Law Faculty Council Thursday, April 6, 2017 (12:00 p.m. in Room 205, Robson Hall). The minutes of that meeting have since been approved at the Law Faculty Council Meeting of Wednesday, June 28, 2017 (1:00 p.m. Common Room, Robson Hall) with no debate or discussion.

The attached Curriculum Proposal was presented by the Dean as an update at the most recent Faculty Meeting of Thursday, August 31, 2017 (1:00 p.m. Room 309, Robson Hall) where there was unanimous consensus on the enclosed proposal.

Please accept the enclosed proposal for approval.

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses the report to Senate.

Faculty of Law

Deleted

LAW 1100	CONTRACTS	6
LAW 2530	DEBTORS' AND CREDITORS' RIGHTS	2
LAW 2600	EVIDENCE *To be deleted fall 2019	4
LAW 2670	CIVIL PROCEDURE *To be deleted fall 2019	2
LAW 3130	POVERTY LAW	3
LAW 3240	CURRENT LEGAL PROBLEMS C	2
LAW 3300	CLINICAL CRIMINAL LAW	8
LAW 3390	SECURITIES LAW	2
LAW 3480	RESTITUTION	2
LAW 3490	RESEARCH PAPER	2
LAW 3760	JURISPRUDENCE	2
LAW 3820	MANITOBA LAW JOURNAL	2
LAW 3822	SCHOLARLY PUBLICATIONS	2
LAW 3970	CURRENT LEGAL PROBLEMS A	2
		41

Added

LAW 1102	CONTRACTS	5
LAW 2602	EVIDENCE	3
LAW 2672	CIVIL PROCEDURE	3
LAW 3132	CLINICAL FAMILY	3
LAW 3302	CLINICAL CRIMINAL LAW	6
LAW 3392	SECURITIES LAW	3
LAW 3394	INTERNET AND E-COMMERCE	3
LAW 3532	INTENSIVE CRIM	3
LAW 3674	ADVANCED PUBLIC LAW	3
LAW 3824	SCHOLARY PUBLICATIONS	3
LAW 3826	ADVANCED SCHOLARY PUBLICATIONS	3
LAW 3828	PREVENTING WRONGFUL CONVICTIONS	3
LAW 3990	INTERNSHIP	12
		53

NET CHANGE IN CREDIT HOURS: +12

The faculty of Law is proposing program modifications to the Juris Doctor degree including decreasing the total to 92 credit hours. First year law will drop from 33 credits to 32 credits by modifying Contract Law from 6 to 5 credits. Second and third year law will drop from 32-30 credits with the elimination of Civil Procedure, Family Law, Income Tax Law and Trusts as mandatory courses. The rationale for our program modification is to allow for more flexibility. The substantial mandatory course load limited opportunities for students to choose courses and follow their own interests in the law.



Faculty of Law

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Executive Summary Program Modification Faculty of Law

Introduction from the Academic Innovation Report

CURRENT CURRICULUM

This document describes proposed revisions to the Juris Doctor (JD) program at the University of Manitoba. The three year course revisions are being submitted to the Senate Committee on Curriculum and Course Changes (SCCCC) for introduction in the fall term 2018. At present, the JD degree at Robson Hall requires 97 credit hours of course work which includes 57 credit hours of mandatory courses over the three years of the program. All courses are categorized as either doctrinal, perspective or clinical and each year contains a mix of all three categories. The 33 credit hours of courses in first year are all mandatory. The curriculum has been amended on an *ad hoc* basis since the last comprehensive reform in 1982, but the basic structure of that reformed curriculum remains unaltered.

PAST CURRICULUM REFORM INITIATIVES AT ROBSON HALL

In 1982, a curriculum reform committee chaired by Professor Philip Osborne created a proposal for a new curriculum at Robson Hall that was debated, amended and adopted by a vote of the Faculty Council. The details of the reform, the rationale and the process were explained in a journal article authored by Professors Osborne and Alvin Esau titled "Curriculum Reform at Robson Hall" (1990) Man LJ 605. The goal was to enable students to achieve a balance among a selection of doctrinal, perspective and clinical courses by requiring students to take courses from each category, increasing the complexity of the material over the three years with a commitment to a coherent, rational and flexible policy. Student choice was recognized as an important factor but in the context of the new curriculum, choice was essentially limited to the third year of study.

THE FEDERATION OF LAW SOCIETIES (FLS) IMPLEMENTATION REPORT

The FLS Implementation Report of 2011 sets out uniform national requirements for all Approved Common Law Degree programs across Canada. The FLS Implementation Report gives latitude to all law schools to determine how the competencies will be taught but it requires each law school to report annually on how the school is fulfilling the minimum national standards. In order for Robson Hall to remain accredited, it will have to ensure that all its JD graduates meet specific minimum competencies in specified areas of knowledge, skills and ethics & professionalism. With approximately 57 credit hours of mandatory courses out of 97 credit hours for a JD, Robson Hall's current curriculum easily meets the competencies requirements of the FLS Implementation Report.

FACULTY INPUT INTO CURRICULUM REFORM

The Academic Innovation (AI) Committee sought faculty input into the questions surrounding curriculum reform, including the impact of the FLS Implementation Report. Faculty members completed an online questionnaire, were interviewed by AI Committee members and participated in a facilitated discussion at a faculty retreat. Most faculty members expressed some support for the principles underlying the 1982 Reforms. The goal in 1982 was to integrate skills, knowledge and perspectives in each year of the LLB program, gradually increasing the complexity and depth of the program as the years progressed. Many Faculty members observed that the current curriculum was not achieving this objective.

Criticism of the current curriculum included:

- students were not getting adequate instruction and reinforcement of the skills of legal research, analysis and writing;
- the substantial mandatory course load limited opportunities for students to choose courses and follow their own interests in the law;
- the program did not accommodate a diversity of courses which would take advantage of the research expertise of our faculty; and
- limited resources that affect student choice. Overall, there was an appetite among the faculty for curricular review and appropriate reforms.

Current Curriculum Adherence to Federation Requirements November 2015

National Requirement - APPROVED CANADIAN LAW DEGREE

The Federation will accept an LL.B. or J.D. degree from a Canadian law school as meeting the competency requirements if the law school offers an academic and professional legal education that will prepare the student for entry to a bar admission program and the law school meets the following criteria:

Academic Program

- The law school's academic program for the study of law consists of three full-time academic years or equivalent, which presumptively, is 90 course credits.
- The course of study consists primarily of in-person instruction and learning and/or instruction and learning that involves direct interaction between instructor and students.
- Holders of the degree have met the competency requirements.
- The academic program includes instruction in ethics and professionalism in a course dedicated to those subjects and addressing the required competencies.
- Subject to special circumstances, the admission requirements for the law school include, at a minimum, successful completion of two years of post-secondary education at a recognized university or CEGEP.

Learning Resources

- The law school is adequately resourced to enable it to meet its objectives, and in particular, has appropriate numbers of properly qualified academic staff to meet the needs of the academic program.
- The law school has adequate physical resources for both faculty and students to permit effective student learning.
- The law school has adequate information and communication technology to support its academic program.
- The law school maintains a law library in electronic and/or paper form that provides services and collections sufficient in quality and quantity to permit the law school to foster and attain its teaching, learning and research objectives.

Proposal for Curriculum Reform

The faculty has approved the following:

- the Academic Innovation Report;
- the Report of the Director of Experiential Learning in 2015;
- the Requirements of the Federation of Law Societies for an approved degree;
- Bloom's taxonomy which divides learning objectives into three domains: cognitive/knowledge, Skills and Affective/attitudes; and,
- guiding principles for reform that include progression, flexibility, coordination, congruence, integration, student choice and research optimization.

Based on this work regarding curriculum reform, we are in the optimal position to begin a reform of the curriculum. It is possible to take preliminary steps in keeping with the guiding principles of curriculum reform in order to move the process forward as faculty and students are prepared for and indeed expecting delivery of change.

The report notes that our curriculum at 97 credit hours is heavier than other Canadian law schools and 7 credit hours heavier than the required 90 credit hours for an approved Canadian Law Degree.

In keeping with guiding principles and to begin to modify the framework of our curriculum the following reforms are being suggested:

- drop our total credit hours to 92 to allow for more flexibility and experiential learning;
- remove Civil Procedure, Family, Tax and Trusts from the mandatory list and have them as electives guaranteed available to the entire cohort as agreed in the AI report to create more flexibility in student choice;
- remove anomalous course credit weighting to allow for better planning by students;
- change perspective designation to Research and Writing (RW) component. Each student must complete one Research and Writing component (RW) course in second and third year. The (RW) component will be satisfied by a course evaluated by at least one research paper worth a minimum of 60% of the final grade consisting of 7,500 words, excluding footnotes and bibliography.

Proposed Curriculum Reform:

First Year (32 Credit hours)

First Year	Mandatory
LAW 1460 Constitutional Law	5
LAW 1102 Contracts	5
LAW 1140 Criminal Law and Procedure	5
LAW 1530 Legal System	2
LAW 1540 Legal Methods	5
LAW 1500 Property	5
LAW 1480 Torts and Compensation Systems	5
Total Credit hours	32

Second Year (30 credit hours)

Second Year	Mandatory
LAW 3530 Administrative Law	3
LAW 2650 Introduction to Advocacy	3
LAW 2690 Corporations I	3
LAW 2602 Evidence	3
LAW 2680 Legal Negotiations	3
Total Mandatory classes	15
Five electives must include one Research and Writing Component (RW)	15
Total Credit hours	30

Third Year (30 credit hours)

Third Year	Mandatory
LAW 3024 The Legal Profession and Professional Responsibility	3
Total Mandatory	3
Electives and Clinical must include one Research and Writing Component (RW)	27
Total Credit hours	30
Total Degree Credit hours	92

Writing Requirement

Each student must complete one RW in second and third year. A RW course involves at least one paper worth at least 60% of the grade, comprising a minimum of 7,500 words (excluding footnotes and bibliography).

Regulations regarding completion of the JD degree (Existing)

- Students may participate for credit in one moot LAW 3220 Competitions B in each of second and third year.



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Transition Plan Program Modification Faculty of Law

Introduction

We propose that the changes take effect for the law students entering the program in September of 2018. The existing curriculum would stay in place for the students who entered the program in September 2016, September 2017 or earlier for half time students.

Most students currently enrolled in the three year Juris Doctor program will move through their courses in a sequential fashion and complete the current program. Some students are in a half time program or require leaves of absence, authorized withdrawals, voluntary withdrawals, or may fail courses and will not complete their program prior to the change from the current curriculum.

The changes to the program do not remove any of the courses that form part of the existing mandatory curriculum. The only change is that four courses that were mandatory under the existing curriculum (LAW 2672 Civil Procedure, LAW 2640 Family Law, LAW 2700 Income Tax Law and Policy and LAW 2490 Trusts) will become electives under the proposed program modification. Under the course modification requests LAW 2602 Evidence and LAW 2672 Civil Procedure change in credit weighting but continue to be offered as part of the curriculum. Therefore, even students that do not complete their program in a sequential fashion will be able to fulfill the requirements of the existing 97 credit hour JD program.

Communicate curriculum changes

Current and prospective students will receive notification about the revised curriculum as soon as possible following approval of the Program Modification. Students will be informed on how the faculty plans to support students who are outside of the typical three year timeframe. These notifications will be made by town hall meetings for 2016 and 2017 continuing students, revisions on University Course Catalogue and notices on the Robson Hall webpage, panel screens and weekly e-news.

Pathways for continuing students to complete their program

Continuing full time students will complete the existing curriculum as the courses that are currently mandatory become electives that are guaranteed by the faculty to be offered with sufficient space for the completion of the existing 97 credit hour J.D. degree. Continuing half time students will be accommodated by taking Civil Procedure and Evidence in the second half of their first year program (*see half time students table below*). The four courses that were mandatory under the existing curriculum Law 2672 Civil Procedure, LAW 2640 Family Law, LAW 2700 Income Tax Law and Policy and LAW 2490 Trusts will become electives under the proposed program modification and continue to be offered.

Continuing students would be offered the choice to transition to the new 92 credit hour curriculum. The result of the transition will be a 93 credit hour J.D. degree if students transition in second year or a 95 credit hour J.D. degree if students transition in third year of the continuing J.D. program. This selection would be offered to all continuing students in September 2018 and again in September 2019 at which all continuing students would normally have completed the program.

COURSE MAP			
Students who entered law in 2016	Year in program	<i>Continuing</i>	<i>Transition</i>
	1	33	33
	2	32-34	32-34
	3	32-34	30
	Total credit hours	97-101	95-97
Students who entered law in 2017			
	1	33	33
	2	32-34	30
	3	32-34	30
	Total credit hours	97-101	93
Modified Curriculum			
Students who entered law in 2018			
	1		32
	2		30
	3		30
	Total credit hours		92

Detailed Modified Curriculum**Year 1****Modified
Curriculum**

LAW 1102 Contracts	5
LAW 1140 Criminal Law and Procedure	5
LAW 1460 Constitutional Law	5
LAW 1480 Torts and Compensation Systems	5
LAW 1500 Property	5
LAW 1540 Legal Methods	5
LAW 1530 Legal Systems	2
Total credit hours	32

Year 2

LAW 2602 Evidence	3
LAW 2650 Introduction to Advocacy	3
LAW 2680 Legal Negotiations	3
LAW 2690 Corporations I	3
LAW 3020 Administrative Law	3
5 Elective courses including one Research and Writing Component (RW)	15
Total credit hours	30

Year 3

LAW 3024 The Legal Profession and Professional Responsibility	3
Elective courses including one Research and Writing Component (RW)	27
Total credit hours	30
Total degree credit hours	92

Bridging students outside of the normal timeframe

Students who are in year two of the current curriculum may be eligible to transit into the revised curriculum. Each student outside of the normal timeframe for completion of the JD degree will meet with the Student Advisor and develop an individual completion plan.

Half time students									
2017-18		2018-19		2019-20		2020-21		2021-22	
LAW 1102 Contracts	6	LAW 1500 Property	5	LAW 2690 Corporations I	3	Electives	18	LAW 3024 The Legal Professional and Professional Responsibility	3
LAW 1530 Legal System	2	LAW 1140 Criminal Law and Procedure	5	LAW 3530 Administrative Law	3	(RW) *	3	Electives	12
LAW 1460 Constitutional Law	5	LAW 1540 Legal Methods	5	LAW 2680 Legal Negotiations	3			(RW) *	3
LAW 1480 Torts and Compensation Systems	5	LAW 2600 Evidence	4	LAW 2650 Introduction to Advocacy	3				
		LAW 2670 Civil Procedure	2	Electives	9				
Total	18	Total	21	Total	21	Total	21	Total	18

* Research and Writing Component (RW)

Degree Total 99 credit hours

Resource Implications

There will be no resource implications for revising years 1, 2 and 3 of the J.D. program. There will be an overall credit hour decrease for the J.D. program from 97 credits to 92 credits. Course development costs will be imbedded in 2018-19 workload assignments, with no additional cost. There will be minimal transition implications in changing to the new curriculum, with no extra financial cost. In order to accommodate students from the existing program who are not transitioning to the modified program LAW 2672 Civil Procedure and LAW 2602 Evidence will offered in two sections reflecting the current and modified credit hours. This should have a nil budget effect as both courses are currently offered sections.

Our overall proposal reflects a net change in credit hours of + 18. However, all additional credit hours are currently offered under topic courses and therefore are already part of our existing budget. The one exception is LAW 3990 Externship which is a new 12 credit hour course. The course is expected to be supervised by practicing professionals on a volunteer basis with limited enrolment and therefore the budget impact is expected to be nil.

SECTION 1: Degree Programs Offered

SECTION 1: Degree Programs Offered

Program/Degree	*Years to Complete	Total Credit Hours
Juris Doctor (J.D.)	5	157 152
Master of Laws (LL.M.)	6	161-163 and Thesis

*This includes two years (60 credit hours) of study in an undergraduate program.

Equivalent academic courses completed at recognized universities elsewhere will be considered. For all admission requirements see: <http://law.robsonhall.ca/jd/admission-to-first-year>

*The Master of Laws is a thesis-based program designed for completion in one year after the completion of a three year J.D. program. The program consists of participation in the Graduate Legal Theory Seminar, two additional courses and completion of a substantial thesis. Further details are available through the LL.M. website: <http://law.robsonhall.ca/llm/admissions> Applicants should also consult the Faculty of Graduate Studies website: umanitoba.ca/graduate_studies/.

SECTION 2: Juris Doctor - J.D.

Juris Doctor-J.D.

Robson Hall, Faculty of Law, offers a three year J.D. program that starts with the fundamental doctrinal courses that allow students to acquire a solid foundation in law. From the foundational courses, students can move into legal specialties of their choice, or choose to pursue a J.D. concentrating on ~~Aboriginal law~~ **Indigenous law**, business law, or human rights. Clinical legal education has been a part of the J.D. program since the early 1970s and students develop lawyering skills under faculty guidance, expanding their perspectives and ethical understanding of the role of practising lawyers. Scholarship and research is built into the J.D. program so students have an opportunity to develop a critical understanding of law and its development.

02 2.1 The Study of Law

2.1 The Study of Law

Legal education in Canada is divided into two phases: the academic study of law at one of the university law schools and practical training under the auspices of a provincial law society for those who wish to be admitted to practise and called to a Bar. As there is a reciprocal recognition of university law degrees between the common law provinces (all provinces except Quebec), the academic study can be taken in any one of these provinces.

A sound education in law provides a good foundation for a great variety of careers. In the past most law graduates have entered the private practise of law to concentrate on various types of legal work: real estate transactions, commercial contracts, company law, family law, taxation,

etc. Contrary to popular belief only a few lawyers concentrate on court work and even fewer specialize in criminal cases. While the tendency to specialize in the practise of law is becoming more prevalent, most lawyers continue to be general practitioners prepared to perform most types of legal work according to the needs of their clients.

Besides the private practice of law, law graduates can join the legal departments which many corporations find it expedient to maintain; others enter the employ of various government departments to serve in a variety of capacities. A few pursue non legal vocations in, business, journalism, social work, and law enforcement. At the University of Manitoba consideration is given to the fact that while most students take law to become practising lawyers, some are taking law as an additional discipline to enhance their opportunities in fields other than the practise of law; thus, while the emphasis is on the academic study of substantive law, the study is carried on in a practical context.

2.2 Clinical Learning

The curriculum invites critical assessment of the role of law in society as well as the development of skills relevant to the practice of law. In addition to lectures and seminars, students are given an opportunity to develop, under supervision, some of the research, writing, and forensic skills which will prove useful in the practise of law. ~~In first year, students are acquainted with the various resource materials available in a law library, and they follow a program designed to develop legal research and writing techniques.~~ **In first year students follow a program designed to develop legal research and writing techniques, problem solving and oral advocacy.** In second and third years, students participate in moot courts, fictitious trials and appeals, which provide practise in research, examination of witnesses, and courtroom argument. This advocacy training is just one element of the program at Robson Hall that contributes to the excellent reputation of our graduates. In third year students may choose from a range of Clinical Courses, including clerkships with the Court of Queen's Bench and the Court of Appeal, Internships and national competitive moot competitions.

Throughout their legal studies students may serve actual legal clients through participation at the University Law Centre, Pro Bono Students, L. Kerry Vickar Business Law Clinic and The Legal Help Centre.

