

Senate
Senate Chamber
Room 245 Engineering Building
WEDNESDAY, December 6, 2000
1:30 p.m.

AGENDA

I MATTERS TO BE CONSIDERED IN CLOSED SESSION

**1. Report of the Senate
 Committee on Honorary Degrees**

This report will be distributed to members of Senate at the meeting. Documentation will be available for examination by eligible members of Senate the day preceding the Senate meeting.

The Senate Executive Committee recommends that the report be considered in closed session at the beginning of the Senate meeting.

II MATTERS RECOMMENDED FOR CONCURRENCE WITHOUT DEBATE

- | | | |
|-----------|--|-----------------|
| 1. | <u>Proposed Academic Schedule 2001-2002</u> | Page 17 |
| 2. | a) Report of the Senate Committee
 <u>on Curriculum and Course Changes: Part A</u> | Page 23 |
| | b) Report of the Senate
 Planning and Priorities Committee
 on a Proposal by the
 Faculty of Agricultural and Food Sciences
 to Offer a Cooperative Education Option
 <u>in the Degree and Diploma Programs</u> | Page 147 |
| | c) Report of the Senate
 Planning and Priorities Committee
 on the Faculty of Science Proposal
 <u>to Introduce an Optional Minor</u> | Page 148 |
| 3. | Reports of the Faculty
Council of Graduate Studies on
<u>Course Proposals/Modifications/Deletions</u> | Page 149 |
| 4. | <u>Revisions to Faculties' Academic Regulations</u> | |
| | a) <u>Arts</u> | Page 164 |
| | b) <u>Nursing</u> | Page 168 |

- c) Pharmacy re Academic Regulations Page 170
- d) Pharmacy re Professional Unsuitability Bylaw Page 177
- e) Physical Education and Recreation Studies Page 186

III MATTERS FORWARDED FOR INFORMATION

- 1. Report of the Senate Committee on Awards Page 187
- 2. Libraries Plan to Increase Fines Page 202 -
- 3. Report of the Faculty Council of Graduate Studies on Administrative Changes to the Interdisciplinary Masters Program in Native Studies Page 204

IV REPORT OF THE PRESIDENT

- 1. President's Report: 21 November 2000 Page 206

V QUESTION PERIOD

Senators are reminded that questions shall normally be submitted in writing to the University Secretary no later than 10:00 a.m. of the day preceding the meeting.

VI CONSIDERATION OF THE MINUTES OF THE MEETING OF NOVEMBER 1, 2000

VII BUSINESS ARISING FROM THE MINUTES

VIII REPORTS OF THE SENATE EXECUTIVE COMMITTEE AND THE SENATE PLANNING AND PRIORITIES COMMITTEE

- 1. Report of the Senate Executive Committee Page 219
- 2. Report of the Senate Planning and Priorities Committee

The Chair will make an oral report on the Committee's activities.

**IX REPORTS OF OTHER COMMITTEES OF SENATE,
FACULTY AND SCHOOL COUNCILS**

1. **Report of the Faculty
Council of Science on a Proposal for a
Bachelor of Science Four Year Major in Biology** **Page 220**
 - a) **Report of the Senate Committee
on Curriculum and Course Changes** **Page 222**
 - b) **Report of the Senate
Planning and Priorities Committee** **Page 224**
2. **Report of the Faculty
Council of Arts on a Proposal
for a Minor in Catholic Studies** **Page 226**
 - a) **Report of the Senate Committee
on Curriculum and Course Changes** **Page 235**
 - b) **Report of the Senate
Planning and Priorities Committee** **Page 238**
3. **Report of the Faculty
Council of Nursing on a Proposal
for a Baccalaureate Degree in Midwifery** **Page 239**
 - a) **Report of the Senate Committee
on Curriculum and Course Changes** **Page 259**
 - b) **Report of the Senate
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4. **Report of the Faculty
Council of Engineering on a Proposal
for a Manufacturing Engineering Program** **Page 265**
 - a) **Report of the Senate Committee
on Curriculum and Course Changes** **Page 268**
 - b) **Report of the Senate
Planning and Priorities Committee** **Page 272**
 - c) **Comments of the Senate Executive Committee** **Page 274**

- 5. a) Report of the Senate Committee
on Curriculum and Course Changes: Part B Page 275
- b) Report of the Senate
Planning and Priorities Committee Page 281
- 6. Final Report of the *Ad Hoc*
Senate Committee on Committees Page 283
- 7. Report of the Senate
Committee on Nominations

This report will be available at the meeting.

X ADDITIONAL BUSINESS

XI ADJOURNMENT

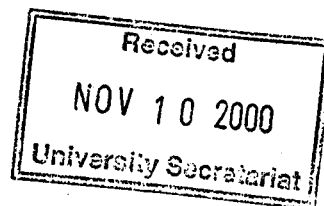
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UNIVERSITY
OF MANITOBA

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Student Records Office



400 University Centre
Winnipeg, Manitoba
Canada R3T 2N2
Telephone: (204) 474-9423
Fax: (204) 275-2589
E-mail: student_records@umanitoba

Date: November 10, 2000

Memo To: Ms. B. Sawicki, University Secretariat

From: Richard Levin, Director Student Records 

Re: Proposed Academic Schedule for 2000-2001

Please find attached the Proposed Academic Schedule for 2000-2001 as reviewed by each Faculty and School, the Director of Admissions and Rabbi Stern for distribution to Senate Executive.

RL:gcr
att.

Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

File:H:\wpdata\november.00

Academic Schedule for 2001-2002

Regular Session September 2001 - April 2002

Spring Intersession April 30 - June 22, 2001 • Summer Evening April 30 - August 4, 2001 • Summer Day July 3 - August 25, 2001

MARCH 2001

March 1 Thursday Last date for receipt of applications to Environmental Design, Interior Design, Medical Rehabilitation (including Physical Therapy degree completion students), Nursing (two year Baccalaureate Program for R.N.s), Pharmacy and Social Work. (See note 1 on final page)

Last date for receipt of applications in the Faculty of Graduate Studies for Canadian applicants applying for May 2001*.

Last date for the receipt of applications to the two-year After Degree Bachelor of Education program including the supplementary application form, the statement of interest in teaching and official transcript.

March 12 - 16 Monday - Friday Mid-term break for first- and second-year Medicine.

APRIL 2001

April 2 Monday Last date for receipt of applications for admission (including complete and official documentation) to the Faculty of Arts for 2001 Intersession, Summer Evening and Summer Day courses.

Last date for receipt of applications for admission to the Post Baccalaureate Certificate in Education for 2001 Intersession and Summer Evening courses

NOTE: Consult the 2001 Summer Session Calendar regarding deadline dates for admission to University 1, Science, and the Continuing Education Division (General Studies), for courses offered during Intersession, Summer Evening and Summer Day.

Cardiorespiratory clinical education commences for second-year Physical Therapy students.

Last date for reports on theses/practica (and the corrected copies of the theses/practica), comprehensive examinations and M. Eng. Projects to be submitted to the Faculty of Graduate Studies by students expecting to graduate in May 2001.

April 7 Saturday Language reading tests for graduate students.

April 13 GOOD FRIDAY University closed. No classes or examinations.

April 16 Monday Summer Fieldwork 1 commences for second-year Occupational Therapy students.

Basic Fieldwork 1 commences for first-year Occupational Therapy students.

April 27 Friday Last date for registration in Intersession and Summer Evening courses without late registration fee. Last date to register and pay fees for Challenge for Credit where the final examination is held during the Intersession/first term Summer Evening exam series in June.

April 30 Monday Summer Internship commences for second and third-year Physical Therapy students.

Summer Fieldwork 2 begins for third-year Occupational Therapy students

Classes begin in Spring Intersession and Summer Evening.

April 30 - May 3 Monday - Thursday Auditions for prospective Bachelor of Music degree students.

MAY 2001

May 1 Tuesday Last date for receipt, by the Faculty of Graduate Studies, for applications and recommendations from graduate departments for Canadian applicants applying for July 2001*.

Last date for receipt of applications for final consideration for the integrated Human Ecology/Education program, the integrated Music/Education program, Management, Nursing (four-year program only), Physical Education and Recreation Studies and for direct admission to Music, Fine Arts and Engineering plus internal and external transfers to Engineering in the 2001-2002 Regular Session. (See note 1 on final page.)

Recommended date for submission of undergraduate applications to University 1. (see also July 4, 2001)

Deadline for receipt of applications for University 1, Arts, Science and Continuing Education (General Studies) from international students applying from outside Canada and the United States.

Last date for application for June supplemental examinations in Agriculture Diploma.

May 4 Friday Medicine 4 clerkship closes.

May 5 Saturday Annual traditional graduation Powwow in honour of Aboriginal graduates.

May 8 - 9 Tuesday - Wednesday Medical Council of Canada examinations.

May 11 Friday Basic Fieldwork 1 ends for first-year Occupational Therapy students.

Last day of classes for first- and second-year Medicine.

May 21 Monday VICTORIA DAY University closed, no classes or examinations.

May 25 Friday Summer Fieldwork 1 ends for second-year Occupational Therapy students.

May 30 - 31 Wednesday - Thursday One Hundred and Twenty-Second Annual Convocation.

JUNE 2001

June 1 Friday Last date for receipt of applications for supplemental examinations in third-year Medical Rehabilitation.

Supplemental examinations in Agriculture Diploma.

Last date for receipt of applications for admission to the Post Baccalaureate Certificate in Education program for 2001 Summer Day Courses.

Last date for receipt of official documentation (e.g. transcripts) from applicants to Dental Hygiene for the 2001-2002 Regular Session.

Deadline date for receipt of complete and official university transcripts requested by the Enrolment Services Admissions Office for the Faculty of Social Work (except Distance Education Students - See June 8).

Last date for receipt of applications for supplemental examinations in first- and second-year and Physical Therapy degree completion programs of Medical Rehabilitation.

Last date for submission of final official transcript for any course work completed in the 2001-2002 academic year from applicants to the 2001-2002 After Degree B.Ed. program.

June 4 Monday Last date to register and pay fees for Challenge for Credit where the final examinations are held during the Summer Evening exam series in August.

June 5 Tuesday Convocation ceremony, College Universitaire de Saint-Boniface.

June 8 Friday Deadline for submission of complete and official university transcripts requested by the Enrolment Services, Admissions Office for the Faculties of Social Work (Distance Education), Medical Rehabilitation, Environmental Design, Interior Design and Management applicants whose qualifying year is complete. (see also July 27)

Summer Fieldwork 2 ends for third-year Occupational Therapy students.

June 11 Monday Deadline for receipt by Faculty of Graduate Studies of annual progress reports for masters' and Ph.D. students.

June 15 Friday Last date for receipt by the Faculty of Graduate Studies for applications and recommendations from graduate departments for International applicants applying for January 2002*.

June 19 Tuesday Classes end in Spring Intersession.

June 22 Friday Exams end in Spring Intersession.

June 29 Friday Last day for registration in Summer Day courses without late registration fee.

JULY 2001

July 2 Monday HOLIDAY IN LIEU OF CANADA DAY. University closed. No classes or examinations.

Last date for receipt by the Faculty of Graduate Studies for applications and recommendations from graduate departments for Canadian applicants applying for September 2001*.

July 4 Wednesday Last date for receipt of undergraduate applications by mail for admission to University 1, the Continuing Education Division (General Studies) and to the Faculty of Arts for the 2001-2002 Regular Session. (See notes below and note 1 on final page)

Deadline for receipt of applications for University 1, Arts, Science and Continuing Education Division (General Studies) from international students residing within Canada and the United States.

NOTE: Applications to the Faculty of Arts will be accepted in-person with complete official documentation up to August 3. While applications for admission to University 1 and Continuing Education Division (General Studies) with complete official documentation will continue to be received in-person up to August 31, assessment of possible transfer credit may not be completed prior to registration.

Last date for receipt of applications for final consideration for internal and external transfers to the Faculties of: Agricultural and Food Sciences (Degree), Human Ecology and Science for the 2001-2002 Regular Session.

NOTES:

— Applications to transfer to the Faculty of Science after July 4 may be considered individually, if they are accompanied by complete official documentation.

— Application to the Faculties of Arts and Science from students applying as visiting or special students, with complete documentation, will continue to be accepted until August 31.

— Manitoba high school applicants who apply between May 30 and July 4 must make their own arrangements for high school records to be delivered to the Enrolment Services, Admissions Office, by July 4.

Last date for receipt of applications for autumn supplemental examinations in those faculties and schools offering these, except Medical Rehabilitation. Arrangements for writing at approved off campus centres must be completed by this date.

Last date to register and pay fees for Challenge for Credit, where the final examinations are held during the Summer Day exam series in August.

Classes begin in Summer Day.

July 9 Monday Last date for the receipt of registration forms by mail from students outside of North America (except new students in the Continuing Education Division (General Studies)) wishing to take Distance Education courses commencing in September. (See note 1 on final page)

Last date for receipt in Graduate Studies Office of Ph.D. theses (for distribution) from students expecting to graduate in October.

July 13 Friday Last date for receipt of final and official documentation from applicants to undergraduate programs for which May 1 and July 4 were the deadlines for making application (except the undergraduate programs indicated in June 8 above and in August 31 following).

Last date for distribution of Master's theses/practica (to examining committee) by students expecting to graduate in October.

July 16 Monday Last date for receipt of applications for admission to the Agriculture Diploma program.

July 27 Friday Deadline for submission of complete and official transcripts from Management applicants whose qualifying year is now complete.

July 30 - August 3 Monday - Friday Supplemental exams in Dentistry and Dental Hygiene.

AUGUST 2001

August 1 Wednesday Last date for receipt of applications for admission to the Post Baccalaureate Certificate in Education program for the 2001-2002 Regular Session.

August 2 Thursday Classes end in Summer Evening.

Last date for receipt by the Student Records Office of Graduation Application Forms from students expecting to graduate in October.

Last date for in person applications for admission to the Faculty of Arts with complete official documentation.

August 4 Saturday Exams end in Summer Evening.

August 6 Monday CIVIC HOLIDAY University closed. No classes or examinations.

August 13 Monday First term begins in third- and fourth-year Dentistry.

August 20 Monday First term begins in first- and second-year Dentistry. First term begins in first- and second-year Dental Hygiene.

Orientation begins for first-year Medicine.

August 22 Wednesday Classes end in Summer Day.

Inaugural exercises for Faculty of Medicine. B.Sc.(Med.) presentations begin in Faculty of Medicine.

August 23 - 24 Thursday - Friday In-person registration in Medicine.

August 25 Saturday Exams end in Summer Day.

August 27 Monday First day of classes in first-, second- and third-year Medical Rehabilitation.

Classes begin in first-, second- and third-year Medicine.

Classes begin in fourth-year Pharmacy.

Last date for reports on theses/practica (and the corrected copies of the theses/practica), comprehensive examinations and M. Eng. Projects to be submitted to the Faculty of Graduate Studies by students expecting to graduate in October of 2001.

August 31 Friday Last date for in-person undergraduate applications for admission to University 1, Science and Continuing Education Division (General Studies) with complete official documentation.

Last date for application to the Faculty of Science (with complete documentation) for the visiting or special student categories.

SEPTEMBER 2001

September 3 Monday LABOUR DAY University closed. No classes or examinations.

September 4 Tuesday Orientation for first-year Social Work students.

Field Orientation for second and third-year Social Work students.

Classes begin in Law.

Registration in Law not permitted after this date without the permission of the dean.

Basic Fieldwork 2 begins for second-year Occupational Therapy students.

September 4 - 5 Tuesday - Wednesday University 1 Orientation

Note: University 1 students are reminded that these orientation sessions are part of their academic program and attendance is required.

September 5 Wednesday Last day to register and pay fees without penalty for all programs except the Agriculture Diploma (September 14).

Social Work classes begin for first-year students.

Field Orientation for second and third-year Social Work students.

Last date for registration and fee payment without fee penalty for students wishing to take Distance Education Courses commencing in September. For further details, see the 2001-2002 Distance Education Program Guide.

September 6 Thursday Classes begin in most Faculties and Schools (including evening classes) except Education courses in the Bachelor of Education and first-year Social Work students. (See *Registration Guide*)

September 6 - 19 Thursday - Wednesday Period for late registration and registration revisions in all programs except Agriculture Diploma and Education courses in the Bachelor of Education (See *Registration Guide*). A financial penalty is assessed on all late registrations during this period.

September 8 Saturday Language reading tests for graduate students.

September 14 Friday Orientation in Agriculture Diploma.

Last date to register for Agriculture Diploma without financial penalty.

September 17 Monday Classes begin in Agriculture Diploma.

September 19 Wednesday Registration revisions and late registration in courses other than those offered in second term only, including Challenge for Credit, are not permitted after this date except in Agriculture Diploma (See September 26) and Education courses in the Bachelor of Education (see *Registration Guide*).

First Term and Full courses dropped after this date are recorded as Voluntary Withdrawals. (See refund schedule in the *Registration Guide* for financial implications.)

Last date for registration revisions in Law.

September 21 Friday Final date for receipt of deferred fee payments. Registrations for all courses are cancelled for any student having an unpaid balance after this date.

September 26 Wednesday Last date for registration revisions in first term electives in Agriculture Diploma. First term and full courses dropped from the Diploma program after this date are recorded as Voluntary Withdrawals. (See refund schedule for financial implications).

September 28 Friday Medicine 3 (Link Period) ends.

Basic Fieldwork 2 ends for second-year Occupational Therapy students.

OCTOBER 2001

October 1 Monday Last date for receipt of internal and external transfer applications for admission (including complete documentation) to the Faculty of Arts from applicants wishing to take Distance Education courses starting in January 2002.

NOTE: Applications for admission to the Faculty of Arts to take on-campus courses starting in January 2002 are not permitted.

Last date for application to write examinations at a location other than the University of Manitoba in courses ending in December taken through the Distance Education Program by independent study, group-based study or net-based study.

Clinical Clerkship in Medicine begins.

October 8 Monday THANKSGIVING University closed. No classes or examinations.

October 16 Tuesday Evening of Excellence

October 17 Wednesday Financial Aid and Awards: Entrance scholarship presentation and reception.

October 18 Thursday Thirty-Fourth Annual Fall Convocation.

October 26 Friday First term lectures end for fourth-year Pharmacy.

Last date for receipt in Graduate Studies Office of Ph.D. theses (for distribution) from graduate students expecting to graduate in February.

October 29 - November 2 Monday - Friday Examination period for first term of fourth-year Pharmacy.

NOVEMBER 2001

November 1 Thursday Last date for receipt of applications for mid-session (second term) transfer to the Faculty of Human Ecology.

Last date for receipt by mail of applications for admission to University 1, Science and the Continuing Education Division (General Studies) for second term credit courses. (See note 1 on final page).

NOTE: Applications for admission to University 1, Science, and the Continuing Education Division (General Studies) with complete official documentation, are permitted (in-person) until December 11, 2001.

Last date for the receipt of registration forms and fee payment by mail from students outside of North America wishing to take Distance Education courses commencing in January. For further details, see the 2001-2002 Distance Education Program Guide.

Last date for distribution of masters' theses/practica (to examining committee) by students expecting to graduate in February 2002.

Last date for receipt by the Faculty of Graduate Studies for applications and recommendations from graduate departments for Canadian applicants applying for January 2002*.

November 5 Monday Orientation for experiential rotations for all fourth-year Pharmacy students.

November 12 MONDAY HOLIDAY IN LIEU OF REMEMBRANCE DAY University closed. No classes or examinations.

November 13 Tuesday First term experiential rotations begin in fourth-year Pharmacy.

November 14 Wednesday Last date for Voluntary Withdrawal from all first term half-courses in all Faculties and Schools (except Education courses in the Bachelor of Education - see *Registration Guide*). (See refund schedule in *Registration Guide* for financial implications). Note that some courses have irregular voluntary withdrawal and refund schedules. See Faculty chapters of the *Registration Guide*. **UMREG telephone registration closes at 5:30 p.m.**

Last date for the receipt of applications for admission to Medicine for the 2002-2003 Regular Session.

November 15 Thursday Last date for receipt by the Faculty of Graduate Studies for applications and recommendations from graduate departments for International applicants applying for May and July 2002*.

November 30 Friday Last date for receipt of University 1, Engineering and Nursing (off-campus) applications for consideration for advanced early admission for Manitoba/Northwestern Ontario high school applicants.

Last date for receipt of applications for admission to the Post Baccalaureate Certificate in Education program for second term courses

Last day of lectures in Agriculture Diploma.

DECEMBER 2001

December 3 Monday Last day of lectures in third-year Dentistry.

December 3 - 10 Monday - Monday Examination period in Agriculture Diploma.

December 5 Wednesday Last day of lectures in Agricultural and Food Sciences (degree), Architecture (including Interior Design and Environmental Design), Arts, Education except Education courses in the Bachelor of Education (see *Registration Guide*), Engineering, Art, Human Ecology, Management, Music, Nursing, Pharmacy (except for fourth-year), Physical Education/Recreation Studies, Science, Social Work and University 1.

December 5 - 19 Wednesday - Wednesday Examination period for third-year Dentistry and Dental Hygiene.

December 6 Thursday On this date in 1989, 14 women were murdered at l'École Polytechnique, Université de Montréal. The university remembers these women at memorial events scheduled on or near this date.

December 6 - 19 Thursday - Wednesday

Examination period. Students are reminded that they must remain available until all examination and test obligations have been fulfilled.

December 7 Friday Last day of lectures in Law.

Field instruction ends in second- and third-year Social Work.

Last day of lectures in first- second- and fourth-year Dentistry, and all years in Dental Hygiene.

December 8 Saturday Examinations begin in Law.

December 10 - 19 Monday to Wednesday Examination period for first, second and fourth year Dentistry and Dental Hygiene.

December 11 Tuesday Last date for application (in-person) for admission to University 1 and the Continuing Education Division for second term credit courses. Applicants must provide complete official documentation at the time of application.

December 14 Friday Medical Rehabilitation closes (all years).

First Term experiential rotations end in fourth-year Pharmacy.

Last day of lectures in Medicine (first- and second-year).

December 19 Wednesday End of examinations and first term.

Clinics end in third and fourth-year Dentistry.

December 20 Thursday Medicine 4 Clerkship closes until January 2.

JANUARY 2002

January 2 Wednesday Lectures resume in all Faculties and Schools (except fourth-year Pharmacy).

Medicine 4 Clerkship resumes.

Field instruction begins in second- and third-year Social Work.

Neurogeriatrics Clinical Education begins for third-year Physical Therapy students.

Last date for reports on theses/practica (and the corrected copies of the theses/practica), comprehensive examinations and M. Eng. Projects to be submitted to the Faculty of Graduate Studies by students expecting to graduate in February of 2002.

Last date for application for January supplemental examinations for Agriculture Diploma.

January 2 - 15 Wednesday - Tuesday Period for registration and registration revisions in second term half-courses in all programs except Agriculture Diploma (See January 11).

January 3 Thursday Supplemental examinations for Agriculture Diploma.

January 5 Saturday Language reading tests for graduate students.

January 7 Monday Second term experiential rotations begin in fourth-year Pharmacy.

Advanced fieldwork begins in third-year Occupational Therapy.

January 11 Friday Last date for registration and/or registration revisions in Agriculture Diploma. Second term courses dropped from the Agriculture Diploma after this date are recorded as Voluntary Withdrawals.

January 15 Tuesday Last date for registration in second term half courses, including Challenge for Credit, and/or registration revisions in all programs except the Agriculture Diploma (See January 11) and Education courses in the Bachelor of Education (see *Registration Guide*).

Final date for receipt of second term and full courses fee payments.

Last date for registration for students wishing to take Distance Education courses commencing in January. For further details, please consult the 2001-2002 Distance Education Program Guide.

Second term and full courses dropped after this date from any program except the Agriculture Diploma and Education courses in the Bachelor of Education (see *Registration Guide*). are recorded as Voluntary Withdrawals. (See *Registration Guide Refund Schedule* for financial implications.)

Last date for receipt by the Faculty of Graduate Studies for applications and recommendations from graduate departments for International applicants applying for September 2002*.

January 21 Monday Registrations for second term and full courses are cancelled for any student having an unpaid balance after this date.

January 22 Tuesday Last date for receipt of applications for admission to Dentistry for the 2002-2003 Regular Session.

FEBRUARY 2002

February 1 Friday Last date for receipt of applications for early consideration to University 1, Engineering, Music and Fine Arts for the 2002-2003 Regular Session.

Last date for receipt of applications for admission to Dental Hygiene and Law.

Last date for application to write examinations at a location other than the University of Manitoba in courses ending in April taken through the Distance Education program by independent study, group-based study or net-based study.

February 4 Monday Last date for receipt in Graduate Studies Office of Ph.D. theses (for distribution) from students expecting to graduate in May of 2002.

Auditions for prospective Bachelor of Music degree students.

February 8 Friday Second term experiential rotations end in fourth-year Pharmacy.

February 11 Monday Second term lectures begin in fourth-year Pharmacy.

February 11 - 15 Monday - Friday MID-TERM BREAK No classes or examinations, except for Medicine, fourth-year Pharmacy, second-year Occupational Therapy and third-year Occupational Therapy and Physical Therapy students.

February 15 Friday Advanced Fieldwork ends for third-year Occupational Therapy students.

February 18 Monday Last date for distribution of masters' theses/practica (to examining committee) by students expecting to graduate in May of 2002. Selected Studies Block begins for third-year Occupational Therapy students.

February 18 - February 22 Monday - Friday Mid-Term Break for second-year Occupational Therapy.

February 25 Monday Intermediate Fieldwork begins for second-year Occupational Therapy students.

February 25 - March 1 Monday - Friday Mid-Term Break for third-year Physical Therapy.

MARCH 2002

March 1 Friday Last date for receipt of applications to Environmental Design, Interior Design, Medical Rehabilitation (including Physical Therapy degree completion students), Nursing (Two-Year Baccalaureate Program for R.N.s), Pharmacy and Social Work. (See note 1 on final page)

Last date for the receipt of applications to the Two-Year After-Degree Bachelor of Education Program from candidates holding a degree including the supplementary application form, the statement of interest in teaching and official transcript.

Last date for receipt by the Faculty of Graduate Studies for applications and recommendations from graduate departments for Canadian applicants applying for May 2002*.

March 5 - Tuesday Last date for Voluntary Withdrawal without academic penalty from full courses and second term half-courses for students in the Agriculture Diploma. (See refund schedule for financial implications).

Directed studies block begins for third-year Physical Therapy students.

March 11 - 15 Monday - Friday Mid-Term break for first- and second-year Medicine.

March 15 Friday Last date for Voluntary Withdrawal from full courses and second term half-courses in all faculties and schools (except students in the Agriculture Diploma, see March 5; and Education courses in the Bachelor of Education see *Registration Guide*). See refund schedule in the *Registration Guide* for financial implications. **NOTE: Some courses have irregular voluntary withdrawal and refund schedules. See the Faculty chapters of the Registration Guide. UMREG telephone registration closes at 5:30 p.m.**

March 22 Friday Last day of lectures in Agriculture Diploma.

Last day of lectures in third-year Pharmacy.

March 25 Monday Musculoskeletal Clinical Education begins for second-year Physical Therapy students.

March 25 - March 28 Monday - Thursday Examination period for third-year Pharmacy.

March 25 - April 2 Monday - Tuesday Final examinations in Agriculture Diploma.

March 29 Good Friday University closed. No classes or examinations

March 30 Saturday Language reading tests for graduate students.

APRIL 2002

April 1 Monday Last date for reports on theses/practica (and the corrected copies of the theses/practica), comprehensive examinations and M. Eng. Projects to be submitted to the Faculty of Graduate Studies by students expecting to graduate in May of 2002.

Last date for receipt of applications (including all complete and official documentation) to the Faculties of Arts and Science for 2002 Intercession, Summer Evening and Summer Day courses. See the *Registration Guide* for dates and information about transiting from University 1 to Arts and Science.

Last date for receipt of application for admission to the Post Baccalaureate Certificate in Education program for the 2002 Intercession and Summer Evening courses

NOTE: Consult the 2002 Summer Session Calendar regarding deadline dates for admission to University 1 and the Continuing Education Division (General Studies), for courses offered during Intercession, Summer Evening and Summer Day.

End of examinations and second term for the Agriculture Diploma.

Cardiorespiratory Clinical Education begins for first-year Physical Therapy students.

April 5 Friday Lectures and all clinics close for Dental Hygiene I and II. Intermediate Fieldwork ends for second-year Occupational Therapy students.

April 8 - 12 Monday - Friday Examination period for Dental Hygiene I and II.

April 8 - 26 Monday - Friday Community pharmacy practice for third-year Pharmacy.

April 10 Wednesday Final lectures in all Faculties and Schools, except Dentistry, Medicine, and courses in the Bachelor of Education (see *Registration Guide*) and fourth-year Pharmacy.

April 12 Friday Lectures and all clinics close for fourth year Dentistry.

April 12 - May 1 Friday - Wednesday Examination period — Students are reminded that they must remain available until all examination and test obligations have been fulfilled.

April 15 Monday Examinations begin in Law.

Examinations begin in fourth-year Pharmacy and Dentistry.

Field instruction ends in second- and third-year Social Work.

Basic Fieldwork 1 begins for first-year Occupational Therapy students.

Summer Fieldwork 1 begins for second-year Occupational Therapy students.

April 15 - 19 Monday - Friday Examination period for fourth year Dentistry.

April 18 Thursday Last day of lectures in fourth-year Pharmacy.

April 19 Friday Graduation ceremony for School of Agriculture.

Last day of lectures in Dentistry years 1 and 2.

April 25 - May 3 Wednesday to Thursday Examination period for fourth-year Dentistry.

April 26 Friday Last day of lectures and all clinics for third-year Dentistry. Term ends for third-year Occupational and Physical Therapy students.

April 29 Monday Summer Fieldwork 2 begins for third-year Occupational Therapy students.

April 29 - May 10 Monday to Friday Examination period for first- and second-year Dentistry.

April 30 - May 3 Tuesday - Friday Auditions for prospective Music majors.

MAY 2002

May 1 Wednesday End of examinations and second term in those Faculties and Schools where examinations commenced April 12.

Recommended date for submission of undergraduate applications to University 1.

Last date to register and pay fees for Challenge for Credit where the final examinations are held during the June series.

Last date for applications for June supplemental examinations in Agriculture Diploma.

Last date for receipt by the Faculty of Graduate Studies for applications and recommendations from graduate departments for Canadian applicants applying for July 2002*.

Last date for registration in Intersession and Summer Evening courses without late registration fee.

Classes begin in Intersession and Summer Evening Session.

May 3 Friday Medicine 4 Clerkship closes.

May 4 Saturday Annual traditional graduation Powwow in honour of Aboriginal graduates.

May 6 Monday Summer Internships begin for third-year Physical Therapy students.

May 6 - 17 Monday - Friday Examination period for third-year Dentistry.

May 10 Friday Basic Fieldwork 1 ends for first-year Occupational Therapy students.

May 14 - 15 Tuesday - Wednesday Medical Council of Canada examinations.

May 16 Thursday Last day of lectures in second-year Medicine.

May 17 Friday Last day of classes in first- and second-year Medicine.

May 20 Monday VICTORIA DAY University closed. No classes or examinations.

May 24 Friday Summer Fieldwork 1 ends for second-year Occupational Therapy students.

May 29 - 30 Wednesday - Thursday One Hundred and Twenty Third Annual Spring Convocation.

JUNE 2002

June 4 Tuesday Convocation ceremony at College universitaire de Saint-Boniface.

June 7 Friday Summer Fieldwork 2 ends for third-year Occupational Therapy students.

June 17 Monday Last date for receipt by the Faculty of Graduate Studies for applications and recommendations from graduate departments for International applicants applying for January 2003*.

JULY 2002

July 1 Monday CANADA DAY University closed. No classes or examinations.

July 3 Wednesday Classes begin in Summer Day Session.

Last date for receipt by the Faculty of Graduate Studies for applications and recommendations from graduate departments for Canadian applicants applying for September 2003*.

EXAMINATION OBLIGATIONS: Students are reminded that they must remain available until all examination and test obligations have been fulfilled.

Observance of Religious Holidays.

The University acknowledges the right of all students to observe recognized Holy Days of their faith which fall within the above schedule and will, at its discretion, upon request, make necessary arrangements to ensure that studies are not jeopardized.

Instructors should be notified of a student's intended absence in advance, and at least three weeks notice of absence from scheduled examinations should normally be given where special arrangements are sought.

Schedule of Registration Activities

The applicable dates for the various registration activities in each Faculty and School for the 2001-2002 Session are published in a *Registration Guide* which is issued to all returning and new students and sent on request to others interested in this information.

For further information on registration activities contact:

Student Records Office
400 University Centre
University of Manitoba
Winnipeg, Manitoba
R3T 2N2
Telephone 474-9423

NOTE: 1) Students planning to take courses through the Distance Education Program should consult the academic schedules/important dates contained in the Distance Education Program Guide.

* Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

October 3, 2000

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

Preamble

Since last reporting to Senate, the Senate Committee on Curriculum and Course Changes (SCCCC) met on October 12, 17, 25 and 26, 2000 to consider curriculum and course changes from Faculties and Schools.

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. **Faculty of Agricultural and Food Sciences**

Department of Entomology

Existing course *Introductory Entomology (038.205)* is a required course for the current course *Insects Affecting Domestic Animals and Wildlife (038.451)*. When the curriculum in the Faculty of Agricultural and Food Sciences was changed so that Introductory Entomology was no longer a required course in most programs, students who were interested in or who could have benefitted from a course in livestock and wildlife entomology rarely had the pre-requisite to take the existing course. The existence of a lab in 038.451 also made time tabling difficult for many students.

Accordingly, course **038.451 Insects Affecting Domestic Animals and Wildlife** is being deleted. It will be replaced by **038.3XX Veterinary and Wildlife Entomology**. The new course is designed to provide students with sufficient introductory information in entomology to allow them to understand the essential components of the interactions of insects and vertebrates. Students will no longer be required to take 038.205, and there is no lab offered in the new course.

Department of Agricultural Economics

Course **061.404 Agricultural Price Analysis** is to be deleted, and replaced by **061.4XX Commodity Market Analysis**. The name change reflects the content as it now addresses all commodity markets besides grain and livestock. The course should be of interest to all marketing students since they should be knowledgeable of commodity markets.

Course **061.414 Linear Economic Models** is being deleted, and will be replaced by **061.2XX Introduction to Management Sciences**. This will match the course number in the Faculty of Management, which is an equivalent in scope content.

Course **061.250 Agricultural Business Management** is being deleted and replaced by **061.1XX Introduction to Agribusiness Management**. Students in University 1 who plan to take the B.Sc. (Agribusiness) could take this course and defer a free elective to third or fourth year. This would be the only introductory course dealing with business principles which could be taken without pre-requisites. The course number is being changed from 061.250 to 061.1XX to accommodate University 1 students.

Course 061.1XX will replace *061.250 Agricultural Business Management* in all four degree programs.

Proposed Changes to B.Sc. (Agribusiness)

Course *061.251 Introduction to Agricultural and Food Marketing* will be added to the degree core requirements for the B.Sc. (Agribusiness).

The Agribusiness Program core is being modified: students in the program will now take two additional courses from the large set of *061.239 Introduction to Environmental Economics*, *039.250 Crop Production*, *035.250 Animal Production* and *065.237 Principles of Ecology*.

In the Agricultural Economics Program, restrictive elective groups 1-6 are being deleted and replaced by two groups (one group requiring at least nine credit from the Department of Economics at the 300 level or above and the other group requiring at least nine credit hours from the Faculty of Agricultural and Food Sciences). Students completing this program will now qualify for a minor in Economics.

The Agribusiness Program is being split into two options: 1) a Management Option, and 2) an International Option with a minor in Arts.

Proposed Change to B.Sc. (Agriculture)

The course *038.413 Insect Control* will replace course *038.431 Insect Pests of Crops* in the Group I restricted electives category in the Agronomy Program.

Certificate in Logistics

In order to introduce new material into the program in keeping with advances and changes reflected in the needs of the freight forwarding industry, the following elective courses are being introduced: **924.057 Freight Forwarding Logistics I** and **924.058 Freight Forwarding Logistics II**.

Elective course **924.059 Airport Systems** is being introduced to follow with a non-credit course that demonstrates the demand and expectations for future distance delivering systems.

Cooperative Education Program

The Faculty of Agricultural and Food Sciences is proposing the introduction of a cooperative education option in its four degree programs as well as the Diploma Program in Agriculture. This will introduce a new type of learning format which will provide valuable practical experience to the students as they integrate the theoretical aspects of the university academic program with functional on-the-job situations.

The following work term courses are being introduced: **065.4AA Agriculture Cooperative Education Work Term 1**, **065.4BB Agriculture Cooperative Education Work Term 2**, and **065.0AB Agriculture Cooperative Education Work Term**.

Students who opt for the Cooperative Education experience will complete the same curriculum as those in the traditional undergraduate degree and diploma streams in addition to the Cooperative Work Term element. The proposed Cooperative Work Terms will each have a credit value of one. The credit hours awarded to a student in the program on successful completion of the required Work Terms will be in addition to the normal academic credits of any other graduate.

It is proposed that Work Terms be eight months long in the undergraduate degree programs, with a Work Term of five and one-half months proposed for students in the diploma program.

3. Faculty of Architecture

Environmental Design Program

Currently, two Design 4 studio courses are being offered with the same title. Accordingly, course **079.359 Design Studio 4** will become **079.3AA Design Studio 5**, and **079.360 Design Studio 5** will become **079.3BB Design Studio 6**. The course descriptions will remain the same. This will create a sequential numbering system for the Environmental Design studio sequence (studios 1 through 6), as well as have a numbering system that is consistent with the new Interior Environment option approved recently by Senate.

At present, there are two history courses with the same titles but different course descriptions. The Faculty is proposing to change the title of the courses, with the course descriptions remaining the same. Accordingly, **079.268 Architecture & Design in the 19th & 20th Centuries** will become **079.2AA Design Since 1800**, and **079.317 Architecture & Design in the 19th & 20th Centuries** will become **079.3CC History of Modern Architecture**.

Course **079.3XX Special Topics in Environmental Design** will be introduced in order to allow students and staff in all third year options greater flexibility to work on special projects or independent studies such as design build projects, gallery installations or exhibitions, work/study opportunities, or conduct and assist in special research projects. This course will not replace existing required courses, but may be used in place of the required third year elective course. The new course will be treated similarly to the Department of Interior Design's current undergraduate special topics course (**051.444**). Students will have to write

and have approved a proposal of study, and to work under the direction of a full time staff member. The staff member will be responsible for evaluating student work and assigning a final grade. As this is proposed as a third year course, it is understood that all first and second year courses will be completed before a student is allowed to register for this course.