2.3 Research and Publications

Research and scholarly writing are integral elements of the mission of the University and the law school. Professors research, write and consult with the larger legal community in their particular area of expertise and students have similar opportunities. Each year students must take a ~~perspective course~~ **writing requirement** which provides an opportunity to explore a particular area of law in depth. ~~Perspective courses have limited enrolment and students must research and write a major paper.~~ **Students have the opportunity to work on a number of Scholarly publications including: Asper Review, Canadian Journal of Human Rights, Manitoba Law Journal, Robson Crim and Under the Golden Boy.**

2.4 Faculty of Law Centres of Excellence

Robson Hall is home to two named research chairs. In 1999, the Faculty of Law established the Asper Chair of International Business and Trade Law. The Asper Chair sponsors a variety of research including bi-annual academic conferences in international business and trade law. An internship program allows up to four students a year to work with the Asper Chair and creates opportunities for students to advance their education, while gaining skills necessary to pursue careers in law or business with an international focus. Additionally, students involved in the Asper program have the opportunity to participate in international commercial dispute resolution competitions.

The Marcel Desautels Chair in Private Enterprise and the Law has a mandate to conduct research and provide education on issues of specific interest to the privately held or family owned businesses. The Desautel Centre's focus is on the needs of closely held businesses. The Faculty of Law also operates the Kerry Vickar Small Business Law Clinic which is headed by a director who is assisted by volunteer mentors from the practising bar.

3.1 Course Requirements for Admission to J.D. Program

Robson Hall, Faculty of Law offers three First Year Admission categories:

- Index Score (Regular) Category (50% GPA and 50% LSAT score)
- Individual Consideration Category
- Aboriginal Category

The minimum academic requirement for the Index score category is two (2) full years of university level courses including a mathematic requirement (equivalent of 60 credits). The J.D. requirement fulfils the University's English requirement.

All applicants must write the Law School Admission Test (LSAT).

Please visit the Robson Hall website: <http://law.robsonhall.ca/jd/admission-to-first-year>.

Section 4: Academic Regulations

Section 4: Academic Regulations

All students are asked to note that some academic policies and regulations are under review and are subject to change. Please check the Web Calendar at www.umanitoba.ca for updated information.

The provisions of the chapter, General Academic Regulations and Requirements, and the chapter, University Policies, apply to all students. In addition, the Faculty of Law has regulations and requirements, published below, that apply specifically to its students.

4.1 Residence requirements for the Juris Doctor Degree

To obtain the Juris Doctor (J.D.) degree from the University of Manitoba, ordinarily a student must successfully complete two of the three years of the Juris Doctor (J.D.) program at the University of Manitoba. The remaining year may be completed at another law school as approved by the Admissions Committee or the Dean's office.

4.2 Licence to Practise Law

Graduates who wish to practise must apply to the Law Society of the province in which they wish to practise. Law societies generally require applicants to complete a bar admission course. The Law Society must be satisfied as to the good character and repute of its applicants, as well as their academic competence and qualifications. Inquiries with regard to the Province of Manitoba should be made to the Law Society of Manitoba.

4.3 Regulations of the Faculty of Law

Regulations of the Faculty of Law, as amended from time to time governing attendance, evaluation, prizes, and progression may be consulted at the Faculty's website (www.umanitoba.ca/faculties/law).

4.4 Miscellaneous Registration Matters

4.4 Miscellaneous Registration Matters

The Associate Dean's office shall, subject to appeal to the Academic Affairs Committee, consider and determine all applications from students admitted to the faculty for permission: (i) to take part of their law studies at another university under a letter of permission with conditions; (ii) to defer their law studies for a period of one or more academic years after successfully completing first or second year, and to permit such students to re-register following such an absence with conditions; (iii) to withdraw before completing the academic year for which they are registered and to permit, in the case of a student who withdraws from first year under exceptional circumstances, that student to re-register for a subsequent academic year as a supernumerary student, and in the case of a second or third year student, to permit such student to re-register for a subsequent academic year; in all cases with or without conditions; (iv) to switch from the full-time program to the half-time program and vice versa.

SECTION 5: Program Requirements (4) ■

<u>Name</u>	<u>Order</u>	<u>Delete</u>
Program Requirements		
5.1 First Year	1	
5.2 Second Year Only	2	
5.3 Second Year or Third Year Electives	3	
5.4 5.3 Third Year		

SECTION 5: Program Requirements

This Section describes the program requirements that are in effect for the ~~2013-2014~~ academic year. However, prospective students should be aware that the Faculty of Law regularly reviews its curriculum to ensure that it continues to meet the current needs of our students.

5.1 First Year

Each full-time student is required to take all of the following courses:

Course No.	<u>Doctrinal Mandatory Courses (Compulsory)</u>	Credit Hours
LAW 1100	Contracts	6
LAW 1102	Contracts	5
LAW 1140	Criminal Law and Procedure	5
LAW 1460	Constitutional Law	5
LAW 1480	Torts and Compensation Systems	5
LAW 1500	Property	5
	Clinical Course (Compulsory)	
LAW 1540	Legal Methods	5
	Perspective Course (Compulsory)	
LAW 1530	Legal System	2
Total credit hours		33 32

5.2 Second Year ~~Only~~

Each full time student in Second Year is required to take a total of 30 credit hours. The 30 credit hours consist of 15 credit hours of mandatory courses and 15 credit hours of electives (List A and List B; see below), which must include a minimum of one Writing Requirement Course (List A).

~~In Second Year~~ each student must take:

	<u>Doctrinal Mandatory Courses (Compulsory)</u>	
LAW 2600	Evidence	4
LAW 2602	Evidence	3

LAW 3530	Administrative Law	3
LAW 2670	Civil Procedure	2
LAW 2690	Corporations I	3
	<u>Clinical Courses (Compulsory)</u>	
LAW 2650	Introduction to Advocacy	3
LAW 2680	Legal Negotiation	3
Total Credit Hours		18 15



5.3 Second Year or Third Year

~~5.3 Second Year or Third Year Electives~~

Doctrinal Courses (Compulsory)		
LAW 2490	Trusts	—3
LAW 2640	Family	—3
LAW 2700	Income Tax and Policy	3

~~Writing Requirement Courses~~

One Research and Writing course from the following list in each of Second and Third Years; more can be taken

List A: Writing Requirement Courses (Second or Third Year):

LAW 3012	International Business Law	3
LAW 3014	International Trade Law	3
LAW 3018	Human Rights Law	3
LAW 3030	Research Paper B	3
LAW 3070	Gender and the Law	3
LAW 3090	Children and the Law	3
LAW 3120	Philanthropy Philanthropy and the Law	3
LAW 3130	Poverty Law	3
LAW 3170	Dispute Resolution	3
LAW 3230	Aboriginal Peoples and Land Claims	3
LAW 3310	Aboriginal Peoples and the Law	3
LAW 3370	The Legislative Process	3
LAW 3380	Issues in Law and Bio Ethics	3
LAW 3394	Internet and E-Commerce	3
LAW 3410	Canadian Legal History	3

LAW 3490	Research Paper	2
LAW 3620	Comparative Law	3
LAW 3674	Advanced Public Law	3
LAW 3740	Public International Law	3
LAW 3760	Jurisprudence	2
LAW 3828	Preventing Wrongful Convictions	3
LAW 3940	Canadian Charter of Rights and Freedoms	3
LAW 3980	Current Legal Problems B	3

**List B: Elective-Doctrinal
Courses (Second or Third Year)
(Optional)**

LAW 2400	Wills and Succession	3
LAW 2490	Trusts	3
LAW 2530	Debtors' and Creditors' Rights	2
LAW 2640	Family Law	3
LAW 2672	Civil Procedure	3
LAW 2700	Income Tax Law	3
LAW 3016	Corporations II	3
LAW 3026	Trademarks	3
LAW 3050	Commercial Law	3
LAW 3210	Competitions A	3
LAW 3212	Immigration and Refugee Law	2 3
LAW 3022	Insurance Law	3
LAW 3220	Competitions B	3
LAW 3330	Employment Law	3
LAW 3390	Securities Law	2
LAW 3392	Securities Law	3
LAW 3480	Restitution	2
LAW 3590	Charter Issues in Criminal Law	3
LAW 3600	Environmental Law	3
LAW 3826	Advanced Scholarly Publications	3
LAW 3690	Real Estate Transactions	3
LAW 3770	Labour-Management Relations	3
LAW 3820	Manitoba Law Journal	2
LAW 3822	Scholarly Publication*	2
LAW 3824	Scholarly Publications	3
LAW 3832	Legal Aid Clinic	3
LAW 3852	Private International Law	3

LAW 3880	Municipal and Planning Law	3
LAW 3970	Current Legal Problems A	2
LAW 3980	Current Legal Problems B	3

Each student in ~~Second Year~~ must take a minimum of 32 ~~30~~ credit hours. The 32 ~~30~~ credit hours are made up of mandatory, doctrinal and clinical courses plus electives comprising 14 ~~15~~ to 16 credit hours. The 32 ~~30~~ credit hours must include at least one perspective course ~~writing requirement course~~.

Each student in ~~Third Year~~ must take a minimum of 32 ~~30~~ credit hours. The 32 ~~30~~ credit hours are comprised of LPPR and any second or third year compulsory doctrinal courses that have not been taken, plus electives comprising the additional 27 credit hours. The 32 ~~30~~ credit hours ~~and~~ must include at least one ~~writing requirement course~~. Note: LAW 3490 Research Paper is excluded if it has been taken in second year.

5.4 5.3 Third Year

Each full time student in Third Year is required to take a total of 30 credit hours. The 30 credit hours consist of one mandatory course and 27 credit hours of electives which must include a minimum of one Writing Requirement Course (List A; see Section 5.2). Third year students may select electives from List A or List B (see Section 5.2), or List C (see below).

Compulsory Course

LAW 3024	The Legal Profession and Professional Responsibility	3
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List C: Elective Courses (Third Year Only)

LAW 3020	Clinical Administrative Law	3
LAW 3132	Clinical Family	3
LAW 3250	Current Legal Problems D	
	A01 Clinical Family Law	3
LAW 3032	Court of Queen's Bench Clerkship	3
LAW 3034	Court of Appeal Clerkship	3
LAW 3300	Clinical Criminal Law	8
LAW 3302	Clinical Criminal Law	6
LAW 3340	Advanced Advocacy	3
LAW 3532	Intensive Criminal Law	3
LAW 3862	Business Transactions: The Art of the Deal	6
	<u>Doctrinal Courses (Optional)</u>	

LAW 3240	Current Legal Problems C	2
	-	
LAW 3360	Advanced Legal Research	3
LAW 3450	Remedies	3
LAW 3510	Corporate Tax	3
LAW 3520	Taxation of Trusts & Estates	3
LAW 3980	Current Legal Problems B	3
LAW 3990	Externship	12

Faculty of Law

Deletions:

Last term offered – Winter 2018

LAW 1100 Contracts Cr.Hrs. 6	-6.0
LAW 2530 Debtors' and Creditors' Rights Cr.Hrs. 2	-2.0
LAW 3130 Poverty Law Cr.Hrs. 3	-3.0
LAW 3240 Current Legal Problems C Cr.Hrs. 2	-2.0
LAW 3300 Clinical Criminal Law Cr.Hrs. 8	-8.0
LAW 3390 Securities Law Cr.Hrs. 2	-2.0
LAW 3480 Restitution Cr.Hrs. 2	-2.0
LAW 3490 Research Paper Cr.Hrs. 2	-2.0
LAW 3760 Jurisprudence Cr.Hrs. 2	-2.0
LAW 3820 Manitoba Law Journal Cr.Hrs. 2	-2.0
LAW 3822 Scholarly Publications Cr.Hrs. 2	-2.0
LAW 3970 Current Legal Problems A Cr.Hrs. 2	-2.0

Last term offered – Winter 2019

LAW 2600 Evidence Cr.Hrs. 4	-4.0
LAW 2670 Civil Procedure Cr.Hrs. 2	-2.0

Introductions:

LAW 1102 Contracts Cr.Hrs. 5	+5.0
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This course covers the basic principles of contract law, including how a contract is formed; what is an offer; what constitutes acceptance; whether all promises are enforceable as a contract; when parties should be allowed to avoid obligations; what happens if one party misrepresents the quality of subject matter of the contract; what happens when a party makes a mistake about what they buy or sell; what should happen if one party takes advantage of another for a better deal for themselves. May not be held with LAW 1100.

LAW 2602 Evidence Cr.Hrs. 3	+3.0
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A study of the rules relating to the admissibility and weight of evidence in judicial proceedings. May not be held with LAW 2600.

LAW 2672 Civil Procedure Cr.Hrs. 3	+3.0
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An introduction to the rules of civil procedure. May not be held with LAW 2670.

LAW 3132 - Clinical Family Cr.Hrs. 3	+3.0
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This course will serve as a bridge between the introductory family law course and the Advanced Family Law course, enabling students to develop a deeper understanding of the issues in this area of the law and to be better prepared to assimilate the necessary skills to be successful in this high demand area of practice. May not be held with LAW 3250 when titled Clinical Family. Registration restricted to students in Year 3. Prerequisite LAW 2640. Grading: Pass/Fail.

LAW 3302 Clinical Criminal Law Cr.Hrs. 6	+6.0
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The primary purpose of this offering is to train students in lawyering skills in the criminal law area. To this end, instruction is given on an intensive basis in small groups. Students may be required to engage in classroom work; to participate in various forms of simulation exercises

and to conduct actual client based cases under the supervision of the instructor. Particular emphasis will be given to questions of professional responsibility and ethics. Registration restricted to students in Year 3. May not be held with LAW 3300. Prerequisites: (LAW 2602 or LAW 2600) and LAW 3590. Corequisite: LAW 3532 or LAW 3340. Grading: Pass/Fail.

LAW 3392 Securities Law Cr.Hrs. 3 +3.0
A study of the basic concepts and application of the securities regulatory system in Canada. May not be held with LAW 3390.

LAW 3394 Internet and E-commerce Law Cr.Hrs. 3 +3.0
This is a perspectives course. It will cover legislation, case law and practical drafting techniques in many areas in order to better equip students in the practice of law, and at the same time invite students to reflect upon the political and social issues that arise as "cyberlaw" develops. Subject matter of the course: The legislation, court decisions, policy debates and practical drafting and litigation techniques connected with the internet and e-commerce. A variety of issues will be covered, including: freedom of expression issues, jurisdiction, internet speech regulation; online privacy issues; intellectual property issues, including domain names and downloading of copyright material; internet commerce issues, such as the law of contracts pertaining to online contracting. May not be held with LAW 3980 when titled "Internet and E-commerce Law".

LAW 3532 Intensive Criminal Law Cr.Hrs. 3 +3.0
This course follows the general introduction to the complexities and principles of criminal law presented in earlier courses on criminal law and evidence. It emphasizes the ways in which these complexities and principles play out in practice and has a strong practical component. It is well-suited for students considering working in the field of criminal law. The first half of the course will address the demands placed on prosecutors and defence counsel at various points of a prosecution, including, inter alia, application for judicial interim release, the preparation of pre-trial motions, direct and cross-examination, and sentencing. These demands are not only statutory, but also logistical, tactical and ethical. The second half of the course will look at these demands in the context of certain "special" criminal law contexts, including, inter alia, impaired driving, young offenders, domestic violence, and drug prosecutions. Registration restricted to students in Year 3. May not be held with LAW 3250 when titled "Intensive Criminal Law". Grading: Pass/Fail.

LAW 3674 Advanced Public Law Cr.Hrs. 3 +3.0
This course provides students with a fuller appreciation and knowledge of several topics of interest and importance for Canadian public law, including the changing boundaries of public law in our "shrinking" state, the scope and meaning of judicial, administrative and bureaucratic independence, the role of international human rights norms in Canadian constitutional and administrative law, the intersection between the Canadian Charter of Rights and Freedoms and administrative law and the role of guidelines, policies and other "soft law" in public administration. Although focused on Canadian public law, the course may include a comparative component and draw from the public law experience of other jurisdictions. May not be held with LAW 3980 when titled "Advanced Public Law". Prerequisite: LAW 3530.

LAW 3824 Scholarly Publications Cr.Hrs. 3 +3.0
The course will provide students with hands-on experience in working with scholarly writing. Students will develop their evaluation and critical analysis skills through the process of editing for publication all submissions to the Journal. May not be held with the former LAW 3820 or the former LAW 3822. Grading: Pass/Fail.

LAW 3826 Advanced Scholarly Publications Cr.Hrs. 3 +3.0

The course will provide students with hands-on experience in working with scholarly writing. Students will develop their evaluation and critical analysis skills through the process of completing full substantive and copy edits on two or three articles during the course of the year. Working as Senior Editors students will develop their interpersonal skills by communicating with authors and by supervising and managing the work of Junior Editors. May not be held with LAW 3250 when titled "Advanced Scholarly Publications". Grading: Pass/Fail.

LAW 3828 Preventing Wrongful Convictions Cr.Hrs. 3 +3.0

This course examines the causes of wrongful convictions, how to avoid them, detection mechanisms and remedies that should be provided under international instruments when a miscarriage of justice has occurred. The course starts by examining the environmental factors that nurture a miscarriage of justice, including the adversarial system of criminal justice. It then examines the role of the various players in the criminal justice system, and how each can inadvertently feed into a wrongful conviction - individually, or in combination with other factors. May not be held with LAW 3980 when titled "Preventing Wrongful Convictions".

LAW 3990 Externship Cr.Hrs. 12 +12.0

The primary purpose of the Externship is to allow students an opportunity to work in a legal context where they gain professional knowledge and skills related to law, the legal profession and legal practice. Particular emphasis will be given to questions of professional responsibility and ethics. Within the workplace, students will be required to participate in various forms of exercises and to conduct work within an actual work setting where they face real day-to-day work situations under the supervision of practicing lawyers. Depending on the nature of the placement, they may be required to engage in classroom work. Registration restricted to students in Year 3. Grading: Pass/Fail.

Net change in credit hours: +12.0

Report of the Senate Committee on Curriculum and Course Changes, Submitted to Senate for Ordinary Debate RE: Faculty of Law

Preamble:

1. The terms of reference for the Senate Committee on Curriculum and Course Changes (SCCCC) are found on the website at: http://www.umanitoba.ca/admin/governance/governing_documents/governance/sen_committees/497.htm. SCCCC is “to recommend to Senate on the introduction, modification or abolition of undergraduate programs, curricula or courses.”
2. The committee considered course and curriculum changes proposed by the Faculty of Law at its meetings on October 11 and October 27, 2017.
3. The Senate Planning and Priorities Committee (SPPC) also considered the proposal from the Faculty of Law, at its meeting on September 25, 2017.

Observations

1. The Faculty of Law is proposing to delete fourteen (14) courses and to introduce thirteen (13) courses, as set out in the proposal. The overall number of credit hours offered by the faculty would increase by twelve (12) credit hours.
2. The course introductions include a proposal for a 12-credit hour externship (LAW 3990 Externship) that students would have the option to complete in Year 3. The course responds to University and faculty priorities to increase experiential learning opportunities for students.
3. The Faculty is also proposing program modifications to the curriculum of the Juris Doctor (J.D.) program, which has not been significantly revised since 1982. The objectives of the proposed changes are to: modernize the curriculum, to reflect changes in the practice of law in the intervening years; ensure the curriculum is consistent with the requirements for Approved Common Law Degree programs in Canada, as determined by the Federation of Law Societies of Canada (FLS); meet the different academic profile of Law students today and to ensure they graduate with the professional skills and knowledge base required by the FLS.
4. The revised curriculum would require that students complete 92 credit hours, rather than 97 credit hours, which would be more aligned to the minimum requirement for 90 credit hours, for Approved Common Law Degree programs. The number of mandatory courses would be reduced from 57 to 50 credit hours, to give students greater flexibility to complete elective courses in areas of law of interest to them and/or to complete LAW 3990 Externship.
5. The modified curriculum would take effect for the Fall Term 2018, for all incoming students. Students admitted to the Faculty in the Fall 2017 or earlier would complete the existing curriculum but would have the option to transition to the revised curriculum. The Faculty would continue to offer all courses required in the existing curriculum, to ensure that continuing students could complete their program.

Recommendation

The Senate Committee on Curriculum and Course Changes recommends:

THAT Senate approve curriculum and course changes proposed by the Faculty of Law, effective September 1, 2018, with specific course changes to take effect as outlined in the proposal.

Respectfully submitted,
Professor G. Smith, Chair
Senate Committee on Curriculum and Course Changes

Report of the Senate Planning and Priorities Committee RE: Undergraduate Course Changes Beyond Nine Credit Hours, Faculty of Law

Preamble:

1. The Senate Planning and Priorities Committee (SPPC) has the responsibility to report to Senate on curriculum changes with significant resource implications, including additions to departmental curricula of more than nine (9) credit hours.
2. At its meeting on September 25, 2017, the SPPC considered course and curriculum changes proposed by the Faculty of Law
3. The Senate Committee on Curriculum and Course Changes also considered the curriculum and course changes proposed by the Faculty (October 11 and 27, 2017).

Observations:

1. The Faculty of Law is proposing to delete fourteen (14) courses and to introduce thirteen (13) courses, as set out in the proposal. The overall number of credit hours offered by the faculty would increase by twelve (12) credit hours.
2. Course introductions include a proposal for a 12-credit hour externship (LAW 3990 Externship) that students would have the option to complete in Year 3. The course responds to University and faculty priorities to increase experiential learning opportunities for students. The committee was informed that the course would be taught by adjunct professors and/or sessional instructors, who were practicing professionals with nil appointments, under the direction of a faculty member.
3. The faculty is also proposing program modifications to the Juris Doctor (J.D.) program. The objectives are to: (i) update and modernize the curriculum to reflect changes in the practice of law since the last significant revisions in 1982; (ii) bring the curriculum in line with the national requirements for Approved Common Law Degree programs in Canada, as determined by the Federation of Law Societies of Canada and set out in the Federation of Law Societies Implementation Report (2011); (iii) meet the changed academic needs of students, most of whom now enter the program having completed a four-year undergraduate degree and so are more academically prepared than students in previous decades, by giving greater emphasis to teaching the professional skills and knowledge base required by the Federation of Law Societies.
4. The total number of credit hours required in the program would be reduced from 97 credit hours to 92 credit hours, which is more consistent with the minimum 90 credit hours required for Approved Common Law Degree programs. The number of credit hours of compulsory courses would be reduced and spaces for optional courses would be increased, to allow students greater flexibility to focus on their individual interests in the law. Also, greater emphasis would be given to developing minimum competencies in specified areas of knowledge, skills, ethics, and professionalism, as required by the Federation of Law Societies of Canada.
5. The revised curriculum would be implemented in the Fall 2018 for all incoming students. Continuing students would complete the existing curriculum but would have the option to transition to the revised curriculum. The faculty indicated that it had sufficient resources

to continue to offer all compulsory courses required in the existing curriculum, to allow continuing students to complete the current program.

6. The faculty has indicated that no new resources would be required to offer the revised curriculum. The faculty has a sufficient number of faculty, physical resources, and information and communication technology to support the program.
7. The University Library has indicated that it can support the course introductions.

Recommendation:

The Senate Planning and Priorities Committee recommends:

THAT Senate approve the Report of the Senate Planning and Priorities Committee concerning undergraduate course changes beyond nine credit hours for the Faculty of Law, effective September 1, 2018.

Respectfully submitted,
Ada Ducas, Chair
Senate Planning and Priorities Committee

Report of the Senate Committee on Instruction and Evaluation RE: Proposed Revisions to the Degree Regulations for the B.C.Sc. (Honours) and B.Sc. (Major) in Computer Science, Faculty of Science

Preamble:

1. The terms of reference for the Senate Committee on Instruction and Evaluation (SCIE) can be found at: http://umanitoba.ca/admin/governance/governing_documents/governance/sen_comm/tees/502.html.
2. At its meeting on October 19, 2017 SCIE considered a proposal from the Faculty of Science to revise their degree regulations for the Bachelor of Computer Science (Honours) and Bachelor of Science (Major) in Computer Science. The proposal will also be considered by the Senate Committee on Curriculum and Course Changes.

Observations:

1. The Faculty is proposing to revise several degree regulations for the Bachelor of Computer Science (Honours) and the Bachelor of Science (Major) in Computer Science as outlined in the document attached to this Report and summarized below.
2. Currently MATH 1300 and MATH 1500 are strongly encouraged for entrance to the B.C.Sc. (Honours) and B.Sc. (Major) in Computer Science. The Faculty is proposing to require MATH 1300 and MATH 1500 with a minimum grade of C+ for entrance to the B.C.Sc. (Honours) and B.Sc. (Major) in Computer Science.
3. The Faculty indicated that a number of second year students in the B.C.Sc. (Honours) and B.Sc. (Major) in Computer Science programs have difficulty in the more mathematically oriented courses. The Faculty noted that poor student results in one or both of MATH 1300 and MATH 1500 are strongly correlated with poor performance in core Computer Science theory courses such as COMP 2130 and COMP 2080. Requiring MATH 1300 and MATH 1500 with a minimum grade of C+ will help to ensure that students are well prepared.
4. The Faculty is proposing to require that students complete MATH 1700 (or equivalent) with a grade of C for entry to the B.C.Sc. (Honours) and B.Sc. (Major) in Computer Science.
5. The Faculty noted that adding MATH 1700 with a grade of C as an entrance requirement will broaden students' experience to further assist them in being successful in theoretical Computer Science courses that require integral calculus.
6. The Faculty is proposing that students entering the B.Sc. (Major) in Computer Science in Fall 2019 or later be required to complete MATH 1240 with a minimum grade of C, as well as MATH 1300 (or equivalent) and MATH 1500 (or equivalent), each with a minimum grade of C+, in addition to the existing degree requirements.

Recommendation

The Senate Committee on Instruction and Evaluation recommends:

THAT Senate approve the revised degree regulations for the Bachelor of Computer Science (Honours) and Bachelor of Science (Major) in Computer Science, Faculty of Science, effective September 1, 2019.

Respectfully submitted,

Dr. Diane Hiebert-Murphy, Chair
Senate Committee on Instruction and Evaluation

Report of the Senate Committee on Curriculum and Course Changes RE: Revised Degree Regulations for the Bachelor of Computer Science (Honours) and Bachelor of Science (Major) in Computer Science, Faculty of Science

Preamble:

1. The terms of reference for the Senate Committee on Curriculum and Course Changes (SCCCC) are found at:
http://umanitoba.ca/admin/governance/governing_documents/governance/sen_committees/497.html
2. At its meeting on October 25, 2017, the SCCCC considered a proposal from the Faculty of Science, to revise the regulations for the Bachelor of Computer Science (Major) and the Bachelor of Computer Science (Honours) programs, including the Cooperative Options.
3. At the same meeting, the SCCCC also considered program modifications relating to the Years 1 and 2 of these programs, some of which correspond to the revised regulations concerning entrance and graduation, as described in the *Report of the Senate Committee on Curriculum and Course Changes Submitted to Senate for Concurrence Without Debate* (dated October 27, 2017).
4. The Senate Committee on Instruction and Evaluation considered the same proposal at its meeting on October 19, 2017.

Observations:

1. The SCCCC endorsed proposed changes to the regulations concerning entrance to the Bachelor of Computer Science (Honours) and the Bachelor of Science (Major) in Computer Science, including the Cooperative Options, to require that students have completed (i) both MATH 1300 – Vector Geometry and Linear Algebra and MATH 1500 – Introduction to Calculus (or their equivalents) with a minimum grade of C+ and (ii) MATH 1700 – Calculus 2 (or equivalent) with a minimum grade of C. The new requirements would be in addition to the existing entrance requirements, as set out in the attachment to this report.
2. The SCCCC also endorsed modifications to the regulation concerning graduation from the B.Sc.(Maj.) in Computer Science, including the Cooperative Option, to require the completion of MATH 1240 – Elementary Discrete Mathematics and MATH 1700 (or equivalent), with a minimum grade of C, and MATH 1300 and MATH 1500 (or their equivalents), with a minimum grade of C+. These new requirements would be in addition to existing graduation requirements, as set out in the attachment to this report, with the exception of COMP 2130 – Discrete Mathematics for Computer Science, which would no longer be required for graduation.
3. The revised regulations would apply to students entering the B.C.Sc.(Hons.) and the B.Sc.(Maj.) in Computer Science in the Fall 2019 and later.

Recommendation:

The Senate Committee on Curriculum and Course Changes recommends:

THAT Senate approve revised degree regulations for the Bachelor of Computer Science (Honours) and the Bachelor of Science (Major) in Computer Science, Faculty of Science, effective for the Fall 2019.

Respectfully submitted,
Professor Greg Smith, Chair
Senate Committee on Curriculum and Course Changes

The proposed changes affect entrance into the Computer Science Major and Honours degree programs. The relevant paragraphs from the calendar program description in Section 4.6.1, modified to reflect the proposed changes are as follows:

Honours

To enter the Honours program in Computer Science, a student must have completed at least 24 credit hours with a minimum DGPA of 3.00, and also obtained a minimum grade of "B" in COMP 1020. Students are strongly encouraged to complete MATH 1300 and MATH 1500 (or equivalents) with at least a "C" prior to entering the Computer Science Honours program. Failure to complete these first year Mathematics requirements will result in the inability to register for certain 2000 level required courses.

Effective for entry to the Honours program in Fall 2019 and later: To enter the Honours program in Computer Science, a student must have completed at least 24 credit hours with a minimum DGPA of 3.00, and also obtained a minimum grade of "B" in COMP 1020, "C+" in both MATH 1300 and MATH 1500 (or their equivalents) and "C" in MATH 1700 (or equivalents).

Four Year Major

To enter the Major Degree program in Computer Science, a student must have completed at least 24 credit hours with a minimum DGPA of 2.00, and also obtained a minimum grade of "C+" in COMP 1020. Students are strongly encouraged to complete MATH 1300 and MATH 1500 (or equivalents) with at least a "C" prior to entering the Computer Science Major program. Failure to complete these first year Mathematics requirements will result in the inability to register for certain 2000 level required courses.

Effective for entry to the Major program in Fall 2019 and later: To enter the Major Degree program in Computer Science, a student must have completed at least 24 credit hours with a minimum DGPA of 2.00, and also obtained a minimum grade of "C+" in COMP 1020, "C+" in both MATH 1300 and MATH 1500 (or their equivalents) and "C" in MATH 1700 (or equivalents).

To graduate with the Computer Science Major degree, a student must present a minimum grade of "C" in: MATH 1300, MATH 1500, **MATH 1240**, (STAT 1000 or STAT 1150), COMP 2080, ~~COMP 2130~~, COMP 2140, COMP 2150, COMP 2160, COMP 2280, COMP 3350, COMP 3370, COMP 3430, COMP 4620 and in each of the 18 credit hours of 3000 and 4000 level Computer Science courses that apply to the Computer Science component of their degree program. Additionally, students must achieve a minimum DGPA of 2.00.

Effective for students entering the Computer Science Major Fall 2019 and later: To graduate with the Computer Science Major degree, a student must present a minimum grade of

“C+” in: MATH 1300 (or equivalent), MATH 1500 (or equivalent), and a minimum grade of “C” in MATH 1240, MATH 1700 (or equivalent), (STAT 1000 or STAT 1150), COMP 2080, COMP 2140, COMP 2150, COMP 2160, COMP 2280, COMP 3350, COMP 3370, COMP 3430, COMP 4620 and in each of the 18 credit hours of 3000 and 4000 level Computer Science courses that apply to the Computer Science component of their degree program. Additionally, students must achieve a minimum DGPA of 2.00.

Report of the Faculty Council of Graduate Studies on Program and Curriculum Changes

Preamble

1. The Faculty of Graduate Studies (FGS) has responsibility for all matters relating to the submission of graduate course, curriculum and program changes. Recommendations for new programs or program changes are submitted by the Faculty Council of Graduate Studies for the approval of Senate.
2. The Faculty of Graduate Studies Academic Programs Committee met on the above date to consider proposals from the Dept. of Human Anatomy and Cell Science.

Observations

3. The **Dept. of Human Anatomy & Cell Science** proposes changes to its supplemental regulations, specifically, Master's Section 4.4.1 *Thesis/Practicum* and Ph.D. Section 5.4 *Program Requirements* to expand its lists of elective course choices to include several IMED courses. This will allow students to explore topics in cell and molecular biology in addition to the classical anatomy offerings (i.e., microscopic anatomy [histology], gross anatomy, neuroanatomy, and embryology). The supplemental regulations changes are in response to the unit's cycle #2 graduate program review of 2015. Full proposal included in agenda.

Recommendations

The Executive Committee recommends THAT: the course and program changes from the units listed below be approved by Faculty Council:

Dept. of Human Anatomy and Cell Science

Respectfully submitted,

Dr. Todd A. Mondor, Chair
Graduate Studies Executive Committee

/ch

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses the report to Senate.



Rady Faculty of
Health Sciences

College of Medicine

Dept. of Human Anatomy & Cell Science
132-745 Bannatyne Avenue
Winnipeg, MB R3E 0J9
Phone: 204-789-3788
Email: Hugo.Bergen@umanitoba.ca

May 23, 2017

Dr. Todd Mondor
Dean, Faculty of Graduate Studies

Re: Changes to Supplemental Regulations

Dear Dr. Mondor,

The Dept. of Human Anatomy & Cell Science requests a change to the Dept.'s 'Supplemental Regulations', with respect to the courses that our graduate students (both MSc and PhD) are permitted to take as part of their program. In addition to the traditional anatomy / cell biology courses that have always been available to the students, we propose that students be allowed to select from an additional 11 IMED courses available on the Bannatyne campus (see attachment for details).

The most recent review of the graduate program recommended a "redefinition of the graduate course program in the department". The reviewers recommended that, with respect to the courses available, students should be allowed to take courses in cell and molecular biology, in addition to classical anatomy courses currently offered (i.e., microscopic anatomy [histology], gross anatomy, neuroanatomy, and embryology). The changes we propose are in response to that recommendation.

Best regards,

Hugo Bergen, Ph.D.
Assoc. Professor
Chair, Graduate Studies Committee
Dept. of Human Anatomy & Cell Science
Max Rady College of Medicine

Hugo.Bergen@umanitoba.ca

Faculty of Graduate Studies Regulation	Supplemental Regulation
<p>Students who meet the minimum requirements for admission to the Faculty of Graduate Studies are not guaranteed admission.</p> <p>Note: This is the minimum requirement of the Faculty of Graduate Studies and units may have higher standards and additional criteria.</p>	
<p>4.3.2 Pre-Master's Programs</p> <p>In specific cases where the academic background of the student is judged to be insufficient for the given program in a unit, the unit may recommend that the student be admitted to a pre-Master's program of study (Section 3).</p> <p>The pre-Master's program of study is intended to bring a student's background up to the equivalent of the required 4-year degree in the major unit, and to provide the student with any necessary prerequisites for courses to be taken in the Master's program.</p>	
<p>4.4 Program Requirements</p> <p>In general, students must complete one of the programs of study described below for the Master's degree. However, the program of study is determined by the unit and may follow the unit's supplemental regulations. Any single course cannot be used for credit toward more than one program.</p>	
<p>4.4.1 Thesis/Practicum Route</p> <p>A minimum of 12 credit hours of coursework, unless otherwise stated in the unit's supplemental regulations, plus a thesis or practicum is required. The minimum must include at least 6 credit hours at the 7000 level or above, with the balance of the coursework at the 3000 level or above. A maximum of 24 credit hours of coursework is allowed unless the unit's supplemental regulations indicate otherwise. The student must complete the thesis/practicum at The University of Manitoba.</p>	<p>Required course work at the Master's level will consist of a <u>minimum</u> of 9 credit hours of approved course work at the 7000 level. Students are required to take:</p> <p>IMED 7410 - Biomedical Trainee Skills (3CH)</p> <p>Plus one <u>at least one</u> of the following:</p> <p>IMED 7090 Cell Biology (6CH); ANAT 7360 Human Microscopic (Histology) Anatomy (6CH) ANAT 7470 Human Macroscopic (Gross) Anatomy (6CH) ANAT 7392 Human Neuroanatomy (3CH) or ANAT 7380 Human Developmental (Embryology) Anatomy (3CH) IMED 7004 - Human Brain Imaging Methods (1.5 CH) IMED 7101 - Fundamentals of Neuroscience I (3 CH) IMED 7102 - Fundamentals of Neuroscience II (3 CH) IMED 7180 - Molecular Approaches in Medical Research (3 CH) IMED 7200 - Cancer Biology (3 CH) IMED 7210 - Epigenetics in Development and Human Disease (1.5 CH) IMED 7242 - Nucleic Acids: Structure and Function in normal development and diseases (1.5 CH) IMED 7244 - Nucleic Acids: Manipulation in Biomedical Research (1.5 CH) IMED 7290 - Developmental Biology (3 CH) IMED 7300 - Microscopy, Optics, Imaging and Analysis In Health Research (3 CH) IMED 7302 - Advanced Molecular Imaging (3 CH)</p> <p>Mandatory attendance at seminars that are part of the Departmental Seminar Program is required. Failure to attend a minimum of 80% of the seminars over the course</p>

Note:

Blue-shaded boxes must be filled in. Yellow-shaded boxes must be filled in if a unit offers that specific program route (i.e. Comprehensive Examination route)

Faculty of Graduate Studies Regulation	Supplemental Regulation
	<p>of an academic year will be taken into consideration at the time of the Annual Progress Report.</p> <p>The course work required for an individual student will be specified in consultation with the student's faculty advisor, and will depend upon the student's background.</p>
<p>4.4.2 Course-based/Comprehensive Examination Route</p> <p>A minimum of 24 credit hours of coursework and comprehensive examination(s) is required. The minimum must include at least 18 credit hours at the 7000 level or above with the balance of the coursework at the 3000 level or above. A maximum of 48 credit hours of coursework is allowed unless a unit's supplemental regulations indicate otherwise.</p>	<p>This department does not offer a comprehensive examination or practicum route for a Master's degree.</p>
<p>4.4.3 Accredited Professional Route</p> <p>The credit hours and course requirements shall reflect the requirements of the unit's external accrediting body.</p>	
<p>4.4.4 Language Reading Requirements</p> <p>Some units specify a language requirement for the Master's degree. Students should check unit supplemental regulations regarding this requirement.</p>	<p>There is no language requirement for the Master's degree in this department.</p>
<p>4.4.5 Advanced Credit</p> <p>Advance credit for courses completed prior to admission to a Master's program will be considered on an individual basis. The student's unit must make a request to the Faculty of Graduate Studies by completing the "Advance Credit Transfer of Courses" form (http://umanitoba.ca/faculties/graduate_studies/forms/index.html).</p> <ul style="list-style-type: none"> • Application for advance credit must be made within the first year of the program (see Lapse of Credit of Courses in this section for course currency). • No more than half of the required coursework for the program can be given advance credit. • A course may not be used for credit toward more than one degree, diploma, or certificate. • The student must register at The University of Manitoba for at least two terms within a single academic year and must also complete the thesis/practicum/project/comprehensive exam at The University of Manitoba. <p>Regardless of the extent of advanced credit granted, all students are required to pay applicable program fees.</p>	
<p>4.4.6 Transfer Credit</p> <p>Courses within a program of study may be taken elsewhere and transferred for credit at The University of Manitoba. All such courses:</p> <ul style="list-style-type: none"> • must be approved for transfer to the program of study by the unit and the Faculty of Graduate Studies before the student may register for them; • are considered on an individual basis; • cannot be used for credit towards another degree; 	

Note:

Blue-shaded boxes must be filled in. Yellow-shaded boxes must be filled in if a unit offers that specific program route (i.e. Comprehensive Examination route)