4. School of Art

The School of Art is proposing a revision of its Art History program. This proposal is being submitted by the School of Art in tandem with revisions by the Faculty of Arts to their three year major and minor B.A. programs in Art History to coordinate the two programs as a first step toward creating parallel four year and honours programs.

These revisions will result not only in more cohesive and solid BFA and BFA honours degree programs, but will also offer a wider and more rational choice of course offerings that reflect current disciplinary concerns and student interests. There are no immediate additional costs anticipated as a result of this revision other than library resources. Statements of support have been received from the Library.

5. Faculty of Arts

Department of Anthropology

Course **076.345 Native North America: A Sociocultural Survey (076.345F Amérindiens de l'amérique du nord: Étude socioculturelle)** is to be deleted. It will be reintroduced at the 200 level as **076.2XX Native North America: A Sociocultural Survey (076.2XXF Les Amérindiens de l'Amérique du nord: une étude socioculturelle)**. The change to a 200 level is in accordance with the two step structure for all of the other ethnographic area courses (one is at the second year level and the other is at the third year level). All of the other departmental courses have already been approved, and this will merely bring this course in line with the others.

Course **076.2XY European Archaeology** is being introduced. It has been offered on a biannual basis since 1990, but it was offered under a selected topics or area number. Since it has become a part of the department's regular course listings, it is felt that it would be best to list it as an individual course.

Course **076.4XX Practicum in Archaeology** is being introduced. It has been offered on an annual basis since 1998, but it was offered under a selected topics or area number. Since it has become a part of the department's regular course listings, it is felt that it would be best to list it as an individual course.

Canadian Studies Program

The list of approved courses in Canadian Studies is being modified.

Department of Classics

Course **003.104 Introduction to the Reading of Ancient Greek** will be deleted. It is to be divided into two three-credit-hour courses, **003.1AA Introduction to the Reading of Ancient Greek 1** and **003.1AB Introduction to the Reading of Ancient Greek 2**. These two courses together will represent the same content and satisfy the same pre-requisites and be subject to the same restrictions as the deleted course.

Course **003.105 Introduction to the Reading of Latin** will be deleted. It is to be divided into two three-credit-hour courses, **003.1AC Introduction to the Reading of Latin 1** and **003.1AD Introduction to the Reading of Latin 2**. These two courses together will represent the same content, will satisfy the same pre-requisites, and will be subject to the same restrictions as the deleted course.

Course **003.269 Greek Literature in Translation** is to be deleted. It will be replaced by **003.3CB Greek Literature in Translation**, which will have the same basic content and virtually the same course description. The change will in effect be a re-numbering of the existing course to reconcile the course number with the fact that the relative difficulty of the course as currently taught is deemed by the instructors to be greater than that of the existing 300-level course **003.367**, which is also being renumbered.

Course **003.270 Latin Literature in Translation** is being deleted. It will be replaced by **003.3CC Latin Literature in Translation**, which will have the same basic content and virtually the same course description. The change will in effect be a re-numbering of the existing course to reconcile the course number with the fact that the relative difficulty of the course as currently taught is deemed by the instructors to be greater than that of the existing 300-level course **003.367**, which is also being renumbered.

Course **003.367 Greek and Roman Mythology** is being deleted. It will be replaced by **003.2AB Greek and Roman Mythology**, which will have the same basic content and virtually the same course description. The change will in effect be a re-numbering of an existing course to reconcile the course number with enrolment patterns that have become prevalent in recent years with an increased proportion of relatively junior enrollees. In addition to that, the relative difficulty of the course as currently taught is deemed by the instructors to be lesser than that of the existing 200-level courses **003.269** and **003.270**, which are also being renumbered.

The Greek Advanced Major and Minor program requirements and the Latin Advanced Major and Minor program requirements are being modified.

Department of Economics

Course **018.243 Comparative Economies** is to be deleted. It will be replaced by **018.2YY An Introduction to the World's Economies**. This change is a result of the disappearance of centrally planned economies and the emergence of a wide range of market-based economies.

Course **018.2XY Corporations in the Global Economy** is being introduced. This course has been offered experimentally during the last two regular sessions as a special topics course, and it has had healthy enrolments. The course will be added to the list of electives for the Global Political Economy program.

Department of Geography

Because the expertise is no longer available in the Faculty of retirement, the Department of Geography is proposing the following courses be deleted: **053.378 Historical Geography of Canadian Indians**, **053.381 Climatic Change in North America Since A.D. 1500**, and **053.470 Historical Geography of the Ojibway Indians**.

Global Political Economy Program

The General Major and Advanced Major programs as well as the list of suggested electives for Economics are being modified.

Interdisciplinary Courses

Course **099.331W Masterpieces of Western Literature** is to be deleted. It will be replaced by two three-credit-hour courses, **099.1XY European Literature 1** and **099.1XZ European Literature 2**. Splitting the course into two courses will make the new courses more attractive to students who wish to read only in the early or later periods.

Labour and Workplace Studies Program

Course **153.3XX History of Working People and Labour Movements 1700 to the Present** is being introduced. It will be cross-listed with History course *011.370 History of Working People and Labour Movements 1700 to the Present*.

As well, the Advanced Major requirements and the suggested electives for Sociology (List A) are to be modified.

Department of Native Studies

Course **032.373 Art of the North American Native Peoples** will be deleted. It was cross-listed with the School of Art, which has restructured the Art History program and is deleting this course. The School of Art is reintroducing *054.2DD Art of the North American Aboriginal Peoples*, and the Native Studies Department will simply include this course in the list of approved courses in Native Studies.

Department of Sociology

A Sociology Double Honours Program is to be introduced. This program will involve only administrative changes, and has no course or resource implications. The Double Honours will accommodate the small number of students who may want a concentration in two departments.

Course **077.376 Criminology Field Experience** is to be modified, as a new description will clearly identify that enrolment is competitive.

The General Major Sociology and Advanced Major Sociology Programs are being revised.

Women's Studies Program

Course **156.252 Introduction to Feminist Theory** is being modified by the addition of a pre-requisite.

Collège universitaire de Saint-Boniface - Français

Course **144.093 Grammaire et style** is being deleted.

Course **144.1AB Grammaire de l'écrit** is being introduced.

Collège universitaire de Saint-Boniface - Traduction

Course **122.090 Introduction à l'espagnol** is to be deleted.

Course **122.1AB Introduction à l'espagnol** will be introduced.

Course **122.126 Espagnol intermédiaire** is being modified.

Courses Offered in Other Faculties and Schools Acceptable for Credit in the Faculty of Arts

School of Art

Virtually all the courses which are acceptable for credit towards the B.A. in the History of Art are taught in the School of Art. The School of Art is recommending substantial changes to the BFA in Art History. As a result of those changes by the School of Art, the Faculty of Arts is proposing similar revisions.

Department of Mathematics

The General Major, Advanced Major and Minor programs in Mathematics are being modified.

6. Faculty of Dentistry

Course **066.101 Early Clinical Experience** was approved by Senate in December 1994. While it has been administered as a pass/fail course since its introduction for the 1995/96 regular academic session, due to a clerical error, this grading distinction was never formally approved by Senate. Accordingly, the Faculty is now proposing the course be amended to include the pass/fail grading distinction, and to make this change retroactive to the 1995/96 academic year. There have been no failures in this course since its introduction and this change will not affect the GPA of any student.

7. Faculty of Education

Department of Educational Administration, Foundations & Psychology

Course **129.556 Practicum in Counselling** will be deleted. It will be replaced by two three-credit-hour courses, **129.548 Counselling Skills** and **129.549 Field Placement in Counselling**. This will mean that the counselling skills part of the practicum can be offered to part-time students in the spring and summer session, and that full-time students can continue to be placed in professional settings for 150 hours of professional supervision.

Bachelor of Music/Bachelor of Education Integrated Program and Bachelor of Human Ecology/Bachelor of Education Integrated Program

Recommendation 52.c of *Building on Strengths: Final Report of the Task Force on Strategic Planning* called for the Faculty of Education "to ensure the maintenance and further development of...joint programs". The new certification requirements of Manitoba Education and Training require that as of May 2003, those seeking initial teacher certification in the province of Manitoba must hold two degrees, one being a B.Ed. degree consisting of a minimum of at least 60 credit hours in Education. Additionally, the two degrees must include a minimum of 150 credit hours. A further provincial requirement is that the teacher education portion of the program must include a minimum of 24 weeks of practicum.

As the Faculty of Human Ecology and the School of Music only offer four-year degrees, the new provincial certification requirements would require their graduates to have six years of university education before being eligible for teacher certification. Because integrated five-year B.Hum.Ec./B.Ed. And B.Mus./B.Ed. programs existed when the Faculty of Education offered a four-year B.Ed. degree, the Faculty is endeavoring to incorporate the best features of those programs while still meeting the new requirements. In some instances, courses offered by the Faculty of Human Ecology and the School of Music which have a large education related component will be considered to be "Education" courses for the purpose of achieving the 60 credit hours required in Education.

8. Faculty of Engineering

Department of Civil and Geological Engineering

Course **023.4XX Design Project** is being introduced.

Mechanical Engineering Aerospace Option

The Faculty of Engineering is proposing to offer a second degree in Mechanical Engineering Aerospace Option. The Department of Mechanical and Industrial Engineering currently offers a second degree in Mechanical Engineering for graduates of the Industrial Engineering program, and a second degree in Industrial Engineering for graduates of the Mechanical Engineering program.

SCCCC observes that requirements for a second degree will differ from faculty to faculty, and that imposing a single University-wide policy would be very difficult.

The Committee also notes that the courses required to obtain the second degree will amount to 39 credit hours. The total credit hours required for graduation in the Mechanical Engineering degree program is 116-120.

9. Faculty of Law

Course **045.147 Legal Methods** is being deleted and reintroduced in order to facilitate an increase in credit hours from 5 to 6. The additional credit hour is needed to address the teaching of computerized legal research previously covered in **045.151 Computer Applications for Law**, which is being deleted.

10. Faculty of Management

Department of Business Administration

The pre-requisite for course **027.452 Comparative Industrial Relations and Human Resource Management** is being changed from a requirement to a recommendation in order to allow students in the International Business Major to take this course which is now required in the major. Many students do not have room in their program for the former pre-requisite.

11. School of Music

Course **033.323 Acoustics of Music** is to be deleted. It will be replaced by **033.123 Introduction to the Acoustics of Music**, in order to meet the specifications for the course to be offered in first year for music students to meet the mathematics requirement.

The M (mathematics) designation will need to be approved by the Faculty of Science.

12. Faculty of Nursing

Course **049.323 Nursing of the Individual with Mental Illness and Their Family** is to be deleted. The name of the course is awkward, and it does not reflect current emphasis on wellness and recovery. It is also not reflective of holistic nursing practice, a key component of mental health nursing. Accordingly, it will be offered as **Perspectives on Mental Health Nursing**.

13. Faculty of Pharmacy

The Faculty of Pharmacy is recommending that the Arts elective requirements from the second and third years of the Bachelor of Science in Pharmacy be removed and the 12 credit hours involved be redistributed as follows: **046.141 Applied Pathophysiology** increases from 2 credit hours to 3 credit hours; **046.138 Pharmacy Practice I** increases from 0 credit hours to 1 credit hour; **046.238 Pharmacy Practice II** increases from 0 credit hours to 2 credit hours; **046.338 Pharmacy Practice III** increases from 0 credit hours to 4 credit hours; and **046.448 Pharmacy Practice IV** increases from 6 credit hours to 10 credit hours.

The Faculty feels that the six credit hours of Arts electives, and nine credit hours of open electives required of Pharmacy students in University 1, addresses the broader education philosophy that the above were initially introduced to achieve. In addition, concern has been expressed that given the full program in pharmacy, timetabling the current electives in the regular academic session is extremely problematic; students are generally required to take these courses in summer session or by distance education. The latter effectively results in many students having fewer opportunities for professional work experience or vacation during the summer months. In addition, in the majority of cases this elective requirement is addressed by work completed prior to enrolment in the Faculty.

14. **Faculty of Physical Education and Recreation Studies**

Physical Education Degree Program

Course **057.319 Basic Trauma and Life Support** is to be deleted. It will be replaced by **057.3AA Basic Trauma and Emergency Support**. This will enhance a previously under-developed area of curriculum in the B.E.S.S. degree program in Athletic Therapy, and will better meet Canadian Athletic Therapists' Association Program Accreditation requirements.

Course **057.4AA Pathology and Clinical Manifestations 2: Cardiac, Respiratory, and Neurologic Disorders** is being introduced as the final course to be phased into the Athletic Therapy curriculum. It will provide several key competencies as specified for accreditation.

Course **057.4AB Drugs and Ergogenic Aids in Sport** is being introduced to provide additional elective courses in keeping with the recently-introduced four-year B.E.S.S. degree. It will enhance the curriculum in a new and socially relevant area of importance to physical education and exercise science.

Course **057.308 Principles of Planning and Administration in Physical Education** is being modified to reflect a change in program emphasis in the three-year B.P.E. degree.

Recreation Studies Degree Program

Course **123.120 Introduction to Leisure Travel** is being added to the core curriculum, to move it from an elective course to a required one. This course is a pre-requisite for **123.412** and will allow all Recreation Studies students to do an emphasis in tourism.

Course **027.203 Administration Theory** is being deleted from General Education. Discussions with students emphasized some areas of duplication in the BRS curriculum. There is an administration and leisure course currently taught in the BRS core curriculum, and students also have the option to take a sport management course and an advanced course in administration of leisure services.

Six credit hours of Science are being deleted and three credit hours of Mathematics are being added. As well, six credit hours of Language are being deleted and three credit hours of University 1 English are being added. With the introduction of University 1, students in the Recreation Studies degree program were required to take three credit hours of Math and three credit hours written English, and also to take three credit hours of Science and

three credit hours of Language. The 6 credit hours of the reduced Science and Language requirements have been added to the General Electives requirements. Students will now have 24 credit hours of General Education electives. This change will increase the flexibility for students to take courses within the General Education area.

15. **Faculty of Science**

Actuarial Mathematics Program

The program is being modified.

Department of Botany

Course **001.4XX Lichen Symbioses** is being introduced. This course will add an option for Botany Honours and Majors at the 4th year level in an area of expertise of a new faculty member. This area is of fundamental interest as well as being highly significant in terms of the vegetation of central and northern Manitoba.

Department of Chemistry

Course **002.449 Advanced Biochemistry (002.449F Biochimie avancée)** is being deleted.

Course **002.461 Project in Chemistry** is being deleted. It will be replaced by **002.4YZ Research Project in Chemistry or Biochemistry**.

The following courses are being introduced to introduce new material into programs in keeping with advances: **002.4AA Signalling and Regulation of Gene Expression (002.4AAF Signalisation et régulation de l'expression génétique)**, and **002.4AB Glycobiology and Protein Activation (002.4ABF Glycobiologie et activation des protéines)**.

Department of Computer Science

Course **074.310 Concepts of Imperative Programming Languages** is being modified. The old course **074.102** contained enough assembler language to satisfy the needs in **074.310**, but that component of **074.102** has been removed, making **074.222** necessary as a pre-requisite to **074.310**.

074.335 Software Engineering I is being modified, as it no longer transfers into Science from Engineering as three credit hours not to be held with **024.445**.

The pre-requisite for course **074.349 Computer Graphics I** is being modified, as the instructors feel that any reasonable assurance of mathematical background is sufficient.

Ecology Program

The program is being modified.

Environmental Science Program

Course **128.320 Ecological Impact Assessment** is to be deleted. It will be replaced by **128.3XZ Environmental Assessment**, since the more concise and industry accepted title for this course is *Environmental Assessment*. A second reason for the replacement is to revise the pre-requisites. Students should have a foundation in environmental legislation in order to adequately discuss federal and provincial assessment protocols.

Course **128.2XY Technical Communication Skills in Environmental Science** is being introduced. While a need for greater technical communication skills in the environmental science curriculum has been identified by faculty and coop employers, this deficiency is not adequately addresses in the courses currently offered in the program. The proposed course will address this deficiency by providing a basic understanding of the methods used in summarizing information, formulating research questions and use of appropriate research techniques.

128.3XY Environmental Responsibilities will be introduced. One of the recommendations forthcoming from the 1998 Environmental Science program review was the development of a course on environmental legislation with its own course number. While environmental legislation has been taught previously as a section of *128.300 Multidisciplinary Topics*, it is the intent to make this course a requirement in the program and a pre-requisite to *Environmental Assessment*. Under these circumstances, the course should be given a distinct course number.

Course **128.100 Environmental Science 1 - Concepts** is being modified, as significant course overlap has been identified with *053.262*. Consequently, students should not be permitted to hold credit for both courses.

Course **128.410 Conservation Strategies** has been restructured in content such that students are expected to have a foundation in the 300-level *Issues* course prior to their enrolment. Consequently, *128.310* is now considered an essential pre-requisite to this course.

Department of Geological Sciences

The restriction of *007.124* is being removed from course **007.136 Environmental Earth Science**.

007.239 Environmental Geology is being modified, as it is now to be listed as a required course in the Honours program, and the pre-requisites are being changed.

The pre-requisite of *007.206* is being removed from **007.426 Applied Geophysics Field School**, as it is redundant.

Course *007.277* is being added as a pre-requisite to **007.463 Geolimnology**.

Department of Mathematics

The recent amalgamation of the Applied Mathematics and Mathematics departments necessitates the re-numbering of courses at the 3rd and 4th year levels.

The amalgamation necessitates the re-numbering of a number of service courses as well.

Service course **136.211 Mathematical Methods for Engineers 2** is being modified, as new course material is needed.

The pre-requisite for service course **136.212 Introductory Numerical Methods for Engineers** is being changed.

Department of Microbiology

The following work term courses are being introduced: **060.3BB Work Term 1**, **060.3BC Work Term 2**, **060.4AA Work Term 3**, and **060.4BB Work Term 4**.

Course **060.4CC Environmental Microbiology** will be introduced.

Course **060.122 Essentials of Microbiology** is being modified to prevent students who are taking or have already taken *060.301 Mechanisms of Microbial Disease* from taking *060.122*. The two courses cover similar topics but *060.301* is taught at a different level and requires second-year courses as pre-requisites.

060.211 General Microbiology (060.211F Microbiologie générale B) will be modified, as much of the material on microbial pathogenicity and host resistance is current taught in *060.301 Mechanisms of Microbial Disease* and has been deleted from *060.211*. The metabolism section in *060.210 General Microbiology A*, the pre-requisite for *060.211*, has been expanded and some of this material is now included in the modified *060.211*. As well, the section on bacterial genetics has been expanded.

060.223 Introductory Biogeochemistry is to be modified, as the Environmental Science program will require students to take *007.134* instead of *007.144*.

The pre-requisite for **060.228 Microbial Ecology** is being changed.

Courses **060.447 Fermentations** and **060.451 Industrial Microbiology** are being modified to allow major students with a "C" in *060.237* to take the courses without requiring signed permission.

060.453 Project in Microbiology is being modified, as the introduction of *002.4YZ*, a similar project course, will be used in the same programs as *060.453*. The modified course description will prevent students in the biochemistry and biotechnology programs from taking both courses.

Course **060.461 Molecular Genetics of Eukaryotes** will now be offered annually instead of biennially.

Department of Physics and Astronomy

Courses **016.102 General Physics 1 (016.102F Physique générale 1)** and **016.103 General Physics 2 (016.103F Physique générale 2)** are being modified to include a statement indicating that the courses cannot be held for credit with *016.141* or *016.142*. As well, the course description appears to emphasize relevance only to medical and biological sciences, which is not accurate nor intended.

016.105 Physics 1: Mechanics (016.105F Physique 1: La Mécanique) and **016.107 Physics 2: Waves & Modern Physics (016.107F Physique 2: La Physique des ondes et la Physique moderne)** are being modified to include a statement indicating that the courses cannot be held for credit with *016.141* or *016.142*.

Course **016.370 Modern Physics II** is being modified to include a statement indicating that the course cannot be held for credit with *016.464* or *016.465*.

016.437 Wave Mechanics is being modified to include a statement indicating that the course cannot be held for credit with *016.464* or *016.465*. As well, outdated course reference is being removed.

Department of Statistics

005.460 Statistics Topics 1 and **005.463 Stochastic Processes** are being reactivated, as they were not listed in the *Calendar* (unintentionally).

Department of Zoology

The following courses are being deleted: **022.418 Systematics and Biogeography of Fishes**, **022.457 Mammalogy**, **022.468 Ornithology** and **022.476 Biology of Amphibians and Reptiles**. They are being offered as: **022.4XX Biodiversity of Vertebrates: Systematics and Biogeography of Fishes**, **022.4XY Biodiversity of Vertebrates: Biology of Amphibians and Reptiles**, **022.4XZ Biodiversity of Vertebrates: Biology of Birds**, and **022.4YX Biodiversity of Vertebrates: Biology of Mammals**. The new titles are more appropriate using contemporary terminology, and will identify individual courses as part of a group of courses all dealing with Vertebrate Zoology.

022.481 Fishery Biology and Management is being modified, as the previous pre- co-requisite was not required for the material that is presented. Several students have successfully completed the material of *022.481* without *005.313*, but with *022.348*. Because *022.348* is already part of the degree requirements for ecology, the proposed change will make this course more accessible to students.

Service course **022.2XX Human Reproductive Physiology** is being introduced as part of the new Baccalaureate of Midwifery program.

Courses Offered in Other Faculties and Schools Acceptable for Credit in the Faculty of Science

Faculty of Agricultural and Food Sciences

Department of Entomology

Course 038.451 **Insects Affecting Domestic Animals and Wildlife** is being deleted, and 038.3XX **Veterinary and Wildlife Entomology** is being added.

Department of Food Science

Course 078.428 **Food Microbiology 2** is being added.

School of Art

A number of courses are being deleted and replaced, arising from the revisions to the Art History program.

University 1

A number of courses are being added to the list from the Faculty of Agricultural and Food Sciences, Faculty of Architecture, and Faculty of Social Work.

Optional Minor Program

An optional minor program is being introduced; these minors will be available on an optional basis to Four Year Major and Honours students. The minor will not be available for students in the General degree program. It will represent a package of courses that indicates some concentration in a discipline that is clearly over and above the requirements of a Major or Honours program.

Expressions of support have been received from the Faculty of Arts, Department of Microbiology, School of Music, Faculty of Management, and Department of Mathematics.

16. **University 1**

A number of changes are recommended to the courses offered for University 1 students by the Faculty of Agricultural and Food Sciences, the Faculty of Social Work and the School of Art.

17. **Centre for Higher Education Research and Development**

In 1989, the Senate Committee on Curriculum and Course Changes was charged with the responsibility of approving, on behalf of Senate, the introduction, modification or abolition of Certificate Programs.

In 1994, the Centre for Higher Education Research and Development (CHERD) was asked to develop a Certificate Course in University Management. These courses are rarely offered at this campus, but are instead taught at various locations across the country.

CHERD is now proposing the introduction of two new courses.

The Senate Committee on Curriculum and Course Changes approved the introduction of the following new courses:

Getting Along with Government: An Approach for the Post-Secondary Sector

Universities in Canada have begun to understand that public support cannot be taken for granted. The objective of this seminar is to provide you the know-how to set up a Government Relations Office. It will inform participants of the inner workings of ministerial offices, will de-mystify government bureaucracy and will equip participants with useful ideas on how to implement a government relations strategy.

Colleges and Institutes Senior Administrators Course

Canadian Colleges and Institutes function in a rapidly changing environment that is increasingly competitive and national in nature. Thus, a college administrator's role is continually changing. To meet these challenges, the Centre for Higher Education Research and Development (CHERD) demonstrates the commitment to address these unique changes in post-secondary environment by creating a management development program specifically designed to address the unique concerns of administrators working in the Canadian College and Institute environment.

18. Continuing Education Division

The Senate Committee on Curriculum and Course Changes received for information a number of revised course outlines from the Continuing Education Division.

Recommendations

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

Faculty of Agricultural and Food Sciences

Department of Entomology
Department of Agricultural Economics
B.Sc. (Agribusiness) Degree
B.Sc. (Agriculture)
Cooperative Education Program

Faculty of Architecture

Environmental Design Program

School of Art

Faculty of Arts

Department of Anthropology
 Canadian Studies Program
 Department of Classics
 Department of Economics
 Department of Geography
 Global Political Economy Program
 Interdisciplinary Courses
 Labour and Workplace Studies Program
 Department of Native Studies
 Department of Sociology
 Women's Studies Program
 Collège universitaire de Saint-Boniface - Français
 Collège universitaire de Saint-Boniface - Traduction
 Courses Offered in Other Faculties and Schools Acceptable for Credit in Arts

Faculty of Dentistry**Faculty of Education**

Department of Educational Administration, Foundations & Psychology
 Integrated Programs with Music and Human Ecology

Faculty of Engineering

Department of Civil and Geological Engineering
 Mechanical Engineering Aerospace Option

Faculty of Law**Faculty of Management****School of Music****Faculty of Nursing****Faculty of Pharmacy****Faculty of Physical Education and Recreation Studies**

Physical Education Degree Program
 Recreation Studies Degree Program

Faculty of Science

Actuarial Mathematics Honours program
 Department of Botany
 Department of Chemistry

Department of Computer Science
 Computer Science - Mathematics Joint Honours Program
 Ecology Program
 Environmental Science Program
 Genetics Program
 Department of Geological Sciences
 Department of Mathematics
 Mathematics - Actuarial Mathematics Joint Program
 Mathematics - Physics and Astronomy Joint Program
 Department of Microbiology
 Department of Microbiology - Chemistry Joint Program in Biochemistry
 Department of Microbiology - Chemistry Joint Program in Biotechnology
 Department of Physics and Astronomy
 Department of Psychology
 Department of Statistics
 Statistics - Actuarial Mathematics Joint Program
 Applied Mathematics - Statistics Joint Program
 Statistics - Mathematics Joint Program
 Department of Zoology
 Courses Offered in Other Faculties and Schools Acceptable for Credit in Science
 Bachelor of Science General Program
 Introduction of Minor

University 1

Respectfully submitted,

Dean B. L. Dronzek, Chair
 Senate Committee on Curriculum and Course Changes

Terms of Reference: *Senate Handbook* (Revised 2000), Section 8.21.

/sgp

1. Faculty of Agricultural and Food Sciences

Department of Entomology

Course to be deleted:

038.451 Insects Affecting Domestic Animals and Wildlife -3

Course to be introduced:

038.3XX Veterinary and Wildlife Entomology (0-0:3-0) +3
 An introduction to the insects and their relatives that affect domestic animals, pets and wildlife. Special consideration is given to life histories, insects/host interactions, evolutionary

relationships, impact on host vertebrates and pest management. Not to be held with the former 038.451.

NET CHANGE IN CREDIT HOURS:

0

Department of Agricultural Economics

Courses to be deleted:

061.250	Agricultural Business Management	-3
061.404	Agricultural Price Analysis	-3
061.414	Linear Economic Models	-3

Courses to be introduced:

061.1XX Introduction to Agribusiness Management (3-L:3-L) +3
 Introduction to management principles applied to agribusiness. Topics covered will include cooperative and corporate organizations, financial analysis, marketing and planning. All students will prepare a business plan. The one hour laboratory will develop spreadsheet skills with respect to processing information and preparing forecasts. *Not to be held with the former 061.211 or 061.250.*

061.2XX Introduction to Management Sciences (3-L:0-0) +3
 An introduction to management science techniques and models. Topics include linear programming, distribution problems, decision theory and queueing models. *Pre-co-requisite: 005.100 or the former 005.221 or equivalent. Students may not hold credit for 027.215 Introduction to Management Sciences and/or both 061.2XX or 061.414.*

061.4XX Commodity Market Analysis (0-0:3-0) +3
 Theory and methods of price analysis, commodity markets and the demand and supply factors that underpin seasonal, cyclical and secular changes in commodity prices. *Pre-requisites: 018.245 or 018.270 and 061.308 or 018.308. Not to be held with the former 061.404.*

NET CHANGE IN CREDIT HOURS:

0

B.Sc. Agribusiness Degree Program**B.Sc. (Agribusiness)****PROPOSED**

Agribusiness students specialize in the people component of agriculture. This begins with the consumer, ends with the producer and involves all those along the food chain. Food production and distribution is undertaken in a business environment and agribusiness is the study of decision-making within this setting. Graduates gain insight into the agribusiness environment through mastering concepts in economics, finance, marketing and management. In addition to the faculty core courses, all students are required to take the B.Sc. (Agribusiness) degree core requirements and the respective program core courses listed below. Students in Agribusiness are not required to take University I Chemistry as part of the Faculty Core requirement.

B.Sc. (Agribusiness) Degree Core Course Requirements:

<i>Course No.</i>	<i>Title</i>	<i>Credit Hours</i>
005.200	Basic Statistical Analysis II	3
009.110	Introductory Financial Accounting	3
*018.245	Microeconomic Theory and Its Applications I	3
*018.247	Macroeconomic Theory and Its Applications I	3
027.244	Human Resource Management	3
061.251	Introduction to Agricultural and Food Marketing	3 "a"
061.308	Introduction to Econometrics	3
061.350	Agricultural and Food Policy	3
One course (three credit hours) from the following:		
039.250	Crop Production (3)	
035.250	Animal Production (3)	3
065.237 (001.237 or 022.237)	Principles of Ecology (3)	

27

NOTE: *In place of 018.246 and 018.248, students planning to take graduate study should consider taking the following "Honors Courses" which require written permission from the Head of the Department Economics prior to registration.:

018.270	Microeconomic Analysis I	3
and		
018.280	Macroeconomic Analysis I	3

Agricultural Economics Core:

Course No.		Credit Hours
*018.246	Microeconomic Theory and Its Applications II	3
*018.248	Macroeconomic Theory and Its Applications II	3
061.4XX	Commodity Market Analysis	3 "a"
061.412	Intermediate Econometrics	3
		12

*NOTE: *In place of 018.246 and 018.248, students planning to take graduate study should consider taking the following "Honors Courses" which require written permission from the Head of the Department Economics prior to registration.:*

018.370	Microeconomic Analysis II	3
and		
018.380	Macroeconomic Analysis II	3

Agribusiness Core:

Course No.		Credit Hours
027.215	Introduction to Management Sciences (3)	3
or		
061.2XX	Introduction to Management Sciences (3)	3
061.352	Food Distribution and International Merchandising	3
061.354	Financial Risk Management	3
118.221	Fundamentals of Marketing	3
Three courses (nine credit hours) from the following:		
035.250	Animal Production (3)	9
039.250	Crop Production (3)	
065.237 (001.237 or 022.237)	Principles of Ecology (3)	
061.239	Introduction to Environmental Economics (3)	3 "a"
		21

Within the B.Sc. (Agribusiness) degree students will elect one of two different programs of study, Agricultural Economics or Agribusiness. Students will normally begin the program of study of their choice in second year. A description of each of the programs of study and their program requirements follows.

Agricultural Economics Program*Chair: D.F. Kraft*

The Agricultural Economics program, which students will enter into after completing University 1, is the application of economics to the production, processing, distribution, and utilization of agricultural commodities. Students will develop: 1) an in-depth knowledge in economic concepts and their application to the financial management of agricultural systems and related industries; and 2) an understanding of a) the principles underlying the analytical methods used in economics, b) the global aspects affecting commodity markets, and c) the relationship between agricultural decisions and natural resource use.

*Course No.**Credit Hours***Second Year**

005.100M	Basic Statistical Analysis I	3
005.200	Basic Statistical Analysis II	3
009.110	Introductory Financial Accounting	3
018.245	Microeconomic Theory and Its Applications I	3
018.247	Macroeconomic Theory and Its Applications I	3
061.1XX	Introduction to Agribusiness Management	3 "a"
061.251	Introduction to Agricultural and Food Marketing	3 "a"
065.203W	Technical Communications	3
One course (three credit hours) of the following:		
035.250	Animal Production (3)	
039.250	Crop Production (3)	3
065.237 (001.237 or 022.237)	Principles of Ecology (3)	
	Restricted Elective - Philosophy - Group 1	3
		30

Third Year

018.246	Microeconomic Theory and Its Applications II	3
018.248	Macroeconomic Theory and Its Applications II	3
027.244	Human Resource Management	3
061.308	Introduction to Econometrics	3
061.350	Agricultural and Food Policy	3
	Restricted Elective - Philosophy - Group 1	3
	Restricted and/or Free Electives	12
		30

Fourth Year

061.4XX	Commodity Market Analysis	3 "a"
061.412	Intermediate Econometrics	3
065.450	Agri-Food Systems	3
	Restricted and/or Free Electives	21
		30

Restricted Electives**Credit Hours**

Group 1	Six credit hours from the following:
015.129	Critical Thinking (3)
015.261	The History and Philosophy of Science (6)
015.275	Ethics and the Environment (3)
015.283	Business Ethics (3)
015.285	Philosophy of Social Science (3)

6

Group 2	At least nine credit hours from the Department of Economics at the 300 level or above	9 "a"
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Group 3	At least nine credit hours from the Faculty of Agricultural and Food Sciences	9 "a"
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Agribusiness Program**PROPOSED***Chair: M. Boyd*

The Agribusiness program will develop an indepth knowledge of the principles of managing an agricultural or food business. Through their choice of restricted electives students will elect to specialize in management or international agribusiness. The international agribusiness option involves the restricted electives option that requires taking a minor in one of the cross disciplinary programs in the Faculty of Arts. International agribusiness requires knowledge of languages, cultures, and international political history, in addition to the other business skills required by the B.Sc. (Agribusiness) degree. Students electing the agribusiness management option will select their restricted electives from the Faculty of Management and the Faculty of Agriculture and Food Sciences. Depending upon the

students interests, the restricted electives and electives will provide a more indepth understanding of the business principles involved in the production, processing and distribution of agricultural products.

<i>Course No.</i>		<i>Credit Hours</i>
Second Year		
005.100M	Basic Statistical Analysis I	3
005.200	Basic Statistical Analysis II	3
009.110	Introductory Financial Accounting	3
018.245	Microeconomic Theory and Its Applications I	3
018.247	Macroeconomic Theory and Its Applications I	3
061.1XX	Introduction to Agribusiness Management	3 "a"
061.251	Introduction to Agricultural and Food Marketing	3 "a"
065.203W	Technical Communications	3
118.221	Fundamentals of Marketing	3
One course (three credit hours) from the following:		
039.250	Crop Production (3)	
035.250	Animal Production (3)	
065.237 (001.237 or 022.237)	Principles of Ecology (3)	3
		30
Third Year		
027.244	Human Resource Management	3
061.308	Introduction to Econometrics	3
061.350	Agricultural and Food Policy	3
061.354	Financial Risk Management	3
Two courses (six credit hours) from the following:		
035.250	Animal Production (3)	
039.250	Crop Production (3)	
065.237 (001.237 or 022.237)	Principles of Ecology (3)	6
061.239	Introduction to Environmental Economics (3)	"a"
	Restricted Electives and/or Free Electives	12
		30
Fourth Year		
027.215	Introduction to Management Sciences (3)	

or		3
061.2XX	Introduction to Management Sciences (3)	3
061.352	Food Distribution and International Merchandising (3)	3
065.450	Agri-Food Systems (3)	3
	Restricted and/or Free Electives	21
		30

Restricted Electives***Credit Hours*****Group 1** Six credit hours from the following:

015.129	Critical Thinking (3)	
015.261	The History and Philosophy of Science (6)	6
015.275	Ethics and the Environment (3)	
015.283	Business Ethics (3)	
015.285	Philosophy of Social Science (3)	

Six courses (18 credit hours) from either Group 2 and Group 3 combined (Management Option); or Group 4 (International Option):

Management Option

At least one course (three credit hours) from the Faculty of Management and a total of nine credit hours from the following courses:

Group 2

005.301	Topics in Statistical Analysis Applied to Business (3)	
005.317	Statistical Quality Control (3)	
009.111	Introduction to Management Accounting (3)	
009.220	Corporation Finance (3)	
027.260	Fundamentals of Production and Operations Management (3)	
027.203	Administrative Theory (3)	
027.208	Introduction to Management and organization Theory (3)	
118.325	Marketing Strategy (3)	
118.330	International Marketing (3)	
118.427	Sales Management	
061.210	Economics of World Agriculture (3)	9-12
061.239	Introduction to Environmental Economics (3)	

061.312	Commodity Futures Markets (3)
061.351	Transportation Economics (3)
061.355	Environmental Policy (3)
061.353	Farm Management (3)
061.4XX	Commodity Market Analysis (3)
061.423	Agricultural Law (3)
061.424	Agricultural Economics Special Project (3)

Group 3*Restricted Electives Credit Hours*

At least two courses (6 credit hours) from Departments in the
Faculty of Agricultural and Food Sciences other than the Department
of Agricultural Economics and Farm Management

6-9

International Option

Group 4 Minor in Asian Studies, Central and East European Studies, or
Latin American Studies (detailed descriptions for these can be
found in the Faculty of Arts section of the General Calendar
under Cross-disciplinary programs) 18

B.Sc. (Agriculture)

The course 038.413 *Insect Control* will replace course 038.431 *Insect Pests of Crops* in the
Group I restricted electives category in the Agronomy Program.

Cooperative Education Program

Courses to be introduced:

065.4AA Agriculture Cooperative Education Work Term 1 +1
Special 32-week work assignment in business, industry, government or research for cooperative education students. Requires submission of a written report covering the work completed during the eight-month professional assignment.

065.4BB Agriculture Cooperative Education Work Term 2 +1
Special 32-week work assignment in business, industry, government or research for cooperative education students. Requires submission of a written report covering the work completed during the eight-month professional assignment.

065.0AB Agriculture Cooperative Education Work Term +1
Special 22-week work assignment in business, industry, government or research for cooperative education students in the diploma program. Requires submission of a written report covering the work completed during the five and one-half month professional assignment.

NET CHANGE IN CREDIT HOURS: **+3**

2. **Faculty of Architecture**

Environmental Design Program

Courses to be deleted:

079.359 Design Studio 4 -6
079.360 Design Studio 5 -6
079.268 Architecture & Design in the 19th & 20th Centuries to -3
079.317 Architecture & Design in the 19th & 20th Centuries -3

Courses to be introduced:

079.2AA Design Since 1800 +3
An examination of key architectural treatises of the 19th and 20th centuries that are representative of the predominant ideals of their time and the influence they have had in the construction of the built environment. *Pre-requisite: 079.168.*

079.3AA Design Studio 5 +6
Studies in the principles, vocabularies and methods of approach to architectural and environmental design. Studio work with specific projects to exercise the analytical, the conceptual and the developmental stages of design. *Pre-requisite: 079.264.* Not to be held with the former 079.345 or 079.346.