Faculty of Graduate Studies Regulation	Supplemental Regulation
<p>courses and any subsequent changes, must be approved by the student's advisor/co-advisor, the advisory committee, and the Head of the unit. Withdrawal from courses or changes of course category without such approval may result in the student being required to withdraw from the Faculty of Graduate Studies.</p>	
<p>5.4 Program Requirements</p> <p>All students must complete one of the following programs of study for the Ph.D. degree, unless otherwise specified in the approved unit supplemental regulations:</p> <ul style="list-style-type: none"> Where admission to the Ph.D. is directly from a Master's degree, a <u>minimum</u> of 12 credit hours at the 7000 level or higher plus a thesis is required. Any further coursework beyond the minimum 12 credit hours at the 7000 level must be at the 3000 level or above. For those students who hold a Master's degree, a maximum of 24 credit hours of coursework is allowed toward the Ph.D. program.* Where admission to the Ph.D. is directly from an Honours Bachelor degree or equivalent, a <u>minimum</u> of 24 credit hours plus a thesis is required. The coursework must include a <u>minimum</u> of 18 credit hours at the 7000 level or higher with the balance of the coursework at the 3000 level or higher. For those students who do not hold a Master's degree, a maximum of 48 credit hours of coursework is allowed toward the Ph.D. program.* <p>*Unless professional accreditation requirements and/or the unit's supplemental regulations indicate otherwise.</p>	<p>ANAT 7330 Readings in Anatomy (3CH)</p> <p>Plus one of the following:</p> <p>IMED 7092 - Cell Biology A Introduction (3 CH) IMED 7094 - Cell Biology B Special Topics (3 CH) IMED 7090 - Cell Biology, ANAT 7360 Human Microscopic (Histology) Anatomy (6CH) ANAT 7470 Human Macroscopic (Gross) Anatomy (6CH) ANAT 7392 Human Neuroanatomy (3CH) or ANAT 7380 Human Developmental (Embryology) Anatomy (3CH) IMED 7004 - Human Brain Imaging Methods (1.5 CH) IMED 7101 - Fundamentals of Neuroscience I (3 CH) IMED 7102 - Fundamentals of Neuroscience II (3 CH) IMED 7180 - Molecular Approaches in Medical Research (3 CH) IMED 7200 - Cancer Biology (3 CH) IMED 7210 - Epigenetics in Development and Human Disease (1.5 CH) IMED 7242 - Nucleic Acids: Structure and Function in normal development and diseases (1.5 CH) IMED 7244 - Nucleic Acids: Manipulation in Biomedical Research (1.5 CH) IMED 7290 - Developmental Biology (3 CH) IMED 7300 - Microscopy, Optics, Imaging and Analysis In Health Research (3 CH) IMED 7302 - Advanced Molecular Imaging (3 CH)</p> <p>Mandatory attendance at seminars that are part of the Departmental Seminar Program is required. Failure to attend a minimum of 80% of the seminars over the course of an academic year will be taken into <u>consideration at consideration at</u> the time of the Annual Progress Report. The course work required for an individual student will be specified in consultation with the student's faculty advisor, and will depend upon the student's background.</p>
<p>5.4.1 Language Reading Requirements</p> <p>Some units specify a language requirement for the Ph.D. degree. Students are advised to check unit supplemental regulations regarding this requirement.</p>	
<p>5.4.2 Advance Credit</p> <p>Advance credit for courses completed prior to admission to a Ph.D. program will be considered on an individual basis. The student's unit makes the request to the Faculty of Graduate Studies by completing the "Advance Credit -Transfer of Courses" form (http://umanitoba.ca/faculties/graduate_studies/forms/index.html).</p> <ul style="list-style-type: none"> Application for advance credit must be made within the first year of the program (see Lapse of Credit of Courses in this section for course currency). No more than half of the required coursework for the program can be given advance credit. 	

Note:

Blue-shaded boxes must be filled in. Yellow-shaded boxes must be filled in if a unit offers that specific program route (i.e. Comprehensive Examination route)

Report of the Faculty Council of Graduate Studies on Program and Curriculum Changes

Preamble

1. The Faculty of Graduate Studies (FGS) has responsibility for all matters relating to the submission of graduate course, curriculum and program changes. Recommendations for new programs or program changes are submitted by the Faculty Council of Graduate Studies for the approval of Senate.
2. The Faculty of Graduate Studies Academic Programs Committee met on the above date to consider proposals from the College of Nursing.

Observations

2. The **College of Nursing** proposes Supplemental Regulation changes for the Ph.D. program. Specifically, Ph.D. thesis to amend the expectations for a grouped manuscript – style thesis. Doctoral level Grouped Manuscript Thesis will include a minimum of three papers instead of two papers of publishable quality with the expectation that three papers must be submitted for publication to a peer-reviewed journal. Full proposal included in agenda.

Recommendations

The Executive Committee recommends THAT: the course and program changes from the units listed below be approved by Faculty Council:

College of Nursing

Respectfully submitted,

Dr. Todd A. Mondor, Chair
Graduate Studies Executive Committee

/ch

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses the report to Senate.

Faculty of Graduate Studies Regulation	Supplemental Regulation
	<p>The proposal document is distributed to the Proposal Examining Committee at least 10 working days prior to a tentative date for oral presentation. All members of the Proposal Examining Committee must agree to proceed with oral defence at least 1 week prior to the tentative date. The Associate Dean, Graduate Programs (or designate) will chair the proposal defence. A one-page abstract must be provided by the student for posting at least 1 week prior to the defence, which will be open to all members of the university community.</p> <p>Student's oral presentation will last approximately 30 minutes with approximately 1 hour allowed for questions following the presentation. The committee may approve the proposal as presented, or request a subsequent meeting if major revisions or additional work is required – any issues must be resolved within 6 months. (Pass as presented, continue on; Pass, revise and note revisions for dissertation, continue on; Pass, revise & circulate revisions back to Advisory Committee, continue on; Fail, revise & circulate revisions back to Advisory Committee, wait for feedback; Fail, redo). The student is only allowed one failure/redo; a second failure would require that the student withdraw from the Program.</p> <p>A "Ph.D. Thesis Proposal" form will be completed and signed by the committee, and by the Associate Dean, Graduate Programs, and forwarded to FGS.</p> <p>The thesis proposal is distinct from the candidacy examination.</p>
<p>5.10 Thesis</p> <p>An essential feature of Ph.D. study is the candidate's demonstration of competence to complete a research project and present the findings. The thesis must constitute a distinct contribution to knowledge in the major field of study, and the research must be of sufficient merit to be, in the judgement of the examiners, acceptable for publication.</p> <p>The thesis must be written according to a standard style acknowledged within the candidate's particular field of study and recommended by the unit, be lucid and well written, and be reasonably free from errors of style and grammar (including typographical errors).</p> <p>The final version of the thesis must be submitted by the candidate to the Faculty of Graduate Studies following the guidelines found at: http://umanitoba.ca/faculties/graduate_studies/thesis/guidelines.html</p>	<p>Specific Requirements for Paper-Based Thesis Format for Doctoral Nursing Programs:</p> <p>A dissertation document can be comprised of a collection of papers, which are about to be published or have been published. In addition, these documents must include an introduction and conclusion chapter (see below for suggested content of these two chapters). Finally, a paper-based thesis must include a statement of contribution and anticipated co-authorship for each paper not yet published or alternately of each co-authored published paper. The contribution to authorship of the student and committee members will be determined in advance with student assuming the first author position. Depending on the contribution of committee member(s), authorship will be assigned accordingly (i.e., second and/or third). Should the student not submit a paper for publication within 1 year of program completion, the advisor may submit the paper as first author. Students who are considering the paper-based thesis option are encouraged to consult with the University of Manitoba Copyright Office regarding the timing of publication submissions.</p> <p>Expectations for a Paper-Based Thesis: <i>Doctoral level Paper-Based Thesis</i> will include a minimum of three papers of publishable quality, with the</p>

Note:

Blue-shaded boxes must be filled in. Yellow-shaded boxes must be filled in if a unit offers that specific program route (i.e. Comprehensive Examination route)

Faculty of Graduate Studies Regulation	Supplemental Regulation
	<p>expectation that three papers two of which must be submitted for publication to a peer-reviewed journal. All manuscripts must represent original work undertaken by the doctoral student for the specific purpose of the thesis. Proposed manuscripts must be approved by the supervisory committee, usually at the time of the proposal defense, and thus are normally developed after the proposal defense. While papers produced during coursework may form the foundation for a thesis paper, students are expected to build upon the knowledge gleaned throughout the coursework and candidacy exam process to create original thesis work. In addition, introduction* and conclusion** chapters are required (see below). The number and content of the papers will be negotiated in collaboration with the advisory committee. The papers will each address a unique research objective/ question or could be a philosophical/ theoretical/ methodological discussion relevant to the dissertation topic. Each paper must be independent of the others and coherently integrate various aspects of the dissertation study and outputs. While the number of papers will depend on the scope and complexity of dissertation topic and study, one of the papers must include a detailed description and summary of the research study and findings. Completion of the PhD Program in Nursing will not be contingent on acceptance of the paper(s) for publication.</p> <p>*Introduction Chapter:</p> <ol style="list-style-type: none"> 1. Opening overview of the research topic 2. Background <ol style="list-style-type: none"> a. Update literature review (original literature review required for the proposal may be appended; likely published paper) b. Conceptual framework for the dissertation study 3. Purpose and Research Questions and/or Objectives 4. Research project design, which includes an outline of the chapters and how they are related <p>**Conclusion Chapter</p> <ol style="list-style-type: none"> 1. Introduction 2. Strengths and weaknesses 3. Synthesis of findings/discussion from each chapter 4. Future research 5. Policy/practice education recommendations
<p>5.11 Thesis Examination Procedures</p> <p>The final examination for the Ph.D. degree proceeds in three stages (see Figure 5-1):</p> <ol style="list-style-type: none"> 1. Examination of the candidate's thesis by an internal examining committee. 2. Examination of the candidate's thesis by an external examiner. 3. Oral examination of the candidate by all examiners on the subject of the thesis and any matters relating thereto. 	
<p>5.11.1 Formation of the Examining Committee I - University of Manitoba (Internal) Examiners</p> <p>The candidate's advisor (and, if appropriate, co-advisor) is considered to be a voting member of the examining committee. The candidate's advisor/co-advisor, in consultation with the Head of</p>	

Note:

Blue-shaded boxes must be filled in. Yellow-shaded boxes must be filled in if a unit offers that specific program route (i.e. Comprehensive Examination route)

Report of the Senate Committee on Admissions concerning a proposal from the Faculty of Architecture to approve the admission requirements for the Architecture Master Preparation option (2017.09.27)

Preamble:

1. The terms of reference for this committee can be found at: http://umanitoba.ca/admin/governance/governing_documents/governance/sen_committees/490.htm.
2. The Faculty of Architecture is seeking formal approval of the admission requirements for the Architecture Master Preparation (AMP) option.
3. The proposal was endorsed by SCADM on September 27th, 2017.

Observations:

1. SCADM did not have an opportunity to review the original admission requirements when the AMP option was created.
2. The original requirements have been modified; some notable changes are as follows:
 - Language throughout the document has been “cleaned up” to ensure that the requirements are clear.
 - Section II – Eligibility Requirements: The GPA calculation will now be based on coursework completed by January 15th of the application year, as opposed to April 30th. This will result in earlier offers being sent to students.

Recommendation:

The Senate Committee on Admissions recommends that the proposal to formalize the admission requirements for the Architecture Master Preparation be approved effective for the Fall 2019 intake.

Respectfully submitted
Susan Gottheil, Chair, Senate Committee on Admissions

Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

November 9, 2017

To: Jeff Adams, Executive Director, Enrolment Services.

From: Environmental Design Program, Faculty of Architecture, Associate Dean Academic & Environmental Design Program Chair - Dr. Karen Wilson Baptist & Dr. Carlos Rueda - Department Head of Architecture.

Subject: Senate Committee on Admissions - Formal Approval of Admissions requirements for the Environmental Design Program (AMP) Architecture Master Preparation Option – **Re-submission**

As mentioned during the previous submission of June 29, 2017 to SCADM, it had recently come to our attention, due to processes affiliated with the update of the undergraduate supplemental regulations and calendar review, that the admission requirements for the Environmental Design Program (Architecture Master Preparation Option) have not received formal approval by the Senate Committee on Admissions. The current ED/AMP program was approved by Senate on December 2nd, 2009. The first group of students registered in the program in September of 2010. The Faculty of Architecture offers a two-year Bachelor of Environmental Design (Architecture Masters Preparation Program) (AMP 1) for students who have a recognized first degree in a non-design field or a one-year program (AMP 2) for students with a recognized degree in a design-related field of study and wish to apply to the Master in Architecture Program.

The documentation now submitted has been revised in order to reflect the comments and recommendation of the Senate Committee on Admissions at the last meeting of June 29, 2017. Minor contradictions around the nature of the selection criteria were clarified and the wording around the Supplementary Application Documentation simplified and clarified. Erin Stone has provided clarity around the AGPA as noted in the document.

Should you have any questions or need further clarification to the request please do not hesitate to contact Dr. Karen Wilson Baptist at karen.wilsonbaptist@umanitoba.ca.

/kwb/yh/1Aug.revoc42017

Senate Committee on Admissions

Formal Review for Approval of the Admission requirements for the Environmental Design Program (ED AMP - Architecture Master Preparation) Option.

I. GENERAL STATEMENT

The Environmental Design Architecture Master Preparation 1 Option (ED/AMP1) is two years in length (66 credit hours) and upon completion of this program, students who enter ED/AMP1 with a non-design background will receive a **Bachelor of Environmental Design Degree**. Students who have a design background in an allied design field (e.g., interior design or landscape architecture) may be considered on a case-by-case basis, for placement into the second year of the program (AMP2), however, they are ineligible to receive the Bachelor of Environmental Design Degree after only one year of study.

II. ELIGIBILITY REQUIREMENTS:

A. Academic Requirements:

In order to be eligible for consideration, all applicants must have completed an undergraduate degree from a recognized university with a minimum Adjusted Grade Point Average (AGPA) of 3.0 (B), or equivalent in their last 60 credit hours of study. Calculation of the AGPA:

The AGPA is calculated using the applicant's most recent 60 credit hours of university work. In the calculation of the AGPA, all courses that have been assigned a final grade are considered "*Completed*" university work, including failed courses. For repeated courses the highest grade received in the course will be used in the AGPA calculation. Courses graded "Pass/Fail" or "Satisfactory" will be excluded from both the AGPA and from the 60 credit hour count. Courses completed on a full or part-time basis, in all undergraduate and graduate programs, and in the fall, winter, and summer terms (except for the work taken after January 15 in the year of application) will be included in the AGPA calculation. Courses completed at a college, which have been assessed an equivalent to university level courses, will be included in the AGPA.

B. English Language Proficiency Requirements:

All applicants whose primary language is not English and who do not qualify for a waiver under the University of Manitoba's English language proficiency regulations will be required to demonstrate proficiency in English through one of the options listed at the University of Manitoba Admissions web site.

English Proficiency Requirement information:

<http://umanitoba.ca/student/admissions/international/english/index.html>.

English Proficiency Waiver information:

<http://umanitoba.ca/student/admissions/international/english/waiver-criteria.html>)

Results for most language tests, including TOEFL, IELTS and CanTEST, expire two years from the test date. Test scores must be valid at the start of classes. Please confirm the validity of your test results.

C. Supplementary Application Documents:

1. **Statement of Intent-** A description (750 words maximum; 12 pt. minimum font size) that reflects on and contemplates an interest in the field of Architecture.
2. **Confidential Reference Letters- Two** confidential reference letters are required. These letters should come from persons able to assess the applicant's professional and intellectual ability.
3. **Curriculum Vitae** - Includes all relevant biographical facts, work and travel history, etc.
4. **Portfolio-** Contains a comprehensive representation of the applicant's creative achievements and potential as well as design interests. Both visual and written work are considered valuable. In the case of Architecture Master Preparation 1 (AMP 1) applicants: Since it is understood that many applicants are coming from disciplines or backgrounds that do not generally utilize graphic forms of communication, the contents of the portfolio are to be focused towards illustrating in whatever way possible, an individual's creative abilities and potential. In the case of Architecture Masters Preparation 2 (AMP 2) applicants: Applicants should assemble a comprehensive portfolio including creative work from both previous studies, as well as self-initiated work.

III. SELECTION CRITERIA AND PROCESS:

Enrolment into the Architecture Master Preparation Option is competitive and limited. Students will be admitted on the basis of an annual selection process. Applicants satisfying the eligibility requirements specified above are eligible for consideration at the discretion of the Department of Architecture Admissions Selection Committee.

This Committee makes a holistic assessment of an applicant's capability to undertake architectural studies by evaluating their creative abilities and academic potential as evidenced in all supporting documents submitted.

Transcripts
Statement of Intent
Two Confidential Reference Letters
Curriculum Vitae
Portfolio

Senate Committee on Admissions

Formal Review for Approval of the Admission requirements for the Environmental Design Program (ED AMP - Architecture Master Preparation) Option.

I. GENERAL STATEMENT

The Architecture Master Preparation 1 Option is two years in length (66 credit hours) and upon completion of this program students who came in with a non design background will receive a **Bachelor of Environmental Design Degree**. Students who have a design background in an allied design field (i.e. interior design or landscape architecture, etc.) may be considered on a case-by-case basis, for placement into the second year of the program, however, they are ineligible to receive the Bachelor of Environmental Design Degree after only one year of study.

The Environmental Design Architecture Master Preparation 1 Option (ED/AMP1) is two years in length (66 credit hours) and upon completion of this program, students who enter ED/AMP1 with a non-design background will receive a Bachelor of Environmental Design Degree. Students who have a design background in an allied design field (e.g., interior design or landscape architecture) may be considered on a case-by-case basis, for placement into the second year of the program (AMP2), however, they are ineligible to receive the Bachelor of Environmental Design Degree after only one year of study.

II. ELIGIBILITY REQUIREMENTS — (current)

Adjusted Grade Point Average (AGPA) of 3.0 (B):

In order to be eligible for consideration, all applicants must have completed an undergraduate degree from a recognized university with a minimum adjusted grade point average (AGPA) of 3.0 (B), or equivalent in their last 60 credit hours of study. For repeated courses the highest grade received for the course will be used in the GPA calculation. Courses graded "Pass/Fail" or "Satisfactory" will be excluded from both the AGPA and from the most recent 60 credit hour count. If the last session has more credit hours available than required, we will use the highest level courses with the highest grades.

Proposed Eligibility Requirements

1.1. ELIGIBILITY REQUIREMENTS:

In order to be eligible for consideration, all applicants must have completed an undergraduate degree from a recognized university by the May/June convocation after the admission deadline.

Applicants must meet an Adjusted Grade Point Average (AGPA) of 3.0 (B), or equivalent in their last 60 credit hours of university level study completed prior to January 15th.

II. ELIGIBILITY REQUIREMENTS:

A. Academic Requirements:

In order to be eligible for consideration, all applicants must have completed an undergraduate degree from a recognized university with a minimum Adjusted Grade Point Average (AGPA) of 3.0 (B), or equivalent in their last 60 credit hours of study. Calculation of the AGPA:

The AGPA is calculated using the applicant's most recent 60 credit hours of university work. In the calculation of the AGPA, all courses that have been assigned a final grade are considered "Completed" university work, including failed courses. For repeated courses the highest grade received in the course will be used in the AGPS calculation. Courses graded "Pass/Fail" or "Satisfactory" will be excluded from both the AGPA and from the 60 credit hour count. Courses completed on a full or part-time basis, in all undergraduate and graduate programs, and in the fall, winter, and summer terms (except for the work taken after January 15 in the year of application) will be included in the AGPA calculation. Courses completed at a college, which have been assessed an equivalent to university level courses, will be included in the AGPA.

Calculation of the Adjusted Grade Point Average (AGPA):

The AGPA is calculated using the applicant's most recent 60 credit hours of university work. If it is not possible to clearly identify the most recently completed 60 credit hours of university work, the average of the term containing the least recent of the 60 credit hours of work will be used as a representative grade for the remaining hours. Full year (6 credit hour) courses count as part of the winter term grades.

In the calculation of the AGPA, all courses that have been assigned a final grade are considered "Completed" university work, including failed courses. Courses graded "Pass/Fail" or "Satisfactory" will be excluded from both the AGPA and from the 60 credit hour count. Courses completed on a full or part time basis, in all undergraduate and graduate programs, and in the fall, winter, and summer terms (except for the work taken after January 15 in the year of application) will be included in the AGPA calculation. Courses completed at a recognized college, which have been assessed an equivalent to university level courses, will be included in the AGPA.

English Language Proficiency Requirements:

All applicants whose primary language is not English and who do not qualify for a waiver under the University of Manitoba's English language proficiency regulations will be required to demonstrate proficiency in English through one of the options listed at the University of Manitoba Admissions web site.

English Proficiency Requirement information:

(<http://umanitoba.ca/student/admissions/international/english/index.html>).

English Proficiency Waiver information:

(<http://umanitoba.ca/student/admissions/international/english/waiver-criteria.html>)

Results for most language tests, including TOEFL, IELTS and CanTEST, expire two years from the test date. Test scores must be valid at the start of classes. Please confirm the validity of your test results.

III. SELECTION CRITERIA AND PROCESS

Enrolment into the Architecture Master Preparation Option is competitive and limited. Students will be admitted on the basis of an annual selection process. Applicants satisfying the minimum entry requirements specified above are eligible for consideration at the discretion of the Department of Architecture Admissions Selection Committee. This Committee makes a balanced and holistic assessment of an applicant's capability to undertake architectural studies by evaluating their creative abilities and academic potential as evidenced in all supporting documents submitted. The evaluation is based on the following items, in order of importance:

- _____ 1. Portfolio
- _____ 2. Statement of Intent
- _____ 3. Transcripts
- _____ 4. Two Confidential Reference Letters
- _____ 5. Curriculum Vitae

In addition to completing the *Application Form* along with the required application fee, each candidate is required to submit the following supporting documents for admissions consideration:

1. Portfolio:

- _____ Contains a comprehensive representation of the applicant's creative achievements and potential as well as design interests. Both visual and written work are considered valuable. In the case of Architecture Master Preparation 1 (AMP 1) applicants: Since it is understood that many applicants are coming from disciplines or backgrounds that do not generally utilize graphic forms of communication, the contents of the portfolio are to be focused towards illustrating in whatever way possible, an individual's creative abilities and potential. In the case of Architecture Masters Preparation 2 (AMP 2) applicants: Applicants should assemble a comprehensive portfolio including creative work from both previous studies, as well as self-initiated work. Please see *Portfolio Guidelines* below for more details.

2. Statement of Intent:

- _____ A description (750 words maximum; 12 pt. minimum font size) that reflects on and contemplates an interest in the field of Architecture. This is not to be a biography. The Architecture Admissions Selection Committee is most concerned with what interests the applicant and offers the following questions to assist potential students in this endeavour.
- _____ • What experiences have you had that may have initiated your interest in studying Architecture?
- _____ • What do you believe Architecture can offer our culture as a whole?
- _____ • What do you expect to get out of an education in Architecture?
- _____ • What are your favourite three spaces and why?
- _____ • Relate the memory of a poignant spatial experience?
- _____ • What are your favourite three books and why (not limited to Architecture books)?

3. Official transcripts:

- _____ From all universities or colleges attended. NOTE: Students who have graduated from the University of Manitoba do not need to submit University of Manitoba transcripts.

4. Two Confidential Reference Letters:

~~—Two confidential reference letters are required. These letters should come from persons able to assess the applicant's professional and intellectual ability.~~

5. ~~A Curriculum Vitae:~~

~~—Includes all relevant biographical facts, work and travel history, etc.~~

Important Notes:

~~Students who are accepted in this Academic Year and decline acceptance cannot defer acceptance. Students must reapply the following year.~~

Portfolio Guidelines:

~~The Architecture Admissions Selection Committee requires that the following guidelines be used for producing a neat, clear and effective portfolio:~~

- ~~• Format: Minimum size 8.5" x 11" to maximum size: 11" x 17" bound vertical or horizontal format;~~
- ~~• Your name should be clearly visible on the spine of the binder;~~
- ~~• Quality plastic sheet protectors for each page of the portfolio are recommended;~~
- ~~• Supply a table of contents or consistent chapter identification with work presented in chronological order (Please keep any graphics to a minimum as we are much more interested in seeing your work);~~
- ~~• A brief explanatory text (one short paragraph maximum) must accompany each image and/or project. Do not include any lengthy written descriptions — keep in mind that the Admissions Committee is reviewing many submissions so brief and succinct descriptions are greatly appreciated;~~
- ~~• Previous schoolwork as well as independent or self-initiated work may be included. In the case of schoolwork, include the project program issued, main objectives of project, instructors' names, dates and duration (or briefly describe this). Also include written evaluations and grades received where available;~~
- ~~• If group or office work is presented, clearly indicate your specific role in the work. Crediting is required for all work presented in the portfolio;~~
- ~~• DO NOT include CD's, videos, films, slides, etc. Print still images from animated material. Only images that have been printed will be accepted;~~
- ~~• Do not submit unclear or poorly reproduced photographs, reproductions or drawings. Photos should not be smaller than 3" x 5".~~

What to Include:

~~The portfolio should document the applicant's design interests, inclinations and passions. These can range from passions that underlie hobbies to those that led to previous field of academic study. The Committee is very interested in individual projects, as well as those done for school assignments. These projects can be photographed or copied with accompanying brief descriptions to form the Portfolio. The following outlines and different forms that this material could take:~~

- ~~• Written: Poetry, articles, travel journals, research papers, music, etc.;~~
- ~~• Graphic: Photography, sketches, drawings, paintings, or technical drawings, etc. (Since primary communication in Architecture is through drawing, it is important to include some examples);~~
- ~~• Constructed: Photographs, drawings and sketches of built projects: including ceramics, models, sculptures, hobbies, instruments, theatre sets, renovations to buildings, objects, cars, and/or photo-documentaries of experiences with building construction.~~

~~The body of work should attempt to illustrate creative potential, technical experience and graphic abilities/skills attained to date.~~

B. Supplementary Application Documents:

1. **Statement of Intent-** A description (750 words maximum; 12 pt. minimum font size) that reflects on and contemplates an interest in the field of Architecture.
2. **Confidential Reference Letters-** Two confidential reference letters are required. These letters should come from persons able to assess the applicant's professional and intellectual ability.
3. **Curriculum Vitae** - Includes all relevant biographical facts, work and travel history, etc.
4. **Portfolio-** Contains a comprehensive representation of the applicant's creative achievements and potential as well as design interests. Both visual and written work are considered valuable. In the case of Architecture Master Preparation 1 (AMP 1) applicants: Since it is understood that many applicants are coming from disciplines or backgrounds that do not generally utilize graphic forms of communication, the contents of the portfolio are to be focused towards illustrating in whatever way possible, an individual's creative abilities and potential. In the case of Architecture Masters Preparation 2 (AMP 2) applicants: Applicants should assemble a comprehensive portfolio including creative work from both previous studies, as well as self-initiated work.

III. SELECTION CRITERIA AND PROCESS:

Enrolment into the Architecture Master Preparation Option is competitive and limited. Students will be admitted on the basis of an annual selection process. Applicants satisfying the eligibility requirements specified above are eligible for consideration at the discretion of the Department of Architecture Admissions Selection Committee.

This Committee makes a holistic assessment of an applicant's capability to undertake architectural studies by evaluating their creative abilities and academic potential as evidenced in all supporting documents submitted.

Transcripts
Statement of Intent
Two Confidential Reference Letters
Curriculum Vitae
Portfolio

Report of the Senate Committee on Admissions concerning a proposal from the Faculty of Arts to offer first year transfer credit to students who successfully complete the Sprachdiplom II certificate program (2017.10.16)

Preamble:

1. The terms of reference for this committee can be found at: http://umanitoba.ca/admin/governance/governing_documents/governance/sen_committees/490.htm.
2. The Faculty of Arts is proposing that incoming students who successfully complete the Sprachdiplom II certificate program should be offered transfer credit for Beginning German 1120 (6 credit hours).
3. The proposal was approved by Arts Faculty Council on September 27, 2017, and was endorsed by SCADM on October 16th, 2017.

Observations:

1. Sprachdiplom is the term for language proficiency diplomas that are administered and conferred by the German Central Agency for Schools abroad which is an office of the Standing Conference of the Ministers of Education and Cultural Affairs in Germany.
2. The program is offered at River East Collegiate, Westgate Mennonite Collegiate, and at the MGLE-German School.
3. With 800-1200 contact hours of formal German instruction prior to writing the exam, this program is equivalent to the German Advanced Placement (AP) examination.
4. The transfer credit would be awarded on a voluntary basis; students can only receive credit for one of AP German, IB German, or the Sprachdiplom II.

Recommendation:

The Senate Committee on Admissions recommends that the proposal to offer first year transfer credit to students who successfully complete the Sprachdiplom II certificate program be approved and in effect upon approval by Senate.

Respectfully submitted
Susan Gottheil, Chair, Senate Committee on Admissions

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses the report to Senate.



UNIVERSITY
OF MANITOBA

Faculty of Arts

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University of Manitoba
Winnipeg, Manitoba
Canada R3T 5V5
Telephone (204) 474-9100
Fax (204) 474-7590
Email Arts_inquiry@umanitoba.ca

DATE: September 28, 2017
TO: Breanne Mitenko, Secretary, Senate Committee on Admissions
FROM: Jeff Taylor, Dean, Faculty of Arts 
SUBJECT: *Sprachdiplom II*

This memo is to confirm that, at its meeting on September 27, 2017, Arts Faculty Council approved the proposal to offer first year German transfer credit to students who successfully complete the Sprachdiplom II certificate program.

I have enclosed the complete proposal for the committee's review.

c: H. Marx, Associate Dean
J. Leboe-McGowan, Associate Dean
G. Smith, Associate Dean
G. Sobie, Manager, Student Services



UNIVERSITY
OF MANITOBA

Faculty of Arts

Dean's Office
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University of Manitoba
Winnipeg, Manitoba
Canada R3T 5V5
Telephone (204) 474-9100
Fax (204) 474-7590
Email Arts_Inquiry@umanitoba.ca

DATE: September 12, 2017
TO: J. Taylor, Dean, Faculty of Arts
FROM: J. Leboe-McGowan, Chair, Faculty of Arts Academic Regulations Policy Committee (ARPC)
SUBJECT: ARPC Proposal for Faculty Executive to Consider – Sprachdiplom II

PREAMBLE

The terms of reference of the above Committee stipulate that it shall recommend to Faculty Council, through the Arts Executive Committee, with respect to undergraduate regulations relating to admission, General, Advanced and Honours degree programs, examinations, grading system, required performance levels and all requirements for receiving degrees.

At its meeting of August 8, 2017, the Committee discussed the following matter:

ARPC recommends offering first year German transfer credit (GRMN 1120 – 6 hours) to incoming students who have completed the Sprachdiplom II language proficiency diploma (level B2-C1) prior to entering the University of Manitoba.

Background:

- Definition and Administration:
 - Sprachdiplom is the term for language proficiency diplomas that are administered and conferred by the German Central Agency for Schools Abroad which is an office of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany. This Standing Conference is the oldest conference of ministers in Germany and plays a significant role as an instrument for the coordination and development of education, both in Germany and abroad. This consortium of ministers is responsible for all levels of schooling, including higher education, research and cultural affairs and in this capacity, formulates internal and external joint interests. At this time, Sprachdiplom is offered in 70 countries around the world with about 70,000 students each year globally sitting the exams. In total, there are 4 different examinations and 4 different certificates attainable for students who attend a German bilingual school in Canada. However, except for native German speakers, there are only two levels applicable to high school students with at least 4 years of formal German instruction said students would be able to apply so they may enter into a second year German language course in our program. These two levels are:
- **Deutsches Sprachdiplom (DSD) I** – This examination/certificate corresponds to the **level B1** of the CEFR. In order to meet the language proficiency requirements for entering preparatory college programs in Germany, the student has to demonstrate B1 competence level in all four competencies (reading comprehension, listening comprehension, written communication and oral communication). This level can be done any time between grades 10 and

12. However, if a student reaches at least the level A2 in all four competencies, but not B1 in all of them, he/she will receive the **DSD A2** certificate. This certificate corresponds to the **level A2** of the CEFR. This level is equivalent to our Intermediate German course GRMN 2100.

- **Deutsches Sprachdiplom (DSD) II** – This examination/certificate corresponds to the **level B2/C1** of the CEFR and proves that the holder of this diploma meets the language proficiency requirements for entrance into post-secondary education programs in Germany; the student has to demonstrate at least B2 level in all four competencies. *This is the level we would like to see accepted as equivalent to the AP so schools have the option of offering one or the other, even though the level far exceeds the competencies a UM student will have after finishing GRMN 1120.*
 - Students do not have to complete DSD I in order to sit the exam for DSD II. Students will have had between 800 and 1200 contact hours (à 45 minutes) of formal German instruction before being admitted to sit the exam for DSD II. This means the program is rigorous and equivalent to both the AP examination and general IB programs, although there is no IB program in Manitoba that offers German at this time.
- DSD II is offered at River East Collegiate, at Westgate Mennonite Collegiate and at MGLE-German School, the latter being a program supported and recognized by both Manitoba Education and the German Central Agency for Schools Abroad. This Saturday German language school makes access to the exams available to students from various high schools throughout Manitoba.
- Over the past 10 years, between 25 and 40 students have sat the exam each year, of which about 65-75% succeed in receiving a diploma.
- Students with a DSD II diploma in hand can use it to apply for university entrance in Germany, it is internationally recognized so they may use it to prove a very high language proficiency to educational facilities and employers anywhere. When UM students apply for one of the prestigious DAAD scholarships to study in Germany they have to ask for a language certificate from the instructor. The first question on the form asks whether the applicant has a DSD I or II. Having one of the diplomas, especially DSD II, gives them a better chance in the selection process because it eases the adaptation to university life in Germany.
- The diploma itself states the level achieved in each of four (4) proficiency areas (reading, listening, writing and speaking proficiencies), i.e. for DSD II it will state a minimum of B2 for each area, a maximum of C1. The grading scale that can be applied to all students who have completed the program could reflect an A (4.0) for any B2 area and an A+ (4.5) for any C1 achieved in an area. This seems fair, especially in light of the DSD II being much more difficult than the AP exam.
- Students sit the exam for DSD II in December and receive their results by mid-April. Their diploma (in German together with the certified English language copy) usually arrives from Germany by early July, so they may then provide the UM Evaluations Office with the diploma for their application.
- If the UM Evaluations Office requires another official letter, the German Language Advisor who oversees the German Central Agency for Schools Abroad for Western Canada is willing to provide such letter for each diploma holder in Manitoba.

- Since credit would be applied to the record on a voluntary basis, this proposal would ask the UM Evaluations Office to develop a form for students to complete and attach to their documentation should they wish to include their DSD II as equivalent to GRMN 1120 on their transcript.
- This proposal seeks to allow students who successfully completed Sprachdiplom II from 2016 on to receive the equivalent to GRMN 1120 for 6 hours at UM.
- This proposal recommends that students cannot apply credit for more than one of: AP, IB, or DSD II. However, it is recommended that any student who has completed more than one of the aforementioned programs may choose which of them they would prefer to apply for credit.

Observations:

- An instructor (Karin James) in the Department of German and Slavic Studies is an official examiner for the oral examination component of both levels of Sprachdiplom and certified by the German Central Agency for Schools Abroad as such. In this capacity, she is regularly involved with the schools offering these examinations and this access to students in various German language programs offers an indirect “recruiting aspect” to the UM in general and the Department of German and Slavic Studies in particular. The department has a vibrant exchange program with universities in Germany and since an official language proficiency diploma adds a great deal of value to students’ application, it is of mutual benefit to both the students and the UM if said diploma will attract the students to a UM program. Advanced Placement tests offer the opportunity of university credit, however, they are not applicable as proof of proficiency in any other form.
- Schools with German language programs are more likely to offer Sprachdiplom than AP for German and students with a credit in one specific area are much more inclined to enroll in courses where they already have a credit. Therefore, the Department of German and Slavic Studies will benefit, and in turn, the University of Manitoba.
- Since languages are an immeasurable asset to any program, it will be a great benefit to the University of Manitoba to give a transfer credit for Sprachdiplom, attracting students to all programs. UM would also be the first university in Canada to do so and would therefore become a model for other universities to follow suit.

Recommendation:

Students who have completed the Sprachdiplom II language proficiency diploma will be granted GRMN 1120 upon admission to the University of Manitoba – if they are eligible, and they so choose.

I ask that this report be transmitted to the meeting of Arts Executive on Tuesday September 19, 2017. I will be happy to present the report at this meeting upon your invitation.

October 19, 2017

Report of the Senate Committee on Instruction and Evaluation RE: Proposed Revised Regulation on Examinations, Faculty of Engineering

Preamble:

1. The terms of reference for the Senate Committee on Instruction and Evaluation (SCIE) can be found at:
http://umanitoba.ca/admin/governance/governing_documents/governance/sen_committees/502.html.
2. At its meeting on October 19, 2017 SCIE considered a proposal from the Faculty of Engineering to revise their regulation on Examinations.

Observations:

1. The Faculty of Engineering is proposing to modify their regulation 3.7 *Examinations*, specifically the section *Supplemental Examinations*, in order to be consistent with the *University Grade Point Averages Policy* (Senate, June 22, 2016) and *Repeated Course Policy* (Senate, June 22, 2016).
2. The Faculty is proposing to remove the statement "When this occurs, the grade achieved on the last course attempt will replace the grades of both the previous course attempt and the supplemental examination." from the *Supplemental Examinations* section of the regulation.

Recommendation

The Senate Committee on Instruction and Evaluation recommends:

THAT Senate approve the revised regulation on Examinations, Faculty of Engineering, effective September 1, 2018.

Respectfully submitted,

Dr. Diane Hiebert-Murphy, Chair
Senate Committee on Instruction and Evaluation

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses the report to Senate.



UNIVERSITY
OF MANITOBA

Academic Regulations and
Curriculum Committee

E2-390 EITC Building
Telephone +1-204-474-8963
Facsimile +1-204-261-4639
Dean.McNeill@umanitoba.ca

Memo

8 September 2017

To: Senate Committee on Instruction and Evaluation (SCIE)
From: Dean McNeill, Chair
Academic Regulations and Curriculum Committee (ARCC)
Faculty of Engineering
Subject: Change in Faculty Regulation on Supplemental Examinations

In response to the Fall 2016 updates to the University policies on Grade Point Averages and Repeated Courses, the Faculty of Engineering is proposed to modify Faculty regulation 3.7 *Examinations* to make it consistent with the new policies. Specifically, the proposal removes a statement indicating that when a student is unsuccessful in passing the supplemental examination and must then repeat the course, that past grades are excluded from the DGPA.

3.7 Examinations

Deferred Examinations

If you miss a final examination for medical or compassionate reasons, you may be granted a deferred examination. Applications for a deferred examination after the examination has been missed must be filed within 48 hours of the date of the missed examination. A medical certificate of otherwise appropriate documentation may be required.

(See Chapter, General Academic Regulations and Requirements of this Calendar for more details)

Deferred Examinations are normally scheduled to take place within 30 working days from the end of the examination series from which the examination was deferred. The date of the deferred examination for a particular course will be set by the Dean's Office no later than January 15, May 15 or Sept 15 and in consultation with the instructor.