079.3BB Design Studio 6 +6
Continuing studies in the principles, vocabularies and methods of approach to architectural and environmental design. Studio work with specific projects to exercise the analytical, conceptual and developmental stages of design. *Pre-requisite: 079.359.* Not to be held with the former 079.345 or 079.346. *Co-requisite: 079.357.*

079.3CC History of Modern Architecture +3
Introduction to key events, images and personalities of the 19th and 20th centuries shaping the ideals and the human environment. *Pre-requisite: 079.268, 079.216 or consent of instructor.*

079.3XX Special Topics in Environmental Design +3
Independent study related to environmental design. Content may vary according to the interest of the community, students, profession, and the faculty. *Pre-requisite: written consent of the instructor(s) and program coordinator.*

NET CHANGE IN CREDIT HOURS: +3

3. School of Art

Courses to be deleted:

054.124	Introduction to Art A	-6
054.130	Introduction to Art B	-6
054.231	Twentieth Century Sculpture	-3
054.236	Art Gallery Seminar I	-6
054.242	History of Visual Communication	-6
054.245	Early Renaissance in Italy	-3
054.246	Late Renaissance in Italy	-3
054.247	Chinese Art	-3
054.248	Japanese Art	-3
054.249	Baroque Art I	-3
054.250	Baroque Art II	-3
054.251	Early Medieval Art	-3
054.252	Late Medieval Art	-3
054.253	Introduction to Traditional Arts	-3
054.254	African Art: Styles and Aesthetics	-3
054.257	Introduction to Art Theory and Criticism	-3
054.258	Nineteenth Century Photography	-3
054.259	Twentieth Century Photography	-3
054.354	Art Gallery Seminar II	-6
054.358	Inuit Art and Culture	-3
054.368	Modern Art I	-3
054.369	Modern Art II	-3
054.370	Modern Art III	-3

054.371	History of Islamic Art	-3
054.373	Art of the North American Native Peoples	-3
054.375	Canadian Art I	-3
054.376	Canadian Art II	-3
054.379	American Art Since 1950	-3
054.380	Seminar in Art Theory and Criticism	-3
054.381	Northern Renaissance Art I	-3
054.382	Northern Renaissance Art II	-3
054.387	History of Byzantine Art I	-3
054.388	History of Byzantine Art II	-3
054.447	Seminar in Contemporary Canadian Art	-6
054.456	Art Gallery Seminar III	-6
054.464	Seminar in Contemporary Issues	-3
054.465	Seminar in Modern Art	-3
054.466	Seminar in Canadian Art	-3
054.474	Seminar in Medieval Art	-3
054.475	Seminar in Renaissance Art	-3
054.476	Seminar in Baroque Art	-3
054.483	Seminar in Inuit Art	-3

Courses to be introduced:

- 054.1AA Introduction to Art 1A +3
 A basic study of world art history and theory to the early Renaissance. *May not be held for credit with 054.1CC or the previous 054.124 or 054.130. Pre-requisite to further study in history and theory of art.*
- 054.1BB Introduction to Art 2A +3
 A basic study of world art history and theory from the Renaissance to the present. *May not be held for credit with 054.1DD or the previous 054.124 or 054.130. Pre-requisite: 054.1AA or 054.1CC. Pre-requisite to further study in history and theory of art.*
- 054.1CC Introduction to Art 1B +3
 A basic study of world art history and theory to the early Renaissance, supplemented by a two-hour laboratory in the practice and techniques of art. A combined grade of "B" or better in the laboratory of this course and that of 054.1DD can be used in place of the entrance portfolio to the School of Art. This course is only open to students in faculties and schools other than the School of Art. *May not be held for credit with 054.1AA or the previous 054.124 or 054.130. Pre-requisite to further study in the history and theory of art.*
- 054.1DD Introduction to Art 2B +3
 A basic study of world art history and theory from the Renaissance to the present, supplemented by a two-hour laboratory in the practice and techniques of art. A combined grade of "B" or better in the laboratory of this course and that of 054.1CC can be used in place of the entrance portfolio to the School of Art. This course is only open to students in faculties and schools other than the School of Art. *May not be held for credit with 054.1BB or the previous 054.124 or 054.130. Pre-requisite: 054.1CC. Pre-requisite to further study in history and theory of art.*

- 054.2AA Medieval to Early Renaissance Art and Architecture +3
 An introduction to the study of Medieval art and architecture in Europe, from the very beginnings of a specifically Christian artistic tradition to the beginning of the Renaissance. *May not be held for credit with the previous 054.251 or 054.252. Pre-requisite: either 6 credits from 054.1AA, 054.1BB, 054.1CC or 054.1DD; the previous 054.124 or 054.130; or written permission of the instructor.*
- 054.2BB Renaissance to Baroque Art and Architecture +3
 An introduction to the study of Renaissance art and architecture up to the Baroque in the context of the social, political and economic circumstances of this time. *May not be held for credit with the previous 054.245, 054.246, 054.249, 054.250. Pre-requisite: either 6 credits from 054.1AA, 054.1BB, 054.1CC or 054.1DD; the previous 054.124 or 054.130; or written permission of the instructor.*
- 054.2CC Modern to Contemporary Art +3
 This course is a study of the major movements, themes, and media of Western Art from the late 18th century to the present. *May not be held for credit with the previous 054.368, 054.369. Pre-requisite: either 6 credits from 054.1AA, 054.1BB, 054.1CC or 054.1DD; the previous 054.124 or 054.130; or written permission of the instructor.*
- 054.2DD Art of the North American Aboriginal Peoples +3
 Study of the art and artifacts of the indigenous peoples of North America (other than the Inuit). *May not be held for credit with the previous 054.373. No pre-requisite.*
- 054.2EE Survey of Asian Art +3
 An introductory survey of the arts of India, China and Japan from prehistory to the present. *May not be held for credit with the previous 054.247, 054.248. No pre-requisite.*
- 054.2FF Women and Art +3
 This course will examine the aesthetics, ideology and social conditions that have shaped women's relationships to the visual arts and to art history, as artists, as patrons, and as subject matter. *No pre-requisite.*
- 054.3AA Topics in Medieval Art and Architecture +3
 Varying from year to year, this course will cover significant topics in Medieval art and architectural history. *Depending on the topic, this course may not be held for credit with one or more of the following courses: the previous 054.251, 054.252. Pre-requisite: 054.2AA or written permission of the instructor.*
- 054.3BB Topics in Renaissance and Baroque Art and Architecture +3
 Varying from year to year, this course will cover significant topics in Renaissance and Baroque art and architectural history. *Depending on the topic, this course may not be held for credit with one or more of the following courses: the previous 054.245, 054.246, 054.249, 054.250. Pre-requisite: 054.2BB, or written permission of the instructor.*
- 054.3CC Topics in 18th and 19th Century Art +3
 Varying from year to year, this course will cover significant topics in 18th and 19th century art history. *Depending on the topic, this course may not be held for credit with one or more of the following courses: the previous 054.258, 054.368, 054.369, 054.370. Pre-requisite:*

either 054.2BB or 054.2CC as appropriate to the topic, or written permission of the instructor.

054.3DD Topics in 20th Century Art +3
Varying from year to year, this course will cover significant topics in 20th century art history. Depending on the topic, this course may not be held for credit with one or more of the following courses: the previous 054.231, 054.259, 054.379. Pre-requisite: 054.2CC, or written permission of the instructor.

054.3EE Contemporary Art +3
This course will consider the art of the past few decades, with an emphasis on recent and contemporary developments. Pre-requisite: 054.2CC, or written permission of the instructor.

054.3FF History of Photography +3
The development of photography from its origins to the present. May not be held for credit with the previous 054.258 or 054.259. Pre-requisite: 054.2CC or written permission of the instructor.

054.3GG History of Ceramics +3
This course will examine the history of ceramics, extending from prehistory in Asia to recent work in Europe, the United States and Canada. No pre-requisite.

054.3HH Art in New Media +3
This course will consider art produced in non-traditional media during the Modern era, i.e. since the 18th century, with emphasis on developments during the 20th century and particularly the last 40 years. Pre-requisite: 054.2CC, or written permission of the instructor.

054.3II Introduction to the Theory and Criticism of Art +3
This course serves as an introduction to the theory and criticism of art. May not be held for credit with the previous 054.257, 054.340 or 054.380. Pre-requisite: any second-year course or written permission of the instructor.

054.3JJ Topics in Aboriginal Art +3
Varying from year to year, this course will cover significant topics in the art of the North American Aboriginal peoples, including the Inuit. Pre-requisite: 054.2DD or 054.358, as appropriate to the topic offered, or written permission of the instructor.

054.3KK Chinese Art and Architecture +3
A survey of the art and architecture of China beginning with the Shang-Yin Period (2000 BCE) and continuing to the present. May not be held for credit with the previous 054.247. Pre-requisite: 054.2EE or written permission of the instructor.

054.3LL Japanese Art and Architecture +3
A survey of the art and architecture of Japan beginning with the Jomon Period (300 BCE to 300 CE) and continuing through the Heisei Period (1989 to present). May not be held for credit with the previous 054.248. Pre-requisite: 054.2EE or written permission of the instructor.

- 054.3MM Topics in Art History +3
This course will vary from year to year depending on the needs of students and the interests and availability of instructors. *May not be taken for credit if student has previously taken a course equivalent to the topic currently offered.*
- 054.3NN Canadian Art and Architecture to World War II +3
A study of Canadian arts up to World War II. Not to be held with the former 054.375. *Pre-requisite: 054.2CC or written permission of the instructor.*
- 054.3OO Canadian Art Since World War II +3
A study of Canadian art from World War II to the present. Not to be held with the former 054.376. *Pre-requisite: 054.2CC or written permission of the instructor.*
- 054.3PP Early Byzantine Art and Architecture +3
A study of the origin and evolution of early Byzantine Art and Architecture. Not to be held with the former 054.387. *Pre-requisite: either 6 credits from 054.1AA, 054.1BB, 054.1CC or 054.1DD; the previous 054.124 or 054.130; 054.2AA; or written permission of the instructor.*
- 054.3QQ Later Byzantine Art and Architecture +3
A study of later Byzantine Art and Architecture to the end of the Middle Ages. Special emphasis will be placed on the influence of Byzantine art on the modern traditions of Eastern Europe. Not to be held with the former 054.388. *Pre-requisite: either 6 credits from 054.1AA, 054.1BB, 054.1CC or 054.1DD; the previous 054.124 or 054.130; 054.2AA; 054.387; or written permission of the instructor.*
- 054.3RR Inuit Art +3
The history and analysis of Inuit Art. Not to be held with the former 054.358. *Pre-requisite: either 6 credits from 054.1AA, 054.1BB, 054.1CC and 054.1DD; the previous 054.124 or 054.130; or written permission of the instructor.*
- 054.3SS Islamic Art and Architecture +3
A contextual and thematic study of Islamic art and architecture beginning in the 7th century and continuing through the present. Not to be held with the former 054.371. *No pre-requisite.*
- 054.4AA Seminar on the Theory and Criticism of Art +3
A seminar treating selected topics in the theory and criticism of art. *Pre-requisite: either 054.3II; the former 054.257, 054.340, or 054.380; or written permission of the instructor.*
- 054.4BB Seminar in Art History I +3
Seminar treating special topics in Art History. *May not be taken for credit if the topic is the same as a topic previously offered in 054.447, 054.465, 054.466, 054.474, 054.475, 054.476, or 054.483. Pre-requisite: one 300-level course in the appropriate area as defined by the instructor, or written permission of the instructor.*
- 054.4CC Seminar in Art History II +3
Seminar treating special topics in Art History. *May not be taken for credit if the topic is the same as a topic previously offered in 054.447, 054.465, 054.466, 054.474, 054.475,*

054.476, or 054.483. Pre-requisite: one 300-level course in the appropriate area as defined by the instructor, or written permission of the instructor.

054.4DD Seminar on Contemporary Issues in Art

+3

A seminar treating contemporary issues in art. The topic varies from year to year. Not to be held with the former 054.464. Pre-requisite: One 300-level course in the appropriate area as defined by the instructor, or written permission of the instructor.

NET CHANGE IN CREDIT HOURS:

-48

Revised B.F.A. Degree Requirements

A student must complete at least 30 and no more than 42 credits in Art History. 15 credit hours of studio courses, field trips and Health Hazards in the Arts, specified history or philosophy requirement, university written English and Mathematics requirements, and electives for a total of 91 credits.

Students intending to enter the 2nd year of a BFA Art History programme must make application to the School of Art through the Admissions Office by the application deadline applicable to the year they wish to enter.

University 1 (1st Year) (30 credit hours)

054.1AA Introduction to Art 1A	
or	
054.1CC Introduction to Art 1B	3
054.1BB Introduction to Art 2A	
or	
054.1DD Introduction to Art 2B	3
011.120 Introduction to W. Civ.	
or	
015.120 Introduction to Philosophy	
or	
015.151 Hist. Intro. to Philosophy	6
004.XXX English	3
013.XXX Mathematics	
or	
054.102 Math in Art	3
Academic Electives	12

The student is strongly advised to take a French, German or Italian language course.

2nd Year (31 credits)

Students will select 5 of the 8 200-level courses listed below.

003.267	Greek Art and Architecture	3
003.268	Roman Art and Architecture	3
054.2AA	Med. to Early Ren. Art and Arch.	3
054.2BB	Ren. To Baroque Art and Arch.	3
054.2CC	Modern to Contemporary Art	3
054.2DD	Art of N.A. Aboriginal Peoples	3
054.2EE	Survey of Asian Art	3
054.2FF	Women and Art	3

Additional Required Courses:

054.120	Fundamentals of Drawing	
	<i>or</i>	
054.122	Basic Design	9
054.127	Health Hazards in the Arts	1
	Academic or Studio Electives	6

054.262 Writing about Art is strongly recommended for Art History Majors.

3rd Year (30 or 33 credit hours)

054.3NN Canadian Art and Arch to WWII

or

054.300	Canadian Art Since WWII	3
054.311	Intro. Theory and Criticism of Art	3
054.344	Field Trip	0
	Studio Electives	6/9

(Students must take either 9 credit hours of Studio at the 100-level or 6 credit hours of Studio at the 200-level).

Art History Electives 13 15

Revised B.F.A. Honours Requirements

1st Year

Same as for BFA General Degree

2nd Year

Same as for BFA General Degree

3rd Year

Same as for BFA General Degree

4th Year (30 credit hours)

Art History Electives

18

(A minimum of three 4th year courses must be taken before graduation)

Other Academic and or Studio Electives

12

(Honours students wishing to take more than 18 credit hours of Art History may use their academic electives to do so).

Department of Canadian Studies**List of Approved Courses in Canadian Studies**
(additions are underscored)*Anthropology*

<u>076.2XX</u>	<u>Native North America: A Sociocultural Survey (B)/</u> <u>Les Amérindiens de l'Amérique du Nord: Étude socioculturelle (B) (CUSB)</u>	<u>3</u>
076.264	Manitoba Prehistory (D)	3
<u>076.346</u>	<u>Native North American Ethnology (B)/</u> <u>Ethnologie des Amérindiens de l'Amérique du Nord (B)</u>	<u>3</u>
<u>076.350</u>	<u>Peoples of the Arctic (B)/Peuples de l'Arctique (B)</u>	<u>3</u>
076.355	Canadian Subcultures(B)/Sous-cultures canadiennes (B) (CUSB)	3

Economics

<u>018.121</u>	<u>Introduction to Canadian Economic Issues and Policies/</u> <u>Introduction aux politiques et aux problèmes économiques canadiens</u>	<u>3</u>
018.228	Social Welfare and Human Resources	6
018.231	Canadian Economic Problems/ Les problèmes économiques du Canada (CUSB)	6
018.235	Community Economic Development	3
018.236	Women in the Canadian Economy	6
018.330	Canadian Economic History/ Histoire économique du Canada (CUSB)	6
018.351	Industrial Relations	6
018.352*	Introductory Regional Economics	3
018.353*	Intermediate Regional Economics	3
018.357*	Health Economics	3
018.360*	Workshop in the Economy of Canada	6
018.369	Economic Issues of Health Policy	3
018.372	Urban and Regional Economics and Policies	3

List of Approved Courses in Canadian Studies - page 2
(additions are underscored)

Francais (CUSB)

<u>144.283</u>	<u>L'individu et le pays</u>	<u>3</u>
144.288	Civilisation canadienne-française (CUSB)	3
144.353	Le théâtre québécois (CUSB)	3
144.354	Le théâtre de l'Ouest (CUSB)	3
<u>144.383</u>	<u>L'époque de la contestation</u>	<u>3</u>
<u>144.384</u>	<u>La révolution tranquille et le roman</u>	<u>3</u>
144.385	Le théâtre de l'Ouest: poésie, nouvelles(CUSB)	3
144.386	Le théâtre de l'Ouest: romans (CUSB)	3
144.483	Littérature de l'Acadie et des Cajuns (CUSB)	3

Department of Classics

Courses to be deleted:

003.104	Introduction to the Reading of Ancient Greek	-6
003.105	Introduction to the Reading of Latin	-6
003.269	Greek Literature in Translation	-3
003.270	Latin Literature in Translation	-3
003.367	Greek and Roman Mythology	-3

Courses to be introduced:

003.1AA Introduction to the Reading of Ancient Greek 1 +3
Readings in Ancient Greek poetry and prose with related exercises in grammar and composition intended to prepare students to read Classical and Hellenistic Greek. Students may not hold credit for both 003.1AA and any of the former 003.093, 003.094, 003.095 or 003.104.

003.1AB Introduction to the Reading of Ancient Greek 2 +3
Further readings in Ancient Greek poetry and prose with related exercises in grammar and composition intended to prepare students to read Classical and Hellenistic Greek. Students may not hold credit for both 003.1AB and 003.103 or any of the former 003.093, 003.094, 003.095 or 003.104. *Pre-requisite: 003.1AA.*

003.1AC Introduction to the Reading of Latin 1 +3
Readings in Latin poetry and prose with related exercises in grammar and composition intended to prepare students to read Classical and Medieval Latin. Students may not hold credit for both 003.1AC and any of the former 003.093, 003.094, 003.095 or 003.105.

003.1AD Introduction to the Reading of Latin 2 +3
Further readings in Latin poetry and prose with related exercises in grammar and

composition intended to prepare students to read Classical and Medieval Latin. Students may not hold credit for both 003.1AD and any of the former 003.093, 003.094, 003.095 or 003.105. *Pre-requisite: 003.1AC.*

003.2AB Greek and Roman Mythology +3

A survey of Greek and Roman myths of creation and the gods with attention to the nature and definition of myth; Greek and Roman legends; the connections of mythology with religious beliefs and cults, and with the literature and arts of Western civilization. Students may not hold credit for both 003.2AB and the former 003.350 or 003.367.

003.3CB Greek Literature in Translation +3

Study in English of selected works of such major figures in Greek literature as Homer, Aeschylus, Sophocles, Euripides, Aristophanes, Herodotus, Thucydides, and Plato: discussion of their influence on the arts and literature of the world. Students may not hold credit for both 003.3CB and the former 003.240 or 003.269.

003.3CC Latin Literature in Translation +3

Study in English of selected works of such major figures in Latin literature as Vergil, Ovid, Terence, Livy, Cicero, Horace and Seneca: discussion of their influence on the arts and literature of the world. Students may not hold credit for both 003.362 and the former 003.240 or 003.270.

NET CHANGE IN CREDIT HOURS: 0

Greek (003G)

2000-2001 Undergraduate Calendar, page 94

- Advanced Major and Minor Program Revisions

- 003.103 course description is modified to add 003.1AA and 003.1AB to list of restrictions (administrative only, not forwarded to CPAC)

- 003.131 and 003.133 course descriptions to be modified to list 003.1AB as satisfying the prerequisite (administrative only, not forwarded to CPAC)

~~Deleted material~~Added material**Greek (003G)****PROGRAM
INFO**

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4	INFO
ADVANCED MAJOR TOTAL: 48 HOURS OF CREDIT				
003.104 003.1AA and 003.1AB	003.131, 003.277 plus 36 hours of credit in Greek			
MINOR TOTAL: 18 HOURS OF CREDIT				
003.104 003.1AA and 003.1AB	003.131 plus 9 hours of credit in Greek			

Latin (003L)

2000-2001 Undergraduate Calendar, page 94

- Advanced Major and Minor Program Revisions

- 003.132 course description to be modified to list 003.1AD as satisfying prerequisite (administrative only, not forwarded to CPAC)

~~Deleted material~~Added material**Latin (003L)****PROGRAM
INFO**

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
ADVANCED MAJOR TOTAL: 48 HOURS OF CREDIT			
003.105 003.1AC and 003.1AD	003.132, 003.276 plus 36 hours of credit in Latin		
MINOR TOTAL: 18 HOURS OF CREDIT			
003.105 003.1AC and 003.1AD	003.132 plus 9 hours of credit in Latin		

Department of Economics

Course to be deleted:

018.243	Comparative Economies	-6
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Courses to be introduced:

018.2XY	<u>Corporations in the Global Economy</u>	+3
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A study of the nature of the corporate form of business enterprise, its history, behaviour and performance, and the economic policy issues arising out of its prominence in today's global economy. Students may not hold credit for both 018.2XY and 018.261 when titled Corporations in the Global Economy. *Pre-requisite: 018.120 or both 018.121 and 018.122.*

018.2YY	<u>An Introduction to the World's Economies</u>	+6
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An examination of the world's economies from a broad-based economics perspective (including economic theories, institutional perspectives and historical evidence) to explain the development and limits of the world's changing and differing economies, and economic growth patterns in the light of the private business sector, labour relations and the role of the state. Students may not hold credit for both 018.2YY and the former 018.243 or 018.262 Special Topics in Economics when titled Introduction to the World' Economies. *Pre-requisite: 018.120 or both 018.121 and 018.122.*

NET CHANGE IN CREDIT HOURS:	+3
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Department of Geography

Courses to be deleted:

053.378	Historical Geography of Canadian Indians (A)	-6
053.381	Climatic Change in North America Since A.D. 1500 (PS)	-3
053.470	Historical Geography of the Ojibway Indians	-3

NET CHANGE IN CREDIT HOURS:	-12
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Global Political Economy Program

Global Political Economy (157)

2000-2001 Undergraduate Calendar, page 121/122

1) General Major and Advanced Major Program Revisions

2) Modification to List of Courses for the Global Political Economy and List of Suggested Electives for Economics

~~Deleted material~~

Added material



8.14 Global Political Economy (157)

Co-ordinator: R. Kueneinan

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
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GENERAL MAJOR: TOTAL 60 CREDIT HOURS

1. Anthropology: 076.239; 076.332
2. Economics: 018.120 or 018.121 and 018.122; 018.254; 018.255; ~~018.262~~ 018.2YY
3. History: 12 credit hours from: 011.137, 011.138, 011.150, 011.238, 011.272
4. Political Studies: 019.150; 019.253
5. Sociology: 077.120; 077.347 or 077.369

~~Subject to the final approval of the Council on Post-Secondary Education, this program will be available to students beginning in the 2001-2002 Regular Session~~

ADVANCED MAJOR: TOTAL 78 CREDIT HOURS

1. Anthropology: 076.239; 076.332; 076.375
2. Economics: 018.120 or 018.121 and 018.122; 018.254; 018.255; ~~018.262~~ 018.2YY
3. Global Political Economy: 157.270; 157.470
4. History: 12 credit hours from: 011.137, 011.138, 011.150, 011.238, 011.272
5. Political Studies: 019.150; 019.383
6. Sociology: 077.120; 077.229; 077.347 or 077.369

~~Subject to the final approval of the Council on Post-Secondary Education, this program will be available to students beginning in the 2001-2002 Regular Session~~

List of Courses for Global Political Economy

Economics

018.120	Principles of Economics	6
or		
018.121	Introduction to Canadian Economic Issues and Policies	3
and		
018.122	Introduction to Global and Environmental Economic Issues and Policies	3
018.254	Political Economy I: Production and Distribution	3
018.255	Political Economy II: Economic Growth and Fluctuations in a Global Economic Environment	3
018.262	Special Topics in Economics	6
018.2YY	<u>An Introduction to the World's Economics</u>	6

List of Suggested Electives

Economics

018.249	Economic Accounting	3
018.261	Special Topics in Economics	3
018.2XY	<u>Corporations in the Global Economy</u>	3
018.339	Development Economics	6
018.366	Economic Ideas and Social Institutions	6
018.371	Sustainable Development: Issues and Policy	3
018.451	Economy and State in a Modern Period: Western Europe and North America	6

Interdisciplinary Courses

Course to be deleted:

099.331W Masterpieces of Western Literature -6

Courses to be introduced:

099.1XY European Literature 1 +3

Great books of continental Europe in English translation. Team taught by a number of specialists in different literatures. Selected works from the ancient period until the end of the eighteenth century.

099.1XZ European Literature 2 +3

Some of the best known and most influential writers of continental Europe in English translation. Taught by specialists in the different literatures. Selected works from the beginning of the nineteenth century until the present day.

NET CHANGE IN CREDIT HOURS: 0**Labour and Workplace Studies Program**

Course to be introduced:

153.3XX History of Working People and Labour Movements
1700 to the Present (M.S) +6

A survey of working class history with emphasis upon the varieties of labour movements and trade unions. The course will refer to the social and political experience of working people in Great Britain, Europe and the United States and will devote one term to Canadian topics. Also offered as History 011.370. Students may not hold credit for both 153.370 and 011.370. *Pre-requisite: six credit hours of labour and workplace studies or history or written consent of the Labour and Workplace Studies Coordinator.*

NET CHANGE IN CREDIT HOURS: +6

2000-2001 Undergraduate Calendar, pages 128/129

- 1) Modification to Advanced Major Requirements - 153.307 (Labour Relations and Occupational Health and Safety Law, 3 credit hours) replaces 153.306 (Workplace Health and Safety, 3 credit hours) as a required course. Students are better served with 153.307 than the present 153.306.
- 2) Modification to List A (Primary Electives) for Sociology - Addition of 077.229 (Introduction to Research Methods, 6 credit hours) to List A (Primary Electives). Encouraging students (other than those in the Advanced Major) to obtain an introduction to research methods. 077.229 is already an alternative to 153.244 (Economic and Social Measurement, 3 credit hours) (which is offered infrequently).

Deleted material

Added material

8.18 Labour and Workplace Studies (153) (Formerly (099B))

Coordinator: C. Grnick



UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
GENERAL MAJOR TOTAL: 30 CREDIT HOURS			
153.127 and 153.128	1. 018.242 2. <u>one of: 153.3XX, 011.370, or 018.351</u> 3. 12 credit hours from List A below		
ADVANCED MAJOR TOTAL: 54 CREDIT HOURS			
153.127 and 153.128	1. 018.242, 018.351, <u>either 153.3XX or 011.370</u> , 153.301, 153.306 <u>153.307</u> 2. 153.244 or 077.229 ¹ 3. either 153.451 ² and 153.452 ² , or 153.481 ³ and 153.482 ³ 4. 6 credit hours from List A below 5. 6 credit hours from List A or List B below		
MINOR TOTAL: 18 CREDIT HOURS			
153.127 and 153.128	1. 018.242 2. <u>one of: 153.3XX, either 011.370, or 018.351</u>		

¹Students who include 077.229 in their program need to take only 9 additional credit hours, of which 3 must be selected from List A below.²Courses 153.451 and 153.452 may only be taken in the final year of the program and require written consent of the Labour and Workplace Studies program coordinator.³Courses 153.481 and 153.482 may only be taken in the next-to-final or final year of the program and require written consent of the Labour and Workplace Studies program coordinator.

8.18.1 Program Information: Labour and Workplace Studies Major Program

For entry to the Major, the prerequisite is a grade of "C" or better in both 153.127 and 153.128. For students who have taken additional courses toward the major, 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.

A) General Major: Requirements

In addition to 153.127 and 153.128 the following courses are required: (For course descriptions and prerequisites, see the departmental course descriptions.)

Economics

018.242 Economics of the Labour Process and Labour Relations 6
~~plus either Economics and one of the following three courses:~~

Economics

018.351 Industrial Relations 6
or

Labour and Workplace Studies

~~153.3XX History of Working People and Labour Movements 6~~
~~1700 to the Present (M,S) (same as History 011.370)~~

or

History

011.370 History of Working People and Labour Movements 6
1700 to the Present (M,S) (same as Labour and Workplace Studies 153.3XX)

plus 12 credit hours from List A below.

B) Advanced Major: Requirements

In addition to 153.127 and 153.128 the following courses are required: (For course descriptions and individual prerequisites, see the various departmental course descriptions.)

Economics

018.242 Economics of the Labour Process and Labour Relations 6
018.351 Industrial Relations 6

History

011.370 History of Working People and Labour Movements 6
1700 to the Present (M,S) (same as Labour and Workplace Studies 153.3XX)

Labour and Workplace Studies

153.244 Economic and Social Measurement (or Sociology 077.229) 3
153.301 Labour Law 3
~~153.306 Workplace Health and Safety 3~~
~~153.307 Labour Relations and Occupational Health and Safety Law 3~~
~~153.3XX History of Working People and Labour Movements 6~~
~~1700 to the Present (M,S) (same as History 011.370)~~

153.451 Labour Studies Field Placement Seminar 3
and

153.452 Labour Studies Field Placement; 6

or

153.481 Labour and Workplace Studies Work Experience Seminar 3
and

153.482 Labour and Workplace Studies Work Experience 6

Sociology

077.229 Introduction to Research Methods (or Labour and Workplace Studies 153.244) 6

plus 12 (or 9; see note 1 in the table above) credit hours of which at least six (or

see note 1 in the table above) must be selected from List A; the remaining six credit hours may be selected from either List A or List B below.

Minor Program

For entry to the Minor, the prerequisite is a grade of "C" or better in both 153.127 and 153.128.

All Programs

While 018.120 Principles of Economics, or 018.121 Introduction to Canadian Economic Studies and 018.122 Introduction to Global Environmental Economic Issues and Policies, and 077.120 Introduction to Sociology are not required, they are highly recommended. Students are encouraged to select additional course from Lists A and B below.

Courses used towards a Labour and Workplace Studies Major or Minor may not be used towards a Major/Minor or Honours in the second field.

Combinations of courses for the Major and Minor programs, other than those listed above, may be permitted by written consent of the Labour and Workplace Studies program coordinator.

List A (Primary Electives)

Students are responsible for ensuring that all prerequisites have been met. In the following list (H) indicates an Honours course.

Faculty of Arts

Economics

018.236	Women in the Canadian Economy	6
018.250	Labour and Technology (May also be taken as 153.245 Labour and Technology)	3
018.336	Labour Economics	6
018.351	Industrial Relations - required course for the Advanced Major - alternate required course for the Major (may also be taken as an optional course for the Major or Minor)	6

History

011.216*	The World 1945-1968	3
011.217*	The World 1961-Present	3
011.267	History of Capitalism (M,S)	3
011.268	A History of Socialism from the French Revolution to the Present (M,S)	3
011.269	The Common People in Industrial Society (S)	6
011.272	The World Since 1945 (GM)	6
011.370	History of Working People and Labour Movements 1700 to the Present (M,S) <u>(same as Labour and Workplace Studies 153.3XX)</u> - required course for the Advanced Major - alternate required course for the Major (may also be taken as an optional course for the Major or Minor)	6

Labour and Workplace Studies

153.244	Economic and Social Measurement	3
153.245	Labour and Technology (May also be taken as 018.250 Labour and Technology)	3
153.301	Labour Law (required course for the Advanced Major)	3
153.303	Labour and the Bargaining Process	3
153.306	Workplace Health and Safety	3
153.307	Labour Relations and Occupational Health and Safety (required course for the Advanced Major)	3
153.308	Workers' Self Management	6
153.311	Special Studies in Labour Studies	3
153.312	Special Studies in Labour Studies	3

* Indicates course no longer offered.

153.313	Employment Legislation and the Protection of Workers	3
153.314	Pensions and Benefits	3
153.315	Labour Adjustment	3
153.3XX	<u>History of Working People and Labour Movements 1700 to the Present (same as History 011.370)</u> - required course for the Advanced Major - alternate required course for the Major (may also be taken as an optional course for the Major or Minor)	6

Political Studies

019.487	Government and Public Sector Unionism (H)	3
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Sociology

077.229	Introduction to Research Methods	6
077.244	Social Stratification	3
077.337	Sociology of Work	3

Faculty of Management

Business Administration

027.203	Administrative Theory	3
027.208	Introduction to Management and Organization Theory	3
027.244	Human Resource Management	3
027.341	Labour Relations	3
027.442	Compensation	3
027.448	Collective Bargaining and Administration	3

List B (Secondary Electives)

The following courses are recommended for students whose programs permit them to elect further coursework to be included in the declared Major provided all other degree requirements and regulations are being completed. Students are responsible for ensuring that all prerequisites have been met. In the following list the designation (H) indicates an Honours course:

Faculty of Arts

Economics

018.228	Social Welfare and Human Resources	6
018.235	Community Economic Development	3
018.330	Canadian Economic History	6
018.366	Economic Ideas and Social Institutions	6

History

011.271	Women in History (S)	6
011.321	The History of Popular Radicalism in the Twentieth Century (G,M,S)	6
011.373	A History of Western Canada (C)	6
011.403	The History of Communism and Socialism Since 1945 (S,M) (H)	6

Philosophy

015.229	Ethics and Society	6
015.283	Business Ethics	3

Political Studies

019.466	The State in the Economy (H)	6
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Psychology

017.351	Organizational Psychology	3
017.360	Environmental Psychology	3

Sociology

077.347	Political Sociology	3
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Women's Studies

156.150	Women's Studies 1: Perspectives from the Humanities	3
156.151	Women's Studies 2: Perspectives From the Social Sciences	3
156.353	Feminist Theory	6
156.355	Feminist Community Organizing: Theories and Practices	3

Sociology (077)

2000-2001 Undergraduate Calendar, page 149

1) General Major Sociology and Advanced Major Sociology Program Revisions**2) Introduction of Honours Double program in Sociology**Deleted material
Added material**8.28 Sociology (077)**

Head: R. Kueneman



UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
GENERAL MAJOR SOCIOLOGY TOTAL: 30 CREDIT HOURS			
077.120 or 077.121 and 077.122	1. 077.229 2. any two of 077.222, 077.333, 077.335, 077.336 , 077.339, 077.347 3. 12 credit hours in Sociology courses numbered at the 200 or 300 level		
GENERAL MAJOR CRIMINOLOGY TOTAL: 30 CREDIT HOURS			
077.120 or 077.121 and 077.122	077.229, 077.251, 077.261	12 credit hours from 077.370, 077.371, 077.372, 077.374, 077.376, 077.378, 077.379, 077.380, 077.383, 077.452	
ADVANCED MAJOR SOCIOLOGY TOTAL: 48 CREDIT HOURS			
077.120 or 077.121 and 077.122	1. 077.229 and 077.233 2. one of 077.239, 077.337, 077.347 , 077.381, 077.387 3. two of 077.222, 077.333, 077.335, 077.336 , 077.339, 077.347 4. 6 credit hours in Sociology courses numbered at the 200 or 300 level		18 credit hours in Sociology courses numbered at the 200 or 300 level
MINOR TOTAL: 18 CREDIT HOURS			
077.120 or 077.121 and 077.122	12 credit hours in Sociology courses numbered at the 200 or 300 level		
HONOURS SINGLE TOTAL: 90 CREDIT HOURS			
077.120 or 077.121 and 077.122	1. 077.201, 077.222 and 077.229 2. 6 credit hours in Sociology 3. 12 credit hours in ancillary options	1. 9 credit hours from 077.333, 077.335, 077.336, 077.339, 077.347 2. 9 credit hours in Sociology courses numbered at the 200 or 300 level 3. 12 credit hours in ancillary options	1. 077.445, 077.446, 077.447, 077.448, and 077.456 2. 6 credit hours in ancillary options
HONOURS DOUBLE TOTAL: 87 CREDIT HOURS			
077.120 or 077.121 and 077.122	1. 077.201, 077.222 and 077.229 2. At least 36 credit hours in other Honours field 3. At least 6 credit hours in ancillary options	9 credit hours from 077.333, 077.335, 077.336, 077.339, 077.347	077.445, 077.446, 077.447, 077.448, and 077.456

Women's Studies Program

Course to be modified:

156.252 Introduction to Feminist Theory (3)

Survey of the varieties of feminist thought and the various approaches feminists have taken toward developing an understanding of women's oppression and the possibilities for change. Students may not hold credit for both 156.252 and the former 099.252 or 099.352. *Pre-requisite: one Women's Studies List B course, or written consent of the Women's Studies coordinator.*

NET CHANGE IN CREDIT HOURS:

0

Collège universitaire de Saint-Boniface - Français

Course to be deleted:

144.093 Grammaire et style

-6

Course to be introduced:

144.1AB Grammaire de l'écrit

+6

Perfectionnement du français par l'entremise d'activités de compréhension et de production de textes divers menant à une étude approfondie de la grammaire, à l'enrichissement du vocabulaire et à un aperçu de la stylistique interne. Développement d'habitudes de travail telles que l'utilisation des outils de rédaction et l'autocorrection. Mise en pratique des notions apprises dans le cours et activités orales dans le cadre du laboratoire obligatoire. On ne peut se faire créditer à la fois le 144.1AB et les anciens 044.093, 144.093 et le 044.110.

NET CHANGE IN CREDIT HOURS:

0

Collège universitaire de Saint-Boniface - Traduction

Course to be deleted:

122.090 Introduction à l'espagnol

-6

Course to be introduced:

122.1AB Introduction à l'espagnol

+6

Ce cours est destiné aux étudiants et étudiantes n'ayant aucune, connaissance de l'espagnol ou n'en ayant qu'une connaissance, minime. L'accent sera mis sur le vocabulaire, la grammaire et l'acquisition d'aptitudes orales et écrites au moyen d'exercices divers et de pratique en laboratoire. Les activités de laboratoire alterneront avec des sessions de conversation en groupes. La participation active de l'étudiante ou de l'étudiant est une exigence du cours. On ne peut se faire créditer à la fois le 122.1AB et le 044.118 ou les anciens 044.090 ou 122.090. Les étudiants et les étudiantes dont l'espagnol est la

langue maternelle et ceux qui possèdent déjà les crédits du cours d'espagnol de secondaire 4 ou l'équivalent ne peuvent s'inscrire à ce cours.

Course to be modified:

122.126 Espagnol intermédiaire (3)

Révision intensive de la grammaire et du vocabulaire étudiés en 122.1AB (044.118) ou les anciens 044.090 et le 122.090 ou en Espagnol 40S. Pratique et perfectionnement des connaissances en classe et au laboratoire. L'étudiante ou l'étudiant ne peut se faire créditer à la fois le 122.126 (044.126) ou l'ancien 044.122. *Préalable: au moins "C" dans le 122.1AB (044.118) ou les anciens 122.090 ou 044.090 ou l'équivalent en Espagnol 40S, ou l'autorisation écrite du professeur.*

NET CHANGE IN CREDIT HOURS:

0

Courses Offered in Other Faculties and Schools Acceptable for Credit in Arts

HISTORY OF ART (054A)

	YEAR I	YEAR II	YEAR III	YEAR IV
GENERAL	6 credit hours from	1. 12 credit hours from List A		
MAJOR	054.1AA, 054.1BB,	2. 054.375 or 054.376		
Total: 30 hours	054.1CC or 054.1DD;	3. 054.3II		
of credit.	and 054.199	4. 054.344		
		5. 9 credit hours from either List A or List B		
MINOR	6 credit hours from	12 credit hours from either List A or List B		
Total: 18 hours	054.1AA, 054.1BB			
of credit.	054.1CC or 054.1DD;			
	and 054.199			

PROGRAM INFORMATION**Major Program**

For entry to the Major, the prerequisite is a grade of "C" or better in 6 credit hours from 054.1AA, 054.1BB, 054.1CC, 054.1DD. 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.