Supplemental Examinations

A student who has attempted to meet all requirements for the degree and has a single failure in their final academic year, in an Engineering course, may apply for a supplemental examination in that course. Supplemental examinations may not be requested for any other reason. A student shall only be permitted to exercise the privilege of writing a supplemental examination once in their degree program.

The grade for a course in which a supplemental examination is written shall be calculated in the following manner, with the grade reported being the greater of these two calculations:

1. The supplemental examination shall have the same percentage weighting as the original examination, and shall be combined with all term marks;
2. The supplemental examination shall have the percentage weighting equal to the combined weight of the original examination and all term tests, and shall be combined with all other term marks.

Both the original course grade and the supplemental examination course grade are retained on the student's record, and both are used in the calculation of TGPA and DGPA.

In the event that the supplemental examination is not successfully passed, the course must be repeated again in a subsequent term. ~~When this occurs, the grade achieved on the last course attempt will replace the grades of both the previous course attempt and the supplemental examination.~~

The results of supplemental examinations must be reported to the Faculty Council of Engineering. The supplemental examination privileges apply only to courses offered by the Faculty of Engineering.

Challenge for Credit

Courses offered in Engineering may not be challenged for credit.

3.7 Examinations

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Both the original course grade and the supplemental examination course grade are retained on the student's record, and both are used in the calculation of TGPA and DGPA.

In the event that the supplemental examination is not successfully passed, the course must be repeated again in a subsequent term.

The results of supplemental examinations must be reported to the Faculty Council of Engineering. The supplemental examination privileges apply only to courses offered by the Faculty of Engineering.

Challenge for Credit

Courses offered in Engineering may not be challenged for credit.



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Office of the Vice-President
(Research and International)

MEMORANDUM

TO: Mr. Jeff Leclerc, University Secretary

FROM: Digvir Jayas, Vice-President (Research and International)
and Chair, Senate Committee on University Research

A handwritten signature in black ink, appearing to be 'Digvir Jayas', with a stylized flourish at the end.

DATE: October 13, 2017

SUBJECT: Proposal to establish a Chair in Interprofessional Collaborative Practice

Attached is the proposal to establish a Chair in Interprofessional Collaborative Practice. The Vice-President (Academic) and Provost, and the Senate Committee on University Research (SCUR), have endorsed this proposal, in accordance with the University's policy on *Chairs and Professorships*.

Please include this report and recommendation on the next Senate agenda. Please feel free to contact me should you require any further information.

Thank you.

DSJ/nis
Encl.

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses the report to Senate.

JUL 07 2017

UNIVERSITY
OF MANITOBA

Office of Provost & Vice-President (Academic)

OFFICE OF THE VICE-PRESIDENT
(RESEARCH AND INTERNATIONAL)208 Administration Building
Winnipeg, Manitoba
Canada R3T 2N2
Telephone (204) 480-1408
Fax (204) 275-1160

Date: July 7, 2017

To: Digvir Jayas, Vice-President (Research and International)

From: Janice Ristock, Provost and Vice-President (Academic)

Re: Proposal for a Chair in Interprofessional Collaborative Practice

On behalf of the Rady Faculty of Health Sciences, Dr. Brian Postl has submitted a proposal to establish a Chair in Interprofessional Collaborative Practice.

The policy on Chairs and Professorships specifies that:

- (1) Chairs are established to advance the University's academic goals and objectives;
- (2) Chairs be funded by way of an endowment or through annual expendable gifts for at least five years, or by a combination of endowment and annual expendable gifts;
- (3) Chairs shall normally be attached to a department, faculty school, college, centre or institute and the goals of the Chair shall be consistent with that unit;
- (4) The establishment of a Chair normally shall not be tied to the appointment of a particular person;
- (5) Individuals appointed to the Chair shall normally have the academic qualifications commensurate with an appointment at the rank of Assistant Professor, Associate Professor, or Professor; and
- (6) The initial term of the appointment of the chair shall be 3 to 5 years, and if renewal is permitted, such renewal shall be subject to a successful performance review and the availability of funds.

The proposed Chair satisfies the above requirements. Funding will be derived from a \$3 million endowment.

I support this proposal from the Rady Faculty of Health Sciences and request that you present it to the Senate Committee on University Research for consideration and recommendation to Senate and, in turn, the Board of Governors.

If you have any questions or concerns, I would be pleased to meet with you.



UNIVERSITY
OF MANITOBA | Rady Faculty of
Health Sciences

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Fax: 204-789-3661

June 29, 2017

Dr. Janice Ristock
Provost and Vice-President (Academic)
208 Administration Building
University of Manitoba
Winnipeg, MB R3T 2N2

Dear Dr. Ristock;

RE: Chair in Interprofessional Collaborative Practice

The Rady Faculty of Health Sciences seeks to establish a Chair in Interprofessional Collaborative Practice.

This Chair is supported by a \$3 million endowment which is a part of the transformation gift made by Dr. Ernest S. Rady. It will provide leadership; research and scholarship; education; and mentorship in interprofessional collaborative practice for patient- and family-centred health care. The Chair's focus will build upon collaborative relationships between educational and practice systems promoting excellence in patient care, quality, and safety.

The Rady Faculty of Health Sciences Council Executive met and approved this amendment to the professorship on June 20, 2017.

Enclosed are the Chair's Terms of Reference for your approval.

I look forward to your response in due course. Please let me know if you require any additional information.

Sincerely,

Dr. Brian Postl
Dean and Vice Provost, Rady Faculty of Health Sciences



**PROPOSAL TO ESTABLISH A CHAIR
IN INTERPROFESSIONAL COLLABORATIVE PRACTICE
IN THE RADY FACULTY OF HEALTH SCIENCES
AT THE UNIVERSITY OF MANITOBA**

EXECUTIVE SUMMARY/PREAMBLE:

In accordance with the procedures and mechanisms for establishing chairs at the University of Manitoba, the following is presented:

TYPE OF APPOINTMENT: Chair

NAME OF CHAIR: Chair in Interprofessional Collaborative Practice

PURPOSE AND OBJECTIVES OF CHAIR:

The Chair will provide leadership; research and scholarship; education; and mentorship in interprofessional collaborative practice for patient- and family-centred health care. The Chair's focus will build upon collaborative relationships between educational and practice systems promoting excellence in patient care, quality, and safety.

The Chair will provide leadership in interprofessional collaborative practice research and scholarship within the Rady Faculty of Health Sciences.

The Chair will train and mentor the next generation of thought leaders who will transform the Manitoba Health System into a high performing interprofessional collaborative network focused on delivering state-of-the-art patient-centred care.

The Chair will advance knowledge that will directly improve quality of patient care, patient safety, retention of health-human resources, and deliver cost efficiencies.

By delivering on these strategic objectives, the Rady Faculty of Health Sciences will become recognized for its leadership and excellence in promoting and facilitating interprofessional collaborative practice and quality of patient-centred care.

RELATIONSHIP TO THE PROPOSING UNIT

Within the Rady Faculty of Health Sciences, the Colleges of Dentistry (which includes the School of Dental Hygiene), Medicine, Nursing, Pharmacy, and Rehabilitation Sciences are collectively focused on excelling in education, research, and health care delivery. The shared vision of the Rady Faculty of Health Sciences is: To advance excellence in health care through innovative research and health professional education that supports collaborative practice. This vision resulted in the development of the Office of Interprofessional Collaboration (OIPC), with whom the Chair will be closely aligned. A dedicated chair in interprofessional collaborative practice will ensure that the shared vision of the colleges within the Rady Faculty of Health Sciences can be supported and realized. This position will be open to a member of any health profession represented within the Rady Faculty of Health Sciences.

THE METHOD BY WHICH THE CHAIR WILL BE FUNDED:

A total of \$155,000 to \$175,000 will be available annually to support the Chairholder and the activities. The \$3 million endowment will generate approximately \$126,000 per year, which will leverage up to \$50,000 (depending on the academic rank of a recruited chairholder), in support annually from the university's Vice-President Research and International.

With this level of annual funding available, we will be in a position to launch a competitive international search to recruit the most qualified candidate in the field.

GENERAL AND SPECIFIC REQUIREMENTS FOR THE CHAIR:

In accordance with the policy and procedures for establishing chairs at the University of Manitoba, individuals appointed to the Chair in Interprofessional Collaborative Practice will have the following qualifications:

- Canadian citizen or permanent resident
- Expertise in collaborative practice and interprofessional education
- PhD in a related field and a licensed health professional; or MD, DMD, or PharmD with appropriate training to be a researcher/educator
- Holding a current academic appointment at the rank of Assistant Professor or higher
- History of excellence in research as evidenced by a strong publication record, and acquisition of national or international peer reviewed grants and contracts
- History of mentoring students, junior colleagues, or investigators
- History of effective and productive collaboration in interprofessional health education and patient-centred care

TERM OF APPOINTMENT:

- The initial term of the appointment will be five years, biennial and final year progress report

- Internal midterm evaluation
- The renewal of the appointment for an additional term(s) will be subject to a successful review of the incumbent's performance within the context of the Rady Faculty of Health Sciences research strategy, such a review to be carried out during the fourth year of the term.

A successful performance review will provide evidence of the following:

- Personal research productivity in the form of external grants, presentations, and peer-reviewed publications. It is expected that funding from one or more national agencies would be expected along with additional funding from local sources.
- Evidence of mentoring including having one or more full-time research trainees or supervision of clinical fellows in their research year.
- Evidence of publication in the range of 3-5 publications/year with 1 or more in a high impact journal.
- Evidence of linkages, collaboration and interprofessional research within the University

PREAMBLE:

Interprofessional collaborative health care has become a focus in practice and health profession education programs in Canada and internationally due to an increasing emphasis on improved patient outcomes; quality and safety; professional satisfaction and well-being; organization efficiency and innovation; and system cost effectiveness and responsiveness. Collaborative care is defined as occurring "...when multiple health workers from different professional backgrounds provide comprehensive services by working with patients, their families, caregivers, and communities to deliver the highest quality of care across settings" (WHO, 2010). Interprofessional education (IPE) is a teaching strategy to prepare and inspire students to strive towards providing excellent collaborative care across practice settings. Increasingly, health profession programs are required to include and demonstrate interprofessional collaboration in their curricula for accreditation purposes. The Deans of the Rady Faculty of Health Sciences created and endorsed a consultation unit called the Office of Interprofessional Collaboration (OIPC) which is tasked with the development of a curriculum focused on enriching collaborative skills. The vision of the OIPC is to be recognized for its culture of interprofessionalism and where the Rady Faculty of Health Sciences graduates and faculty are competent interprofessional practitioners and scholars.

Interprofessional collaboration is an area of research and scholarly development in both education and practice. Securing a Chair in Interprofessional Collaborative Practice will help the Rady Faculty of Health Sciences to achieve its goal of becoming recognized for interprofessional collaboration education that facilitates excellence in patient care through an integrated approach by health professionals.

OTHER PROVISIONS:

- 1) The selection and appointment of an individual to the proposed Chair shall be

conducted in accordance with section 2.3 of University Policy on Chairs and Professorships

2) The duties and responsibilities of the individual appointed to the proposed Chair will be in accordance with 2.4 of University Policy on Chairs and Professorships.

3) Annual reporting requirements shall also be in accordance with the University Policy on Chairs and Professorships. In addition to the reporting requirements stipulated in this policy, the Chair holder shall provide an annual report of activities to the President of the University. In turn, the President shall provide a copy of said report to individuals or organizations that have contributed to the establishment of the Chair, and that have specifically requested this information.

4) The Chair holder will have an appointment in the Department/College within the Rady Faculty of Health Sciences most appropriate given his/her discipline/background, and will have an affiliation with the Office of Interprofessional Collaboration. The Chair holder will participate in an appropriate amount of teaching activity, including undergraduate and graduate students, where appropriate.

5) The role of the Chair will be to contribute significantly to the body of research and scholarship in the Rady Faculty of Health Sciences. Accordingly, the appointment of the Chair will be made on the recommendation of the Rady Faculty of Health Sciences and Office of Interprofessional Collaboration, and shall be conducted in accordance with the University policy in Academic Appointments and the guidelines for the establishment of chairs.

6) It is understood that the Chair would be structured with a five year maximum term with an option of renewal subject to satisfactory performance of the incumbent, but also with the understanding that the research focus could be changed at such intervals according to the changing needs of the Rady Faculty of Health Sciences and subject to approval by the University of Manitoba.

February 22, 2017
Revised July 6, 2017



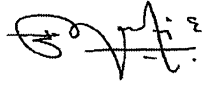
UNIVERSITY
OF MANITOBA

OFFICE OF THE
VICE-PRESIDENT (RESEARCH
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MEMORANDUM

TO: Mr. Jeff Leclerc, University Secretary

FROM: Digvir Jayas, Vice-President (Research and International)
and Chair, Senate Committee on University Research 

DATE: October 30, 2017

SUBJECT: Revision to the Terms of Reference for the Leslie F. Buggie Professorship

The Vice-President (Academic) and Provost, and the Senate Committee on University Research (SCUR), recommends the revision to the terms of reference for the Leslie F. Buggie Professorship. SCUR met on October 12, 2017

Please include this report and recommendation on the next Senate agenda. Please feel free to contact me should you require any further information.

Thank you.

DSJ/nis
Encl.

Cc: Dr. Brian Postl, Vice-Provost and Dean, Rady Faculty of Health Sciences

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses the report to Senate.



UNIVERSITY
OF MANITOBA

Office of Provost & Vice-President (Academic)

208 Administration Building
Winnipeg, Manitoba
Canada R3T 2N2
Telephone (204) 480-1408
Fax (204) 275-1160

Date: September 29, 2017

To: Digvir Jayas, Vice-President (Research and International)

From: Janice Ristock, Provost and Vice-President (Academic)

Re: Revised Terms of Reference for the Leslie F. Bugey Professorship in Pharmacy

On behalf of the College of Pharmacy, Dr. Lalitha Raman-Wilms has submitted a proposal to revise the terms of reference for the Leslie F. Bugey Professorship in Pharmacy. This Professorship was approved by the University of Manitoba Senate in 2013. The College of Pharmacy is proposing a revision to the terms of reference that would set the term of the appointment at three years with a performance review after year two (currently the appointment is for five years with a review after year three). This change is proposed in order to support as many faculty members as possible in advancing their research programs. The terms of reference have also been revised so that all references to the Faculty of Pharmacy are changed to the College of Pharmacy.

The donor to the fund, Dr. JoAnne Bugey, has been contacted and is supportive of the changes. The College of Pharmacy's Executive Council approved the proposed modification to the terms of reference on September 20, 2017. Dr. Brian Postl, Dean of the Rady Faculty of Health Sciences, is also in support of the changes.

I support this proposed revision to the terms of reference for the Leslie F. Bugey Professorship in Pharmacy and request that you present it to the Senate Committee on University Research for consideration and recommendation to Senate and, in turn, the Board of Governors.

If you have any questions or concerns, I would be pleased to meet with you.

Encl.



UNIVERSITY
OF MANITOBA

Rady Faculty of
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September 22, 2017

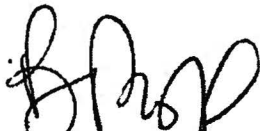
Dr. Diane Hiebert-Murphy
Vice-Provost (Academic Affairs)
208 Administration Building
University of Manitoba
Winnipeg, MB R3T 2N2

Dear Dr. Hiebert-Murphy,

RE: Revision to the Leslie F. Bugey Professorship in Pharmacy

The College of Pharmacy has requested to revise the terms of reference for the Leslie F. Bugey Professorship in Pharmacy. The College of Pharmacy's College Executive Council completed an electronic vote on these changes and they were approved as of September 20th, 2017. Donor Relations has ensured that the donor of the fund, Dr. JoAnne Bugey, is aware of and supportive of these changes. The original vision of the award, to support research excellence in Pharmacy, remains intact.

I endorse these amendments on behalf of the Rady Faculty of Health Sciences. Please let me know if you require any additional information.



Yours sincerely,

Brian Postl, MD, FRCPC
Dean, Rady Faculty of Health Sciences & Vice-Provost (Health Sciences)



UNIVERSITY
OF MANITOBA

Faculty of
Health Sciences

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Fax: 204-789-3744

September 28, 2017

Dr. Diane Hiebert-Murphy
Vice-Provost (Academic Affairs)
208 Administration Building
University of Manitoba
Winnipeg, MB R3T 2N2

Dear Dr. Hiebert-Murphy,

RE: Revision to the Leslie F. Bugey Professorship in Pharmacy

The College of Pharmacy would like to revise the terms of reference for the Leslie F. Bugey Professorship in Pharmacy. We would like to change the term of the Professorship from five to three years, with a review after two years. As well, we are changing reference from the Faculty of Pharmacy to the College of Pharmacy. As Dean of the College of Pharmacy, I am proposing these changes based on consultation with faculty members.

As a small College, we want to give as many faculty members as possible the opportunity to benefit from the Professorship. A term of three to six years (if renewed) will provide the Professorship holders with enough time to initiate and get research project underway, and launch their programs to the point where they will be able to leverage further funding. In consultations with faculty members, it was felt that the Professorship represents an important opportunity for faculty's research growth. It is anticipated that the endowment will grow in the future to support a Research Chair. At that time, we would propose the term be revised to five years.

The donor of the fund, Dr. JoAnne Bugey, was contacted and is supportive of these changes.

The College of Pharmacy's College Executive Council completed an electronic vote on these changes and they were approved as of September 20th, 2017.

Enclosed are the updated Terms of Reference for your approval. I have also included the Professorship's existing Terms for your reference.

I support this proposal enthusiastically and without reservation. I look forward to your response in due course. Please let me know if you require any additional information.

Sincerely,

A handwritten signature in black ink, appearing to read 'Lalitha', with a long horizontal flourish extending to the right.

Lalitha Raman-Wilms, BScPhm, PharmD, FCSHP
Professor and Dean
College of Pharmacy
Rady Faculty of Health Sciences

PROPOSAL TO REVISE AN ENDOWED PROFESSORSHIP AT THE UNIVERSITY OF MANITOBA

EXECUTIVE SUMMARY:

In accordance with the procedures and mechanisms for revising Chairs and Professorships at the University of Manitoba the following is presented:

TYPE OF APPOINTMENT: Endowed Professorship

TYPE/AREA/NAME OF PROFESSORSHIP: Leslie F. Buggey Professorship in Pharmacy Research

PURPOSE AND OBJECTIVES OF THE PROFESSORSHIP:

Objectives:

The purpose and objective of the Professorship shall be to provide research leadership, scholarship and mentorship in pharmacy. Specific objectives include:

- To contribute significantly to the body of scholarship in, but not limited to, pharmacy outreach, training and public service in the area of dissemination of drug knowledge;

- To promote a program in pharmacy research;

- To create the opportunity to recruit/retain an experienced leader with demonstrated expertise in pharmacy research and a proven track record in related research. The support of an endowed professorship would afford such an individual with the time and necessary support to fully devote his/her efforts to achieve the proscribed objectives;

- To enhance the competitiveness of the University of Manitoba College of Pharmacy at national and international peer reviewed funding agencies;

- The establishment and sustenance of critical intramural and extramural links and collaborations that serve to promote research at the University of Manitoba;

- The provision of mentorship and opportunities for young investigators embarking on careers focused on pharmacy outreach or pharmacy research;

- The pursuit of research topics that will lead to improved health and services that ensure high quality, timely care is available for Manitobans.

RELATIONSHIP TO THE PROPOSING UNIT

The College of Pharmacy will foster an environment of exceptional research and scholarship, and facilitate the application, communication, and dissemination of the results of university research for the benefit of the profession: locally, nationally and internationally.

The College of Pharmacy will achieve the highest possible standards in research, clinical and professional service, by applying quality improvement strategies to practice and employing evidence-based practice, providing high quality, patient-centered drug treatment, thereby promoting understanding, interaction and involvement among academic disciplines, other health-care professions, and the public.

The Professorship will support an individual faculty member by providing operating funds to pursue independent research in outreach, training and public service in the area of dissemination of drug knowledge. This support will allow the recipient to maximize his/her research activity and effectiveness, as well as lead research activity in the Faculty in this strategically important area. Excellence of the candidate will be the first priority.

THE METHOD BY WHICH THE PROFESSORSHIP WILL BE FUNDED

- 1) Interest accrued from the existing endowment fund of \$1,007,330.58.
- 2) There is a commitment from the donor of a bequest, which when realized, may allow the Professorship to become a fully funded Chair.
- 3) The Dean of the College has committed to fund the salary of the Professorship fully from the university operating budget until such time as the fund reaches the level required for a fully funded endowed Chair. The disbursement from the endowment will supplement the Professorship's research and other operating costs.

GENERAL AND SPECIFIC REQUIREMENTS FOR THE PROFESSORSHIP

In accordance with the University's policy on academic hiring (Article 18 of the UMFA Collective will be followed), individuals appointed to the Professorship shall have the following qualifications:

- Holding a current academic appointment at the rank of tenured Associate or Full Professor;
- Possess a history of excellence in research as evidenced by a strong publication record in high impact journals and acquisition of national or international peer reviewed grants or contracts;
- History of mentoring junior colleagues and investigators;
- History of effective and productive collaboration with intramural and extramural investigators and institutions.

TERM OF APPOINTMENT:

The intent of the Professorship is to be flexible for use in both recruitment of new faculty or retention of existing faculty according to the needs of the College of Pharmacy and will follow the UMFA Collective Agreement provisions under Article 18. Hiring of Members.

- 1) Professorship Appointments shall be for three years with possibility of renewal. Applications shall be solicited through a search process in accordance with the University's policy on academic hiring (Article 18 of the UMFA Collective will be followed).
- 2) The incumbent will provide a brief annual progress report. At year two, there will be a performance review by the College Executive Committee

A successful performance review will provide evidence of the following:

Personal research productivity in form of grants, contracts, presentations, and peer-reviewed publications.

Evidence of mentoring including having one or more full-time research trainees or supervision of clinical experiential students.

Evidence of peer-reviewed publications

Evidence of linkages, collaboration and multi-disciplinary research within the University and between the University and other research institutions.

Demonstrated efforts and corresponding results in the area of the dissemination of drug knowledge.

- 3) The renewal of another three year term appointment will not be automatic and will be subject to a successful review of the incumbent's performance with the context of the College of Pharmacy's research strategy; such a review to be carried out during the fourth year of the term. The review will be performed by the Dean and College Executive leadership, who will also evaluate the best use for the Professorship based on strategic needs and priorities of the College, within the guidelines of the gift agreement.

PREAMBLE

The College of Pharmacy is characterized by its teaching expertise, research programs, and practice partnerships in the health sciences field. The provision of optimal pharmaceutical care requires that the pharmacist must have a thorough knowledge of the science of medicines to apply to their clinical use.

During the past ten years (including 2012), the average pass rate for our graduates on the two-part national PEBC Qualifying Examination has been greater than 98%. In addition

to academic excellence, many students appreciate the academic and personal experiences resulting from membership in a small faculty.

The College has been recognized at the provincial, national and international levels through receipt of research grants and participation in academic, professional and scientific programs, boards, and committees. As described in various sections of our web site, this professional expertise is reflected in the teaching and research which is undertaken in the College.

This Professorship will be the first of its kind within the College of Pharmacy. The Professorship is a means to facilitate faculty excellence and is a commitment to the position and to the discipline of Pharmacy. This Professorship allows the College to honour and recognize the distinction of a superior individual while providing financial support, for use in research, teaching or service activities. The Professorship may also be a recruitment tool to attract potential new faculty members.

OTHER PROVISIONS:

- 1) The duties and responsibilities of the individual appointed to the proposed Professorship will be in accordance with the University Policy and Procedures on Chairs and Professorships.
- 2) The Professorship holder will have a full-time appointment in the College of Pharmacy.
- 3) The role of the Professorship will be to continue to pursue leading edge pharmacy research. Accordingly, the appointment of the Professorship will be made on the recommendation of the Dean of Pharmacy and shall be conducted in accordance with the University policy in Academic Appointments and the guidelines for the establishment of Chairs/Professorships.
- 4) The individual holding the Professorship will make an annual written report to the Dean of the College of Pharmacy. The Dean will make this report available to the donor, as per the terms of the endowment agreement.



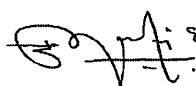
UNIVERSITY
OF MANITOBA

OFFICE OF THE
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MEMORANDUM

TO: Mr. Jeff Leclerc, University Secretary

FROM: Digvir Jayas, Vice-President (Research and International)
and Chair, Senate Committee on University Research 

DATE: October 30, 2017

SUBJECT: Revision to the Terms of Reference for the MINDERMAR Professorship in
Human Simulation

The Vice-President (Academic) and Provost, and the Senate Committee on University Research (SCUR), recommends the revision to the terms of reference for the MINDERMAR Professorship in Human Simulation. SCUR met on October 12, 2017

Please include this report and recommendation on the next Senate agenda. Please feel free to contact me should you require any further information.

Thank you.

DSJ/nis
Encl.

Cc: Dr. Brian Postl, Vice-Provost and Dean, Rady Faculty of Health Sciences

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses the
report to Senate.



UNIVERSITY
OF MANITOBA

Office of Provost & Vice-President (Academic)

208 Administration Building
Winnipeg, Manitoba
Canada R3T 2N2
Telephone (204) 480-1408
Fax (204) 275-1160

Date: September 28, 2017

To: Digvir Jayas, Vice-President (Research and International)

From: Janice Ristock, Provost and Vice-President (Academic)

Re: Revised Terms of Reference for the MINDERMAR Professorship in Human Simulation

On behalf of the Rady Faculty of Health Sciences, Dr. Brian Postl has submitted a proposal to revise the terms of reference for the MINDERMAR Professorship in Human Simulation. This Professorship was approved by the University of Manitoba Senate in 2007 and specified that the individual holding the Professorship would normally hold an appointment in the (former) Faculty of Medicine. The Max Rady College of Medicine is proposing a revision to the terms of reference that would extend the scope of the Professorship to include an academic from any of the disciplines in the Rady Faculty of Health Sciences: Medicine, Nursing, Dentistry, Pharmacy, or Rehabilitation Sciences.

The donor to the fund, the Rady Family Foundation, has been contacted and is supportive of the change. The Max Rady College of Medicine Executive and the Rady Faculty of Health Sciences' Council Executive approved the proposed modification to the terms of reference in June 2017.

I support this proposed revision to the terms of reference for the MINDERMAR Professorship in Human Simulation from the Rady Faculty of Health Sciences and request that you present it to the Senate Committee on University Research for consideration and recommendation to Senate and, in turn, the Board of Governors.

If you have any questions or concerns, I would be pleased to meet with you.



UNIVERSITY
OF MANITOBA

Rady Faculty of
Health Sciences

Max Rady College of Medicine
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230 Basic Medical Sciences Building
745 Bannatyne Avenue
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Canada R3E 0J9
Phone: 204-789-3485
Fax: 204-789-3661

August 30, 2017

Dr. Diane Hiebert-Murphy
Vice-Provost (Academic Affairs)
208 Administration Building
University of Manitoba
Winnipeg, MB R3T 2N2

Dear Dr. Hiebert-Murphy,

RE: Revision to the MINDERMAR Professorship in Human Simulation

The Max Rady College of Medicine would like to revise the terms of reference for the MINDERMAR Professorship in Human Simulation to extend the scope of the Professorship to include future candidates from any of the disciplines in the Rady Faculty of Health Sciences: Medicine, Nursing, Dentistry, Pharmacy and Rehabilitation Sciences.

The donor to the fund, the Rady Family Foundation, was contacted and is supportive of this change.

The Max Rady College of Medicine Executive met and approved this change to the professorship on June 13, 2017.

The Rady Faculty of Health Sciences' Council Executive approved this modification at its meeting on June 20, 2017.

Enclosed are updated Terms of Reference and a position description for your approval. I have also included the Professorship's existing Terms for your reference.

I support this proposal enthusiastically and without reservation. I look forward to your response in due course. Please let me know if you require any additional information.

Sincerely,

Dr. Brian Postl
Dean and Vice Provost, Rady Faculty of Health Sciences

Encl.

**PROPOSAL TO MODIFY THE
MINDERMAR PROFESSORSHIP IN HUMAN SIMULATION
IN THE RADY FACULTY OF HEALTH SCIENCES
AT THE UNIVERSITY OF MANITOBA**

HISTORY: The MINDERMAR Professorship was approved by the University of Manitoba Senate in 2007. The purpose of the MINDERMAR Professorship was to establish a Professor of Human Simulation that would be actively involved in the development and evaluation of educational programs that utilize standardized patients, task trainers and high fidelity human simulators to portray real-life scenarios.

The donor, the Rady Family Foundation, established this professorship in the Clinical Learning and Simulation Facility (now Program) in the then Faculty of Medicine by providing a gift of one million Canadian dollars (\$1,000,000 CAD) to the University of Manitoba by way of an agreement dated September 19, 2007. In recognition of the Gift, the University established a professorship in the Faculty of Medicine entitled, "MINDERMAR Professorship in Human Simulation".

In 2017, the Max Rady College of Medicine wishes to extend the scope of the Professorship to include future candidates from any of the disciplines in the Rady Faculty of Health Sciences: Medicine, Nursing, Dentistry, Pharmacy and Rehabilitation Sciences.

TYPE OF APPOINTMENT: Professorship

TYPE/AREA/NAME OF PROFESSORSHIP: MINDERMAR Professorship

PURPOSE AND OBJECTIVES OF PROFESSORSHIP: The intent is to create and enhance communication skills, procedural skills, and life-sustaining measures for individual health professionals and health care teams. Simulation education initiatives will be delivered not only in the simulation facility, but also in the work place environment. The professor will be actively involved in education research to enhance outcomes of curriculum strategies to address patient safety and quality health care delivery.

RELATIONSHIP TO THE PROPOSING UNIT: The Mindermar Professorship in Human Simulation will be situated within the Clinical Learning and Simulation Program (CLSP), Rady Faculty of Health Sciences and therefore will support simulation programming for all Rady Faculty colleges.

THE METHOD BY WHICH THE PROFESSORSHIP WILL BE FUNDED: The Professorship is funded through a gift of \$1,000,000 made by the Rady Family Foundation, Mindel Olenick, and Marjorie and Morley Blankstein held in the University Investment Trust at the University of Manitoba. The income of the endowment fund shall be allocated in accordance with the policies of the University of Manitoba and will contribute to the scholarly activities and salary and benefits of the Professorship.

GENERAL AND SPECIFIC REQUIREMENTS FOR THE PROFESSORSHIP

In accordance with the policy and procedures for establishing chairs and professorships at the University of Manitoba, the incumbent will normally hold an appointment in a College within the Rady Faculty of Health Sciences most appropriate given his/her discipline/background at the Associate Professor or Professor level. The individual will preferably have a Master's or Ph.D. in a related discipline and will have an accomplished research and teaching record in the field of human simulation. Academic faculty members working in the general area of simulation education will be eligible to apply for the award. The successful applicant will be actively involved in educational research to enhance outcomes of curriculum strategies to address patient safety and quality health care delivery.

TERM OF APPOINTMENT:

Term of Appointment: The Professorship will be awarded on a competitive basis for a five year period.

OTHER PROVISIONS:

- 1) The selection and appointment of an individual to the Professorship shall be conducted in accordance with the University Policy and Procedures on Chairs and Professorships.
- 2) The appointment will be made on the recommendation of the Selection Committee of Rady Faculty of Health Sciences and shall be conducted in accordance with the University policy in Academic Appointments and the guidelines for the establishment of Chairs/Professorships.
- 3) The Selection Committee will consist of the Dean of the Rady Faculty of Health Sciences (or designate) and an academic representative from each of the Colleges of the Rady Faculty of Health Sciences as named by the respective College Deans.
- 4) The Professorship holder will have an appointment in a College within the Rady Faculty of Health Sciences most appropriate given his/her discipline/background.
- 5) The duties and responsibilities of the individual appointed to the proposed Professorship will be in accordance with the University Policy and Procedures on Chairs and Professorships.

- 6) Annual reporting requirements shall also be in accordance with the University Policy on Chairs and Professorships.
- 7) In accordance with University Policy, the annual performance of the professor will be reviewed in the same manner as other faculty members. The Dean of the Rady Faculty of Health Sciences or designate shall be responsible for initiating and coordinating any reappointment review process and for recommending on reappointment.
- 8) It is understood that the Professorship would be structured with a five year maximum term with an option of renewal subject to satisfactory performance of the incumbent.

Dean, Rady Faculty of Health Sciences

Date



Position Description

MINDERMAR PROFESSOR IN HUMAN SIMULATION and DIRECTOR, CLINICAL LEARNING AND SIMULATION PROGRAM

POSITION:

The Mindermar Professor in Human Simulation and Director, Clinical Learning and Simulation Program (CLSP) is responsible for creating a shared multi-year programmatic vision in collaboration with key stakeholders; and supporting and promoting the integration of simulation-based learning across the continuum from standardized patients through high-fidelity simulators. Primary responsibilities relate to program leadership and management, education leadership, faculty development, future planning, and research. This position reports to the Vice-Dean Education in the Rady Faculty of Health Sciences. The position is 0.4 FTE or 16 hours per week (based on a 40-hour work week) and is awarded on a competitive basis for a five year term.

QUALIFICATIONS:

The incumbent will normally hold an appointment in a College within the Rady Faculty of Health Sciences most appropriate given his/her discipline/background at the Associate Professor or Professor level. The individual will preferably have a Masters or Ph.D. in a related discipline and will have an accomplished research and teaching record in the field of human simulation. Academic faculty members working in the general area of simulation education will be eligible to apply for the award. The successful applicant will be actively involved in educational research to enhance outcomes of curriculum strategies to address patient safety and quality health care delivery.

DUTIES:

Program Leadership and Management:

- Provides overall leadership and oversight for the CLSP and its resources (budget, staff, equipment and labs) in the Rady Faculty of Health Sciences;
- Develops the overall strategic plan and oversees its implementation in coordination with Vice-Dean Education, Business Manager, and members of the Simulation Planning Sub-Committee; prioritizes current resources to ensure that the goals and objectives of the Program are achieved;
- Provides direct supervision (i.e., expectation and goal setting, coaching/feedback, monitoring progress, etc.) to Academic staff; Provides indirect supervision of other staff supervised by the Business Manager;

- Chairs the CLSP Operations Committee and co-chairs with the Business Manager the Standardized Patient Planning Committee in order to develop and improve the program;
- Represents the University at regional and national meetings and conferences;
- Liaises with partners and stakeholders at local, provincial and national levels;
- Identifies emerging trends in simulation-based education and develops strategies to respond to them;
- Oversees the ongoing replacement of capital equipment and purchase of new technology in collaboration with the Business Manager;
- Advises the Simulation Steering Sub-Committee on the utility of seeking simulation program accreditation through university or other external accrediting bodies (i.e. RCPSC, ACS, SSH, etc.);
- Leads the effort to attain and maintain simulation program accreditation through accrediting bodies as identified by the Simulation Steering Sub-Committee;
- Provides input and support to the accreditation processes of the Rady Faculty of Health Sciences education programs
- Develops and revises program policies to ensure the safe, effective, and efficient use of the lab space, equipment, and supplies; ensures alignment with University policies and RCPSC accreditation standards; and
- Participates in community outreach programs to include conducting tours of the facilities, recruiting students, participating in public relations activities, and performing demonstrations and instruction to community groups/programs.

Education Leadership:

- Provides clinical and academic leadership for the development and evaluation of education modules using simulation that are suitable for the entire spectrum of health professions' education. This includes the use of standardized patients, task trainers, high fidelity human simulators or a combination thereof, to portray real-life scenarios for team exercises.
- Provides simulation-related consultation, expertise and advice; collaborates with colleagues from all colleges in the Rady Faculty of Health Sciences to coordinate curricular integration of simulation, including standardized patients, throughout educational programs and with interprofessional initiatives;
- Collaborates with the Office of Educational and Faculty Development to design and implement educational programs for faculty development in the use of clinical simulation, debriefing, and assessment;
- Mentors/coaches students and faculty related to the effective use of simulation;
- Develops a fellowship program in simulation for those who wish to pursue a clinical academic career in health care simulation; oversees selection and supervises successful candidates throughout the conduct of their fellowship;
- Establishes standards for the quality of simulation-based teaching in order to facilitate the continuous upgrading of the scholarship of faculty members who have academic responsibilities.

Research:

- Identifies research opportunities and develops and facilitates original qualitative and quantitative research programs; assesses a variety of aspects of health sciences education using simulation, including evaluation of outcomes of curriculum strategies, patient safety and improvement to the quality of health care delivery;
- Applies for and obtains grants from peer-reviewed funding agencies;
- Collaborates with other investigators and research/evaluation associates in the Rady Faculty of Health Sciences, in other universities and with other simulation provider organizations to foster collaborative research in simulation-based education;
- Raises awareness of the use of simulation resources internally and externally through publication of related research activities, results, and innovations and/or presentations at local, national, and/or international conferences.

Committee Responsibilities:

- Chair, CLSP Operations Committee
- Co-Chair, Standardized Patient Planning Committee
- Member, Simulation Steering Sub-Committee, Rady Faculty of Health Sciences
- Member, Winnipeg Regional Health Authority Education Sub-Committee



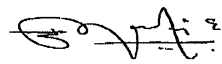
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MEMORANDUM

TO: Mr. Jeff Leclerc, University Secretary

FROM: Digvir Jayas, Vice-President (Research and International)
and Chair, Senate Committee on University Research 

DATE: October 30, 2017

SUBJECT: Periodic Review of Research Centres and Institutes: *Centre for Earth Observation Sciences (CEOS)*

Attached is the report on the *Centre for Earth Observation Sciences* conducted by the Senate Committee on University Research (SCUR), according to the Policy on Research Centres, Institutes, and Groups. The Senate Committee on University Research met on October 12, 2017.

Please include this report and recommendation on the next Senate agenda. Please feel free to contact me should you require any further information.

Thank you.

DSJ/nis
Encl.

Cc: Norm Halden, Dean
Tim Papakyriakou, Director

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses the report to Senate.

THE SENATE COMMITTEE ON UNIVERSITY RESEARCH
REPORT ON THE REVIEW OF THE
Centre for Earth Observation Science (CEOS)

Preamble:

1. The Policy for *Research Centres, Institutes and Groups*, stipulates that all research centres/institutes be reviewed by the Senate Committee on University Research (SCUR) on a periodic basis but not less than once every 5 years. Accordingly and following the approval by Senate of this Policy, the Senate Committee on University Research established a schedule for the review of all research centres/institutes.
2. For each research centre/institute identified for review, a sub-committee of the Senate Committee on University Research was established. In accordance with the Policy, the task of each sub-committee was to recommend to SCUR on whether a formal, independent review committee should be struck to conduct a full review. If a sub-committee was of the view that a full review of a specific research centre/institute was not warranted, it was further charged with recommending to SCUR on the continuance or termination of the research centre/institute.

Observations:

1. The review process followed that which is outlined in section 2.8 of the Policy, and involved a review of annual reports of each centre/institute as well as a report prepared by each research centre/institute director which contained:
 - A description of how and why the centre/institute has achieved or revised its original objectives; a detailed listing of its research and training accomplishments; a current membership list; and a detailed financial statement;
 - a five-year plan which identifies future research directions and development strategies;
 - letters indicating continued support for the research/centre institute from appropriate department heads and faculty/school deans/directors; and
 - the names of individuals who could provide external assessments of the research centre/institute.
2. The membership of this committee was as follows:

Stefi Baum, Science (Chair)
Jonathan Bedoes, Engineering
Todd Mondor, Graduate Studies/Arts

3. The assessment of the committee was as follows:

The committee believes that CEOS has fulfilled and has appropriate plans to fulfill in the future the general objectives of research centres as stipulated under policy and is appropriately evolving its objectives for the future in its new five year plan.