Minor Program

For entry to the Minor, the prerequisite is a grade of "C" or better in 6 credit hours from 054.1AA, 054.1BB, 054.1CC, 054.1DD.

Introductory Courses

054.1AA	Introduction to Art 1A	(3)
054.1BB	Introduction to Art 2A	(3)
054.1CC	Introduction to Art 1B	(3)
054.1DD	Introduction to Art 2B	(3)

Required Courses

054.199	First Year Field Trip	(0)
054.344	Field Trip	(0)

List A**Classics**

003.267	Greek Art and Archaeology	(3)
003.268	Roman Art and Archaeology	(3)

Art History

054.2AA	Medieval to Early Renaissance Art and Architecture	(3)
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054.2BB	Renaissance to Baroque Art and Architecture	(3)
054.2CC	Modern to Contemporary Art	(3)
054.2DD	Art of the North American Aboriginal Peoples	(3)
054.2EE	Survey of Asian Art and Architecture	(3)
054.2FF	Women and Art	(3)
List B		
054.262	Writing About Art	(3)
054.291	Field Studies in Art History I	(3)
054.292	Field Studies in Art History II	(6)
054.3AA	Topics in Medieval Art and Architecture	(3)
054.3BB	Topics in Renaissance and Baroque Art and Architecture	(3)
054.3CC	Topics in 18 th and 19 th Century Art	(3)
054.3DD	Topics in 20 th Century Art	(3)
054.3EE	Contemporary Art	(3)
054.3FF	History of Photography	(3)
054.3GG	History of Ceramics	(3)
054.3HH	Art in New Media	(3)
054.3II	Introduction to the Theory and Criticism of Art	(3)
054.3JJ	Topics in Aboriginal Art	(3)
054.3KK	Chinese Art and Architecture	(3)
054.3LL	Japanese Art and Architecture	(3)
054.3MM	Topics in Art History	(3)
054.358	Inuit Art	(3)
054.371	Islamic Art and Architecture	(3)
054.375	Canadian Art and Architecture to World War II	(3)
054.376	Canadian Art Since World War II	(3)
054.378	Twentieth Century American Art Until 1950	(3)
054.387	Early Byzantine Art and Architecture	(3)
054.388	Later Byzantine Art and Architecture	(3)
054.391	Field Studies in Art History III	(3)
054.392	Field Studies in Art History IV	(6)
054.4AA	Seminar on the Theory and Criticism of Art	(3)
054.4BB	Seminar in Art History I	(3)
054.4CC	Seminar in Art History II	(3)
054.464	Seminar on Contemporary Issues in Art	(3)
054.471	Directed Study I	(3)
054.472	Directed Study II	(3)

Mathematics

Mathematics (136)

2000-2001 Undergraduate Calendar, page 159

1) General Major, Advanced Major, Minor Program Revisions

2) Modification to Footnotes

~~Deleted material~~

Added material

Mathematics ~~(013)~~(136)

Head: R. G. Woods

The departments of Applied Mathematics and Mathematics offer all of their introductory courses under the Mathematical Sciences Introductory Program. The courses offered by this program all carry the prefix "136" in the course number.

**PROGRAM
INFO**

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
GENERAL MAJOR TOTAL: 36 CREDIT HOURS			
1. one of 136.150 ¹ , 136.151, 136.152, 136.153	136.230, 136.260, 136.270	1. 136.271	
2. one of 136.170, 136.171, 136.173; or 136.169		2. 4-2 credit hours from 136.245, 136.250, 136.255, 013.332, 013.333, 013.335, 013.336,	
3. 136.120		013.370-136.3S1, 136.3TO,	
4. one of 136.130, 136.131 ²		136.3A1, 136.3A2, 136.3L1,	
5. 074.101		136.3PS, 136.3TX	
ADVANCED MAJOR TOTAL: 48 CREDIT HOURS			
1. one of 136.150 ¹ , 136.151, 136.152, 136.153	136.230, 136.260, 136.270, 136.271	1. 013.332 and 013.333 ² 136.3A1, 136.3A2, 136.3L1 ¹	
2. one of 136.170, 136.171, 136.173; or 136.169		2. 4-2 credit hours in Mathematics (013) (136) courses	
3. 136.120			
4. one of 136.130, 136.131 ²			
5. 074.101			
MINOR TOTAL: 18 CREDIT HOURS			
A minimum of 18 credit hours from: 136.120 ¹ , 136.130, 136.131, 136.150, 136.151, 136.152, 136.153, 136.169, 136.170, 136.171, 136.173, 136.230, 136.245, 136.250, 136.255, 136.270, 136.271, 013.332, 013.333, 013.335, 013.336, 013.370-136.3S1, 136.3TO, 136.3A1, 136.3A2, 136.3L1, 136.3PS, 136.3TX. The 18 credit hours must include 136.130², 136.150² and 136.170² (or 136.169).			

¹013.332 and 013.333; ~~136.3A1, 136.3A2 and 136.3L1~~ may be taken in either year 3 or year 4.

²136.131 may be taken in place of 136.130; 136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.171 or 136.173 may be taken in place of 136.170.

NOTES:

The courses listed under the University 1 heading may be taken in any year provided that at least six credit hours are taken in first year from 136.120, 136.130, 136.131, 136.150, 136.151, 136.152, 136.153, 136.169, 136.170, 136.171, 136.173, and that normal prerequisites are met.

For entry to either Major in Mathematics, the prerequisite is a grade of "C+" or better in six hours of Mathematics courses taken.

For entry to the Minor in Mathematics, the prerequisite is a grade of "C" or better in six hours of Mathematics courses taken.

A detailed listing of courses in the Department of Mathematics is available in the *Calendar* entries of the Faculty of Science.

Equivalent Honours courses may sometimes be substituted for General courses in the Year 2 and Year 3 lists the courses listed above. (In particular, 013.237 may be used in place of 013.335 and 013.336). In this way, a Major degree can be considerably strengthened. Students must obtain written permission from the department of Mathematics and Astronomy in order to take Honours courses. For more detailed advice on this point students should talk to a faculty member in the department.

5. **Faculty of Dentistry**

Course to be modified: (to be retroactive to the 1995/96 Academic Year)

066.101 **Early Clinical Experience (6)**

Add to course description: "Course to be graded as pass/fail".

6. **Faculty of Education**

Department of Educational Administration, Foundations & Psychology

Course to be deleted:

129.556 **Practicum in Counselling** -6

Courses to be introduced:

129.548 **Counselling Skills** +3

Emphasis will be on the development of counselling skills such as attending and listening, reflection of content and feelings, feedback and self-disclosure, focusing and summarization. Students may not hold credit for both 129.548 and the former 129.556 or 043.516. *Pre- or co-requisite: 129.550 (or the former 043.509).*

129.549 **Field Placement in Counselling** +3

A field-based counselling situation for students to apply counselling skills under qualified professionals in the field, and supported by University instructors (Pass/Fail). Students may not hold credit for both 129.549 and the former 129.556 or 043.516. *Pre- or co-requisite: 129.550 (or the former 043.509) and 129.548.*

NET CHANGE IN CREDIT HOURS: 0

**Bachelor of Music/Bachelor of Education Integrated Program and
Bachelor of Human Ecology/Bachelor of Education Integrated Program**

**INTEGRATED BACHELOR OF HUMAN ECOLOGY/BACHELOR OF EDUCATION
PROGRAM**

YEAR 1: HUMAN ECOLOGY

002.130	University 1: Structure and Modeling in Chemistry	3
002.132	University 1: Introduction to Organic Chemistry	3
017.120	Introduction to Psychology	6
or		
077.120	Introduction to Sociology	6
028.103	Human Ecology: Perspectives & Communication	3
030.120	Food: Facts and Fallacies	3
030.121	Nutrition for Health and Changing Lifestyles	3
062.101*	Human Development in the Family	3
062.142	Family Management Principles	3
064.122	Dynamics of the Fashion Industry	3

Total credit hours = 30

Intersession or Summer Session

018.120	Principles of Economics	6
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YEAR 2: HUMAN ECOLOGY

005.100*	Basic Statistical Analysis	3
028.205*	Introduction to Research in Human Ecology	3
064.102	Today's Textiles	3
062.172	Environments for Living	3
030.213	Nutrition Through the Life Cycle	3
030.215	Composition, Functional & Nutritional Properties of Food	3
062.207	Family Financial Management	3
064.223	Textile Product Development: Foundations	3
071.125	Biology B	6

Total Credit hours = 30

NOTE: Apply to Integrated Program During Year 2

YEAR 3: HUMAN ECOLOGY

028.310*	Communication for Professional Practice	3
030.216	Principles of Food Preparation and Preservation	3
132.124	Teaching Human Ecology in Senior Years I	3
	Human Ecology Electives	9
	Free electives (any faculty including Education)	6

Total credit hours = 24

Intersession

132.1XX	Integrated Programs School Experience I	3
132.150	Education in the Senior Years	3

YEAR 4: HUMAN ECOLOGY

028.408	Current Issues in Human Ecology	3
	Human Ecology Electives	12
132.229	Teaching Human Ecology in Senior Years II	3
	Education Elective	3

Humanities: Human Ecology uses the Faculty of Arts
definition of Humanities (Section 5.0) 6

Total credit hours = 27

Intersession

132.1XY	Integrated Programs School Experience II	3
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YEAR 5: EDUCATION

132.298	Senior Years School Experience 2	6
129.180	Psychology of Learning & Instruction 1	3
129.181	School & Society 1	3
132.199	Teacher and Technology	3
129.280	Psychology of Learning & Instruction 2	3
129.281	School & Society 2	3
132.250	Themes in Senior Years Education	3
132.251	Language & Literacy Across the Curriculum	3
	Education elective or second C&I	3

Total Credit hours = 30

Total Program hours = 150

Students who complete the above program of studies satisfactorily receive a Bachelor of Human Ecology degree and a Bachelor of Education degree. Students are expected to maintain academic standards consistent with the granting of the Degrees in non-integrated programs.

77

**BACHELOR OF MUSIC/BACHELOR OF EDUCATION INTEGRATED
(SECONDARY)**

YEAR 1: MUSIC

033.107	Introduction to the History of Music	3
033.108	History of Music II	3
033.111	Music Theory I	3
033.112	Music Theory II	3
033.118	Ensemble	2
033.119	Ensemble	2
033.138	Basic Musical Skills I	2
033.139	Basic Musical Skills II	2
033.140	Major Practical Study	6
004.1XX	English (Course Meeting Written English Requirements)	3
033.323	Acoustics of Music (Meets Mathematics Requirements)	3

Total credit hours = 32

YEAR 2: MUSIC

033.207	History of Music III	3
033.208	History of Music IV	3
033.211	Music Theory III	3
033.212	Music Theory IV	3
033.218	Ensemble	2
033.219	Ensemble	2
033.238	Basic Musical Skills III	2
033.239	Basic Musical Skills IV	2
033.240	Major Practical Study	6
033.246	Conducting	3
	Second Teachable	6

Total credit hours = 35

NOTE: Apply to Integrated Program During Year 2

YEAR 3: MUSIC

033.318	Ensemble	2
033.319	Ensemble	2
033.347	Major Practical Study	6
033.396	Music of the 20 th Century I	3
	Required Music Ed.	9
132.120	Teaching the Arts in Senior Years	3
132.160	Teaching General Music	3
	Second teachable	6

Total credit hours = 34

Intersession:

132.1XX	Integrated Programs School Experience I	3
132.150	Education in the Senior Years	3

YEAR 4: MUSIC

033.418	Ensemble	2
033.419	Ensemble	2
033.447	Major Practical Study	6
033.397	Music of the 20 th Century II	3
132.224	Teaching Music in Senior Years	3
	Music Education	12
	Second Teachable	6

Total credit hours = 34

Intersession

132.1XY	Integrated Programs School Experience II	3
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YEAR 5: EDUCATION

132.298	Senior Years School Experience 2	6
129.180	Psychology of Learning & Instruction 1	3
129.181	School & Society 1	3
132.199	Teacher and Technology	3
129.280	Psychology of Learning & Instruction 2	3
129.281	School & Society 2	3
132.250	Themes in Senior Years Education	3
132.251	Language & Literacy Across the Curriculum	3
	Second C&I 1 or Education elective	3

Total credit hours = 30

Total Program hours = 174

Students who complete the above program of studies satisfactorily receive a Bachelor of Music degree and a Bachelor of Education degree. Students are expected to maintain academic standards consistent with the granting of the Degrees in non-integrated programs.

**Music Education Courses in the School of Music**

033.246	Conducting
033.309	Introduction to Ethnomusicology
033.313	Music for Children I
033.314	Music for Children II
033.363	Music Theory V
033.369	Percussion Techniques
033.372	Classroom Instruments
033.373	Early Musical Development
033.377	Vocal Techniques
033.378	Woodwind Techniques
033.379	Brass Techniques

033.380	String Techniques
033.388	Jazz Ensemble Techniques
033.415	Choral Repertoire
033.435	Music for Children III
033.475	Choral Techniques I
033.476	Choral Techniques II
033.477	Band and Orchestral Techniques I
033.478	Band and Orchestral Techniques II

Required for Instrumental Music

033.246	Conducting
033.369	Percussion Techniques
033.378	Woodwind Techniques
033.379	Brass Techniques
033.388	Jazz Ensemble Techniques
033.477	Band and Orchestra Techniques I
033.478	Band and Orchestra Techniques II
	Music Education Elective (3 credit hours)

Total credit hours = 24

Required for Choral Music

033.246	Conducting
033.377	Vocal Techniques
033.388	Jazz Ensemble Techniques
033.415	Choral Repertoire
033.475	Choral Techniques I
033.476	Choral Techniques II
	Music Education Electives (6 credit hours)

Total credit hours = 24

Required for Early/Middle Years Music

033.246	Conducting
033.313	Music for Children I
033.372	Classroom Instruments
033.373	Early Musical Development
033.377	Vocal Techniques
	Electives (6 credit hours)

Total credit hours = 24

7. Faculty of Engineering

Department of Civil and Geological Engineering

Course to be introduced:

023.4XX Design Project (2-6T:0-0) +6

An interdisciplinary project-based course involving engineering design, teamwork and delivered in studio format. Students are expected to work in pre-assigned teams under the guidance of professional engineers on a predetermined project. Lecture material will cover project management, construction, environmental and economic issues. Each team will be required to give an oral presentation of their design project. *Pre-requisites: 023.377 and 023.370. Co-requisites: 023.439, 023.422 and 023.440.*

NET CHANGE IN CREDIT HOURS: +6

Second Degree in Mechanical Engineering Aerospace Option

Courses required by graduates of the Industrial Engineering Program to obtain a second degree in Mechanical Engineering Aerospace Option:

025.347	Heat Transfer IIIM
025.348	Dynamics
025.349	Advanced Fluid Mechanics of Design
025.350	Stress Analysis and Design III
025.351	Aircraft and Spacecraft Performance Dynamics
025.352	Aerodynamics
025.353	Computer Aided Engineering Design and Analysis
025.417*	Program Management and Engineering Systems
025.418	Analysis and Design of Aerospace Structures
025.419	Aerospace Materials and Advanced Manufacturing Processes
025.420	Gas Turbines Propulsion Systems
025.450	Mechanical Engineering Laboratory

* If this course was already taken as part of the Industrial Engineering Program, an additional course must be taken. The course must be approved by the Head of the Department of Mechanical and Industrial Engineering.

Requirements for the second degree:

At the present time the Programs in Mechanical and Industrial Engineering differ by eleven (11) core courses. The suggested policy is that graduates of one of the programs be required to complete a minimum of twelve (12) additional half-courses to become eligible for the second degree. The regulations for obtaining a second degree become:

A. Core Course Requirement:

Candidates must complete all the core course requirements for the program in

which they wish to obtain the second degree. If candidates took core courses from the second degree program as technical electives for their first degree program, then suitable courses approved by the Head of the Department of Mechanical and Industrial Engineering must be taken as substitutes. The minimum number of additional courses to be completed is twelve (12). Extra courses taken during completion of the first degree and which were not required for that degree may be counted among the twelve providing they are appropriate.

B. Technical Elective Requirements:

The technical elective requirements of each of the programs must be satisfied. These are a minimum of three (3) for the Mechanical Engineering Program and a minimum of three (3) for the Industrial Engineering Program. Upon approval by the Head of the Department of Mechanical and Industrial Engineering, any or all of the technical elective requirements may be satisfied by designating appropriate courses from the previously completed program.

C. Minimum Passing Grade:

Due to possible time tabling difficulties and to confusion as to the definition of a part time student, the minimum passing grade in all additional courses taken to qualify for the second degree program is a "C". A "C" grade or higher must have been achieved in any designated technical electives or any core courses completed previously and which are to be counted as credit towards the second degree.

8. Faculty of Law

Courses to be deleted:

045.147	Legal Methods	-5
045.151	Computer Applications for Law	-2

Course to be introduced:

045.147	<u>Legal Methods (6-0:0-0) or (0-0:6-0) or (3-0:3-0)</u>	+6
An introduction to legal research and writing skills, civil procedure, and oral advocacy. Grading: Pass/Fail.		

NET CHANGE IN CREDIT HOURS: -1

9. Faculty of Management

Department of Business Administration

Course to be modified:

027.452	<u>Comparative Industrial Relations and Human Resource Management (3)</u>	
To provide an international perspective on industrial relations (IR) and human resource		

management (HRM) through analysis and comparison of IR systems and HRM practice across selected countries and of current developments therein. Also covers theories and issues relevant to these topics. *Students are encouraged, but not required, to complete 027.341 prior to taking this course.*

NET CHANGE IN CREDIT HOURS: 0

10. **School of Music**

Course to be deleted:

033.323 Acoustics of Music -3

Course to be introduced:

033.1XX Introduction to the Acoustics of Music +3

A study of the physical and mathematical basis of music; consideration of the nature of musical sound, its production, propagation and detection; tone production of some typical musical instruments; scales and temperaments. Experiments and projects. *Pre-requisite: basic understanding of the rudiments of music: 033.193 or equivalent, or consent of the instructor.*

NET CHANGE IN CREDIT HOURS: 0

11. **Faculty of Nursing**

Course to be modified:

049.323 Perspectives on Mental Health Nursing (4)

Emphasis will be placed on the mental health needs of individuals and their families who are experiencing mental health problems and/or mental illness. Diverse perspectives on mental health and illness will be explored. A clinical practicum will provide an opportunity to apply mental health nursing principles in acute and community settings.

NET CHANGE IN CREDIT HOURS: 0

12. **Faculty of Pharmacy**

Courses to be deleted:

046.138	Pharmacy Practice I	0
046.238	Pharmacy Practice 2	0
046.338	Pharmacy Practice 3	0
046.448	Pharmacy Practice 4	-6

Courses to be introduced:

046.138 Pharmacy Practice I +1
Students will be required to complete two assignments, namely observation assignment in an assigned pharmacy practice site and consumer interview. Subject to satisfactory completion of the assignments and the submission of two reports, students will be graded on a pass/fail basis.

046.238 Pharmacy Practice 2 +2
One week (40 hours) practice experience in an assigned community pharmacy under the supervision of a licensed pharmacist. Subject to satisfactory completion and submission of required reports, students will be graded pass/fail. *Pre-requisite: 046.138. Co-requisites: 046.224, 046.239.*

046.338 Pharmacy Practice 3 +4
Four weeks (160 hours) practice experience in an assigned community pharmacy under the supervision of a licensed pharmacist. Subject to satisfactory completion and submission of required report, students will be graded on a pass/fail basis. *Pre-requisite: 046.238. Co-requisites: 046.342, 046.343, 046.345.*

046.448 Pharmacy Practice 4 +10
Nine weeks (360 credit hours) practice experience in an assigned hospital and community pharmacy under the supervision of a licensed pharmacist. Subject to satisfactory completion and submission of required reports, students will be graded on a pass/fail basis. *Pre-requisite: 046.338. Co-requisite: 046.444.*

Course to be modified:

046.141 Applied Pathophysiology for Pharmacy Students
A comprehensive theoretical foundation of the phenomena that produce alterations in human physiology function across the lifespan. Course content will prepare the student for subsequent courses related to diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations.

NET CHANGE IN CREDIT HOURS: +11

13. **Faculty of Physical Education and Recreation Studies**

Physical Education Degree Program

Course to be deleted:

057.319 Basic Trauma and Life Support -1

Courses to be introduced:

057.3AA Basic Trauma and Emergency Support (3-0) +3
Assessment and management of medical emergencies common to sports. Topics will include on-field primary and secondary surveys, airway management, assessment and

management of head, spinal, chest, abdominal and extremity trauma. Upon completing the course, students may apply for Red Cross First Responder certification. *Pre-requisites:* 057.306, 068.148, 068.149 and 068.150. May not hold for credit with the former 057.319.

057.4AA Pathology and Clinical Manifestations 2: Cardiac, Respiratory and Neurologic Disorders (3-0) +3

A theory course including the basic principles of pathology and clinical manifestations of cardiac, respiratory, and neurologic disorders. Preventative measures, assessments and treatment methods employed in care of patients with these disorders will also be examined. *Pre-requisites:* 068.148, 068.149, 068.150, 022.253, and 022.254.

057.4AB Drugs and Ergogenic Aids in Sport (3-0) +3

A multi-disciplinary examination of drugs, hormones, dietary supplement and methods used by athletes in attempting to enhance athletic performance. Ethical concerns, and mechanisms of action will be examined for steroids, stimulants, masking agents, blood doping, and hormonal and dietary supplements among others. 022.133 or 022.253 and 022.254 are strongly recommended.

Course to be modified:

057.308 Principles of Planning and Administration in Physical Education (3-0) 3

This course covers the administrative and organizational aspects of physical education, intramural and inter-school programs. *Pre-requisite:* 057.150 or the former 057.132.

NET CHANGE IN CREDIT HOURS: +8

Recreation Studies Degree Program

Course to be added to the core curriculum:

123.120 Introduction to Leisure Travel

Course to be deleted from General Education:

027.203 Administration Theory

6 credit hours of Science be deleted and 3 credit hours of Math added

6 credit hours of Language be deleted and 3 credit hours of University 1 English requirement be added.

14. Faculty of ScienceWarren Centre for Actuarial Studies and Research**ACTUARIAL MATHEMATICS PROGRAM****Program Change****2001-2002****Proposed Program:****ACTUARIAL MATHEMATICS (010)**

Warren Centre for Actuarial Studies and Research

Faculty of Management

Director: M. Byrne

General Office: 268 Drake Centre Telephone: (204) 474-7426

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
HONOURS ACTUARIAL 120 CREDIT HOURS			
136.169 (B), (or 136.150 ¹ and 136.170 ¹ (B)), 136.130 ¹ (B), and 005.100 Plus 6 credit hours from the Faculty of Arts, which should include the "W" course A "W" course must be taken in University 1 or Year 2 ³	010.202, 010.212, 010.221, 005.200 ² , 136.275 (or 136.270 and 136.271), 027.215 ³	010.313, 010.323, 010.333, 010.353, 010.424 or 010.434, 005.305, 005.350, 005.360, 136.3CO	010.414, 010.415, whichever of 010.424 or 010.434 not yet taken, 005.347 ³ or 005.312 ² , 005.349 ³ , 136.230 ³
30 Hours	30 Hours	30 Hours	30 Hours
JOINT MATHEMATICS ACTUARIAL MATHEMATICS HONOURS		See Section 4.10 Mathematics	
JOINT STATISTICS-ACTUARIAL MATHEMATICS HONOURS		See Section 4.14 Statistics	

¹136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.131 may be taken in place of 136.130; 136.171 or 173.173 may be taken in place of 136.170.²005.200 may be taken in University 1 or Year 2.³005.347 or 005.312 and (or) 005.349 may be taken in Year 3 or 4.⁴The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program.⁵136.230 and 027.215 may be taken in Year 2, 3 or 4.**Actuarial Mathematics Program Information**

The Faculty of Science offers an interdisciplinary program leading to a B.Sc. (Honours) degree in Actuarial Mathematics. Courses from the Faculty of Management are included in this program.

To enter the program, a student must have 005.100, 136.150¹ and 136.170¹ (or 136.169) and 136.130¹ with a grade of at least "B" in 136.170¹ or 136.169 and 136.130¹ and have satisfied the Faculty of Science requirements for entry to the Honours program. Courses 074.101 and 018.120 (or 018.121 and 018.122) are strongly recommended in University 1.

The Warren Centre for Actuarial Studies and Research and the Department of Statistics offer a joint Honours program (see Section 4.14). Also, the Warren Centre for Actuarial Studies and Research and the Department of Mathematics offer a joint Honours program (see Section 4.10).

The electives in Year 3 and Year 4 are to be chosen from Actuarial Mathematics, approved Business Administration courses, Applied Mathematics (300 or 400 level), Computer Science, Economics,

Mathematics (136.220 and 300 or 400 level) and Statistics (005.348 or 400 level courses). Other electives may be selected through consultation with the program head.

Recommended Electives

University 1: Computer Science 074.101; Economics 018.120 (or 018.121 and 018.122)

Year 2 : Accounting and Finance 009.110, 009.111, 009.220; Economics 018.245

Year 3: Accounting and Finance 009.341

Year 4: Actuarial Mathematics 010.405, 010.406; Business Administration 027.200, 027.423; Statistics 005.414

The Honours program must be approved each year by the program head.

Double Honours programs can usually be arranged, combining Actuarial Mathematics with Mathematics, Statistics or Economics.

The changes are:

1. Statistics 005.100 has been added to the Calendar text as an entry requirement.
2. Mathematics 006.325 is being replaced by Mathematics 136.3CO in Year 3.

Department of Botany

Course to be introduced:

001.4XX Lichen Symbioses (L)

+3

The biology, diversity, systematics and evolution of lichens including the molecular biology and coevolution of the algal and fungal symbionts. Offered in 2001-2002 and in alternate years thereafter. *Pre-requisite: 001.221 or consent of instructor.*

NET CHANGE IN CREDIT HOURS:

+3

DEPARTMENT OF BOTANY

Program Change

2001-2002

Proposed Program:

BOTANY (001)

Head: D. Punter

General Office: 505 Buller Building Telephone: (204) 474-8132

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
HONOURS	120 CREDIT HOURS		
071.125, 002.130, 002.131, 005.100 Plus 3 credit hours of Mathematics ¹ or Physics from 136.120, 136.130 ¹ , 136.150 ¹ , 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 001.211 and 005.200 which must be taken in University 1 or Year 2	001.201, 001.202, 001.237, (022.237 or 065.237) ² , 001.246, Either: 002.221 plus 002.236 and 002.237 (060.236 and 060.237); or 002.277 and 002.278 (060.277 and 060.278), 022.228	001.301, 001.307, 001.357	001.403, 001.460
		Plus 24 credit hours of 300 or 400 level Botany courses; plus 18 credit hours from Botany, Microbiology, Zoology or related fields	

A "W" course must be taken in University 1 or Year 2

30 Hours	30 Hours	30 Hours	30 Hours
HONOURS DOUBLE	MINIMUM 120 CREDIT HOURS		
071.125, 002.130, 002.131, 005.100 Plus 3 credit hours of Mathematics ¹ or Physics from 136.120, 136.130 ¹ , 136.150 ¹ , 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which should include the "W" course A "W" course must be taken in University 1 or Year 2	Arranged in consultation with departments concerned		

FOUR YEAR MAJOR ⁴	120 CREDIT HOURS		
071.125, 002.130, 002.131, 005.100 Plus 3 credit hours of Mathematics ¹ or Physics from 136.120, 136.130 ¹ , 136.150 ¹ , 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 001.211 and 005.200 which must be taken in University 1 or Year 2 A "W" course must be taken in University 1 or Year 2	001.201, 001.202, 001.237 (022.237 or 065.237) ² , 001.246, 022.228 Either: 002.221 plus 002.236 and 002.237 (060.236 and 060.237); or 002.277 and 002.278 (060.277 and 060.278) Plus 21 credit hours of 300 or 400 level Botany courses	001.301, 001.307	001.403

THREE YEAR GENERAL	Minimum of 12 hours of Botany courses at the 200, 300 and (or) 400 level
MINOR	Minimum of 12 hours of Botany courses at the 200, 300 and (or) 400 level
071.125	
JOINT BOTANY-ZOOLOGY HONOURS AND FOUR YEAR MAJOR ECOLOGY PROGRAMS	
See Section 4.6 Ecology Program	

¹136.131 may be taken in place of 136.130; 136.151, 136.152, 136.153 or 136.169 may be taken in place of 136.150.²001.237 (022.237 or 065.237) has 005.100 as corequisite.³The University written English and mathematics requirement must be successfully completed within the first 60 credit hours of this program. Completion of three credit hours from 136.120, 136.130¹, 136.150¹, or 005.100 in University 1 or Year 2 will satisfy the mathematics requirement.⁴IMPORTANT NOTE: 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 with a view to satisfying the prerequisites of the required courses.

The Changes are:

1. Zoology 022.228 has been added to Year 2 of the Honours and Major program.
2. The requirement for "one of 136.120, 136.130, 136.150, 074.101 or 074.126" has been changed to read "Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130, 136.150, 016.102 or 016.105."

Department of Chemistry

Courses to be deleted:

002.449	Advanced Biochemistry	-6
002.449F	Biochimie avancée	-6
002.461	Project in Chemistry	-3

Courses to be introduced:

002.4AA	<u>Signalling and Regulation of Gene Expression</u>	+3
The biochemistry of cell response to external stimuli, with emphasis on animals. Cell surface receptors and ligands; signalling to the nucleus; phosphorylation and proteolysis; transcription; gradients in cell patterning. Not to be held with the former 002.449. <i>Pre-requisite: 002.237/060.237.</i>		
002.4AAF	<u>Signalisation et régulation de l'expression génétique</u>	+3
La biochimie de la réponse cellulaire aux stimuli externes, en mettant l'accent sur les animaux. Les récepteurs à la surface des cellules ainsi que les ligands, la signalisation au noyau, la phosphorylation et la protéolyse; la transcription; les gradients dans le typage cellulaire. <i>Un étudiant ou une étudiante ne peut se faire créditer à la fois le 002.4AA et l'ancien 002.449. Préalable : le 002.237/060.237.</i>		
002.4AB	<u>Glycobiology and Protein Activation</u>	+3
The role of carbohydrate containing biomolecules in biochemistry and their importance for understanding some genetic diseases. The importance of limited proteolysis in activation of biomolecules. Not to be held with the former 002.449. <i>Pre-requisite: 002.237/060.237.</i>		
002.4ABF	<u>Glycobiologie et activation des protéines</u>	+3
Le rôle des biomolécules contenant des glucides en biochimie et leur importance dans la connaissance des maladies génétiques. L'importance de la protéolyse limitée dans l'activation des biomolécules. <i>Un étudiant ou une étudiante ne peut se faire créditer à la fois le 002.4AA et l'ancien 002.449. Préalable : le 002.237/060.237.</i>		
002.4YZ	<u>Research Project in Chemistry or Biochemistry</u>	+6
A research project in any aspect of chemistry or biochemistry, chosen in consultation with the course administrator and an appropriate supervising faculty member. Written reports and oral presentation at the end of the project will be required. The course is normally available only to final year students in chemistry programs. Not to be held with 060.453. <i>Pre-requisite: permission of the course administrator.</i>		

NET CHANGE IN CREDIT HOURS: +3

DEPARTMENT OF CHEMISTRY
Program Changes
2001-2002

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Proposed Program:

CHEMISTRY (002)

Head: H. Duckworth

General Office: 350 Parker Building Telephone: (204) 474-9321

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
HONOURS	123 CREDIT HOURS		
002.130 (B), 002.131 (B) 016.105 (C) and 016.107 (C), or 016.102 (C+) and 016.103 (C+), 136.150 ¹ (C), plus one of 136.120, 136.130 ¹ , 136.170 ¹ with a grade of 'C'. Plus 6 credit hours from the Faculty of Arts, which should include the "W" course. Plus 6 credit hours of electives ²	At least 12 credit hours from: 002.221, 002.222, 002.228, 002.229, 002.236 (060.236), 002.237 (060.237) ³ , 002.238, 002.247, Whichever two of: 136.120, 136.130 ¹ , 136.170 ¹ not yet taken ¹ Plus 12 credit hours of electives ⁴ which may include 6 credit hours of Chemistry ⁵	At least 18 credit hours from: any of 002.221, 002.222, 002.228, 002.229, 002.236 (060.236), 002.237 (060.237) ³ , 002.238, 002.247, not yet taken, and 002.336, 002.337, 002.338, 002.339, 002.358, 002.457, 002.468, 002.469 Plus 12 credit hours of electives ⁴ which may include 6 credit hours of Chemistry ⁵	002.460 and 002.4YZ Plus sufficient credit hours from Chemistry courses not yet taken ¹ to total a minimum of 63 credit hours Plus sufficient electives ⁴ to total a minimum of 33 credit hours
A "W" course must be taken in University 1 or Year 2 ⁶			
30 Hours	30 Hours	30 Hours	33 Hours
FOUR YEAR MAJOR ⁷	120 CREDIT HOURS		
002.130 (C+), 002.131 (C+) 016.105 and 016.107, or 016.102 and 016.103 136.150 ¹ , plus one of 136.120, 136.130 ¹ , 136.170 ¹ Plus 6 credit hours from the Faculty of Arts, which may include the "W" course. Plus 6 credit hours of electives ²	At least 12 credit hours from: 002.221, 002.222, 002.228, 002.229, 002.236 (060.236), 002.237 (060.237) ³ , 002.238, 002.247, Whichever two of: 136.120, 136.130 ¹ , 136.170 ¹ not yet taken ¹ Plus 12 credit hours of electives ⁴ which may include 6 credit hours of Chemistry ⁵	At least 18 credit hours from: any of 002.221, 002.222, 002.228, 002.229, 002.236 (060.236), 002.237 (060.237) ³ , 002.238, 002.247, not yet taken, and 002.336, 002.337, 002.338, 002.339, 002.358, 002.457, 002.468, 002.469 Plus 12 credit hours of electives ⁴ which may include 6 credit hours of Chemistry ⁵	002.460 Sufficient credit hours from Chemistry courses not yet taken ¹ to total a minimum of 57 credit hours Plus sufficient electives ⁴ to total a minimum of 30 credit hours
A "W" course must be taken in University 1 or Year 2 ⁶			
THREE YEAR GENERAL			
A minimum of 12 credit hours from: 002.221, 002.222, 002.228, 002.229, 002.238, 002.247			
MINOR			
002.130 (C) and 002.131 (C)	Normally 002.221 and 002.222, plus an additional 6 credit hours		
JOINT MICROBIOLOGY-CHEMISTRY HONOURS AND FOUR YEAR MAJOR IN BIOCHEMISTRY		See Section 4.11 Microbiology	
JOINT MICROBIOLOGY-CHEMISTRY HONOURS IN BIOTECHNOLOGY		See Section 4.11 Microbiology	
¹ 136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.131 may be taken in place of 136.130; 136.171 or 136.173 may be taken in place of 136.170; 136.169 may be taken in place of 136.150 and 136.170.			
² Students intending to elect 002.236 and 002.237 (060.236 and 060.237) in either the Honours or the Four Year Major program should note that Biology 071.125 is a prerequisite.			
³ Other combinations of mathematics courses may be acceptable with the approval of the Department Head.			
⁴ Electives chosen during Years 2, 3 and 4 must include at least nine credit hours of Science courses other than Chemistry at the 200 level or higher. Students should take careful note of prerequisites when planning their selection from this list.			
⁵ Students must complete a minimum of six (6) credit hours in each of the following subject areas:			
Analytical - 002.247, 002.347			
Inorganic - 002.238, 002.338, 002.457, 002.468			
and a minimum of nine credit hours in each of the following areas:			
Organic/Biochemistry - 002.221, 002.222, 002.236 (060.236), 002.237 (060.237), 002.339, 002.358, 002.4AA, 002.4AB, 002.458, 002.462, 002.463, 002.469, 002.470			
Physical/Polymer - 002.228, 002.229, 002.336, 002.337, 002.349, 002.464, 002.465			
⁶ The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. See <i>Student Services, General Academic Regulations and Policy</i> , Section 4.1, <i>University Written English and Mathematics Requirement</i> .			
⁷ IMPORTANT NOTE: 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 with a view to satisfying the prerequisites of the required courses. (Letters in brackets indicate minimum prerequisite standing for further study.)			

The changes are:

- 002.4YZ (6 credit hours) replaces 002.461 (3 credit hours), resulting in a change from 60 to 63 credit hours of required Chemistry courses in the Honours program.
- 002.4AA and 002.4AB replaces 002.449 in the list of Organic/Biochemistry options in footnote 5.

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DEPARTMENT OF CHEMISTRY
Program Changes
2001-2002

Major Program Performance Requirements

Current Program Regulations:

To continue in the Major program, a student must have a sessional Grade Point Average of 2.00 in the regular session. To graduate with the Major degree, students must present a grade of "C" or better on the 57 credit hours of Chemistry required in the degree.

Proposed Program Regulations:

To continue in and graduate from the Major program, a student must have a sessional Grade Point Average of 2.00 in the regular session. To graduate with the Major degree, students must present a grade of "C" or better on the 57 credit hours of Chemistry required in the degree.

Department of Computer Science

Courses to be modified:

074.310 Concepts of Imperative Programming Languages (3)

The design, evaluation, and use of modern imperative programming languages. Data types, operations, control structures, program decomposition. Implementation requirements and strategies. Not to be held with the former 074.325. *Pre-requisites: 074.206 and 074.222.*

074.335 Software Engineering I (3)

Introduction to software engineering. Software life cycle models, system and software requirements analysis, specifications, software design, testing and maintenance, software quality. Not to be held with the former 074.331. *Pre-requisites: 074.206 and 074.213 (or the former 074.239).*

074.349 Computer Graphics I (3)

An introductory course in computer graphics including topics such as raster graphics, two and three-dimensional transforms, and simple rendering. *Pre-requisite: 074.219 (or the former 074.209) or a calculus or linear algebra course at the 200 level or higher.*

NET CHANGE IN CREDIT HOURS:

0

Honours Program Change:

The following sentence will be added to the performance requirements for the Honours and Honours Co-operative option programs:

"To graduate with the Honours degree, a student must present a minimum grade of "C" in each of 074.206, 074.208, 074.213, 074.222, 074.223, 074.303, 074.317,

074.343 and 074.337 and each Computer Science course that apply go the Computer Science component of their degree program."