The Centre has had and continues to have strong external research funding as well as operational support from the faculty which houses it (CHRFEEER), and has a viable funding plan for the future. A number of graduate students have received degrees in research affiliated with CEOS. CEOS is appropriately forward looking, recognizing the need to maintain and grow its collaborations and external funding.

The review sub-committee does **not** recommend the central allocation of the \$124,750 request indicated on pp. 45 of the CEOS submission, as the large majority of those heavily involved in CEOS hold appointments within CHRFEEER. Thus it seems appropriate that the funding come from CHRFEEER.

Recommendation:

THAT the *Centre for Earth Observation Sciences* be renewed for a term of 5 years, from January 1, 2018 through December 31, 2022.



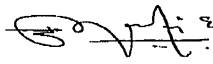
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MEMORANDUM

TO: Mr. Jeff Leclerc, University Secretary

FROM: Digvir Jayas, Vice-President (Research and International)
and Chair, Senate Committee on University Research 

DATE: October 30, 2017

SUBJECT: Periodic Review of Research Centres and Institutes: Centre for Professional and Applied Ethics (CPAE)

Attached is the report on the Centre for Professional and Applied Ethics conducted by the Senate Committee on University Research (SCUR), according to the Policy on Research Centres, Institutes, and Groups. The Senate Committee on University Research met on October 12, 2017.

Please include this report and recommendation on the next Senate agenda. Please feel free to contact me should you require any further information.

Thank you.

DSJ/nis
Encl.

Cc: Jeff Taylor, Dean
Neil McArthur, Director

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses the report to Senate.

THE SENATE COMMITTEE ON UNIVERSITY
RESEARCH REPORT ON THE REVIEW OF THE
CENTRE FOR PROFESSIONAL AND APPLIED ETHICS

Preamble:

1. The Policy for *Research Centres, Institutes and Groups*, stipulates that all research centres/institutes be reviewed by the Senate Committee on University Research (SCUR) on a periodic basis but not less than once every 5 years. Accordingly and following the approval by Senate of this Policy, the Senate Committee on University Research established a schedule for the review of all research centres/institutes.
2. For each research centre/institute identified for review, a sub-committee of the Senate Committee on University Research was established. In accordance with the Policy, the task of each sub-committee was to recommend to SCUR on whether a formal, independent review committee should be struck to conduct a full review. If a sub-committee was of the view that a full review of a specific research centre/institute was not warranted, it was further charged with recommending to SCUR on the continuance or termination of the research centre/institute.

Observations:

1. The review process followed that which is outlined in section 2.8 of the Policy, and involved a review of annual reports of each centre/institute as well as a report prepared by each research centre/institute director which contained:
 - A description of how and why the centre/institute has achieved or revised its original objectives; a detailed listing of its research and training accomplishments; a current membership list; and a detailed financial statement;
 - a five-year plan which identifies future research directions and development strategies;
 - letters indicating continued support for the research/centre institute from appropriate department heads and faculty/school deans/directors; and
 - the names of individuals who could provide external assessments of the research centre/institute.
2. The membership of this sub-committee was as follows:

Jason Leboe-McGowan (Chair), Professor, Department of Psychology
Associate Dean (Undergraduate Studies), Faculty of Arts

Todd Mondor, Professor, Department of Psychology
Acting Dean, Faculty of Graduate Studies/Acting Vice-Provost (Graduate Education)

Karalyn Dokurno, Former Executive at Large, Graduate Students' Association

3. The assessment of the sub-committee was as follows:

In our view, the Centre for Professional and Applied Ethics (CPAE) generally fulfills the objectives of a research centre as defined by the University of Manitoba's *Research Centres, Institutes and Groups Policy*. Under that policy, research centres must "focus and sustain research in specific areas and encourage research collaborations among disciplines and between Departments, Faculties and Schools", "provide unique training opportunities for students", and "serve as a valuable information source for the community at large." The CPAE also succeeds in fulfilling its particular mandate to "promote research, teaching and informed public awareness on issues of contemporary ethical concern".

Since 1985, the CPAE has provided an essential context for scholars across the University to collaborate on ethics research. The Centre's associates represent a range of disciplines, including History, English Literature, Sociology, Economics, Management, Political Studies, Philosophy, Medicine, Pharmacy, Kinesiology and Nursing. In organizing colloquia and public talks throughout the year, the Centre offers invaluable opportunities for faculty members, students, and members of the community to learn about and discuss contemporary advancements in the inter-disciplinary study of professional and applied ethics. The Centre provides research grants in support of faculty members' efforts to advance the state of knowledge on ethics and on topics of ethical concern. Since 2009, the Centre has also established a Research Cluster for researchers to share their ongoing projects on normative issues in social policy.

The CPAE provides guidance for the development and improvement of university courses on professional and applied ethics for teachers at the University of Manitoba and at other institutions, and for the Manitoba public school system. Executive members and affiliates of the CPAE provide frequent consultations about ethical issues to members of the community and often contribute their expertise in various forms of media, including radio, print, and television interviews.

The CPAE is committed to offer enriching educational opportunities for high school and university students. For example, the CPAE hosts an annual essay contest for high school students (the Glassen High School Ethics Competition), which attracts over 600 entries. With the Manitoba Association of Rights and Liberties (MARL), the CPAE organizes an annual philosophical debate competition (the Manitoba High School Ethics Bowl), in which 150 teachers and students compete for a chance to represent Manitoba at the North American Ethics Slam in North Carolina. Also with

MARL, the CPAE hosts an annual 'Ethics Slam' debate competition, involving teams drawn from the university and the off-campus community. Furthermore, with the University of Manitoba's Department of Philosophy, the CPAE organizes an annual student conference, during which honours undergraduate and graduate students present their research on topics related to ethics.

Through these activities, our assessment is that, overall, the CPAE succeeds in fulfilling both the general objectives defined by the University of Manitoba's Policy governing research centres and the particular mandate upon which the CPAE was founded. Nevertheless, we would like to note that the initial report that the CPAE submitted to SCUR in January 2017 was deficient in a number of ways. The Centre provided most of the additional information that we requested in a revised report submitted to SCUR in April 2017. However, some additional specifics that we requested about how the Centre provides unique research training opportunities for students remained absent from the report. The absence of this information led us to conclude that the CPAE should develop more focused and deliberate initiatives to enable students to gain research experience in the area of professional and applied ethics.

To clarify, there is no question that those affiliated with the CPAE provide excellent research training opportunities for students. The CPAE's commitment to students is also apparent from the Centre's involvement in hosting events for high school, undergraduate, and graduate students. However, based on the information included in the report, sub-committee members were not convinced that the CPAE is sufficiently engaged in initiating or facilitating "unique training opportunities for students". As indicated above, providing these student training opportunities is one of the core requirements for retaining status as a research centre at the University of Manitoba. Given this serious concern, we recommend that the CPAE be renewed only for a 3-year term, rather than the typical 5-year term. When the CPAE submits their report to SCUR at the end of this term, we urge the Centre to devote more attention to completing an activity report that more clearly identifies how it is fulfilling all of the required objectives of a University of Manitoba research centre. In doing so, we particularly direct the CPAE to address, in an explicit and detailed way, how the Centre provides unique training opportunities to undergraduate and graduate students. During the 3-year renewal period, we also consider it essential that the CPAE develop new initiatives that focus specifically on helping students acquire scholarly and research skills in the area of professional and applied ethics.

We are confident in the future health of the CPAE. Their five-year plan includes a goal for improving the physical infrastructure that supports the Centre and for funding Post-Doctoral Research Fellows. The Centre also plans to expand the number of their Research Affiliates and to further develop collaborative initiatives with several other University of Manitoba research centres and the Institute for the

Humanities. We are also pleased to note that the core endowment funds that support CPAE activities will be stable and sufficient for the foreseeable future. Thus, we have no reason for concern regarding the financial viability of the Centre for at least the next three years.

Recommendation:

THAT the *Centre for Professional and Applied Ethics* be renewed for a term of 3 years, from January 1, 2018 to December 31, 2020.



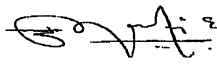
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MEMORANDUM

TO: Mr. Jeff Leclerc, University Secretary

FROM: Digvir Jayas, Vice-President (Research and International)
and Chair, Senate Committee on University Research 

DATE: October 30, 2017

SUBJECT: Periodic Review of Research Centres and Institutes: *University of Manitoba
Transport Institute (UMTI)*

Attached is the report on *University of Manitoba Transport Institute* conducted by the Senate Committee on University Research (SCUR), according to the Policy on Research Centres, Institutes, and Groups. The Committee met on October 12, 2017

Please include this report and recommendation on the next Senate agenda. Please feel free to contact me should you require any further information.

Thank you.

DSJ/nis
Encl.

Cc: Gady Jacoby, Acting Dean
Adolph Ng, Director

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses the report to Senate.

THE SENATE COMMITTEE ON UNIVERSITY RESEARCH
REPORT ON THE REVIEW OF THE
UNIVERSITY OF MANITOBA TRANSPORT INSTITUTE (UMTI)

Preamble:

1. The Policy for *Research Centres, Institutes and Groups*, stipulates that all research centres/institutes be reviewed by the Senate Committee on University Research (SCUR) on a periodic basis but not less than once every 5 years. Accordingly, and following the approval by Senate of this Policy, the Senate Committee on University Research established a schedule for the review of all research centres/institutes.
2. For each research centre/institute identified for review, a sub-committee of the Senate Committee on University Research was established. In accordance with the Policy, the task of each sub-committee was to recommend to SCUR on whether a formal, independent review committee should be struck to conduct a full review. If a sub-committee was of the view that a full review of a specific research centre/institute was not warranted, it was further charged with recommending to SCUR on the continuance or termination of the research centre/institute.

Observations:

1. The review process followed that which is outlined in section 2.8 of the Procedure, and involved a review of annual reports of the centre/institute as well as a report prepared by the research centre/institute director which contained:
 - (a) A description of how and why the centre/institute has achieved or revised its original objectives; a detailed listing of its research and training accomplishments; a current membership list; and a detailed financial statement;
 - (b) a five-year plan which identifies future research directions and development strategies;
 - (c) letters indicating continued support for the research/centre institute from appropriate department heads and faculty/school deans/directors; and
 - (d) the names of individuals who could provide external assessments of the research centre/institute.
2. The membership of this sub-committee was as follows:

Chair: Dr. John Doering
Member: Dr. Michelle Porter
Member: Dr. Andrew Halayko

3. As part of the review process, the sub-committee submitted four questions of clarification to the UMTI Director. Relevant content from the responses, which were fulsome and engaging, is included in the sub-committee assessment. The specific additional questions that were posed to the UMTI Director were:

- *The publications and research accomplishments listed in the University of Manitoba Transport Institute (UMTI) Renewal Proposal seem to be primarily those attributable to yourself. Did you collect and collate the CVs of the Institute's Associates?*
- *There doesn't appear to be representation from the external community on the Advisory Board. Typically, Advisory Boards are populated with external members. The UMTI is populated almost exclusively with internal (i.e., Asper) members. Why? Please explain the rationale?*
- *The mission statements of the UMTI have a tendency to focus on scholarly research, which is not inappropriate for an academic institute. What is less clear is the impact of the UMTI's scholarly activity on policy and practice. Can you comment, please.*
- *Can you please outline the process used to assemble the 5-year plan.*

4. The assessment of the sub-committee is as follows:

(a) The extent to which the research centre/institute has fulfilled:

- (i) The general objectives of research centre/institutes as stipulated under the Policy:

The University of Manitoba Transport Institute (UMTI), herein after referred to as simply UMTI, was created in 1984 and has operated on a continuous basis since its inception.

Staff in UMTI include a Director, a Research Assistant and Administrator (0.5 FTE), and another Research Assistant (0.5 FTE). In addition, there are twelve (12) Associates who are based at the University of Manitoba and fifteen (15) Associates who are not based at the University of Manitoba.

An Advisory Board, consisting of eight (8) faculty members from different departments within the Asper School as well as a faculty member from the Centre for Earth Observation Sciences, meets twice per year. The Advisory Board advises the UMTI and its Director on : i) setting UMTI's overall directions and strategies as per its stated missions and objectives; ii) UMTI's promotion and development of scholarly research-related activities; iii) the facilitation of academic connections and relationships with scholars inside and outside the University of Manitoba in areas of research deemed beneficial to UMTI, such as transport, logistics, and supply chain management; iv) searching external agency funding in areas of research of relevance to UMTI, such as transport, logistics, and supply chain management; and v) all education and training-related activities developed and operated by UMTI.

UMTI has satisfied the majority of the expectations of a research institute, namely, it: i) has clearly identified goals and objectives; ii) has some degree of permanence, transcending collaboration on a particular, limited project; iii) brings together scholars from different disciplines and/or areas of specialization within a particular

discipline; iv) maintains high levels of research productivity; v) fosters the training of future researchers, especially in regard to research skills; vi) attracts post-doctoral fellows, visiting professors, and other scholars; vii) cooperates with scholars at other universities and/or institutions; and viii) seeks external funding in order to operate on a cost recovery basis.

The sub-committee did question that publications and research accomplishments “seem to be primarily those attributable to [the Director]” and asked whether CVs of all the Institute’s Associates were collated. In response it was clarified that “We did collect and collate the CVs of UMTI Associates.” Furthermore it was emphasized that “only publications that involve COLLABORATIONS between UMTI staff and associates appear in the renewal proposal.” Several publications that do not involve the UMTI Director were highlighted (eg. Jiang, d’Alfonso, and Wan (published in *Transportation Research Part B: Methodological*); and Prentice and Lau (published in *International Journal of Aviation Management*). It was also noted that UMTI is relatively small (3 FT members, including the Director, and 20+ associates), thus most of the research accomplishments can be attributable to the Director (Adolf Ng). Making “UMTI much more comprehensive” was indicated to be a priority, and examples of significant director-independent activities were provided (eg. Xun Jiao, Mingyan Yu and Yufeng Lin (student associate) involvement in a “Genome Canada project on Arctic shipping”).

(ii) Its specific objectives, as indicated on its establishment:

Determinants of specific objectives were outlined in a response to sub-committee questions. The UMTI Director indicated that specific objectives were, in part, formulated based on “the last assessment of UMTI in 2015, [in which] the committee raised serious issues about the scarcity of scholarly publications by UMTI. In this case, my first task as the Director of UMTI was to solve this problem and made UMTI to become a research institute with real substance.” Furthermore, with “the focus of UMTI activities in 2016 and early 2017 ... the research base and capacity being built up and consolidated, UMTI will put more emphasis on knowledge dissemination to policymakers and practitioners. With adequate funding, in the next five years, UMTI plans to build consortiums/networks that can bring scholars, policymakers, and practitioners together to solve issues that are critical to Manitoba, Canada, and the world”.

Further clarity was also provided on how the 5-year plan for UMTI was prepared. This involved UMTI staff identifying “hot” areas believed to be pivotal to transportation and logistics in Manitoba, Canada, and the world. Advisory Board members and UMTI associates and student associates were invited to “provide suggestions and what UMTI can/should achieve in the coming years.” “The draft plan was then circulated and discussed among the Advisory Board Members. After their approval, it was sent to the then Dean of Asper (Michael Benarroch) for his review and approval.” A primary consideration was that the direction and activities identified could be well-supported by available and potential funds in the near future.

This context identified the missions of UMTI to be:

1. *Be recognized as a leading institute that undertakes high quality scholarly research in transportation and logistics.*
2. *Be recognized as a leading institute that plays a significant role in defining the future direction in transportation and logistics research.*
3. *Be recognized as a leading institute of collaborative scholarly research of faculty members, researchers, and students in transportation and logistics.*
4. *Be recognized as a leading institute that actively involves professional stakeholders into high quality scholarly research.*
5. *Facilitate the transfer of knowledge and findings generated from such high-quality research to the professional communities so as to solve real problems in policymaking and industries in transportation and logistics.*
6. *Train students to become competent scholarly researchers, policymakers, and industrial practitioners in transportation and logistics in Manitoba, Canada, and the world.*
7. *Train policymakers and industrial practitioners in transportation and logistics.*

[This SCUR sub-committee recognizes that these are objectives of UMTI and not a “mission” as stated in the information it provided.]

To achieve these objectives, UMTI proposes to:

1. *Publish high quality scholarly works, for instance (but not limited to), internationally well-recognized scholarly journal papers, scholarly books published by internationally well-recognized scholarly publishers, peer-reviewed papers accepted by internationally well-recognized conferences. Also, UMTI will prepare high quality proposals competing for competitive funds for research projects.*
2. *Edit internationally well-recognized scholarly journals and edit special issues in internationally well-recognized scholarly journals.*
3. *Actively work and collaborative with faculty members, researchers, and students between the Department of Supply Chain Management, Asper School of Business, University of Manitoba, and/or the international scholarly communities in transportation and logistics on publishing high quality scholarly works and grant proposals. These include co-authorships of publications, joint application of research grants, and co-organization of scholarly conferences.*
4. *Organize conferences and workshops on transportation and logistics. UMTI will actively involve scholars, policymakers, and industrial stakeholders throughout the bidding and organizing process (e.g., sponsorships, committee members).*
5. *The outputs of the scholarly conferences organized by UMTI will be made freely (or at a reasonable cost) available to policymakers and industrial practitioners. Also, UMTI will publish newsletters and short research communications and distribute them to policymakers and industrial*

stakeholders, so as to keep them informed on the scholarly research outputs of UMTI.

- 6. Actively involved in the supervision and training of graduate students, either as chief or co-supervisors. During their studies, we make sure that they become competent researchers through various means (e.g., publication of journal papers). Also, we are working with two Chinese universities in organizing an international study tour that will bring 23 Chinese students and 10 Asper students to visit UMTI, Asper School of Business, and the University of Manitoba. During the tour, the students will learn various business, management, and research techniques so as to equip them to develop effective strategies in solving practical business problems. In turn, it promotes exchanges between Canadian and Chinese students.*
- 7. Organize the Certificate in Logistics (C-Log) Program, a well-recognized professional program that has been offered by UMTI since 1997. Students who have completed the CLog Program will lead to the award of the Certified Logistics Professional Designation (CCLP) by the Canadian Institute of Transport and Traffic.*

- (b) Highlight past research training and funding of the centre. Discuss the appropriateness of its proposed five-year plan for future research directions and development strategies:

Past training includes:

- 2 MSc Supply Chain Management students have completed their training at UMTI
- 3 Supply Chain Management students are enrolled in its MSc program
- 10 students have graduated from the Certificate in Logistics (CLog)
- 108 students are enrolled in the CLog program

The major scholarly activities noted for the next five years include:

- Continue its UMTI Distinguished Speakers' Series
- Continue to invite Visiting Scholars
- Establish the UMTI Book Series in Transportation and Logistics
- Organize Conferences and Workshops in Transportation and Logistics
- Continue to organize the Certificate in Logistics (CLog) Program
- Organize the International Study Tour

These activities don't seem sufficiently big enough to achieve the objectives stated above. A more systematic and strategic outline of program structure, trainee supports and a plan for recruiting and training local, national and international trainees should be more fully developed. Moreover, targets for training and funding should be identified so as to better enable assessment of progress and success.

- (c) Its current and projected financial viability

UMTI has already secured 950k\$ in funding for the next five years. These are sufficient funds to operate for the next five years.

Recommendation:

THAT the *University of Manitoba Transport Institute (UMTI)*, be renewed for a term of 5 years, from January 1, 2018 through to December 31, 2022.