MAJOR: 074.343 and 074.337 and each Computer Science course that apply go the Computer Science component of their degree program."

Computer Science - Mathematics Joint Honours Program**COMPUTER SCIENCE – MATHEMATICS JOINT PROGRAM****Program Change****2001-2002****Proposed Program:****COMPUTER SCIENCE - MATHEMATICS JOINT PROGRAM (074M)**

The Departments of Computer Science and Mathematics offer a Joint Honours program for students wishing in-depth study in both Computer Science and Mathematics.

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS 123 CREDIT HOURS			
074.101 and 074.102 (B), 136.130 ¹ (B), 136.169 (B), (or 136.150 ¹ and 136.170 ¹ (B)) 005.100 (C) Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	074.206, 074.208 ¹ , 074.222, 074.223, 136.220, 136.235, 136.275 plus one of 136.260 or 136.280	074.303, 074.317, 074.337, 074.343, 074.430, 074.431 (or 074.442), Two of 074.329, 074.335, 074.338, One of 074.429, 074.435, 074.438, Plus an additional 3 credit hours of 300 or 400 level Computer Science ⁴ 136.3L1 or 136.3L2, 136.3A3 (or 136.3A1 and 136.3A2), 136.3CM, whichever of 136.260 or 136.280 not yet taken Plus 12 credit hours of 300 or 400 level Mathematics courses, of which 3 credit hours must be at the 400 level	
A "W" course must be taken in University 1 or Year 2 ²			
30 Hours	33 Hours	30 Hours	30 Hours
JOINT COOPERATIVE OPTION HONOURS 123 CREDIT HOURS			
074.101 and 074.102 (B), 136.130 ¹ (B), 136.169 (B), (or 136.150 ¹ and 136.170 ¹ (B)), 005.100 (C) Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	074.206, 074.208 ¹ , 074.222, 074.223, 074.298 ¹ , 136.220, 136.235, 136.275 plus one of 136.260 or 136.280	074.303, 074.317, 074.337, 074.343, 074.398 ¹ , 074.430, 074.431 (or 074.442), 074.498 ¹ , Two of 074.329, 074.335, 074.338, One of 074.429, 074.435, 074.438, Plus an additional 3 credit hours of 300 or 400 level Computer Science ⁴ 136.3L1 or 136.3L2, 136.3A3 (or 136.3A1 and 136.3A2), 136.3CM, whichever of 136.260 or 136.280 not yet taken Plus 12 credit hours of 300 or 400 level Mathematics courses, of which 3 credit hours must be at the 400 level	
A "W" course must be taken in University 1 or Year 2 ²			
30 Hours	33 Hours	30 Hours	30 Hours

¹136.131 may be taken in place of 136.130; 136.151, 136.152, or 136.153 may be taken in place of 136.150; 136.171 or 136.173 may be taken in place of 136.170.

²The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. As there are no electives in Year 2 of the program, students should complete the University written English requirement in University I. If not completed in University I, a "W" course must be completed prior to Year 3 in addition to the required Year 2 courses. See *Student Services, General Academic Regulations and Policy*, Section 4.1, *University Written English and Mathematics Requirement* of this Calendar.

³Students in this program will not take 074.213 or 074.313. 074.213 is waived as a prerequisite for students in this program.

⁴Students who plan a Master's degree in Computer Science or Mathematics should take suitable 400 level courses in the appropriate department.

⁵The work terms 074.298, 074.398 and 074.498 will be completed in the summers following Year 2, Year 3 and Year 4, respectively.

The Changes are:

- Mathematics 013.340, 013.345, 013.338 and 013.372 have been replaced by 136.3L1 or 136.3L2; 136.3A3 (or both of 136.3A1 and 136.3A2), and 136.3CM.
- The list of 12 credit hours of Mathematics courses in Year 3 and 4 has been changed from "Plus 12 credit hours from the following courses, including at least 6 credit hours at the 400 level: 013.347, 013.349, 013.375, 013.376, 013.452, 013.456 and 013.465" to "Plus 12 credit hours of 300 or 400 level Mathematics courses, of which 3 credit hours must be at the 400 level".
- Footnote 5 has been deleted and the chart amended accordingly.

ECOLOGY PROGRAM
Program Change
2001-2002

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Proposed Program:

4.6 ECOLOGY PROGRAM (001E)

Coordinator: I. Waters

Office: 524 Buller Telephone: (204) 474-8739

The Departments of Botany and Zoology offer a Joint Honours program and a Joint Four Year Major program in Ecology.

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS			
120 CREDIT HOURS			
071.125, 002.130, 002.131 Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 ¹ , 136.150 ¹ , 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 005.100 and 005.200 which must be taken in University 1 or Year 2	001.201, 001.202, 001.237 (022.237 or 065.237) ² , 022.228, 022.232, 022.260	001.301 or 022.354 ³ , 001.307, 022.375 Plus 001.342 (022.345), 001.345, and 022.348 which may be taken in Year 3 or 4	001.413 or 022.400
<p>Either: 002.221 plus 002.236 and 002.237 (060.236 and 060.237); or 002.277 and 002.278 (060.277 and 060.278), 001.246 Plus additional courses from the approved option list to make a total of 30 credit hours in each of Year 2, 3 and 4. Included in these additional courses must be a minimum of 12 credit hours at the 400 level in Botany and/or Zoology in Year 3 or 4</p>			
A "W" course and an "M" course must be taken in University 1 or Year 2 ⁴			
30 Hours	30 Hours	30 Hours	30 Hours
JOINT FOUR YEAR MAJOR⁵			
120 CREDIT HOURS			
071.125, 002.130, 002.131 Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130, 136.150, 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which may include the "W" course Plus 005.100 and 005.200 which must be taken in University 1 or Year 2 ⁴	001.201, 001.202, 001.237 (022.237 or 065.237) ² , 022.228, 022.232, 022.260	001.301 or 022.354 ³ , 001.307, Plus 001.342 (022.345), 001.354, and 022.348 which may be taken in Year 3 or 4	
<p>Either: 002.221 plus 002.236 and 002.237 (060.236 and 060.237); or 002.277 and 002.278 (060.277 and 060.278), 001.246 Plus an additional 30 credit hours to be chosen from the approved option list, a minimum of 12 credit hours of which must be at the 400 level in Botany and/or Zoology</p>			
A "W" course and an "M" course must be taken in University 1 or Year 2 ⁴			
UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
JOINT FOUR YEAR MAJOR⁵ COOPERATIVE OPTION			
120 CREDIT HOURS			
071.125, 002.130, 002.131 Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130, 136.150, 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which may include the "W" course Plus 005.100 and 005.200 which must be taken in University 1 or Year 2 ⁴	001.201, 001.202, 001.237 (022.237 or 065.237) ² , 022.232, 022.260	001.301 or 022.354 ³ , 001.307, 001.398/022.398, 001.399/022.399 Plus 022.348, 001.342, (022.345), 001.354 which may be taken in Year 3 or 4	001.498/022.498, 001.499/022.499
<p>Either: 002.221 plus 002.236 and 002.237 (060.236 and 060.237); or 002.277 and 002.278 (060.277 and 060.278), 001.246 Plus an additional 30 credit hours to be chosen from the approved option list, a minimum of 12 credit hours of which must be at the 400 level in Botany and/or Zoology</p>			

A "W" course and an "M" course must be taken in University 1 or Year 2⁴

¹136.151, 136.152, 136.153 or 136.169 may be taken in place of 136.150. 136.131 may be used in place of 136.130.

²001.237 (022.237 or 065.237) has 005.100 as corequisite.

³For students who have completed 022.253 and 022.254 before entering the Honours or Four Year Major Program, the 022.353 and 022.354 requirement will be waived if they received a minimum grade of "B" in 022.254 and completed and passed the laboratory component of 022.353 and 022.354.

⁴The University written English and mathematics requirement must be successfully completed within the first 60 credit hours of this program. Completion of three credit hours from 005.100 and 136.150¹ or 136.130¹ in University 1 or Year 2 will satisfy the University mathematics requirement.

IMPORTANT NOTE: 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 with a view to satisfying the prerequisites of the required courses.

Ecology Program Prerequisite Information

Though normally a prerequisite for all Zoology and some Botany courses, 071.125 may be waived under special circumstances at the discretion of the Program Coordinator. Students who qualify should contact the Program Coordinator to arrange for substitutions for 071.125. However, students who intend to seek admission to professional faculties which require 071.125 (such as Dentistry, Pharmacy, Medical Rehabilitation, Optometry, Veterinary Science) will not be eligible for admission to those faculties without credit in 071.125.

Students registering for 300 and 400 level Botany courses in which prerequisites are not specified must have completed two years in a university program or have written permission of the department head of Botany.

Honours

To enter the Honours program, students must have a "B" in 071.125 or 002.131 and not less than "C+" in the other course. In addition, all other Faculty requirements for entry to the Honours program must be satisfied. If 071.125 has been waived (see above), then the entrance requirement will be 002.131 and the replacement for 071.125, with a "B" standing in either course and not less than a "C+" in the other.

To continue in the Honours program, i.e., to proceed from Year 2 to Year 3 and Year 3 to Year 4, a student must have a sessional GPA of 2.50 (C+), with no failures, and in addition, must have a 3.00 (B) average on all Botany and Zoology courses during that session and a grade of "C+" or better in each Botany and Zoology course. Individual courses may be designated in which a grade of "B" or better is required.

In Year 4, in order to graduate with an Honours degree, a student must obtain a GPA of 3.00 (B) or better on the year's work, with no failures, and must have a grade of "C+" or better in all Botany and Zoology courses.

Four Year Major

To enter the four year Major program, a student must have a "C+" in either 071.125 or 002.131 and not less than a "C" in the other course. In addition, all other Faculty requirements for entry to the four year Major program must be satisfied. If 071.125 has been waived (see above), then the entrance requirement will be 002.131 and the replacement for 071.125, with a "C+" standing in either course and not less than a "C" in the other.

Students who so wish, and who have an appropriate standing and course selection may transfer to the Honours program at any time up to the commencement of Year 4.

Four Year Major Cooperative Option

To be eligible to enter the Cooperative Option, students must have met the requirements for entry to the program and have successfully completed 60 credit hours including the following courses: 071.125, 002.130, 002.131, 005.100 and 005.200, 136.150 or 136.130, 001.201, 001.202, 001.237 (022.237 or 065.237), 022.232, and 022.260.

Entry into the Cooperative Option is competitive and may be based on academic performance. Students are advised that satisfying the entrance requirements does not guarantee a place in the Cooperative Option if demand for places exceeds the number of places available. Acceptance into the program is dependent upon the student receiving a job placement through the Cooperative Option Coordinator. Students will be required to submit work reports upon the completion of each employment term. In order to progress in the Cooperative program, a student must obtain a "pass" for each work term report. Students must register in and pay fees for the appropriate employment term course prior to the commencement of that employment term. Students may complete four work terms but must complete a minimum of three. Work terms may commence in the winter term of Year 3.

First work term 001.398/022.398

Second work term 001.399/022.399

Third work term 001.498/022.498

Fourth work term 001.499/022.499

The summer after Year 2 may be used to clear academic deficiencies or for additional employment purposes.

Students should refer to the general Faculty regulations for Cooperative Options in Section 3.4.

Approved Option List

The approved optional courses for both the four year Major and Honour programs are:

001.211, 001.221, 001.229, 001.320, 001.322, 001.325, 001.337, 001.358, 001.401, 001.402, 001.404, 001.417, 001.465, 001.480, 001.488, 001.4XX, 002.238, 002.247, 005.312, 005.313, 007.239, 007.331, 007.431, 007.463, 022.215, 022.338, 022.343, 022.346, 022.350, 022.358, 022.361, 022.417, 022.448, 022.471, 022.472, 022.477, 022.480, 022.481, 022.482, 022.484, 022.487, 022.488, 022.4XX, 038.205, 038.425, 038.428, 038.436, 038.450, 038.452, 038.454, 022.4XY, 022.4XZ, 022.4YX, 039.354, 039.427, 039.436, 039.441, 040.306, 040.350, 040.351, 040.406, 040.409, 040.412, 040.413, 040.450, 040.451, 040.454, 053.373, 060.210, 060.211, 060.223, 060.228, 060.344, 060.348, 060.4CC, 065.250, 128.310, 128.3XZ, 128.410.

The following courses are optional for the four year Major program: 022.375 and 022.400.

001.460 and 022.411 are only available to Honours Ecology students.

Other courses not on the optional list may be selected with the approval of the Program Coordinator.

By an appropriate selection of courses from this list, students can obtain a particular program emphasis in either terrestrial or aquatic ecological systems.

The changes are:

1. "Plus 3 credit hours of Mathematics or Physics from: 136.120, 136.130, 136.150, 016.102 or 016.105" has replaced 136.150.
2. Cell Biology 022.228 has been added to Year 2 as a required course and deleted from the options list.
3. The following courses are being added to the Approved Option List for the Ecology program: 001.4XX, 060.4CC, 128.3XZ, 022.4XX, 022.4XY, 022.4XZ, 022.4YX. 128.3XZ replaces 128.320, 022.4XX replaces 022.418, 022.4XY replaces 022.476 and 022.4XZ replaces 022.468, respectively.

Environmental Science Program

Course to be deleted:

128.320 Ecological Impact Assessment (L) -3

Courses to be introduced:

128.2XY Technical Communication Skills in Environmental Sciences (L) +3
Lectures and laboratories designed to provide a basic understanding of the methods used in formulation of research questions; search techniques currently available; and the organization and summarization of information for report, poster and seminar presentations. *Pre-requisites: 30 credit hours of university credit and permission from the Environmental Science Program.*

128.3XY Environmental Responsibilities +3
Environmental responsibilities in terms of policies, legislation, standards and guidelines are covered through lectures, case study review and discussion. Environmental liability and due diligence are reviewed in relation to responsibilities of organizations and individuals. Strategies to manage environmental liabilities, including environmental assessment, risk assessment, audit, site assessment and management systems are also discussed. *Pre-requisite: 60 credit hours of university course work.*

128.3XZ Environmental Assessment (L) +3
The theory, principles and practices of environmental assessment as a planning and decision-making process to identify and mitigate adverse effects of development projects. Environmental assessment is defined in the context of federal and provincial legislation, and applicable standards and guidelines. Laboratory assignments involve practical experiences, case study review and basic report preparation. Not to be held with the former 128.320 or 001.356. *Pre-requisites: 061.355 or 128.3XY, and 001.237 (or 022.237 or 065.237), or Instructor permission.*

Courses to be modified:

128.100 Environmental Science 1 - Concepts (3)
This course will introduce students to the conceptual framework of Environmental Science by examining its physical, biological, and social components. General topics to be considered will include ecological principles and the responses of natural and managed systems to disturbance; population growth; biodiversity and conservation; and environmental sustainability. *Not to be held for credit with 001.337, 071.134, or 053.262.*

128.410 Conservation Strategies (3) L
Case studies, seminars and tutorials considering the general aspects, components, preparations, monitoring, evaluation and communication of conservation strategies. Specific strategies are presented and discussed in tutorial sessions. *Not to be held with the former 001.468. Pre-requisites: 128.310 (or the former 001.355).*

NET CHANGE IN CREDIT HOURS: +6

ENVIRONMENTAL SCIENCE PROGRAM

Program Change

2001-2000

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Proposed Program:

ENVIRONMENTAL SCIENCE PROGRAM (128)

Director: N.R. Hunter

General Office: 231 Machray Hall Telephone: (204) 474-6225

The Faculty of Science offers an interdisciplinary program leading to a B.Sc. Major degree in Environmental Science.

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
FOUR YEAR MAJOR²	120 CREDIT HOURS		
128.100, 002.130, 002.131, 007.134 ¹ , 016.102, 016.103 ² , 071.125, 136.150 ³ Plus 6 credit hours from the Faculty of Arts, which may include the "W" course	128.200, 128.217, 001.237 (022.237 or 065.237), 005.100, 005.200, 060.223, 128.2XY, 015.275, 018.239	128.310, 128.3XZ, 128.3XY	128.410

A "W" course and an "M" course must be taken in University 1 or Year 2⁴

Plus a "depth package" in a defined area of Environmental Science, approved by the Program Administrator or Director, consisting of 27 credit hours of 200 (or higher) level courses with a minimum of 12 credit hours at the 300 or 400 level

MAJOR COOPERATIVE OPTION	120 CREDIT HOURS		
128.100, 002.130, 002.131, 007.134 ¹ , 016.102, 016.103 ² , 071.125, 136.150 ³ Plus 6 credit hours from the Faculty of Arts, which may include the "W" course	128.200, 128.217, 001.237 (022.237 or 065.237), 005.100, 005.200, 060.223, 128.2XY, 015.275, 018.239	128.398, 128.399, 128.310, 128.3XY, 128.3XZ	128.410, 128.498

A "W" course and an "M" course must be taken in University 1 or Year 2⁴

Plus a "depth package" in a defined area of Environmental Science, approved by the Director, consisting of 27 credit hours of 200 (or higher) level courses with a minimum of 12 credit hours at the 300 or 400 level

NOTE: The Cooperative Option is a five year program

THREE YEAR GENERAL

Minimum 12 credit hours from: 128.217, 128.300, 128.310⁶, 128.3XY, 128.3XZ⁶, 128.400, 128.410,
128.421, and 128.422

MINOR

128.100, 128.200 plus a minimum of 12 credit hours from the following list: 128.300, 128.310, 128.3XZ, 128.400, 128.410, 128.421, 128.422.
Please note that 001/022/065.237 and 005.200 are prerequisites for some courses.

¹007.123, may be used in place of 007.134. Students who wish to proceed to a "depth package" in Geological Sciences are advised to complete either 007.123, or 007.134 and one of 007.135, 007.136 or 007.137.

²016.105 and 016.107 may be used in lieu of 016.102 and 016.103.

³136.120, 136.130, 136.131, 136.151, 136.152 or 136.153 may be taken in place of 136.150.

⁴Other courses may be taken as approved by the Program Director.

⁵The written English and mathematics requirement must be successfully completed within the first 60 credit hours of this program. Completion of 136.150³ or 005.100 in University 1 or Year 2 will satisfy the University mathematics requirement.

⁶128.310 and 128.3XZ have one of 001.237, 022.237 or 065.237 as a prerequisite.

⁷**IMPORTANT NOTE:** 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 with a view to satisfying the prerequisites of the required courses and facilitating scheduling of courses.

Environmental Science Prerequisite Information

Entry is based on completion of 12 credit hours from 128.100, 128.200, 071.125, 002.130, 002.131, 005.100, 005.200, 136.150³, 007.134 (or 007.123), 016.102, and 016.103 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. All other faculty requirements for entry into the four year Major program must be satisfied.

Entry from the National Environmental Education and Training Program

Graduates from the National Environmental Education and Training (NEET) Program, with an average of "C+" or better, may enter the Environmental Science four year Major program. NEET graduates with 60 credit hours of transfer credit will be exempt from completing 128.100, 128.200, 128.310, 128.3XZ, 128.410, 001.237 (022.237, 065.237), 018.239 and 015.275. Students interested in pursuing an Environmental Science depth package in Native Studies will receive credit for 24 credit hours toward this package. Students in depth packages in other areas of Environmental Science should consult the program director.

Program Note

Students in this program must complete a minimum of 60 credit hours of courses offered by the Faculty of Science. Students who convert to another program are required to satisfy the requirements of that new program.

Cooperative Option

To be eligible to enter the Cooperative Option, students must have met the requirements for entry to the program and have successfully completed 60 credit hours including the following courses: 128.100, 128.200, 128.217, 128.2XY, 002.130, 002.131, 005.100, 005.200, 007.134 (or 007.123), 001.237 (022.237 or 065.237), and 071.125.

Entry into the Cooperative Option is competitive and may be based on academic performance. Students are advised that satisfying the entrance requirements does not guarantee a place in the Cooperative Option if the demand for places exceeds the number of places available. Acceptance into the program is dependent upon the student receiving a job placement through the Cooperative Option coordinator.

The changes are:

1. 007.134 (or 007.123) replaces 007.144 and other first year Geological Sciences courses as the required introductory geology course and in the program entry requirements for the Major and Major-Cooperative programs.
2. 136.150 will be listed as the recommended Mathematics course instead of "one of 074.101, 074.126, 136.120, 136.130 and 136.150". Mathematics 136.120, 136.130, 136.131, 136.151, 136.152 and 136.153 may be substituted for 136.150.
3. Environmental Geology 007.239 has been deleted from the core.
4. 128.3XZ replaces 128.320 as a required course in Year 3 of the program.
5. 128.2XY *Technical Communications in Environmental Sciences* (3)L and 128.3XY *Environmental Responsibilities* (3) have been added to the core. 128.ZXY has been made a requirement for entry to the Cooperative Option. The inclusion of these new courses into the core is in response to the recent review that identified gaps in the areas of communication skills and environmental legislation in the Program.
6. The requirement of 9 credit hours of Social Science/Humanities chosen from a defined list has been replaced by 015.275 *Ethics and Environment* (3) and 018.239 *Environmental Economics* (3) as required core courses. (The prerequisite of 018.120 for 018.239 is waived for students in this program.)
7. 128.3XY and 128.3XZ have been added to the list of courses acceptable as upper level Science courses for the General degree. 128.320 has been deleted from that list.
8. The minor changes from "128.100, 128.200, 128.310, 128.320, 128.410 and one of 001.237, 022.237 or 065.237 (or either 001.228 or 022.229)" to "128.100, 128.200 plus a minimum of 12 credit hours from the following list: 128.300, 128.310, 128.3XY, 128.3XZ, 128.400, 128.410, 128.421, 128.422. Please note that 001/022/065.237 and 005.200 are prerequisites for some courses."

GENETICS PROGRAM
Program Change
2001-2002

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Proposed Program:

GENETICS PROGRAM (060G)

Coordinator: P. Loewen

General Office: 418 Buller Building Telephone: (204) 474-9372

The Faculty of Science offers an interdisciplinary program leading to a B.Sc. (Honours) degree in Genetics.

Courses from Arts, Agricultural and Food Sciences and Medicine are included in this program.

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
HONOURS	120 CREDIT HOURS		
002.130, 002.131, 071.125, 005.100, 136.150 ¹	001.246, 002.221, 002.222, 002.236 (060.236), 002.237 (060.237), 005.200, 022.228, 060.210, 060.211	001.346, 039.314, 060.341, 076.289, 125.302	
Plus 6 credit hours from the Faculty of Arts, which should include the "W" course			
Plus either 136.120, 136.130 ¹ , or 136.170 ¹ and 6 credit hours of electives or from the list of optional courses.		42 credit hours from list of optional courses, a minimum of 18 of which must be at the 400 level	
A "W" course and an "M" course must be taken in University 1 or Year 2 ²			
30 Hours	30 Hours	30 Hours	30 Hours

¹136.131 may be taken in place of 136.130; 136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.171 or 136.173 may be taken in place of 136.170; 136.169 may be taken in place of 136.150 and 136.170.

²The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. As there are no electives in Year 2 of the program, students should complete the University written English requirement in University 1. If not completed in University 1, a "W" course must be completed prior to Year 3 in addition to the required Year 2 courses.

Genetics Entry Requirements and Optional Courses

The requirements for entry to the Genetics Honours program are a "B" in each of 002.130 and 002.131, and not less than a "C+" in 071.125; or a "B" in 071.125 and a "C+" in each of 002.130 and 002.131; plus standing in 136.150¹. In addition, students must satisfy the general faculty requirements for entry to Honours programs. Students in this program must have each year's course selection approved by the Genetics program coordinator.

To proceed from Year 2 to Year 3 and Year 3 to Year 4 and to complete Year 4 of the program successfully, a student must have a sessional Grade Point Average of 2.50.

Students who achieve less than a 2.50 sessional Grade Point Average in summer session will be allowed to continue in the Honours program if they maintain a 2.50 cumulative Grade Point Average (including that summer session) and at least a 2.00 sessional average in the summer session.

The optional courses are:

Physics: 016.102, 016.103, 016.105, 016.107

Botany: 001.434

Chemistry: 002.228, 002.229, 002.4AA, 002.4AB, 002.462, 002.463

Zoology: 022.215, 022.253, 022.254, 022.306, 022.414, 022.415

Microbiology: 060.301, 060.343, 060.344, 060.345, 060.346, 060.406.453, 060.454, 060.457, 060.460, 060.461

Computer Science: 074.101, 074.102, 074.126, 074.127

Animal Science: 035.350, 035.428

Plant Science: 039.350, 039.352, 039.433, 039.450

Human Genetics: 125.401

By an appropriate selection of courses from this list, students can obtain particular program emphasis in either plant, human or molecular genetics.

All programs must contain a minimum of 18 credit hours of 400 level courses as options in Years 3 and 4.

Other suitable optional courses may be arranged through consultation with the Genetics program committee

The changes are:

1. The required courses 016.105 and 016.107 (or 016.102 and 016.103) in University 1 and 074.126 in Year 3 have been moved to the options list. The credit hours of optional courses have been increased from 39 to 42 credit hours in the list of optional courses.
2. Statistics 005.100 has been moved from Year 2 to University 1.
3. Genetics 001.346 has been moved from Year 2 to Year 3.
4. Cell Biology 022.228 has been moved from Year 3 to Year 2.
5. The following courses have been added to the list of optional courses: Physics 016.102 or 016.105, 016.103 or 016.107, Computer Science 074.126, Zoology 022.253 and 022.254 and Plant Science 039.350.
6. Chemistry 002.4AA and 002.4AB replace Chemistry 002.449 in the list of options.

Department of Geological Sciences

Courses to be modified:

007.136 Environmental Earth Sciences (3)

An integrated approach to environmental Earth Science. The effect of Earth's internal processes on the external processes in the atmosphere and hydrosphere. Topics include: the water cycle, weather, climate and climate development, pollution. Not to be held with the former 007.132. *Pre-requisites: one of 007.123, 007.134, 007.144, or 007.225 (or the former 007.126, 007.127, or 007.133).*

007.239 Environmental Geology (3)

Examination of geological processes and material as they interact with human activities, environmental planning, and management. Also available by correspondence. *Pre-requisite: university geology, or 053.129 or 053.120, or consent of instructor.*

007.426 Applied Geophysics Field Course (3)

One and one-half weeks field instruction in the planning and execution of geophysical surveys and the use of portable geophysical instruments. Offered in 2001 Summer Session and alternate years thereafter. Taught with the first half of 007.474. Not to be held for credit with 007.474. *Pre-requisite: 007.381 (or the former 007.380).*

007.463 Geolimnology (3) L

The major physical, geochemical, sedimentological, and hydrogeological processes in lakes and their watersheds. A multidisciplinary course. Offered in 2000-2001 and in alternate years thereafter. *Pre-requisites: university chemistry and geology, or 007.277, or consent of instructor.*

NET CHANGE IN CREDIT HOURS:

0

DEPARTMENT OF GEOLOGICAL SCIENCES

Program Change

2001-2002

100

Proposed Program :

GEOLOGICAL SCIENCES (007)

Head: N.M. Halden

General Office: 240 Wallace Building Telephone: (204) 474-9371

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
HONOURS GEOLOGY (007G) 129 CREDIT HOURS			
007.123 (B), or 007.124 (B) (or 007.134 (B) or 007.144 (B) and one of : 007.135, 007.136, or 007.137 (B)) Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 18 credit hours of electives A Science background is recommended A "W" course and an "M" course must be taken in University 1 or Year 2 ¹	007.206, 007.239, 007.244, 007.250, 007.252, 007.253, 007.260, 007.277 Plus 6 credit hours of electives	007.311, 007.313, 007.331, 007.349, 007.390, 007.430, 007.449 ² , 007.452, 007.467, 007.485 ³ , 007.487, 007.489 Plus 18 credit hours of Geological Sciences electives from the recommended additional electives listed in the text below Plus 9 credit hours of electives	
30 Hours	30 Hours	36 Hours ⁴	33 Hours
HONOURS GEOPHYSICS (007P) 126 CREDIT HOURS			
007.123 (B), or 007.124 (B), (or 007.134 (B) or 007.144 (B) and one of : 007.135, 007.136, or 007.137 (B)), 016.105 (B) or 016.102 (B+), 016.107 (B), 136.151 (B) and 136.171 (B) (or 136.150 (B) and 136.170 (B)) ¹ 074.101 which must be taken by the end of Year 3 Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 6 credit hours of electives (which could include 074.101)	007.206, 007.250, 007.253, 016.237, 016.240, 136.210 ^{1a} , 136.211 ^{1a} Plus 6 credit hours of electives	007.244, 007.252, 007.374, 007.381, 007.474 ² , 136.3E2 ^{1a} , 136.3E1 ¹ , 016.250, 016.260, 016.261	007.313, 007.425, 007.432, 007.433, 007.467, 007.481, 007.483, 007.487 Plus 3 credit hours of electives as approved by the Department
A "W" course must be taken in University 1 or Year 2 ¹			
30 Hours	32 Hours	34 Hours ⁴	30 Hours
FOUR YEAR MAJOR IN GEOLOGY² (007G) 120 CREDIT HOURS			
007.123 (C+), or 007.124 (C+), (or 007.134 (C+) or 007.144 (C+) and one of: 007.135, 007.136, or 007.137 (C+)) Plus 6 credit hours from the Faculty of Arts, which may include the "W" course A Science background is recommended	007.244, 007.250, 007.252, 007.253, 007.260	007.206, 007.277, 007.311, 007.331, 007.390, 007.430 or 007.452, 007.467, 007.489 Plus 18 credit hours of Science electives	Plus 9 credit hours of Geological Sciences electives
A "W" course and an "M" course must be taken in University 1 or Year 2 ¹			
FOUR YEAR MAJOR IN GEOPHYSICS² (007P) 120 CREDIT HOURS			
007.123 (C+), or 007.124 (C+) (or 007.134 (C+) or 007.144 (C+) and one of: 007.135, 007.136, or 007.137 (C+)), 016.105 (C+) or 016.102 (B), 016.107 (C), 136.151 (C+) and 136.171 (C) (or 136.150 (C+) and 136.170 (C)) ¹ 074.101 which must be taken by the end of Year 3 Plus 6 credit hours from the Faculty of Arts, which may include the "W" course A "W" course and an "M" course must be taken in University 1 or Year 2 ¹	007.206, 007.250, 007.253, 016.237, 136.210 ^{1a} , 136.211 ^{1a}	007.244, 007.252, 007.374, 007.381, 016.260, 016.261, 136.3E2 ^{1a} , 136.3E1 ¹	007.313, 007.481 Plus 9 credit hours from: 007.425, 007.426, 007.432, 007.433, 007.474, 007.483
THREE YEAR GENERAL			
Minimum of 12 credit hours from 200 and 300 level courses			
MINOR			
007.123 (C) or 007.124 (C), (or 007.134 (C) or 007.144 (C) and one of: 007.135, 007.136, or 007.137 (C))	Plus 12 credit hours chosen from 200 and 300 level courses		

¹ 136.169 may be taken in place of 136.151 and 136.171.

² Students will register for 007.485 in Year 4, after participating in at least one Department field excursion per year. Students should be aware that they will be expected to contribute to transportation and accommodation costs. Please consult the departmental office at the beginning of each year for information about these trips.

³ 136.270 and 136.271 may be taken in place of 136.210 and 136.211. Students should note that 136.130 is a prerequisite to 136.270, and a corequisite to 136.271.

⁴ Geology: Year 3 - 30 hours in Regular Session, six (6) hours (007.449) in following Summer Session. Geophysics: Year 3 - 28 hours in Regular Session, six (6) hours (007.474) in following Summer Session. 007.449 and 007.474 will normally be taken immediately following the spring examinations on or about May 1 and will continue for approximately three weeks. Registration will show as Summer Session.

⁵ 136.3C0 and 136.3P1 may be taken in place of 136.3E1 and 136.3E2.

⁶ The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful

completion of a suitable elective course within the first 60 credit hours of this program.

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The University written English and mathematics requirement must be successfully completed within the first 60 credit hours of this program.

*For students in the Geophysics Honours and Major programs, this course will count as the full 4 credit hours.

***IMPORTANT NOTE:** 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 with a view to satisfying the prerequisites of the required courses.

Geological Sciences Prerequisite Information

Students are responsible for all prerequisites and corequisites of the courses required or selected in all programs above.

To fulfill prerequisite requirements, a grade of 'C' must be achieved in any course stipulated as a prerequisite to a further course in Geological Sciences.

Preparation for Professional Careers in the Geosciences

Students who plan to enter the scientific or professional fields of Geology or Geophysics should take the Honours program. The B.Sc. (Hons) is a recognized professional degree. The four-year Major program may provide for professional standing, depending on options chosen.

For students considering registration as a Professional Geoscientist, 27 hours of electives are required from other sciences including Mathematics, Physics, Chemistry, Biology, Computer Science and Statistics. See Department for further information.

Honours Requirements and Options

To enter any of the Geological Sciences Honours programs, a student must have the grades specified in the charts above for first-year courses, and have satisfied the faculty requirements for entry to the Honours program. Students who do not obtain the entrance requirements for the Honours program in their first year but who are interested in obtaining an Honours degree should consult with the department before registering for their second year.

Honours Geology Option

The following courses are available as Geological Sciences elective courses in Year 3 and 4 of the Honours Geology program. These courses will be taught in alternate years unless otherwise indicated: 007.329, 007.342, 007.349*, 007.374, 007.375, 007.428, 007.429, 007.431, 007.432, 007.433, 007.463, 007.466, 007.483, (*To be offered every year.)

Recommended additional electives

For students who wish to increase the focus of their knowledge, recommended electives are listed below:

1)Geology: 007.329, 007.342, 007.374, 007.375, 007.381, 007.427, 007.428, 007.429, 007.431, 007.432, 007.433, 007.463, 007.466, 007.481, 007.483, or others as approved by the Department.

2)Environmental Geoscience: 023.425, 040.350, 040.351, 040.406, 040.409, 040.412, 040.413, 040.450, 007.463, 007.342, 007.429, 053.344, 053.361, 001.237 (022.237 or 065.237), 001.337, 128.310, 128.3XZ, or others approved by the Department. (Students are responsible for completion of prerequisites for these courses.)

Honours Geophysics Option

Students who wish to enter the Honours Geophysics Option and have not taken 007.123 may arrange with the department to make up this credit. Students must contact the department during the spring preceding entrance to the Honours program. All course choices in the Honours

program should be made after consultation with the coordinator of the Geophysics program.

Four Year Major in Geology

To enter the four year Major in Geology, students must have either 007.123 or 007.124, or one of 007.134 or 007.144 and one of 007.135, 007.136 or 007.137 (C+). Students must also satisfy all faculty requirements for entry to the four year Major program.

Four Year Major in Geophysics

To enter the four year Major in Geophysics, students must have either 007.123 or 007.124, or one of 007.134 or 007.144 and one of 007.135, 007.136 or 007.137 (C+); 016.105 (C+) or 016.102 (B), 016.107 (C), 136.151' (C+), and 136.171' (C). Students must also satisfy all faculty requirements for entry to the four year Major program. Geophysics Major students intending to pursue a professional career or advanced studies in Geophysics are advised to take, as electives, as many as possible of the geophysics, physics and mathematics courses listed in the Geophysics Honours program. These programs are designed for students interested in combining an in-depth study of Geology and Geophysics with broad coverage of another subject or subjects of their choice (Science or non-Science). It does not give professional standing for those planning careers in the Geological Sciences, although such standing can be achieved with a master's degree. Admission to graduate programs may be conditional upon completion of additional courses or require a period of pre-master's study. Students intending to proceed to a master's degree must consult with the department at the beginning of their second year of undergraduate study and in each subsequent year.

Professional Registration

The professional practice of geoscience in certain provinces and territories in Canada is governed by provincial/territorial law and is regulated by professional geoscience associations. In Manitoba, the Association of Professional Engineers and Geoscientists (APEGM) regulates professional practice. The requirements for professional registration are acceptable academic preparation and subsequent period of acceptable geoscience experience. Students considering professional registration should take the B.Sc. (Hons.) degree and make appropriate course selections, particularly in the basic sciences. Students should consult with the Department of Geological Sciences. Graduates that do not meet the academic requirements may be required by the professional association to take additional courses or examinations. Current registration information for APEGM is available in the department or from the association.

Three Year General

As prescribed with all other faculty regulations in Section 3.2, students in this program must select 30 credit hours of 200 and (or) 300 level courses from two Science departments. To satisfy this requirement in the department of Geological Sciences, students must select a minimum of 12 credit hours at the 200 or 300 level.

The changes are:

1. 006.343, 006.360, 006.325 and 006.347, listed in the program chart for the Geophysics Major and Honours program and in footnote 5, have been changed to 136.3E2, 136.3E1, 136.3CO and 136.3P1, respectively.
2. Geological Sciences 007.239 has been added to Year 2 of the Honours program and the elective credit hours has been reduced from 6 to 3.
3. Geological Sciences 007.349 has been moved from the list of Geological Sciences electives to a required course in Year 3 or 4 and the credit hours of Geological Sciences options reduced accordingly.
4. The paragraph "Preparation for Professional Careers in the GeoSciences" has been added to the Calendar text. For students wanting to focus on an Environmental Geoscience or Geology stream within the Honours program, a list of suggested electives has been developed and listed in the Honours Geology option portion of the Calendar text.

Department of Mathematics

Courses to be deleted:

013.332	Advanced Calculus	-6
013.333	Modern Algebra	-6
013.335	Set Theory and Logic	-3
013.336	Topology	-3
013.370	Problem-Solving Seminar	-6
006.320	Numerical Mathematics 2	-3
006.320F	Mathématiques numériques 2	-3
006.325	Applied Complex Analysis	-3
006.328	Mathematical Problems in the Biological Sciences	-3
006.329	Mathematical Theory of Operational Research	-3
006.332	Techniques of Applied Analysis	-3
006.334	Mathematical Elements for Computational Graphics	-3
006.336	Applied Linear Algebra	-3
006.337	Introduction to Mathematical Modelling	-3
013.338	Metric Spaces	-3
013.340	Advanced Calculus	-6
013.345	Advanced Algebra	-6
006.347	Partial Differential Equations 1	-3
013.347	Combinatorial Mathematics and Probability	-6
013.349	Theory of Numbers	-6
013.371	Introduction to Point-Set Topology	-3
013.372	Introduction to Complex Function Theory	-3
013.373	Differential Equations 1	-3
013.374	Differential Equations 2	-3
013.375	Modern Geometry	-3
013.376	Set Theory	-3
006.442	Tensor and Variational Calculus	-3
006.444	Advanced Mathematical Modelling	-3
006.445	Topics in Numerical Analysis	-3
006.446	Applied Functional Analysis	-3
006.447	Partial Differential Equations 2	-3
006.448	Introduction to Finite Elements and Boundary Elements	-3
013.448	Modern Algebra	-6
006.449	Project Course in Applied Mathematics	-6
013.452	Real Variables	-6
006.453	Topics in Applied Mathematics 1	-3
006.454	Topics in Applied Mathematics 2	-3
013.455	Projective Geometry	-6
013.456	Recursive Functions and Model Theory	-6
013.457	Partial Differential Equations	-6
013.460	Topics in Mathematics	-6
013.462	Topics in Complex Function Theory	-6
013.463	Topics in Topology	-6
013.465	Combinatorial Theory	-6
013.468	Topics in Mathematics 1	-3

013.469 Topics in Mathematics 2

-3

Courses to be introduced:

136.3A1 Modern Algebra 1

+3

Introduction to the concepts and structures of modern algebra, including groups, rings and fields; substructure, isomorphism, quotients. Not to be held with 136.206 (or the former 013.229), 136.3A3 (or the former 013.345) or the former 013.333. *Pre-requisites: 136.230 (or the former 013.246) and an additional 6 credit hours of 200 level mathematics courses, or consent of instructor.*

136.3A2 Modern Algebra 2

+3

Continuation of 136.3A1. Further study of rings and fields: integral domains, polynomial rings; ideals and quotient rings; rational function fields. Lattices and Boolean algebras may be included. Not to be held with 136.206 (or the former 013.229), 136.3A3 (or the former 013.345) or the former 013.333. *Pre-requisite: 136.3A1.*

136.3A3 Advanced Algebra

+6

An introduction to abstract algebra with topics taken from among the theories of groups, rings, modules, fields and lattices. Not to be held with 136.206 (or the former 013.229) or the former 013.333 or 013.345. *Pre-requisites: 136.235 (or the former 013.235) and 136.220 (or the former 013.237) or consent of instructor.*

136.3C0 Applied Complex Analysis

+3

Concepts and techniques of complex variable theory in the context of applied mathematics. Not to be held with 136.3E2 or the former 006.343 or 006.325. *Pre-requisites: 136.270 (or the former 013.239) and 136.271 (or the former 013.249) (or 136.275 (or the former 013.234)) or consent of department.*

136.3C1 Complex Analysis 1

+3

The geometry of the complex plane, analytic functions, contour integration. Cauchy's theorem and formula, the residue theorem, etc. Not to be held with the former 013.372. *Co-requisite: 136.3MS (or the former 013.338) or consent of instructor.*

136.3CG Mathematical Elements for Computational Graphics

+3

Two- and three-dimensional transformations, affine and non-affine geometry; descriptions of plane and space curves, and surfaces; development of Frenet-Serret frame; Gaussian curvature and surface fairness. Stress is placed on the mathematical and conceptual framework. May not be held with the former 006.333 or 006.334. *Pre-requisites: 136.270 (or the former 013.239) or 136.211 (or the former 006.261) or 136.275 (or the former 013.234) and 136.260 (or the former 006.220) or 136.212 (or the former 006.270) or 074.219 or consent of department.*

136.3CM Combinatorics 1

+3

Basic counting principles, pigeon-hole principle, recursion, graphs. Not to be held with the former 013.347. *Pre-requisites: 136.220 (or the former 013.237) and 136.235 (or the former 013.235) or consent of instructor.*

136.3DE Ordinary Differential Equations with Applications 2 +3
 Laplace transforms, series solutions of ODEs, systems of linear ODEs, applications, introduction to dynamical systems. Not to be held with the former 006.236 or 006.245. *Pre-requisite: 136.280 (or the former 006.226 or 006.235). Co-requisite: 136.271 (or the former 013.249) or 136.275 (or the former 013.234).*

136.3G1 Modern Geometry +3
 Topics in modern Euclidean geometry, affine and projective geometry, inversive geometry, etc. Not to be held with the former 013.375. *Pre-requisites: 136.275 (or the former 013.234) and 136.235 (or the former 013.235) or consent of instructor.*

136.3L1 Calculus 4 +6
 Uniform convergence of series and integrals. Transformations, inverse and implicit function theorems. Vector analysis including Green's and Stokes' theorems. May not be used in an Honours program. Not to be held with the former 013.332 or 136.3L2 (or the former 013.340). *Pre-requisites: 136.230 (or the former 013.246), 136.270 (or the former 013.239), 136.271 (or the former 013.249), or consent of the instructor.*

136.3L2 Advanced Calculus +6
 Vector analysis; The Riemann and Riemann-Stieltjes integral, uniform convergence of series and integrals, power series and Fourier series. Not to be held with 136.3L1 (or the former 013.332 or 013.340). *Pre-requisites: 136.275 (or the former 013.234), 136.235 (or the former 013.235) and 136.220 (or the former 013.237) or consent of instructor.*

136.3LA Applied Linear Algebra +3
 Topics in linear algebra and matrix methods with emphasis on applications such as eigenvalues, special matrices, error analysis, and iterative methods. Not to be held with the former 006.441 or 006.336. *Pre-requisites: 136.260 (or the former 006.220), 136.230 (or the former 013.246) or 136.235 (or the former 013.235).*

136.3M1 Introduction to Mathematical Modelling +3
 An introduction to the principles and techniques involved in the design, development, solution, testing and revision of mathematical models of "real-world" phenomena illustrated through the discussion of case studies. Not to be held with the former 006.240, 006.250 or 006.337. *Pre-requisites: 136.260 (or the former 006.220) and the former 006.245 and 006.236. Co-requisite: 005.100.*

136.3MB Mathematical Problems in the Biological Sciences +3
 Circulatory system, flow of blood. Enzyme kinetics. Cell populations. Diffusion in biology. Some ecological systems. Not to be held with the former 006.328. *Pre-requisites: 136.230 (or the former 013.246), 136.271 (or the former 013.249) and 136.280 (or the former 006.235 or 006.226) or consent of department.*

136.3MS Metric Spaces +3
 Definition of metric spaces; examples. Compactness, connectedness and continuity in metric spaces. Applications to analysis. Not to be held with 136.3T0 (or the former 013.336) or the former 013.338. *Pre-requisites: 136.275 (or the former 013.234) and 136.220 (or the former 013.237) or consent of instructor.*

136.3NA Numerical Mathematics 2 +3
 Numerical differentiation and Gaussian quadrature; curve-fitting by splines; numerical methods for initial-value problems, boundary-value problems, and transforms; problems involving large, sparse or ill-conditioned linear systems. Not to be held with the former 006.320 or 006.331. *Pre-requisites:* 136.260 (or the former 006.220), 136.280 (or the former 006.235 or 006.226), 136.270 (or the former 013.239) and 136.271 (or the former 013.249) (or 136.275 (or the former 013.234)), and either 074.101 (or the former 074.120) or 074.123, or consent of instructor.

136.3NAF Mathématiques numériques 2 +3
 Différentiation numérique; quadrature Gaussienne; lissage à l'aide de splines; méthodes numériques pour les problèmes à valeurs initiales et problèmes aux frontières; transformations; problèmes où interviennent les systèmes de grande taille, épars ou mal conditionnés. L'étudiant ou l'étudiante ne peut se faire créditer le 136.3NA à la fois avec les anciens 006.320 ou 006.331. *Préalables:* 136.260 (ou l'ancien 006.220), 136.280 (ou les anciens 006.235 ou 006.226), 136.270 (ou l'ancien 013.239) et 136.271 (ou l'ancien 013.249) (ou 136.275 (ou l'ancien 013.234)) et le 074.101 (ou l'ancien 074.120) ou 074.123 ou le consentement du professeur. Donné au Collège universitaire de Saint-Boniface.

136.3NT Theory of Numbers +6
 Divisibility, congruences; quadratic residues and reciprocity; introduction to analytic and algebraic number theory. Not to be held with the former 013.349. *Pre-requisites:* 136.275 (or the former 013.234) and 136.220 (or the former 013.237) or consent of instructor.

136.3OR Mathematical Theory of Operational Research +3
 Linear and non-linear optimization techniques of operational research such as linear systems, mathematical programming, networks, convexity, duality, classical optimization and non-linear programming; some assignments will be done using a computer. Not to be held with the former 006.329. *Pre-requisites:* 136.230 (or the former 013.246), 136.235 (or the former 013.235) or consent of department.

136.3P1 Partial Differential Equations 1 +3
 Fourier series and introductory Sturm-Liouville theory. Derivation of wave, diffusion and Laplace equations. Solution by separation of variables. Not to be held with the former 006.347 or 013.457. *Pre-requisites:* 136.270 (or the former 013.239) and 136.271 (or the former 013.249) (or 136.275 (or the former 013.234)) and 136.3DE (or the former 006.245 or 006.236) or consent of department.

136.3PS Problem Solving Seminar +3
 Problem solving methods and heuristics; Polya's method; assorted problems in geometry, algebra, combinatorics, analysis and logic; proof technique and presentation of mathematics. Students may be required to: i) participate in mathematical competitions; ii) present solutions to problems in class; iii) give in-class presentations about material based on readings. May not be used in an Honours program. *Co-requisites:* 136.170 (or 136.169) and 136.130, or consent of instructor.

136.3S1 Set Theory and Logic +3
 An introduction to set theory, relations and functions, arguments and proofs; the axiomatic nature of mathematics. Not to be held with the former 013.335. May not be used in an

Honours program. *Pre-requisite: 12 credit hours of 200 level mathematics courses or consent of instructor.*

136.3S2 Set Theory +3
Axiom systems, cardinal and ordinal numbers, models of set theory, the axiom of choice, the generalized continuum hypothesis, etc. Not to be held with the former 013.376. *Pre-requisite: 136.220 (or the former 013.237) or consent of instructor.*

136.3T0 Topology +3
An introduction to topology. Topological spaces, metric spaces; compactness, connectedness; continuity of mappings. May not be used in an Honours program. Not to be held with 136.3T1 (or the former 013.371), 136.3MS (or the former 013.338) or the former 013.336. *Pre-requisite: 136.3S1 (or the former 013.335) or consent of instructor.*

136.3T1 Topology 1 +3
Topics include topologies, continuity, connectedness, compactness, and separation properties. Not to be held with 136.3T0 (or the former 013.336) or the former 013.371. *Pre-requisite: 136.3MS (or the former 013.338) or consent of instructor.*

136.3TA Techniques of Applied Analysis +3
Applied mathematical topics such as asymptotics, transform theory and special functions. Not to be held with the former 006.332. *Pre-requisites: 136.3CO (or the former 006.325) and 136.3DE (or the former 006.245 or 006.236) or consent of department. Co-requisite: 136.3L1 (or the former 013.332) or consent of department.*

136.3TX Topics in General Mathematics +3
Topics of general interest in Mathematics or Applied Mathematics that will vary depending upon the interest and requirements of students and faculty, and may include specialized topics not available in regular course offerings. May not be used in an Honours program. *Pre-requisite: consent of instructor.*

136.4A1 Modern Algebra +6
A continuation of the topics of 136.3A3, and an introduction to such further topics as category theory, universal algebra, multilinear algebra, and homological algebra. Not to be held with the former 013.448. *Pre-requisite: 136.3A3 (or the former 013.345).*

136.4C2 Complex Analysis 2 +3
Conformal mappings, space of analytic functions, space of meromorphic functions, harmonic functions. Not to be held with the former 013.462. *Pre-requisites: 136.3T1 (or the former 013.371), 136.3C1 (or the former 013.372) and 136.3L2 (or the former 013.340).*

136.4C3 Complex Analysis 3 +3
Subharmonic functions, infinite products, entire functions, analytic continuation. Not to be held with the former 013.462. *Pre-requisite: 136.4C2.*

136.4CM Combinatorics 2 +3
Generating functions, combinatorial geometry, symbolic dynamics, forbidden configurations, topics from combinatorial matrix theory. Not to be held with the former 013.465. *Pre-requisites: 136.275 (or the former 013.234), 136.3CM (or the former 013.347)*

and 136.3A3 (or the former 013.345).

136.4DS Dynamical Systems: Theory and Applications +3
Systems of differential equations, linear systems, applied dynamics, phase space, stability, introduction to chaos. *Pre-requisites: 136.3NA (or the former 006.320) and 136.3DE (or the former 006.236 or 006.245).*

136.4EC Introduction to Elliptic Curves +3
Homogeneous coordinates, non-singular cubic curves, cubic curves of finite fields. *Pre-requisites: 136.250 (or the former 013.226), 136.235 (or the former 013.235), and either 136.3A1 and 136.3A2, or 136.3A3 (or the former 013.345).*

136.4FA Applied Functional Analysis +3
Elements of metric, normed and inner product spaces; operators and inverses; applications in analysis and numerical analysis. Not to be held with the former 006.446. *Pre-requisite: 136.3L1 (or the former 013.332).*

136.4FE Introduction to Finite Elements and Boundary Elements +3
Introduction to finite element and boundary element techniques for solving partial differential equations. Not to be held with the former 006.448. *Pre-requisites: 136.3NA (or the former 006.320) and 136.3P1 (or the former 006.347).*

136.4FG Finite Geometry +3
Finite fields, finite affine and projective planes, partial geometries and related configurations. *Pre-requisite: 136.3A3 (or the former 013.345). Co-requisite: 136.4CM.*

136.4GC Graphs, Codes and Designs +3
Graph decompositions, colourings, and applications, adjacency matrices, triple systems and generalizations, BIBDs, orthogonal designs, linear codes, Hamming codes, error-correction codes, public key cryptography, secret sharing. *Pre-requisites: 136.3CM (or the former 013.347) and 136.3A3 (or the former 013.345).*

136.4J1 Project Course in Applied Mathematics 1 +3
A research project chosen by the student in consultation with the department head and an appropriate supervising Faculty member. A written report will be required, to be submitted by March 31. An oral examination may be required. This course is restricted to students in fourth year of the Honours program in Mathematics. *Pre-requisite: 136.3M1 (or the former 006.337).*

136.4J2 Project Course in Applied Mathematics 2 +6
A research project chosen by the student in consultation with the department head and an appropriate supervising Faculty member. A written report will be required, to be submitted by March 31. An oral examination may be required. This course is restricted to students in fourth year of the Honours program in Mathematics. *Pre-requisite: 136.3M1 (or the former 006.337).*

136.4M2 Advanced Mathematical Modelling +3
Interactive development of mathematical models for real life situations using more advanced mathematics; topics and methods used will vary from year to year. Not to be held

with the former 006.444. *Pre-requisite: 136.3M1 (or the former 006.337) and consent of department.*

136.4ML Mathematical Logic +6

The mathematical study of propositional and predicate logic; proof theory. Introduction to model theory (completeness, compactness, Lowenheim-Skolem theorems). Recursion theory, undecidability, incompleteness. Not to be held with the former 013.456. *Pre-requisite: 136.3A3 (or the former 013.345) or consent of instructor.*

136.4NA Topics in Numerical Analysis +3

Mathematical approach to an in-depth study of two of the following topics: computational methods of linear algebra, numerical solution of ordinary differential equations, numerical solution of partial differential equations, numerical solution of integral equations, spline functions with applications, finite elements. Not to be held with the former 006.445. *Pre-requisite: 136.3NA (or the former 006.320) or consent of department.*

136.4P2 Partial Differential Equations 2 +3

Partial differential equations and their classification. Special functions and generalized eigen function expansions. Solution by separation of variables, and transform methods. Not to be held with the former 006.447. *Pre-requisite: 136.3P1 (or the former 006.347).*

136.4RV Real Variables +6

Measure and integration on the real line and on abstract spaces. Classical Banach spaces of functions, and basic functional analysis. Not to be held with the former 013.452. *Pre-requisites: 136.235 (or the former 013.235), 136.3MS (or the former 013.338) and 136.3L2 (or the former 013.340) or consent of instructor.*

136.4T2 Topology 2 +3

Topics include Tychonoff spaces, ordered spaces, arbitrary products, the Stone-Cech compactification, various types of disconnectedness, generalizations of compactness, paracompactness, and introductory homotopy theory. Not to be held with the former 013.463. *Pre-requisite: 136.3T1 (or the former 013.371).*

136.4T3 Topology 3 +3

A selection of intermediate and advanced topics in general topology. These may include: an introduction to geometric topology, an introduction to independence results in set-theoretic topology, Stone duality, metrization, compactification theory, uniformities, absolutes and perfect maps, and realcompactness. Not to be held with the former 013.463. *Pre-requisite: 136.4T2.*

136.4TN Tensor and Variational Calculus +3

An introduction to tensor calculus, differential forms, and variational principles on differentiable and Riemannian manifolds. Not to be held with the former 006.442. *Pre-requisites: six credit hours of 200 level calculus and 136.280 (or the former 006.235) or consent of department. Co-requisite: one of 136.3L1 (or the former 013.332), 136.3L2 (or the former 013.340), or consent of instructor.*

136.4X1 Topics in Mathematics 1 +3

Topics of current interest in Mathematics or Applied Mathematics that will vary depending

upon the interests and requirements of students and faculty, and will include specialized topics not available in regular course offerings. *Pre-requisite: consent of instructor.*

136.4X2 Topics in Mathematics 2 +6
Topics will vary depending upon the interests and requirements of students and faculty, and will include specialized topics not available in regular course offerings. *Pre-requisite: consent of instructor.*

NET CHANGE IN CREDIT HOURS: -15

Service courses to be deleted:

006.324	Applied Differential Equations	-3
006.343	Mathematical Methods and Complex Analysis	-4
006.360	Mathematical Methods for Engineers 3 (L)	-3
006.371	Applied Discrete Mathematics (L)	-3
013.355	Advanced Mathematics for Physicists	-6
013.464	Topics in Advanced Mathematics for Physicists	-6

Service courses to be introduced:

136.3E1 Mathematical Methods for Engineers 3 (L) +3
Vector integral calculus, series solutions of ordinary differential equations, Fourier series, and an introduction to partial differential equations. For Engineering and Geophysics students only. Not to be held with the former 006.324 or 006.360. *Pre-requisites: 136.210 (or the former 006.260) and 136.211 (or the former 006.237, 006.238, 006.244 or 006.261).*

136.3E2 Mathematical Methods and Complex Analysis +4
Theory and applications of complex function theory; complex Fourier series, Laplace transformation and its complex inversion; series solution of differential equations. For Engineering and Geophysics students only. Not to be held with 136.3C0 (or the former 006.325) or the former 006.343. *Pre-requisite: 136.3E1 (or the former 006.360) or consent of department.*

136.3E3 Applied Discrete Mathematics (L) +3
Sets, groups, graphs, and Boolean algebra. For Engineering students only. Not to be held with 074.213 or the former 074.212 and the former 006.371. *Pre-requisites: 136.210 (or the former 006.260) and 136.212 (or the former 006.270).*

136.3LS Linear Spaces for Physicists +3
A course intended for honours/major students in Physics. Review of linear algebra (136.130); vector spaces, linear transformations; eigenvalues and eigenvectors; inner product spaces; additional topics as time permits. Not to be held with 136.230 (or the former 013.246) or 136.235 (or the former 013.235) or the former 013.355. *Pre-requisites: 136.275 (or the former 013.234) or both of 136.270 (or the former 013.239) and 136.271 (or the former 013.249), or consent of instructor.*

Courses to be modified:

136.211 Mathematical Methods for Engineers 2 (4) L

Laplace transforms and calculus of several variables including partial differentiation, multiple integrals, and applications. For Engineering and Geophysics students only. Not to be held with the former 006.227, 006.228, 006.243 or 006.261. *Pre-requisite: 136.210 (or the former 006.260).*

136.212 Introductory Numerical Methods for Engineers (4) L

Numerical methods applied to problems in engineering; roots of nonlinear equations and systems of linear equations, numerical differentiation and integration, initial-value problems. For Engineering students only. Not to be held with 136.260 (or the former 006.220), the former 010.344 or the former 006.270. *Pre-requisite: 136.210 (or the former 006.260) and 074.101 (or the former 074.111 or 074.112).*

NET CHANGE IN CREDIT HOURS:**-12**

DEPARTMENT OF MATHEMATICS

Program Change

2001-2002

Proposed Program:

MATHEMATICS (136)

Head: G. Woods

General Office: 342A Machray Hall Telephone: (204) 474-8703

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
MATHEMATICS HONOURS ¹ 120 CREDIT HOURS			
136.130 ¹ (B), 136.169 (B), (or 136.150 ¹ and 136.170 ¹ (B)), 005.100 ² , 074.101 ² Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	136.220, 136.235, 136.260, 136.275, 136.280	48 credit hours of 300 and 400 level Mathematics ³ courses, which must include 136.3A1 or 136.3A3 ³ , 136.3L2, 136.3CM, 136.3CO, or 136.3C1 ³ , 136.3MS, 136.3DE and two modules listed below: Topology ⁴ : 136.3T1, 136.3T2 Algebra ⁵ : 136.4A1 Analysis ⁶ : 136.3RV, 136.4FG Combinatorics ⁷ : 136.4GC, 136.4FG Analytical Applied Mathematics ⁸ : 136.3M1, 136.3P1, one of 136.4P2 or 136.4DS. Computational Mathematics ⁹ : 136.3NA and two of 136.3LA, 136.4FE and 136.4DS.	

A "W" course must be taken in University 1 or Year 2⁴

30 Hours	30 Hours	30 Hours	30 Hours
MATHEMATICS HONOURS DOUBLE ¹ MINIMUM 120 CREDIT HOURS			
136.130 ¹ (B), 136.169(B), (or 136.150 ¹ and 136.170 ¹ (B)), 005.100 ² , 074.101 ² Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	136.220, 136.235, 136.260, 136.275, 136.280	136.3MS, 136.3L2, 136.3A3, 136.3C1	136.3DE, 12 credit hours from 136.4A1, 136.4RV, 136.4C2, 136.4C3, 136.4T2, 136.4T3 plus at least an additional 3 credit hours from among the above and 136.3CM, 136.3NT, 136.3T1, 136.3G1, 136.3S2, 136.4FG, 136.4EC, 136.4ML, 136.4X2, 136.4CM, 136.4X1, 136.4D5, 136.4GC

A "W" course must be taken in University 1 or Year 2⁴

MATHEMATICS JOINT HONOURS COMPUTER SCIENCE-MATHEMATICS		See Section 4.5 Computer Science
MATHEMATICS FOUR YEAR MAJOR*		120 CREDIT HOURS
136.130 ¹ , 136.150 ¹ and 136.170 ¹ (or 136.169), 005.100 ² , 074.101 ² Plus 6 credit hours from the Faculty of Arts, which may include the "W" course	136.220, 136.235, 136.260, 136.275, 136.280	136.3A1 or 136.3A3, 136.3L1 or 136.3L2, 136.3CM, 136.3CO or 136.3C1, 136.3DE and enough courses from 136.240, 136.250, 005.200 and all third and fourth year Mathematics course to make 48 credit hours

A "W" course must be taken in University 1 or Year 2⁴

APPLIED MATHEMATICS FOUR YEAR MAJOR WITH COMPUTER SCIENCE OPTION ¹	120 CREDIT HOURS		
136.120, 136.130 ¹ , 136.150 ¹ and 136.170 ¹ , (or 136.169), 074.101 and 074.102 Plus 6 credit hours from the Faculty of Arts, which may include the "W" course	136.230, 136.260, 136.270, 136.271, 136.280, 074.206	136.3NA, 136.3CO, 136.3M1, 136.3P1, 136.3L1, 136.3DE, 136.240	
	Plus 005.100 and 005.200; plus an additional 6 credit hours from options list; plus one of the following patterns: "Graphics": 074.219, 074.349, 074.449; or "Software": 074.310, 074.348, 074.371; or "Theoretical Computer Science": 074.208, 074.213, 074.317 or 074.453; or "Hardware": 074.222, 074.223, 074.337 or 074.343; or "Artificial Intelligence": 074.319, two of: 074.419, 074.420, 074.436		

A "W" course must be taken in University 1 or Year 2⁴

APPLIED MATHEMATICS FOUR YEAR MAJOR WITH ECONOMICS OPTION ¹	120 CREDIT HOURS		
136.120, 136.131 ¹ , 136.150 ¹ and 136.170 ¹ (or 136.169), 018.120 (or both 018.121 and 018.122)	136.230, 136.260, 136.270, 136.271, 136.280	136.3DE, 136.3NA, 136.3CO, 136.3M1, 136.3P1, 136.3L1, 136.3DE, 136.240	
	Plus 005.100 and 005.200, 074.101, plus an additional 3 credit hour course from options list, plus 018.253 and 018.373, and at least two of 018.245, 018.246, 018.247 and 018.248		

A "W" course must be taken in University 1 or Year 2⁴

APPLIED MATHEMATICS FOUR YEAR MAJOR WITH MANAGEMENT SCIENCES OPTION*		120 CREDIT HOURS
136.120, 136.131 ¹ , 136.150 ¹ and 136.170 ¹ (or 136.169)	136.230, 136.260, 136.270, 136.271, 136.280, 136.3NA, 136.3CO, 136.3DE, 136.3OR, 136.3LA, 136.3M1, 136.3P1, 136.3L1, 136.240, 018.120 (or both 018.121 and 018.122), 005.100, 005.200, 074.101, plus 027.215, 027.340 and six (6) credit hours Management Sciences courses approved by the department.	

A "W" course must be taken in University 1 or Year 2⁴

APPLIED MATHEMATICS FOUR YEAR MAJOR WITH STATISTICS OPTION*		120 CREDIT HOURS
136.120, 136.130 ¹ , 136.150 ¹ and 136.170 ¹ (or 136.169), 005.100	005.200, 136.230, 136.260, 136.270, 136.271, 136.280	136.3NA, 136.3CO, 136.3M1, 136.3P1, 136.3L1, 136.3DE, 136.240, 005.312 (or 005.347), 005.313 (or 005.348), 005.350, 005.360

Plus 6 credit hours from the Faculty of Arts, which may include the "W" course

074.101, plus an additional 6 credit hours from the options list, plus 6 credit hours of 300 or 400 level Statistics courses.

A "W" course must be taken in University 1 or Year 2⁴

MATHEMATICS THREE YEAR GENERAL		A minimum of 12 credit hours from 200 and (or) 300 level Mathematics courses
MATHEMATICS MINOR		

136.130¹, 136.150¹ and 136.170¹ (or 136.169) plus a minimum of 9 credit hours from 136.120 and 200 and (or) 300 level Mathematics courses.

MATHEMATICS PROGRAM INFORMATION

¹136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.131 may be taken in place of 136.130 and vice versa; 136.171 or 136.173 may be taken in place of 136.170 and vice versa.

²005.100 and 074.101 do not have to be taken in University 1, but they have to be taken by the end of Year 2.

³Students considering graduate work in pure mathematics should note that many graduate schools will require a student to rectify any deficiencies in 136.4A1, 136.4RV, 136.4C1, 136.4C3, 136.4T2, and 136.4T3.

⁴The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program.

⁵136.3L1, 136.3S1, 136.3T0 and 136.3TX can not be used in an Honours program.

⁶If both Analytical Applied Mathematics and Computational Mathematics are chosen as the modules, then at least 3 of 136.3LA, 136.4FE, 136.4DS and 136.4P2 must be taken.

⁷The Topology, Algebra, Analysis and Combinatorics modules require 136.3A3.

⁸The Topology, Algebra and Analysis modules require 136.3C1.

⁹**IMPORTANT NOTE:** The Four Year Major programs need not be completed in the manner prescribed in the charts above. Each chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their programs with a view to satisfying the prerequisites of the required courses. Please refer to the text below for the minimum requirements for entry to a Four Year Major. (Letters in brackets indicate minimum prerequisite standing for further study.)

Mathematics Prerequisite Information

Students are responsible for all prerequisites and corequisites of the courses required or selected in all programs above.

Unless otherwise specified, a minimum grade of "C" must be achieved for any course stipulated as prerequisite to a further course in Mathematics.

NOTE: Students entering either the Faculty of Arts or Science, and intending to take courses from the department, are strongly advised to speak to a Science student advisor or the faculty advisor in the department concerning an appropriate choice of mathematics courses.

Four Year Major in Applied Mathematics with Option (Computer Science, Economics, Management Sciences, Statistics)

These programs provide a sound general knowledge of applied mathematics together with a significant number of courses in the option area. Courses in the Computer Science option provide training in aspects of computer science which are most useful to the practicing mathematician. Courses in the Economics, Management Sciences and Statistics options are fundamental to each area and provide a strong, mathematical basis for further study.

To enter the four year Major in Applied Mathematics with one of the above four options, a student must have a "C+" in either 136.169 or two of 136.120, 136.130¹, 136.151¹, or 136.171¹, one of which must be either 136.151¹, or 136.171¹, and have satisfied all Faculty requirements for entry to the program. It is recommended that all students take 12 credit hours of 100 level mathematics courses in their initial 30 credit hours; however, students should take at least 136.120, 136.131¹, and 136.150¹.

To graduate with the four year Major degree, students must present a grade of "C" or better on courses which are used to meet the Applied Mathematics component of their degree program.

Mathematics

Honours Requirements

To enter the Honours program in Mathematics a student must have a minimum grade of "B" in 136.130¹ and either 136.170¹ or 136.169. In addition, students must have satisfied the Faculty requirements for entry to the Honours program.

The program for students who elect Honours in Mathematics is as follows: Year 2 Mathematics courses as indicated in the chart above and 9 credit hours from such fields as physics, chemistry, actuarial mathematics, computer science, statistics,

philosophy, or economics. Other fields may be elected with the approval of the department.

Year 3 Mathematics courses as indicated in the chart above and electives to be chosen from the subject fields above or a third year Mathematics course not already elected. Students performing satisfactorily in Year 2 may obtain permission to take an additional course.

Year 4 Mathematics courses as indicated and electives to be chosen from the subject fields above or a Mathematics course not already elected. Students performing satisfactorily in Year 3 may obtain permission to take an additional course.

Electives normally allowed are:

Statistics: 005.100, 005.200, 005.318, 005.347, 005.348, 005.350, 005.360, 005.414, 005.452, 005.453, 005.458, 005.459, 005.460, 005.462, 005.463, 005.469.

Physics: 016.240, 016.250, 016.260, 016.261, 016.263, 016.341, 016.365, 016.366, 016.369, 016.370, 016.437, 016.462, 016.464, 016.465.

Chemistry: 002.228, 002.229, 002.336, 002.337, 002.464, 002.465.

Economics: 018.253, 018.270, 018.373, 018.370, 018.412, 018.413.

Mechanical Engineering: 025.349.

Other courses may be elected with permission of the department. Students are required to obtain the approval of the department concerning their choice of electives.

A student may elect Honours in Mathematics and one other field, subject to the approval of both departments. The Mathematics prescription for a Double Honours program is as indicated in the above table.

Honours programs must be approved each year by the department.

Four Year Major Requirements

To enter the four year Major in Mathematics, a student must have a "C+" in either 136.169 or in two of 136.120, 136.130¹, 136.150¹ and 136.170¹, at least one of which must be either 136.150¹ or 136.170¹, and have satisfied all Faculty requirements for entry to the program. It is recommended that students take all mathematics courses in their initial 30 credit hours; however, students should take at least 136.130¹ and 136.150¹.

It is recommended that 005.100 and 005.200 be completed in Year 2.

It is suggested that among their electives, students might choose courses in which mathematics is extensively used, for example, courses in physics, chemistry and certain courses in economics. For more detailed advice on this point students should talk to a Faculty member in the department.

Students in the Major program may take Honours courses as part of their Major program. In this way a Major degree can be considerably strengthened. Students should seek advice from department members as to which mathematics courses are best suited to their particular program of studies.

Options List: 136.3MB, 136.3OR, 136.3TA, 136.3CG, 136.3LA, 136.4TN, 136.4M2, 136.4NA, 136.4FA, 136.4P2 and 136.4FE.

Three Year General

As prescribed with all other Faculty regulations in Section 3.2 students in this program must select 30 credit hours from two Science departments. To satisfy the requirement in Mathematics, students must select a minimum of 12 credit hour mathematics courses as prescribed in the above chart.

See a Science student advisor or the faculty advisor in the department for information regarding entry to or completion of any of the above programs.

The changes are:

1. The Applied Mathematics Honours, Honours Double and Major programs have been combined with the Mathematics programs.
2. Years 3 and 4 of the Mathematics Honours, Mathematics Honours Double and Four Year Major programs have been revised to include new '136' courses.
3. Footnotes 6 and 7 have been deleted and replaced with new footnotes outlining the required courses for two modules and the exclusions in the Honours program.

Mathematics - Actuarial Mathematics Joint Program**MATHEMATICS – ACTUARIAL JOINT PROGRAM**

**Program Change
2001-2002**

Proposed Program:**MATHEMATICS - ACTUARIAL MATHEMATICS JOINT PROGRAM (013M)**

The Department of Mathematics and the Warren Centre for Actuarial Studies and Research offer a Joint Honours program for students wishing in-depth study in both Mathematics and Actuarial Mathematics.

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS 120 CREDIT HOURS			
136.169 (B) (or 136.150' and 136.170' (B)), 136.130' (B), 005.100, 005.200 (B) Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 9 credit hours of electives A "W" course must be taken in A "W" course and an "M" course must be taken in University 1 or Year 2	010.212, 010.221, 005.350, 005.360, 136.220, 136.235, 136.275, 136.280	010.313, 010.323, 010.333, 010.353, 136.3MS, 136.3L2, 136.3C1, 005.305 Plus 3 credit hours of approved electives	010.202, 010.414, 136.3A3, 136.3CM, 136.4RV Plus 9 credit hours of approved electives
30 Hours	30 Hours	30 Hours	30 Hours

¹136.131 may be taken in place of 136.130; 136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.171 or 136.173 may be taken in place of 136.170.
²The courses required in this program will satisfy the University mathematics requirement. The University written English must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. See *Student Services, General Academic Regulations and Policy, Section 4.1, University Written English and Mathematics Requirement*. (Letters in brackets indicate minimum prerequisite standing for further study.)
(Letters in brackets indicate minimum prerequisite standing for further study.)

Honours Requirements

To enter the Honours program in Mathematics – Actuarial Mathematics, a student must have satisfied the Faculty of Science requirements for entry to the program, and have completed 005.100, 005.200, 136.130', and either 136.169 or 136.150' and 136.170' with a minimum grade of B in each of 005.200, 136.130' and 136.169 or 136.170'.

Recommended Electives:

Actuarial 010.424, 010.434; Accounting and Finance 009.110, 009.220; Computer Science 074.101, 074.126; Economics 018.120 (or 018.121 and 018.122), 018.245; Statistics 005.347, 005.349.

The changes are:

1. Mathematics 013.338, 013.340 and 013.372 have been replaced in Year 3 by 136.3MS, 136.3L2 and 136.3C1, respectively.
2. Mathematics 013.345, 013.452 and 013.373 have been replaced in Year 4 by 136.3A3, 136.4RV and 136.3CM, respectively.
3. Footnotes 3 and 4 has been deleted and the chart amended accordingly.
4. The calendar text has been modified to clarify that 005.100 and 005.200 (grade of B) are entry requirements.

Mathematics - Physics & Astronomy Joint Program**MATHEMATICS - PHYSICS AND ASTRONOMY JOINT PROGRAM**

Program change

2001-2002

Proposed Program:**MATHEMATICS - PHYSICS AND ASTRONOMY JOINT PROGRAM (013P)**

The Departments of Mathematics and Physics and Astronomy offer a Joint Honours program for students wishing in-depth study in both Mathematics and Physics.

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS	138 CREDIT HOURS		
136.130 ¹ (B), 136.151 ¹ and 136.171 ¹ (B), (or 136.169 (B)), 016.105 (B) (or 016.102 (B+)) ² and 016.107 (B), 005.100, 074.101 Plus 6 credit hours from the Faculty of Arts, which should include the "W" course A "W" course must be taken in University 1 or Year 2 ³	016.226, 016.240, 016.250, 016.260 ³ , 016.261, 016.265, 136.220, 136.235, 136.275, 136.280	136.3MS, 136.3L2, 136.3A3 (or 136.3A1 and 136.3A2), 136.3C1 or 136.3CO 016.341, 016.365, 016.369, 016.370	136.3DE, 136.4P2 ³ plus 9 credit hours of 300 or 400 level Mathematics courses, of which 3 credit hours must be at the 400 level, 016.343, 016.366, 016.437 Plus 3 credit hours from 300 and 400 level Physics Honours courses
30 Hours	36 Hours	36 Hours	33 Hours

¹136.131 may be taken in place of 136.130; 136.150, 136.152 or 136.153 may be taken in place of 136.151; 136.170 or 136.173 may be taken in place of 136.171.

²016.103 is not suitable for entry to the program. Students must also take 016.107 if they have already taken 016.103. Students can hold credit for both 016.103 and 016.107.

³The corequisite of 016.237 is waived. It is recommended that students audit 016.237 in second year.

*The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. As there are no electives in Year 2 of the program, students should complete the University written English requirement in University 1. If not completed in University 1, a "W" course must be completed prior to Year 3 in addition to the required Year 2 courses. See *Student Services, General Academic Regulations and Policy, Section 4.1, University Written English and Mathematics Requirement*. (Letters in brackets indicate minimum prerequisite standing for further study.)

³The prerequisite of 136.3P1 has been waived for students who have completed 016.369 and 016.370.

The changes are:

1. Mathematics 013.338, 013.340, 013.345, 013.372 have been replaced in Year 3 by 136.3MS, 136.3L2, 136.3A3 (or 136.3A1 and 136.3A2) and 136.3C1 or 136.3CO, respectively.
2. Mathematics 013.371, 013.373 and 013.452 and another 6 credit hours of 400 level Mathematics courses have been replaced in Year 4 by 136.3DE and 136.4P2, plus 9 credit hours of 300 or 400 level Mathematics, of which 3 credit hours must be at the 400 level. The total number of Mathematics credit hours in years 3 and 4 have been reduced from 36 to 33. As a result, the total number of credit hours in Year 4 of the program has been reduced from 36 to 33.
3. Footnote 5 has been deleted and replaced by a different footnote.

Department of Microbiology

Courses to be introduced:

- 060.3BB Work Term 1 0
 Work assignments in business, industry or government for students registered in the Microbiology Honours or Major Cooperative program. Requires submission of a written report completed during the four-month professional assignment. (Pass/Fail grade only).
- 060.3BC Work Term 2 0
 Work assignments in business, industry or government for students registered in the Microbiology Honours or Major Cooperative program. Requires submission of a written report completed during the four-month professional assignment. (Pass/Fail grade only).
- 060.4AA Work Term 3 0
 Work assignments in business, industry or government for students registered in the Microbiology Honours or Major Cooperative program. Requires submission of a written report completed during the four-month professional assignment. (Pass/Fail grade only).
- 060.4BB Work Term 4 0
 Work assignments in business, industry or government for students registered in the Microbiology Honours or Major Cooperative program. Requires submission of a written report completed during the four-month professional assignment. (Pass/Fail grade only).
- 060.4CC Environmental Microbiology (L) +3
 Applications of microbial ecology and biogeochemistry to environmental concerns, including bioremediation, water treatment, and the terrestrial subsurface. *Pre-requisite: 060.228. 060.223 and 060.348 are recommended.*

Courses to be modified:

- 060.122 Essentials of Microbiology (3)
 A review of the essential principles of microbiology including immunity, with emphasis on microbial disease. This course is intended for students in the Faculty of Nursing. Not to be held with the former 060.121. Not available to students who have previously obtained credit in, or are currently enrolled in, 060.301. *NOTE: 060.122 is offered primarily for students in the Faculty of Nursing but may be taken by students in other health care or related programs or by students in other faculties intending to enter the Faculty of Nursing. Although this course may then be used as an elective in an Arts or Science program, it may not be used to meet a program requirement of an Honours, Major, General or Minor program in the biological sciences.*
- 060.211 General Microbiology B (3) L
 Microbial synthesis of nucleic acids and proteins, introduction to bacterial and animal viruses, mutation, and bacterial genetics. Not to be held with the former 060.202, 060.220 or 060.222. *Pre-requisite: 060.210.*
- 060.211F Microbiologie générale B (3) L
 Synthèse microbienne des acides nucléiques et des protéines, introduction aux virus

bactériens et des animaux, mutation, génétique bactérienne. On ne peut se faire créditer à la fois le 060.211 avec les anciens 060.202, 060.220 ou le 060.222. *Préalable : 060.210.*

060.223 Introductory Biogeochemistry (3)

The roles and interactions of biological, chemical and geological reactions in determining the composition of the environment. Microorganisms as major agents of biogeochemical change and their roles in the element cycles will be especially emphasized. *Pre-requisite: 002.131 (or the former 002.128). It is recommended that 3 credit hours of 100-level Geological Sciences be taken concurrently with or prior to 060.223.*

060.228 Microbial Ecology (3) L

A survey of methods used to study microbial associations and their behaviour. Not to be held with the former 060.226. *Pre-requisite: 060.210 (or the former 060.201, 060.220 or 060.222).*

060.447 Fermentations (3) L

Biochemical and enzymatic mechanisms of microbial reactions in anaerobic fermentations and methods of their investigation. *Pre-requisites: 060.211 (or the former 060.202, 060.220 or 060.222) and 060.237 (002.237) (or the former 060.235 (002.235)).*

060.451 Industrial Microbiology (3) L

A survey of microbial reactions used in industry. Fermentations, such as the production of amino acids and antibiotics, will be discussed. *Pre-requisites: 060.211 (or the former 060.202, 060.220 or 060.222) and 060.237 (002.237) (or the former 060.235 (002.235)).*

060.453 Project in Microbiology (6)

A research project chosen in consultation with the department head, and supervised by a staff member. A written report is normally required. The course is available only to final year Honours students in Microbiology, the Joint Microbiology-Chemistry programs, or the Genetics program. Not to be held with 002.4YZ.

060.461 Molecular Genetics of Eukaryotes (3) L

A comprehensive study dealing with replication and expression of DNA, genome structure, and the involvement of genes in AIDS and cancer. Not to be held with the former 060.452 or 060.455. *Pre-requisites: 060.211 (or the former 060.202, 060.220 or 060.222) and 060.237 (002.237) (or the former 060.235 (002.235)). 001.246 is recommended.*

NET CHANGE IN CREDIT HOURS:

+3

DEPARTMENT OF MICROBIOLOGY

Program Change

2001-2002

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Proposed Program:

MICROBIOLOGY

Head: P.C. Loewen

General Office: 418 Buller Building Telephone: (204) 474-9372

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
HONOURS	120 CREDIT HOURS		
071.125, 002.130, 002.131 Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 ¹ , 136.150 ¹ , 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 005.100 which must be taken in University 1 or Year 2 A "W" course and an "M" course must be taken in University 1 or Year 2 ²	060.210, 060.211, 060.228, 060.236 (002.236), 060.237 (002.237), 001.246, 002.221, 002.222, 022.228	060.301, 060.341, 60.344, 060.347, 060.348	060.401, 060.447, 060.453, 060.460, 060.461
30 Hours	30 Hours	30 Hours	30 Hours
HONOURS COOPERATIVE OPTION	120 CREDIT HOURS		
071.125, 002.130, 002.131 Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 ¹ , 136.150 ¹ , 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 005.100, which must be taken in University 1 or Year 2 A "W" course and an "M" course must be taken in University 1 or Year 2 ²	060.210, 060.211, 060.228, 060.236 (002.236), 060.237 (002.237), 001.246, 002.221, 002.222, 022.228	060.301, 060.341, 60.344, 060.347, 060.348 060.388, 060.3BC, 060.4AA and/or 060.4BB	060.401, 060.447, 060.460, 060.461
30 Hours	30 Hours	30 Hours	30 Hours
FOUR YEAR MAJOR³	120 CREDIT HOURS		
071.125, 002.130, 002.131 Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 ¹ , 136.150 ¹ , 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which may include the "W" course Plus 005.100 which must be taken in University 1 or Year 2 A "W" course and an "M" course must be taken in University 1 or Year 2 ²	060.210, 060.211, 060.236 (002.236), 060.237 (002.237), 001.246, 002.221, 002.222, 022.228	33 credit hours of Microbiology courses ^{2,3} including 15 credit hours at the 400 level ¹	
	Plus 9 credit hours from Microbiology courses ^{2,3} or from the option list (see below)		
MAJOR COOPERATIVE OPTION⁶	120 CREDIT HOURS		
071.125, 002.130, 002.131 Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 ¹ , 136.150 ¹ , 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which may include the "W" course Plus 005.100 which must be taken in University 1 or Year 2 A "W" course and an "M" course must be taken in University 1 or Year 2 ²	060.210, 060.211, 060.236 (002.236), 060.237 (002.237), 001.246, 002.221, 002.222, 022.228	060.301, 060.341 27 credit hours of Microbiology courses ^{2,3} including 15 credit hours at the 400 level ¹ 060.388, 060.3BC, 060.4AA and/or 060.4BB Plus 9 credit hours from Microbiology courses ^{2,3} or from the option list (see below)	
THREE YEAR GENERAL	12 credit hours of Microbiology at the 200 and (or) 300 level		
MINOR	12 credit hours of Microbiology at the 200 and (or) 300 level		
002.130, 002.131, 071.125 (C)			

¹136.131 may be taken in place of 136.130; 136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.171 or 136.173 may be taken in place of 136.170.

²097.701 may be considered as a 400 level Microbiology course in the Honours and Major programs. Please refer to course description in *Graduate Studies*, Section 4.11.7.

³060.401, 060.453 and 060.457 cannot be selected.

⁴The written English and mathematics requirement must be successfully completed within the first 60 credit hours of this program. Completion of three credit hours from 005.100, 136.120, 136.130¹, 136.150¹, and 136.169 in University 1 or Year 2 will satisfy the University mathematics requirement.

⁵060.402 and 060.458 cannot be selected.

IMPORTANT NOTE: 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 with a view to satisfying the prerequisites of the required courses.

The listed requirements are minimum requirements. Students are reminded that should they wish to take further courses in Microbiology, they are at liberty to do so within the degree regulations.

Four Year Major Cooperative Option

Students interested in alternating employment terms and academic terms as part of their Major Microbiology program may enter the Cooperative Option in their third year in Major Microbiology. This program provides students with a minimum of 12 months of paid employment by the time they graduate. It enables them to obtain work experience in research and industry with participating firms, government agencies and University units.

The course and grade requirements for entry to, and continuation in, this option are the same as those required for entry to the regular Major program. Students should refer to the general faculty regulations for B. Sc. (Major) Cooperative Option in Section 3.4.

Students will apply for openings in the Cooperative Option in September of their third year in the Major program. They will be notified of their provisional acceptance in the program by October. Acceptance into the program is dependent upon the student receiving an employment placement. Employment term positions available to the students will be approved by the department, and the employers will select the students they wish to employ. The first work term can be taken in January or May. Students are advised that satisfying the entrance requirements does not guarantee a place in the Cooperative Option if the demand for places exceeds the number of places available. The department reserves the right to determine and select the best qualified applicants.

Students are required to register in and pay fees for each employment term prior to the commencement of each employment term. Students will be required to submit an employment report upon the completion of each employment term.

Option List¹ for All Microbiology Programs:

Botany: 001.221, 001.229, 001.237, 001.301, 001.322, 001.346, 001.413, 001.416, 001.417, 001.434

Chemistry: 002.228, 002.229, 002.238, 002.247, 002.339, 002.347, 002.4AA, 002.4AB, 002.462, 002.463
 Zoology: 022.215, 022.237, 022.253, 022.254, 022.306, 022.307, 022.350, 022.353, 022.354, 022.400, 022.414, 022.415, 022.460
 Food Sciences: 078.415, 078.428
 Medical Microbiology: 097.701²
 Mathematics: 136.201

¹ Other suitable options may be selected with permission of the department.

² May be considered as a 400 level microbiology course in the Honours and Major programs. See course description in *Graduate Studies*, Section 4.11.7.

Three Year General

As prescribed with all other faculty regulations in Section 3.2, students in this program must select 30 credit hours of 200 and (or) 300 level courses from two Science departments. To satisfy the requirement in the Department of Microbiology, students must take a minimum of 12 credit hours of Microbiology courses as prescribed in the chart above.

Students wishing to elect courses in Microbiology in fulfillment of the requirements for the B. Sc. (General) degree should note the following:

Students must have successfully completed 071.125 (C), and 002.130 and 002.131.

The regulations for the B. Sc. (General) degree allow election of up to 42 credit hours from a single department. Students are therefore encouraged to elect additional Microbiology courses over and above the required minimum.

Microbiology 060.277 and 060.278 (002.277 and 002.278) are not available in this program.

Minor

Students must complete 12 credit hours at the 200 and (or) 300 level. Note that 071.125 (C) and 002.131 or 002.132 are prerequisites to 060.210.

The changes are:

1. The phrase "For example 060.447 and 060.451 require at least a "C+" in 060.237 (002.237)" has been deleted from the text due to the change in prerequisites for 060.447 and 060.451.
2. The options list in the Major and Honours program charts has been moved from the chart to a list in the text part of the Calendar. Botany 001.237, Zoology 022.237 and 022.307, Food Science 078.415 and 078.428 have been added to the options list. Chemistry 002.4AA and 002.4AB replace 002.449 in the option list.
3. The former footnote 4 has been replaced by Footnote 5.
4. The former footnote 2 has been deleted and appears in the text.
5. The new footnote 3 lists the three Microbiology courses excluded from the Major program.
6. A Co-operative Option has been added to the Major and Honours programs.
7. The sentence "A grade of 'C' or better in 071.125 is a prerequisite for General, Major and Honours courses in Microbiology." that appears before the Microbiology course descriptions has been amended to include the phrase "with the exception of 060.122" at the end of the sentence.
8. Statistics 005.100 and 3 credit hours of Mathematics or Physics from: 136.120, 136.130, 136.150, 016.102 or 016.105 has replaced the previous requirement "Plus 6 credit hours from 005.100, 005.200, 016.102, 016.103, 136.120, 136.130, 136.150, 136.169, 136.170 in the Honours and Major programs.
9. Cell Biology 022.228 has been added to Year 2 as a required course in the Major and Honours programs and deleted from the option list.

DEPARTMENT MICROBIOLOGY – CHEMISTRY JOINT PROGRAM IN BIOCHEMISTRY Program Changes 2001-2002

Proposed Program:

MICROBIOLOGY - CHEMISTRY JOINT PROGRAMS IN BIOCHEMISTRY (060C)

The Departments of Microbiology and Chemistry offer a Joint Honours program and a Joint Four Year Major program for students wishing to pursue a program of study in the area of biological chemistry.

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS 123 CREDIT HOURS			
002.130, 002.131, 071.125, 016.105 and 016.107, or 016.102 and 016.103, 136.150 ¹ Plus one of: 136.120, 136.130 ¹ , 136.170 ¹ Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	002.221, 002.222, 002.228, 002.229, 002.236 (060.236), 002.237 (060.237), 060.210, 060.211, and whichever two of 136.120, 136.130 ¹ , 136.170 ¹ not yet taken ²	002.238, 002.247, 060.345, 060.346 Plus 18 credit hours from option list below The 33 credit hours of options must include 24 credit hours from Chemistry and Microbiology with at least 6 hours from each department. The remaining 9 credit hours may be from any of the options listed	002.4AA, 002.4AB, 002.462, 002.463, 002.470, 060.454 Plus 15 credit hours from option list below
A "W" course and an "M" course must be taken in University 1 or Year 2 ³			
30 Hours	30 Hours	30 Hours	33 Hours
JOINT FOUR YEAR MAJOR* 120 CREDIT HOURS			
002.130, 002.131, 071.125, 016.105 and 016.107, or 016.102 and 016.103, 136.150 Plus one of: 136.120, 136.130 ¹ , 136.170 ¹ Plus 6 credit hours from the Faculty of Arts, which may include the "W" course	002.221, 002.222, 002.228, 002.229, 002.236 (060.236), 002.237 (060.237), 060.210, 060.211, and whichever two of 136.120, 136.130 ¹ , 136.170 ¹ not yet taken ²	002.238, 002.247, 060.345, 060.346 Plus 24 credit hours of Chemistry and Microbiology courses. The 24 credit hours must include 12 credit hours at the 400 level and at least 6 credit hours from each of Chemistry and Microbiology	Two of 002.4AA, 002.4AB, 002.462, 002.463 ³
A "W" course must be taken in University 1 or Year 2 ⁴			

¹136.131 may be taken in place of 136.130; 136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.171 or 136.173 may be taken in place of 136.170; 136.169 may be taken in place of 136.150 and 136.170.

²Other combinations of mathematics courses may be acceptable with the approval of the Department Heads.

³Only two of 002.4AA, 002.4AB, 002.462, 002.463 are required, but all may be taken.

⁴The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. As there are no electives in Year 2 of the program, students should complete the University written English requirement in University 1. If not completed in University 1, a "W" course must be completed prior to Year 3 in addition to the required Year 2 courses. See *Student Services, General Academic Regulations and Policy*, Section 4.1, *University Written English and Mathematics Requirement*.

⁵The courses required in this program will satisfy the University's Mathematics requirement. The Written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. See *Student Services, General Academic Regulations and Policy*, Section 4.1, *University Written English and Mathematics Requirement*.

IMPORTANT NOTE: 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 with a view to satisfying the prerequisites of the required courses.

Biochemistry Honours Requirements and Optional Courses

The requirements for entry to the joint Honours program are a minimum of "B" in each of 002.130 and 002.131, and a minimum of "C+" in 071.125; or a minimum of "C+" in each of 002.130 and 002.131, and a minimum of "B" in 071.125. Also, standing in 016.107 or 016.103, and 136.150¹ plus one of 136.120, 136.130¹ or 136.170¹ is required. In addition, students must satisfy the general faculty requirements for entry to Honours programs. In order to satisfy prerequisite requirements for courses taken in Year 2 and subsequent years, students must take the courses indicated above in University 1. Students contemplating entry to this program should contact the head of both of the participating departments for approval of their programs of study.

To continue in the Honours program, i.e., to proceed from Year 2 to Year 3 and from Year 3 to Year 4, and to successfully complete Year 4 of the Honours program, a student must have a sessional Grade Point Average of 2.50, and in addition, must have a 3.00 Grade Point Average on all Chemistry and Microbiology courses during that session.

Students who achieve less than a 2.50 sessional Grade Point Average in summer session will be allowed to continue in the Honours program if they maintain a 3.00 cumulative Grade Point Average in all Microbiology and Chemistry courses including that summer session and at least a 2.00 sessional Grade Point Average in the summer session.

In Years 3 and 4, the optional 33 credit hours will be chosen from the lists of optional courses below in the following way: a minimum of 24 credit hours from the departments of Chemistry and Microbiology combined, with not less than six of these 24 credit hours from each department. The remaining optional nine credit hours may be chosen from any of the options listed. Other suitable optional courses may be selected through consultation with the heads of the departments of Chemistry and Microbiology.

The optional courses are: Chemistry: 002.336, 002.337, 002.338, 002.339, 002.347, 002.349, 002.358, 002.457, 002.458, 002.460, 002.464, 002.465, 002.468, 002.469, 002.472.

Microbiology: 060.228, 060.301, 060.341, 060.343, 060.344, 060.347, 060.348, 060.401, 060.447, 060.451, 060.453, 060.457, 060.460, 060.461, 060.4CC.

Other departments: 001.246, 001.301, 001.417, 005.100, 005.200, 016.220, 016.227, 016.228, 022.228, 022.353, 022.354, 022.415, 022.460, 074.101, 074.102, 074.126, 074.127, 097.701, 136.201 or 136.3M1, 136.270, 136.271, 136.280.

Four Year Major Requirements and Optional Courses

The requirements for entry to the joint four year Major program are a minimum of "C+" in each of 002.130 and 002.131, and a minimum of "C" in 071.125; or a minimum of "C+" in 071.125 and a minimum of "C" in each of 002.130 and 002.131; plus standing in 016.107 or 016.103, 136.150¹ plus one of 136.120, 136.130¹, 136.170¹. In addition, students must satisfy the general faculty requirements for entry to four year Major programs.

Students in this program should note the following:

— Students must satisfy any course prerequisites and corequisites for courses selected. Care should be taken to select courses in their proper sequence, e.g., 002.237 (060.237) should be taken in Year 2 as it is prerequisite to a number of subsequent required or optional courses.

— Normally 400 level courses are available only to students in their fourth year. 060.453 and 060.457 are not available to Major students.

— Students are encouraged to elect other courses pertinent to the study of biochemistry although this is not required for completion of the degree. The departments of Microbiology and Chemistry will be glad to suggest such supplementary courses upon request by students.

— Students who may wish to transfer to the Honours program in Biochemistry following Year 2 should be sure to complete all courses recommended in Year 2 (see chart above).

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The changes are:

1. Chemistry 002.449 has been replaced in the Honours program by 002.4AA and 002.4AB.
2. "Chemistry 002.449 or both of 002.462 and 002.463" has been replaced in the Major program by "Two of 002.4AA, 002.4AB, 002.462, 002.463".
3. Mathematics 136.3M1 replaces 006.337 in the list of optional courses. Chemistry 002.4YZ and Microbiology 060.4CC have been added to the options list.

Department of Microbiology - Chemistry Joint Program in Biotechnology**DEPARTMENT MICROBIOLOGY - CHEMISTRY JOINT HONOURS
PROGRAM IN BIOTECHNOLOGY****Program Changes
2001-2002****Proposed Program:****MICROBIOLOGY - CHEMISTRY JOINT PROGRAM IN BIOTECHNOLOGY (060T)**

The Departments of Microbiology and Chemistry offer a Joint Honours program for students wishing to pursue a program of study in the area of Biotechnology.

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS	120 CREDIT HOURS		
002.130, 002.131, 071.125, 016.105 and 016.107 (or 016.102 and 016.103), 136.150 ¹ and 136.170 ¹ (or 136.169) Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	002.221, 002.222, 002.228, 002.229, 002.236 (060.236), 002.237 (060.237), 060.210, 060.211, 060.228, 001.246	002.238, 002.247, 002.339, 060.341, 060.344, 060.347, 039.433 Plus 9 credit hours from option list below	002.347, 002.462 or 002.463, 060.447, 060.451, 060.457, 060.460, 060.461 Plus 6 credit hours from option list below
A "W" course and an "M" course must be taken in University 1 or Year 2 ²			
30 Hours	30 Hours	30 Hours	30 Hours

¹136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.171 or 136.173 may be taken in place of 136.170.

²The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. As there are no electives in Year 2 of the program, students should complete the University written English requirement in University 1. If not completed in University 1, a "W" course must be completed prior to Year 3 in addition to the required Year 2 courses. See *Student Services, General Academic Regulations and Policy, Section 4.1, University Written English and Mathematics Requirement*.

Biotechnology Entry Requirements and Optional Courses

The requirements for entry to the joint Honours program are a minimum of "B" in each of 002.130 and 002.131, and a minimum of "C+" in 071.125; or a minimum of "C+" in each of 002.130 and 002.131, and a minimum of "B" in 071.125. Also, standing in 016.107 or 016.103, 136.150¹ and 136.170¹ (or 136.169) is required. In addition, students must satisfy the general faculty requirements for entry to Honours programs. To satisfy prerequisite requirements for courses taken in Year 2 and subsequent years, students must take the courses indicated above in University 1. Students contemplating entry to this program should contact the head of both the participating departments for approval of their program of study.

To continue in the Honours program, i.e., to proceed from Year 2 to Year 3 and from Year 3 to Year 4, and to complete successfully Year 4 of the Honours program, a student must have a sessional Grade Point Average of 2.50, and in addition, must have a 3.00 Grade Point Average on all Chemistry and Microbiology courses during that session.

Students who achieve less than a 2.50 sessional Grade Point Average in summer session will be allowed to continue in the Honours program if they maintain a 3.00 cumulative Grade Point Average in all Microbiology and Chemistry courses (including that summer session) and at least a 2.00 sessional Grade Point Average in the summer session.

The change is:

1. 002.4AA and 002.4AB replace 002.449, 002.4YZ replaces 002.461 and 136.3M1 replaces 006.337 in the list of optional courses. 060.4CC has been added as an optional course.

The optional courses are:

Chemistry: 002.336, 002.337, 002.338, 002.349, 002.358, 002.4AA, 002.4AB, 002.457, 002.458, one of 002.460 or 002.470, whichever of 002.462 or 002.463 not yet taken, 002.464, 002.465, 002.468, 002.469, 002.4YZ.

Microbiology: 060.301, 060.343, 060.345, 060.346, 060.348, 060.401, 060.453, 060.454, 060.4CC.

Other departments in Science: 001.201, 001.202, 001.301, 001.322, 001.346, 001.417, 005.100, 005.200, 006.328, 016.220, 016.227, 016.228, 022.215, 022.228, 022.353, 022.354, 022.415, 022.460, 074.101, 074.102, 074.126, 074.127, 136.120, 136.130, 136.131, 136.201, 136.270, 136.271, 136.280.

Agricultural and Food Sciences: 035.350, 035.428, 039.314, 039.352, 039.450, 039.451, 078.301, 078.401, 078.415, 078.428.

Arts: 076.286, 076.289.

Medicine: 097.701, 125.302.

Other suitable courses may be selected through consultation with the department heads.

Department of Physics and Astronomy

Courses to be modified:

016.102 General Physics 1 (3) L

A non-calculus survey course in Physics covering topics in mechanics and thermodynamics, with illustrations drawn from the life and physical sciences. This course, together with the sequel 016.103, is recommended for students seeking either a single, comprehensive course in Physics or entry into health science programs. It may also be used for entry into the Honours Physics program (B+ or better) or the Major Physics program (B or better). *Not to be held for credit with 016.105, 016.141 or 016.142 or the former 016.118, 016.120, 016.121 or 016.127. Pre-requisites: Either Physics 40S, 016.090 (with a "C" or better), or equivalent; and either Pre-Calculus Mathematics 40S, Applied Mathematics 40S (with a 70% or better), or equivalent. It is strongly recommended that students take Pre-Calculus Mathematics 40S. It is also strongly recommended that students attain a minimum of 70% as the average of their marks in Physics 40S and Pre-Calculus Mathematics 40S.*

016.102F Physique générale 1 (3) L

Ce cours d'initiation à la physique ne requiert pas de calcul et traite de certains thèmes tirés de la mécanique et de la thermodynamique avec des exemples tirés des sciences biologiques et physiques. Ce cours, de même que le 016.103, est particulièrement conseillé aux étudiants désireux d'avoir une vue d'ensemble de la physique ou qui ont l'intention d'entreprendre des études dans les sciences de la santé. Il peut aussi servir comme cours de base pour un programme de spécialisation en physique ("B+" ou mieux) ou de majeure en physique ("B" ou mieux). On ne peut se faire créditer à la fois le 016.102 avec le 016.105, 016.141 ou 016.142 ou l'ancien 016.118, 016.120, 016.121 ou 016.127. *Préalables: soit Physique 40S, 016.090 (avec note minimale de "C"), ou l'équivalent; et soit le cours de Mathématiques précalcul 40S ou une note de 70% dans le cours de Mathématiques appliquées 40S, ou l'équivalent. Il est fortement recommandé aux étudiants d'obtenir une note de 70% dans les cours de Mathématiques précalcul 40S et de Physique 40S.*

016.103 General Physics 2 (3) L

A non-calculus survey course in Physics covering topics in electricity, magnetism, optics, and modern physics, with illustrations drawn from the life and physical sciences. This course, together with its pre-requisite 016.102, is recommended for students seeking either a single comprehensive course in Physics, or entry into health science programs. Not suitable for entry to Major or Honours in Physics. The course may not be held for credit with 016.141 or 016.142 or the former 016.120 or 016.121. *Pre-requisites: 016.102 or 016.105 or the former 016.118.*

016.103F Physique générale 2 (3) L

Ce cours d'initiation à la physique ne requiert pas de calcul et traite de certains thèmes tirés de l'électricité, du magnétisme, de l'optique et de la physique moderne et appuyé d'exemples pris des sciences biologiques et physiques. Ce cours, de même que le 016.102, est particulièrement conseillé aux étudiants désireux d'avoir une vue d'ensemble de la physique ou qui ont l'intention d'entreprendre des études des sciences de la santé. Il ne peut servir aux programmes de majeure ou de spécialisation en physique. On ne peut

se créditer à la fois le 016.103 et le 016.141 ou le 016.142 ou les anciens 016.120 ou 016.121. *Préalable : 016.102 ou 016.105 ou l'ancien 016.118.*

016.105 Physics 1: Mechanics (3) L

A calculus-based introduction to classical mechanics which includes vectors, translational kinematics and dynamics, work and energy, linear momentum and collisions, rotational kinematics and dynamics, and oscillatory motion. This course is intended for students considering a program of study in engineering or the physical sciences. The course may not be held for credit with 016.102, 016.141 or 016.142 or the former 016.118, 016.120, 016.121 or 016.127. *Pre-requisites: Pre-Calculus Mathematics 40S (or equivalent) and Physics 40S (or equivalent) or 016.090 (with a grade of "C+"). It is strongly recommended that students attain a minimum of 80% as the average of their marks in Physics 40S and Pre-Calculus Mathematics 40S. Co-requisite: One of 136.150, 136.151, 136.152, 136.153 or 136.169 (or the former 006.125, 013.139 or 013.159).*

016.105F Physique 1 : La mécanique (3) L

Une introduction, basée sur le calcul, à la mécanique classique. Les sujets suivants seront traités: les vecteurs, la dynamique et la cinématique du mouvement de translation, la cinématique de la rotation, l'énergie, le travail, le moment linéaire, les collisions, le mouvement oscillatoire. Ce cours est destiné particulièrement aux étudiants qui voudraient poursuivre leur programme d'études dans les sciences physiques ou en ingénierie. L'étudiant ne peut se faire créditer à la fois le 016.105 et 016.102 (ou l'ancien 016.121) et les anciens 016.118, 016.120 et 016.127. *Préalables : Mathématiques précalcul 40S (ou l'équivalent) et Physique 40S (ou l'équivalent) ou 016.090 (note minimale de "C+"). Il est fortement recommandé que l'étudiant obtienne une moyenne de 80% dans les préalables de Mathématiques précalcul 40S et de Physique 40S. Corequis : un de 136.150, 136.151, 136.152, 136.153 ou 136.169 (ou les anciens 006.125, 013.139 ou 013.159).*

016.107 Physics 2: Waves and Modern Physics (3) L

A calculus-based introduction to waves and modern physics which includes: oscillations, waves, superposition, interference, relativity, photoelectric effect, quantisation, Rutherford atom, Bohr model, atomic spectra, deBroglie waves, Heisenberg's uncertainty principle, nuclear reactions, fission, fusion, subatomic particles. This course, like Physics 1 (016.105), is intended for students considering a program in the physical sciences. The course may not be held for credit with 016.141 or 016.142. *Pre-requisites: 016.105 or 016.102 (B) (or the former 016.121 (B)), or the former 016.118, and 136.150 (or 136.151, 136.152, 136.153 or the former 006.125 or 013.139). Co-requisite: 136.170 (or 136.169, 136.171, 136.173 or the former 006.126, 013.149, or 013.159).*

016.107F Physique 2: La physique des ondes et la physique moderne (3) L

Une introduction, basée sur le calcul, à la physique des ondes et à la physique moderne. Les sujets suivants seront traités : les oscillations, les ondes, la superposition, l'interférence, la relativité, l'effet photoélectrique, le modèle quantique, l'atome de Rutherford, le modèle de Bohr, les spectres atomiques, la théorie de deBroglie, le principe d'incertitude de Heisenberg, les réactions nucléaires, la fission, la fusion, les particules sous-atomiques. Ce cours, tout comme le 016.105 Physique, est destiné aux étudiantes et aux étudiants qui veulent suivre un programme d'études en sciences physiques. On ne peut se faire créditer à la fois le 016.107 avec le 016.141 ou 016.142. *Préalables : 016.105 ou 016.102 (B) (ou l'ancien 016.121 (B)), ou l'ancien 016.118, et 136.150 (ou 136.151,*

136.152, 136.153 ou les anciens 006.125 ou 013.139). Corequis : 136.170 (ou 136.169, 136.171, 136.173 ou les anciens 0016.126, 013.149 ou 013.159).

016.370 Modern Physics 2 (3)

This course is the sequel to 016.250. It focuses on solutions of the three-dimensional Schrödinger equation with special emphasis on one electron atoms, multi-electron atoms, and simple molecules. Not to be held with 016.464 or 016.465 (or the former 016.358). *Pre-requisite: 016.250 (or the former 016.230).*

016.437 Wave Mechanics (6) L

Basic theory, general formalism and its interpretation, solution of Schrödinger's equation for various potentials, approximation methods and elementary applications. Not to be held with 016.464 or 016.465 or the former 016.447. *Pre-requisites: 016.237 and 016.370 (or the former 016.358), or consent of department.*

NET CHANGE IN CREDIT HOURS:

0

DEPARTMENT OF PHYSICS AND ASTRONOMY

Program Change

2001-2002

Proposed Program:

PHYSICS AND ASTRONOMY (016)

Head: G. Williams

General Office: 301 Allen Building Telephone: (204) 474-9817

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
HONOURS			
120 CREDIT HOURS			
016.105 (B) (or 016.102 ¹ (B+)) and 016.107 (or the former 016.106) (B), 136.130 ¹ (B), 136.150 ¹ (B), 136.170 ¹ (B) Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	016.226, 016.237, 016.240, 016.250, 016.260, 016.261 ⁹ , 016.265, 136.275 (or both of 136.270 and 136.271)	016.341, 016.343, 016.365, 016.369, 016.370, 136.3LS Plus 3 credit hours of electives with one of the following strongly recommended: 016.357, 016.366	016.437, 016.451, 016.452 ⁴ , 136.3CO Plus 9 credit hours from 016.357, 016.366, 016.425, 016.454, 016.456, 016.458, 016.462, 016.463

Astronomy courses may be used in place of some of the above courses with permission of the department.
Consult the department advisor for details.

A "W" course must be taken in University 1 or Year 2*

30 Hours	30 Hours	30 Hours	30 Hours
JOINT MATHEMATICS-PHYSICS AND ASTRONOMY HONOURS SEE SECTION 4.10 MATHEMATICS			
FOUR YEAR MAJOR * 120 CREDIT HOURS			
016.105 (C+) (or 016.102 ¹ (B)) and 016.107 (or the former 016.106) (C+), 136.150 ^{1,5} and 136.170 ^{1,5} Plus 6 credit hours from the Faculty of Arts, which may include the "W" course	016.237, 016.240, 016.250, 016.260, 136.120, 136.130 ¹ 016.226, 016.261, 016.265, 016.370, 136.275, (or both of 136.270 and 136.271)	Plus 12 credit hours from 300 and 400 level Honours Physics and Astronomy courses	016.343, 016.365, 016.454, 136.3CO, 136.3LS

Astronomy courses may be used in place of some of the above courses with permission of the department.
Consult the department advisor for details.

A "W" course must be taken in University 1 or Year 2*

THREE YEAR GENERAL			
A minimum of 12 credit hours from 016.220, 016.225, 016.226, 016.227, 016.228, 016.235, 016.280, 016.336, 016.380			
MINOR			
016.105 (C) and 016.107 (C) (or 016.102 (C+) and 016.103 (C+))	A minimum of 12 credit hours from 016.220, 016.225, 016.226, 016.227, 016.228, 016.235, 016.280, 016.336, 016.380		

¹Students must achieve a minimum grade of "C" in all Honours Physics and Astronomy courses that are either required in the program or required as prerequisites to other Physics and Astronomy courses taken in the Honours program.

²016.103 is not suitable for entry to the Honours and Four Year Major program. Students must also take 016.107 if they have already taken 016.103. Students can hold credit in both 016.103 and 016.107.

³136.131 may be taken in place of 136.130; 136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.171 or 136.173 may be taken in place of 136.170; 136.16 may be taken in place of 136.150 and 136.170.

⁴Other Honours Physics and Astronomy or Honours Mathematics courses may be substituted for one of 016.437, 016.451 or 016.452 with permission of the Department.

⁵A minimum grade of "C" and an average of "C+" is required on these two Mathematics courses.

⁶The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. As there are no electives in Year II of the program, students should complete the University written English requirement in University 1. If not completed in University 1, a "W" course must be completed prior to Year 3 in addition to the required Year 2 courses. See *Student Services, General Academic Regulations and Policy, Section 4.1, University Written English and Mathematics Requirement*.

⁷The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. See *Student Services, General Academic Regulations and Policy, Section 4.1, University Written English and Mathematics Requirement*.

⁸IMPORTANT NOTE: The 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 with a view to satisfying the prerequisites of the required courses.

⁹Engineering 130.118 may be used in place of 016.261.

(Letters in brackets refer to minimum prerequisite standing required for further study.)

The change is:

- 006.325 and 136.230 have been replaced by 136.3CO and 136.3LS, respectively, in the Honours and Major programs.

Department of Psychology

**DEPARTMENT OF PSYCHOLOGY
PROGRAM CHANGE
2001-2002**

Proposed Program:**PSYCHOLOGY (017)**

Acting Head: G. Sande

General Office: P404 Duff Roblin Building Telephone: (204)474-9338

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
HONOURS	120 CREDIT HOURS		
017.120 (B+)(or 017.121(B+) and 017.122(B+))	017.230WM	3 credit hours from	017.452
6 Credit Hours Science ¹ (B)	6 credit hours 200 or 300 level Psychology ²	017.363, 017.450, or 017.457	18 credit hours Psychology ³
	15 credit hours Science ⁴	15 credit hours Psychology ¹	6 credit hours Science ¹
	3 credit hours free options ⁵	9 credit hours Science ¹	
30 Hours	30 Hours	3 credit hours free options ⁵	
		30 Hours	30 Hours
FOUR YEAR MAJOR	120 CREDIT HOURS		
017.120 (C+)(or 017.121 (C+) and 017.122 (C+))	017.225, 017.226M	18 credit hours 200 or 300 level	18 credit hours 200 or 300 level
6 Credit Hours Science ¹ (C+)	6 credit hours 200 or 300 level Psychology ²	Psychology ²	Psychology ²
	Plus 30 credit hours of courses from departments in the Faculty of Science, including a minimum of 18 credit hours at the 200 level or above.		

A "W" course must be taken in University 1 or Year 2⁶

1. Introductory courses in Biology, Chemistry, Computer Science, Mathematics, Statistics or Zoology are highly recommended.
2. These 6 credit hours must include 3 credit hours from each of two different lettered categories of Psychology courses below.
3. These 15 credit hours must include 3 credit hours from each of two different lettered categories of Psychology courses below not sampled in Year 2.
4. These 18 credit hours must include 6 credit hours at the 400 level; and 6 credit hours at any level including any remaining lettered category below.
5. Ancillary options are to be chosen from courses that are offered by departments in the Faculty of Science and must be approved by the Department of Psychology.
6. Free options are to be chosen from courses that are acceptable for credit in the Faculty of Science and must be approved by the Department of Psychology.
7. During Years 2 to 4 a total of 42 credit hours of 200 or 300 level Psychology courses must be completed, including a minimum of 3 credit hours from each of four of the five lettered categories of courses below.
8. The courses required in this program will satisfy the university mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program.

The change is:

1. Footnote 3 has been amended to delete the phrase "3 credit hours at the 400 level" to reduce the number of 400 level courses required in the program so that the B. A. Honours and B. Sc. Honours have similar 400 level requirements. The calendar text did not change.

Department of Statistics

Courses to be reactivated:

005.460 Statistical Topics I (3)Topics of current interest in Statistics that will vary with the needs and interests of students and faculty. *Pre-requisite: 005.360 or consent of Department.***005.463 Stochastic Processes (3)**An introduction to stochastic processes. *Pre-requisite: 005.360 or consent of Department.***NET CHANGE IN CREDIT HOURS:****0**

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DEPARTMENT OF STATISTICS
Program Change
2001-2002

Proposed Program:

STATISTICS (005)

Head: S. Cheng

General Office: 338 Machray Hall Telephone: (204) 474-9826

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
HONOURS	120 CREDIT HOURS		
005.100, 136.169 (or 136.150 ¹ and 136.170 ²), 136.130 ² , 074.101 ¹ Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 9 credit hours	005.200 ¹ , 136.120 ¹ , 136.230, 136.270 and 136.271 (or 136.275), Plus sufficient credit hours of electives to total 30 credit hours ³	005.305, 005.347 and 005.348 (or 005.312 and 005.313 ⁴), 005.350, 005.360, 136.3L1 Plus 18 credit hours from 005.301, 005.317, 005.318, 005.338, 005.349, and 005.458, 005.459, 005.460, 005.462, 005.463, 005.469, 005.470 with at least 9 credit hours from 005.458, 005.459, 005.462, 005.469 and 005.470 Plus 12 credit hours ⁴	005.414, 005.452, 005.453
A "W" course must be taken in University 1 or Year 2 ⁵			
30 Hours	30 Hours	30 Hours	30 Hours
HONOURS DOUBLE MINIMUM	120 CREDIT HOURS	By arrangement with departments concerned	
FOUR YEAR MAJOR⁶	120 CREDIT HOURS		
005.100, 136.169 (or 136.150 ¹ and 136.170 ²), 136.130 ² Plus 6 credit hours from the Faculty of Arts, which may include the "W" course	005.200 ¹ , 136.120 ¹ , 136.270, 136.271, 074.101 ¹	005.312, 005.313, 005.350, 005.360 Plus 18 credit hours from 005.301, 005.305, 005.317, 005.318, 005.338, 005.349, 005.414, 005.458, 005.459, 005.460, 005.462, 005.463, 005.469, 005.470 Plus 24 additional credit hours from list below ⁴	005.452, 005.453
A "W" course must be taken in University 1 or Year 2 ⁵			
THREE YEAR GENERAL			
A minimum of 12 credit hours from 005.301, 005.305, 005.312, 005.313, 005.317, 005.318, 005.338, 005.349, 005.350 ¹ , 005.360 ¹ , 005.469			
MINOR			
005.100	005.200, Plus 12 credit hours from 005.301, 005.305, 005.312, 005.313, 005.317, 005.318, 005.338, 005.349, 005.350 ¹ , 005.360 ¹ , 005.469		

¹005.200, 074.101 and 136.120 may be taken either in University 1 or Year 2.

²136.131 may be taken in place of 136.130; 136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.171 or 136.173 may be taken in place of 136.170.

³005.312 and 005.313, with an average grade of "B" and a minimum grade of "C+" on each course, may be used in lieu of 005.347 and 005.348.

⁴Of the electives required in Years 2, 3 and 4, 18 credit hours are to be selected from one department which represents a field of application such as: Actuarial Mathematics, Botany, Microbiology, Zoology, Economics, Psychology or Sociology. (Mathematics, Applied 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.

⁵Of these 24 credit hours, 15 credit hours are to be taken from either Computer Science, Mathematics and Applied Mathematics, or from one of the following departments: Actuarial Mathematics, Botany, Microbiology, Zoology, Economics, Psychology or Sociology.

⁶005.350 and 005.360 have corequisites of 136.270 and 136.271. Therefore students who wish to take 005.350 and 005.360 should consider taking 136.130, 136.150 and 136.170 in University 1 or Year 2, as they are prerequisite to 136.270 and 136.271.

⁷The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program.

⁸**IMPORTANT NOTE:** 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 with a view to satisfying the prerequisites of the required courses.

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

The changes are:

1. The elective credit hours in Year 2 of the Honours program has been changed from 18 to "Plus sufficient credit hours of electives to total 30 credit hours."
2. 005.305 has been added to the list of acceptable courses for the General and Minor programs.
3. 005.460 and 005.463 have been added to list of Statistics options in the Honours and Major programs.
4. The phrases "Plus 12 credit hours" in University 1 and "Plus 15 credit hours" in Year 2 of the Major program have been deleted as there is no requirement for a full course load in the Major program as there is in the Honours program.
5. 013.332 has been replaced by 136.3L1 in Year 3 of the Honours program.

Statistics - Actuarial Mathematics Joint Program

STATISTICS – ACTUARIAL MATHEMATICS JOINT PROGRAM

Program Change

2001-2002

Proposed Program:

STATISTICS - ACTUARIAL MATHEMATICS JOINT PROGRAM (005A)

The Department of Statistics and the Warren Centre for Actuarial Studies and Research offer a Joint Honours program for students wishing in-depth study in Statistics and Actuarial Mathematics.

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONOURS 120 CREDIT HOURS			
005.100 (B), 136.169, or 136.150 ¹ and 136.170 ¹ , 136.130 ¹ , 074.101 ² , Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 9 credit hours electives	005.200 ⁴ , 010.202, 010.212, 010.221, 136.275 (or 136.270 and 136.271), 136.230 ³ Plus 9 approved credit hours	005.305, 005.347 and 005.348 (or 005.312 and 005.313 ⁵), 005.350, 005.360, 010.313, 010.323, 010.333, 010.353, 010.424, (or 010.434)	005.349, 005.414, 005.452, 005.453, 010.414, 010.424 or 010.434 (whichever not yet taken), 027.215, 074.126 Plus 6 approved credit hours
A "W" course must be taken in University 1 or Year 2 ¹			
30 Hours	30 Hours	30 Hours	30 Hours

¹136.131 may be taken in place of 136.130; 136.151, 136.152 or 136.53 may be taken in place of 136.150; 136.171 or 136.173 may be taken in place of 136.170.

²074.101 may be taken in University 1 or later in the program.

³The courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. See *Student Services, General Academic Regulations and Policy, Section 4.1, University Written English and Mathematics Requirement*.

⁴005.200 may be taken in University 1 or Year 2.

⁵136.235 may be taken in place of 136.230.

⁶005.312 and 005.313, with an average grade of "B" and a minimum grade of "C+" on each course, may be used in lieu of 005.347 and 005.348.
(Letters in brackets indicate minimum prerequisite standing for further study.)

Entry to Honours

To enter the Honours program students must have satisfied the Faculty of Science requirements for entry to the program, and have completed 005.100, 136.130¹ and either 136.169 or 136.150¹ and 136.170¹ with a minimum grade of B in each of 005.100 and 136.169 (or a B average in 136.150¹ and 136.170¹).

Recommended Electives:

010.405, 010.406, 010.415 Accounting and Finance 009.110, 009.220, 009.341, Business Administration 027.200, Economics 018.120 (or 018.121 and 018.122), 018.245.

The change is:

1. The entry requirement has been changed from "a grade of 'B' in 005.200" to "a grade of 'B' in 005.100" and the entry requirements in the calendar text have been clarified.

Applied Mathematics - Statistics Joint Program and Statistics - Mathematics Joint Program

STATISTICS – MATHEMATICS JOINT PROGRAM/APPLIED MATHEMATICS – STATISTICS JOINT PROGRAM Program Changes 2001-2002

Proposed Program:

STATISTICS - MATHEMATICS JOINT PROGRAM (005M)

The Departments of Statistics and Mathematics offer a Joint Honours program for students wishing in-depth study in Statistics and Mathematics.

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
JOINT HONORS	120 CREDIT HOURS		
005.100, 136.130 ^(B) , 136.169 ^(B) , (or 136.150 ¹ and 136.170 ^(B)), 074.101 ² Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 9 credit hours	005.200 ³ , 136.220, 136.235, 136.260, 136.275, 136.280 Plus 6 approved credit hours	005.305, 005.347, 05.348 (or 005.312 and 005.313 ⁴), 005.350 and 005.360. Plus a total of 30 credit hours from 136.240 and any 300 and 400 level Mathematics courses, which must include at least 3 credit hours at the 400 level and 136.3MS, 136.3L1 (or 136.3L2), 136.3A3 (or 136.3A1), 136.3CO (or 136.3C1), 136.3CM and 136.3DE	005.414 ⁵ , 005.452, 005.453 ⁶ , Plus 6 approved credit hours

A "W" course must be taken in University 1 or Year 2⁷

30 Hours	30 Hours	30 Hours	30 Hours
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¹136.131 may be taken in place of 136.130; 136.151, 136.152 or 136.153 may be taken in place of 136.150; 136.171 or 136.173 may be taken in place of 136.170.

²May be taken in Year 2

³May be taken in Year 3.

⁴005.200 may be taken in University 1.

⁵005.312 and 005.313, with an average grade of "B" and a minimum grade of "C+" on each course, may be used in lieu of 005.347 and 005.348.

⁶courses required in this program will satisfy the University mathematics requirement. The University written English requirement must be met through successful completion of a suitable elective course within the first 60 credit hours of this program. See *Student Services, General Academic Regulations and Policy*, Section 4.1, *University Written English and Mathematics Requirement*.

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

The changes are:

1. The Applied Mathematics – Statistics Joint Honours program has been deleted. The proposed program combines required courses from both the Applied Mathematics – Statistics Joint Honours program and the Statistics – Mathematics program.
2. Mathematics 013.338, 013.340, 013.372, 013.345, 013.373 and 013.452 have been replaced by "Plus a total of 30 credit hours from 136.240 and any 300 or 400 level Mathematics courses; which must include at least 3 credit hours at the 400 level and 136.3MS, 136.3L1 (or 136.3L2), 136.3A3 (or 136.3A1), 136.3CO (or 136.3C1), 136.3CM and 136.3DE".
3. Footnote 7 has been deleted and the chart amended accordingly.

Department of Zoology

Courses to be deleted:

022.418	Systematics and Biogeography of Fishes	-3
022.457	Mammalogy	-6
022.468	Ornithology	-3
022.476	Biology of Amphibians and Reptiles	-3

Courses to be introduced:

022.4XX	<u>Biodiversity of Vertebrates: Systematics and Biogeography of Fishes (L)</u>	+3
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A study of the evolutionary history, interrelationships and distribution patterns of the fish-like vertebrates. Laboratories will cover the identification of the major groups of fish-like vertebrates. Not to be held with the former 022.467 or 022.418. *Pre-requisite: 022.232 or 022.250 or consent of instructor.*

022.4XY	<u>Biodiversity of Vertebrates: Biology of Amphibians And Reptiles (L)</u>	+3
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Lectures consider the evolution, biology and adaptations of amphibians and reptiles. Laboratories and student presentations will deal with classification, structure, identification, and methods of field and laboratory study of these animals. Offered in 2002-2003 and in alternate years thereafter. Not to be held with the former 022.476. *Pre-requisite: 022.232 or 022.250 or consent of instructor.*

022.4XZ	<u>Biodiversity of Vertebrates: Biology of Birds (L)</u>	+3
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Biology of birds including: morphology, systematics, evolution, life histories and breeding biology, ecology, migration, and distribution of birds. Offered in 2002-2003 and in alternate years thereafter. Not to be held with the former 022.468. *Pre-requisite: 022.232 or 022.250. Co-requisite: 022.343 or consent of instructor.*

022.4YX	<u>Biodiversity of Vertebrates: Biology of Mammals (L)</u>	+3
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Structure, classification, evolution, life histories and distribution of mammals and their relation to human cultures. Techniques of studying mammals. Identification of the mammals of Manitoba. Offered in 2001-2002 and in alternate years thereafter. Not to be held with the former 022.457. *Pre-requisites: 022.232 or 022.250, and 022.237 (001.237 or 065.237) or consent of instructor.*

Course to be modified:

022.481	<u>Fishery Biology and Management (L) 3</u>	
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Lectures and laboratories dealing with the principles and practices of fishery science. Next offered in 2001-2002 and in alternate years thereafter. *Pre- or co-requisite: 022.348 or consent of instructor.*

NET CHANGE IN CREDIT HOURS: -3

Service course to be added:

022.2XX Human Reproductive Physiology

+3

This course provides an in-depth understanding of human reproduction with particular emphasis on intrinsic control mechanisms and extrinsic methods of regulation of reproduction. This course also provides the basis for the understanding of alterations from normal mechanisms of reproductive processes. *Pre-requisites: 022.132 and 022.133 or consent of instructor.*

NET CHANGE IN CREDIT HOURS:

+3

DEPARTMENT OF ZOOLOGY
Program Change
2001-2002

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Proposed Program:

ZOOLOGY (022)

Head: E. Huebner

General Office: Z320 Duff Roblin Building Telephone: (204) 474-9245

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
HONOURS SINGLE	120 CREDIT HOURS		
071.125, 002.130, 002.131 Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 ¹ , 136.150 ¹ , 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which should include the "W" course Plus 005.100 and 005.200 which must be taken in University 1 or Year 2 A "W" course and an "M" course must be taken in University 1 or Year 2 ⁵	022.215, 022.228, 022.232, 022.237 (001.237 or 065.237) ² , 022.260, 002.277 and 002.278 (060.277 and 060.278) or 002.221 and 002.236 (060.236) and 002.237 (060.237) ³	022.353 and 022.354 ⁴ , 022.375, 001.246	022.400 and 022.411 Plus an additional 21 credit hours from the remaining 300 and 400 level Zoology courses and 6 hours from Botany, Microbiology or electives from a related field
30 Hours	30 Hours	30 Hours	30 Hours
HONOURS DOUBLE MINIMUM	120 CREDIT HOURS		
071.125, 002.130, 002.131 Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 ¹ , 136.150 ¹ , 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which should include the "W" course A "W" course and an "M" course must be taken in University 1 or Year 2 ⁵	Arranged in consultation with departments concerned		
FOUR YEAR MAJOR ⁶	120 CREDIT HOURS		
071.125, 002.130, 002.131 Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 ¹ , 136.150 ¹ , 016.102 or 016.105 Plus 6 credit hours from the Faculty of Arts, which may include the "W" course Plus 005.100 and 005.200 which must be taken in University 1 or Year 2 ⁵	022.232, 022.260, 002.277 and 002.278 (060.277 and 060.278) or 002.221 and 002.236 (060.236) and 002.237 (060.237) ³	022.353 and 022.354 ⁴	022.400 Plus an additional 21 credit hours from the remaining 300 or 400 level Zoology courses.
	022.215, 022.228, 022.237 (001.237 or 065.237) ² , 001.246 which must be taken in Year 2 or 3		
A "W" course and an "M" course must be taken in University 1 or Year 2 ⁵			
THREE YEAR GENERAL	A minimum of 12 credit hours from 200 and (or) 300 level Zoology courses or Botany 001.246 and 001.346		
MINOR			
071.125	12 credit hours from 200 and 300 level Zoology courses		
JOINT BOTANY-ZOOLOGY HONOURS AND FOUR YEAR MAJOR ECOLOGY PROGRAM		See Section 4.6 Ecology Program	
¹ 136.151, 136.152, 136.153 or 136.169 may be taken in place of 136.150. 136.131 may be used in place of 136.130. ² 022.237 (001.237/065.237) has 005.100 as a corequisite. ³ If 002.221, 002.236 (060.236) and 002.237 (060.237) are elected, 002.236 (060.236) and 002.237 (060.237) may be taken in either Year 2 or Year 3. ⁴ For students who have completed 022.253 and 022.254 before entering the Honours or Four Year Major Program, the 022.353 and 022.354 requirement will be waived if they received a minimum grade of "B" in 022.254 and completed and passed the laboratory component of 022.353 and 022.354, however, if possible, completion of 022.354 is advised. ⁵ The University written English and mathematics requirement must be successfully completed within the first 60 credit hours of this program. Completion of three credit hours from 005.100 and 136.150 ¹ in University 1 or Year 2 will satisfy the University mathematics requirement. ⁶ IMPORTANT NOTE: 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.			

¹136.151, 136.152, 136.153 or 136.169 may be taken in place of 136.150. 136.131 may be used in place of 136.130.

²022.237 (001.237/065.237) has 005.100 as a corequisite.

³If 002.221, 002.236 (060.236) and 002.237 (060.237) are elected, 002.236 (060.236) and 002.237 (060.237) may be taken in either Year 2 or Year 3.

⁴For students who have completed 022.253 and 022.254 before entering the Honours or Four Year Major Program, the 022.353 and 022.354 requirement will be waived if they received a minimum grade of "B" in 022.254 and completed and passed the laboratory component of 022.353 and 022.354, however, if possible, completion of 022.354 is advised.

⁵The University written English and mathematics requirement must be successfully completed within the first 60 credit hours of this program. Completion of three credit hours from 005.100 and 136.150¹ in University 1 or Year 2 will satisfy the University mathematics requirement.

⁶**IMPORTANT NOTE:** 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.

The Changes are:

1. "Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130, 136.150, 016.102 or 016.105" replaces 136.150 in the Honours program.
2. "Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130, 136.150, 016.102 or 016.105" has been added to the Major program.

DEPARTMENT OF ZOOLOGY
Program Changes
2001-2002

Major Program:

A graduation requirement has been added to the performance regulations listed in the General Calendar. The regulation "To continue in the Major program, a student must have a sessional grade point average of 2.00 and a "C" or better in each Zoology course," has been amended to state:

To continue in and graduate from the Major program, a student must have a sessional grade point average of 2.00 and a "C" or better in each Zoology course.

Minor Program:

Botany 001.246 and 001.346 have been deleted from the Minor. The Minor will now consist of Biology 071.125 and 12 credit hours from 200 and 300 level Zoology courses.

**COURSES OFFERED IN OTHER FACULTIES AND SCHOOLS ACCEPTABLE FOR CREDIT
IN THE FACULTY OF SCIENCE
2001-2002**

NOV 20 2000

Deletions:

Faculty of Agricultural and Food Sciences:

Department of Entomology:

038.451 Insects Affecting Domestic Animals and Wildlife (3)L

School of Art:

054.124	Introduction to Art A	(6)
054.130	Introduction to Art B	(6)
054.231	Twentieth Century Sculpture	(3)
054.236	Art Gallery Seminar 1	(6)
054.242	History of Visual Communication	(6)
054.245	Early Renaissance in Italy	(3)
054.246	Late Renaissance in Italy	(3)
054.247	Chinese Art	(3)
054.248	Japanese Art	(3)
054.249	Baroque Art 1	(3)
054.250	Baroque Art 2	(3)
054.251	Early Medieval Art	(3)
054.252	Late Medieval Art	(3)
054.253	Introduction to Traditional Arts	(3)
054.254	African Art: Styles and Aesthetics	(3)
054.257	Introduction to Art Theory and Criticism	(3)
054.258	19 th Century Photography	(3)
054.259	20 th Century Photography	(3)
054.358	Inuit Culture and Art	(3)
054.368	Modern Art 1	(3)
054.369	Modern Art 2	(3)
054.370	Modern Art 3	(3)
054.371	History of Islamic Art	(3)
054.373	Art of the North American Native Peoples	(3)
054.375	Canadian Art 1	(3)
054.376	Canadian Art 2	(3)
054.379	Twentieth Century American Art Until 1950	(3)
054.380	Seminar in Art Theory and Criticism	(3)
054.381	Northern Renaissance Art 1	(3)
054.382	Northern Renaissance Art 2	(3)
054.387	History of Byzantine Art 1	(3)
054.388	History of Byzantine Art 2	(3)
054.447	Seminar in Contemporary Canadian Art	(6)
054.464	Seminar in Contemporary Issues	(3)
054.465	Seminar in Modern Art	(3)
054.466	Seminar in Canadian Art	(3)
054.483	Seminar in Inuit Art	(3)

Faculty of Agricultural and Food Sciences:

Department of Entomology:

- 038.3XX Veterinary and Wildlife Entomology (3)**
 An introduction to the insects and their relatives that affect domestic animals, pets and wildlife. Special consideration is given to life histories, insects/host interactions, evolutionary relationships, impact on host vertebrates and pest management. Not to be held with the former 38.451.

Department of Food Science:

- 078.428 Food Microbiology 2 (3)L**
 In depth study of the microbiological problems encountered in different segments of the food industry, including the cereal, confectionery, fruit, vegetables, meat, poultry, fish, dairy and beverage industries. *Prerequisite: 078.415.*

School of Art:

- 054.1AA Introduction to Art 1A (3)**
 A basic study of world art history and theory to the early Renaissance. May not be held for credit with 054.1CC or the previous 054.124 or 054.130. *Prerequisite to further study in history and theory of art.*
- 054.1BB Introduction to Art 2A (3)**
 A basic study of world art history and theory to the early Renaissance to the present. May not be held for credit with 054.1DD or the previous 054.124 or 054.130. *Prerequisite: 054.1AA or 054.1CC. Prerequisite to further study in history and theory of art.*
- 054.1CC Introduction to Art 1B (3)**
 A basic study of world art history and theory to the early Renaissance, supplemented by a two-hour laboratory in the practice and techniques of art. A combined grade of "B" or better in the laboratory of this course and that of 054.1DD can be used in place of the entrance portfolio to the School of Art. May not be held for credit with 054.1AA or the previous 054.124 or 054.130. *Prerequisite to further study in history and theory of art.*
- 054.1DD Introduction to Art 2B (3)**
 A basic study of world art history and theory to the early Renaissance to present, supplemented by a two-hour laboratory in the practice and techniques of art. A combined grade of "B" or better in the laboratory of this course and that of 054.1CC can be used in place of the entrance portfolio to the School of Art. This course is only open to students in Faculties and Schools other than the School of Art. May not be held for credit with 054.1BB or the

previous 054.124 or 054.130. *Prerequisite: 054.1CC. Prerequisite to further study in history and theory of art.*

- | | | |
|----------------|---|-----|
| 054.199 | First Year Field Trip
A field trip conducted by members of Faculty. (Note: In the Faculty of Science this course is only available to students in the Art History Minor.) | (0) |
| 054.2AA | Medieval to Early Renaissance Art and Architecture
A introduction to the study of Medieval art and architecture in Europe, from the very beginnings of a specifically Christian artistic tradition to the beginning of the Renaissance. May not be held for credit with the previous 054.251 or 054.252. <i>Prerequisite: either 6 credits from 054.1AA, 054.1BB, 054.1CC or 054.1DD; the previous 054.124 or 054.130; or written permission of the instructor.</i> | (3) |
| 054.2BB | Renaissance to Baroque Art and Architecture
A introduction to the study of Renaissance art and architecture up to the Baroque in the context of the social, political and economic circumstances of this time. May not be held for credit with the previous 054.245, 054.246, 054.249, 054.250. <i>Prerequisite: either 6 credits from 054.1AA, 054.1BB, 054.1CC or 054.1DD; the previous 054.124 or 054.130; or written permission of the instructor.</i> | (3) |
| 054.2CC | Modern to Contemporary Art
This course is a study of the major movements, themes, and media of Western Art from the late 18 th century to the present. May not be held for credit with the previous 054.368, 054.369. <i>Prerequisite: either 6 credits from 054.1AA, 054.1BB, 054.1CC or 054.1DD; the previous 054.124 or 054.130; or written permission of the instructor.</i> | (3) |
| 054.2DD | Art of the North American Aboriginal Peoples
Study of the art and artifacts of the indigenous peoples of North American (other than the Inuit). May not be held for credit with the previous 054.373. <i>No prerequisite.</i> | (3) |
| 054.2EE | Survey of Asian Art
An introductory survey of the arts of India, China and Japan from prehistory to the present. May not be held for credit with the previous 054.247, 054.248. <i>No prerequisite.</i> | (3) |
| 054.2FF | Women and Art
This course will examine the aesthetics, ideology and social conditions that have shaped women's relationship to the visual arts and to art history, as artists, as patrons, and as subject matter. <i>No prerequisite.</i> | (3) |
| 054.3AA | Topics in Medieval Art and Architecture
Varying from year to year, this course will cover significant topics in Medieval art and architectural history. Depending on the topic, this course may not be held for credit with one or more of the following courses: the previous 054.251, 054.252. <i>Prerequisite: 054.2AA, or written permission of the instructor.</i> | (3) |

- 054.3BB Topics in Renaissance and Baroque Art and Architecture (3)**
 Varying from year to year, this course will cover significant topics in Renaissance and Baroque art and architectural history. Depending on the topic, this course may not be held for credit with one or more of the following courses: the previous 054.245, 054.246, 054.249, 054.250. *Prerequisite: 054.2BB, or written permission of the instructor.*
- 054.3CC Topics in 18th and 19th Century Art (3)**
 Varying from year to year, this course will cover significant topics in 18th and 19th century art history. Depending on the topic, this course may not be held for credit with one or more of the following courses: the previous 054.258, 054.368, 054.369, 054.370. *Prerequisite: either 054.2BB or 054.2CC as appropriate to the topic, or written permission of the instructor.*
- 054.3DD Topics in 20th Century Art (3)**
 Varying from year to year, this course will cover significant topics in 20th century art history. Depending on the topic, this course may not be held for credit with one or more of the following courses: the previous 054.231, 054.259, 054.378, 054.379. *Prerequisite: 054.2CC, or written permission of the instructor.*
- 054.3EE Contemporary Art (3)**
 This course will consider the art of the past few decades, with an emphasis on recent and contemporary developments. *Prerequisite: 054.2CC, or written permission of the instructor.*
- 054.3FF History of Photography (3)**
 The development of photography from its origins to the present. May not be held for credit with the previous 054.258 or 054.259. *Prerequisite: 054.2CC, or written permission of the instructor.*
- 054.3GG History of Ceramics (3)**
 This course will examine the history of ceramics, extending from prehistory in Asia to recent work in Europe, the United States and Canada. *No prerequisite.*
- 054.3HH Art in New Media (3)**
 This course will consider art produced in non-traditional media during the Modern era, i.e. since the 18th century, with emphasis on developments during the 20th century and particularly the last 40 years. *Prerequisite: 054.2CC, or written permission of the instructor.*
- 054.3II Introduction to the Theory and Criticism of Art (3)**
 This course serves as an introduction to the theory and criticism of art. May not be held for credit with the previous 054.257, 054.340, or 054.380. *Prerequisite: any second-year course or written permission of the instructor.*
- 054.3JJ Topics in Aboriginal Art (3)**
 Varying from year to year, this course will cover significant topics in the art of the North American Aboriginal peoples, including the

Inuit. *Prerequisite: 054.2DD or 054.358, as appropriate to the topic offered, or written permission of the instructor.*

- 054.3KK Chinese Art and Architecture (3)**
A survey of the art and architecture of China beginning with the Shag-Yin Period (2000 BCE) and continuing to the present. May not be held for credit with the previous 054.247. *Prerequisite: 054.2EE, or written permission of the instructor.*
- 054.3LL Japanese Art and Architecture (3)**
A survey of the art and architecture of Japan beginning with the Jomon Period (300 BCE to 300 CE) and continuing through the Heisei Period (1989- present). May not be held for credit with the previous 054.248. *Prerequisite: 054.2EE, or written permission of the instructor.*
- 054.3MM Topics in Art History (3)**
This course will vary from year to year depending on the needs of students and the interests and availability of instructors. May not be taken for credit if student has previously taken a course equivalent to the topic currently offered.
- 054.3NN Canadian Art and Architecture to World War II (3)**
A study of Canadian arts up to World War II. Not to be held with the former 054.375. *Prerequisite: 054.2CC or written permission of the instructor.*
- 054.3OO Canadian Art Since World War II (3)**
A study of Canadian arts up to World War II to present. Not to be held with the former 054.376. *Prerequisite: 054.2CC or written permission of the instructor.*
- 054.3PP Early Byzantine Art and Architecture (3)**
A study of the origin and evolution of early Byzantine Art and Architecture. Not to be held with the former 054.387. *Prerequisite: either 6 credit hours from 054.1AA, 054.1BB, 054.1CC or 054.1DD; the previous 054.124 or 054.130; 054.2AA; or written permission of the instructor.*
- 054.3QQ Later Byzantine Art and Architecture (3)**
A study of later Byzantine Art and Architecture to the end of the Middle Ages. Special emphasis will be placed on the influence of Byzantine art on the modern traditions of Eastern Europe. Not to be held with the former 054.388. *Prerequisite: either 6 credit hours from 054.1AA, 054.1BB, 054.1CC or 054.1DD; the previous 054.124 or 054.130; 054.2AA; 054.387; or written permission of the instructor.*
- 054.3RR Inuit Art (3)**
The history and analysis of Inuit Art. Not to be held with the former 054.358. *Prerequisite: either 6 credits from 054.1AA, 054.1BB, 054.1CC and 054.1DD; the previous 054.124 or 054.130; or written permission of the instructor.*

- 054.3SS Islamic Art and Architecture (3)**
 A contextual and thematic study of Islamic art and architecture beginning in the 7th century and continuing through the present. Not to be held with the former 054.371. *No prerequisite.*
- 054.391 Field Studies in Art History 3 (3)**
 This off-campus travel course will provide students with the opportunity to study firsthand the art of architecture of a particular city or region in a broad cultural context. Course location may vary from year to year. Open to Art History and Studio students who have already completed their Art History requirements at the second-year level. Offered during the Summer Session only.
- 054.392 Field Studies in Art History 4 (3)**
 This off-campus travel course will provide students with the opportunity to study firsthand the art of architecture of a particular city or region in a broad cultural context. Course location may vary from year to year. Open to Art History and Studio students who have already completed their Art History requirements at the second-year level. Offered during the Summer Session only.
- 054.4AA Seminar on the Theory and Criticism of Art (3)**
 A seminar treating contemporary selected topics in the theory and criticism of art. *Prerequisite: either 054.311; the former 054.257, 054.340; or 054.380; or written permission of the instructor.*
- 054.4BB Seminar in Art History 1 (3)**
 Seminar treating special topics in Art History. May not be taken for credit if the topic is the same as a topic previously offered in 054.447, 054.465, 054.466, 054.474, 054.475, 054.479, or 054.483 *Prerequisite: One 300-level course in the appropriate area as defined by the instructor, or written permission of the instructor.*
- 054.4CC Seminar in Art History 2 (3)**
 Seminar treating special topics in Art History. May not be taken for credit if the topic is the same as a topic previously offered in 054.447, 054.465, 054.466, 054.474, 054.475, 054.479, or 054.483 *Prerequisite: One 300-level course in the appropriate area as defined by the instructor, or written permission of the instructor.*
- 054.4DD Seminar on Contemporary Issues in Art (3)**
 A seminar treating contemporary issues in art. The topic varies from year to year. Not to be held with the former 054.464. *Prerequisite: One 300 level course in the appropriate area as defined by the instructor, or written permission of the instructor.*
- 054.471 Directed Study 1 (3)**
 Directed study in the history of art under the supervision of an instructor. Admission by consent of current instructor and director.
- 054.472 Directed Study 2 (3)**
 Directed study in the history of art under the supervision of an instructor. Admission by consent of current instructor and director.

For report (University 1 courses):

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Faculty of Agricultural and Food Sciences:

Additions:

Department of Agricultural Economics and Farm Management:

061.1XX Introduction to Agribusiness Management (3)L

Faculty of Architecture:

Deletions:

Department of Interior Design:

051.114 History of Culture and Environment (6)

Department of Environmental Design:

079.114 History of Culture and Environment (6)

Additions:

Department of Environmental Design:

079.160 History of Environmental Design (3)

079.166 History of Culture, Ideas and Environment 1 (3)

079.167 History of Culture, Ideas and Environment 2 (3)

Note: 079.167, together with 079.166, replaces former courses 051.114 and 079.114

Faculty of Social Work:

Additions:

047.208 Interpersonal Communication Skills (3)

Total Credit Hours Deleted	- 141
Total Credit Hours Added	+ 132
Net Change in Credit Hours	- 9

Bachelor of Science General Program**B.Sc. GENERAL PROGRAM****Program Change****2001-2002**

Addition to the list of 24 credit hours of Introductory Science Courses:

Twenty four credit hours must be chosen from the following list of Introductory Science course, with at least six credit hours from each of four subject areas.

- Astronomy: 016.180
- Biology: 071.125
- Chemistry: 002.130 and 002.131
- Geological Sciences: 007.123, 007.124, or one of 007.134 or 007.144 and one of 007.135, 007.136 or 007.137
- Mathematics: six credit hours chosen from : 136.120M, 136.130M, 136.131M, 136.150M, 136.151M, 136.152M, 136.153M, 136.168M, 136.169M, 136.171M, 136.173M
- Physics: 016.102 and 016.103, or 016.105 and 016.107
- Statistics: 005.100M and 005.200

It is proposed the Environmental Sciences 128.100 Environmental Science 1: Concepts (3) and 128.200 Environmental Science 2: Issues (3) be added to the list.

INTRODUCTION OF A OPTIONAL MINOR PROGRAM IN THE FACULTY OF SCIENCE

Minors will be available on an optional basis to Four Year Major and Honours students. Students will be permitted to declare a Minor in addition to their declared Major or Honours concentration. The minor will not be available for students in the General degree program.

The Minor regulations will be as follows:

FOUR YEAR MAJOR DEGREE AND MAJOR (COOPERATIVE OPTION)

OPTIONAL MINOR

Students in B.Sc. Major programs may, if they wish, declare and complete a Minor from departments and interdisciplinary programs in which a Minor is offered. In the Faculty of Science these are listed in the program charts for each department or interdisciplinary program. Available Minors in the Schools of Music and Art and the Faculties of Arts and Management are to be found within the appropriate descriptions of Departmental/School/Faculty/Program offerings. Completion of a Minor is entirely optional. Students may **not**, however, declare both their Major and Minor from the same department/interdisciplinary program.

A Minor will **normally** consist of a minimum of 18 credit hours, with a minimum of 12 credit hours being at the 200, 300 and 400 level (although there are some exceptions). It should be noted that no course can be used as part of a prescribed Major and also be part of a prescribed Minor, an alternate course will have to be selected to satisfy the Minor requirement. For example: if a course in Economics is part of a student's Major in Statistics, then that course may **not** be used as part of a Minor in Economics.

FOUR YEAR HONOURS DEGREE (INCLUDING COOPERATIVE OPTION)

Students in B.Sc. Honours programs may, if they wish, declare and complete a Minor from departments and interdisciplinary programs in which a Minor is offered. In the Faculty of Science these are listed in the program charts for each department or interdisciplinary program. Available Minors in the Schools of Music and Art and the Faculties of Arts and Management are to be found within the appropriate descriptions of Departmental/School/Faculty/Program offerings. Completion of a Minor is entirely optional. Students may **not**, however, declare both their Major and Minor from the same department/interdisciplinary program. It should be noted that for Honours students any consideration of completing a Minor should be made early due to restricted opportunities in later years of their programs. Completion of a Minor may, in fact, require that a student take more than the minimum number of credit hours for graduation.

A Minor will **normally** consist of a minimum of 18 credit hours, with a minimum of 12 credit hours being at the 200, 300 and 400 level (although there are some exceptions). It should be noted that no course can be used as part of a prescribed Honours and also be part of a prescribed Minor, an alternate course will have to be selected to satisfy the Minor requirement. For example: if a course in Economics is part of a student's Honours in Statistics, then that course may **not** be used as part of a Minor in Economics.

15. University 1

Approved courses for University 1:

Faculty of Agricultural and Food SciencesGeneral Agriculture

Course to be added:

065.1XX Introduction to Agribusiness Management (3)

Introduction to management principles applied to agribusiness. Topics covered will include cooperative and corporate organizations, financial analysis, marketing and planning. All students will prepare a business plan. The one hour laboratory will develop spreadsheet skills with respect to information processing and preparing forecasts. Not to be held for credit with the former 061.211 or 061.250.

Faculty of Social Work

Course to be added:

047.208 Interpersonal Communication Skills (3)

A basic core of interpersonal skills for communicating effectively and for establishing and maintaining relationships in one-to-one and group situations. Emphasis is on experiential learning using a variety of techniques.

School of Art

Courses to be deleted:

054.124 Introduction to Art A (6)

054.130 Introduction to Art B (6)

Courses to be added:

054.1AA Introduction to Art 1A (3)

A basic study of world art history and theory to the early Renaissance. May not be held for credit with 054.1CC or the former 054.124 or 054.130. *Pre-requisite to further study in history and theory of art.*

054.1BB Introduction to Art 2A (3)

A basic study of world art history and theory from the early Renaissance to the present. May not be held for credit with 054.1DD or the former 054.124 or 054.130. *Pre-requisite: 054.1AA or 054.1CC. Pre-requisite to further study in history and theory of art.*

054.1CC Introduction to Art 1B (3)

A basic study of world art history and theory to the early Renaissance, supplemented by a two hour laboratory in the practice and techniques of art. A combined grade of "B" or better

in the laboratory of this course and that of 054.1DD can be used in place of the entrance portfolio to the School of Art. This course open only to students in faculties and schools other than the School of Art. May not be held for credit with 054.1AA or the former 054.124 or 054.130. *Pre-requisite to further study in history and theory of art.*

054.1DD Introduction to Art 2B (3)

A basic study of world art history and theory from the early Renaissance to the present, supplemented by a two hour laboratory in the practice and techniques of art. A combined grade of "B" or better in the laboratory of this course and that of 054.1CC can be used in place of the entrance portfolio to the School of Art. This course open only to students in faculties and schools other than the School of Art. May not be held for credit with 054.1BB or the former 054.124 or 054.130. *Pre-requisite: 054.1CC. Pre-requisite to further study in history and theory of art.*

Report of the Senate Planning and Priorities Committee on a Proposal by the Faculty of Agricultural and Food Sciences to Offer A Cooperative Education Option in the Degree and Diploma Programs

Preamble

1. The terms of reference of the Senate Planning and Priorities Committee (SPPC) are found in the Senate Handbook (Rev. 1993), pp 10.21/22 wherein SPPC is charged with making recommendations to Senate regarding proposed academic programs.
2. The Faculty of Agricultural and Food Sciences wishes to introduce an option for students to include a cooperative education element in their B.Sc. (Agriculture, Agribusiness, Agroecology and Food Sciences) degrees and their Diploma in Agriculture. It is proposed that this be done through the introduction of two new courses to the degree program and one new course to the diploma program. Each course is accorded one credit.

Observations

1. The creation of a coop program is regarded as a desirable by students, faculty and potential employers.
2. Students who take the cooperative option will complete the same curriculum as those in the traditional degree and diploma programs. Work term credits will be in addition to the normal academic credits. It is proposed that the work terms be eight months in duration and are intended to be longer than the typical summer job.
3. As a result of time-tabling of the work terms, no double teaching is required; students will get all their courses in an acceptable order and without compromise.
4. The net result of incorporating the work terms is to make the degree cooperative option five years in duration; the diploma cooperative option is two years in duration, the same as the existing traditionally-formatted diploma.
5. The Faculty of Agricultural and Food Sciences has had a part time Job Placement Officer for the past few years. This position has been funded by the Faculty Endowment Account, the Manitoba Institute of Agrologists and a Student Initiation Fund. The introduction of the Cooperative Education Option will permit the expansion of the Job Placement position to a full time position funded by the Faculty and will include a Cooperative Education function as well. In future, when the Cooperative Education Program is fully implemented, the primary costs associated with the program will be funded by coop fees.

Recommendation

That Senate approve and forward to the Board of Governors the recommendation from the Faculty of Agricultural and Food Sciences to implement a Cooperative Education Program in the Faculty of Agricultural and Food Sciences as set out in their proposal dated August 30, 2000.

Respectfully submitted,

Norman Halden, Chair
Senate Planning and Priorities Committee

/ls

Report of the Senate Planning and Priorities Committee on the Faculty of Science Proposal to Introduce an Optional Minor

Preamble

1. The terms of reference of the Senate Planning and Priorities Committee (SPPC) are found in the Senate Handbook (Rev. 1993), pp 10.21/22 wherein SPPC is charged with making recommendations to Senate regarding proposed academic programs.
2. The Faculty of Science has recommended the introduction of an Optional Minor Program in the Faculty of Science. Minors will be available on an optional basis to Four Year Major and Honours students, but will not be available to students in the general degree program. Students will be permitted to declare a minor in addition to their declared Major or Honours concentration.

Students can declare and complete a minor from departments and interdisciplinary programs in which a minor is offered; in Science these are listed in program charts. Similarly, available minors from the Schools of Music and Art and the Faculties of Arts and Management are described in the Calendar.

A minor will normally consist of a minimum of 18 credit hours with 12 credit hours being at the 200, 300 and 400 level.

Observations

1. The proposal represents progress towards a harmonization of faculty regulations.
2. The proposal provides additional flexibility and options for students in program planning by recognizing a concentration of courses within a discipline.
3. There are no resource implications.

Recommendation

That Senate approve and forward to the Board of Governors the recommendation from the Faculty of Science to introduce an optional Minor program in the Faculty of Science as set out in the attached document [undated].

Respectfully submitted,

Norman Halden, Chair
Senate Planning and Priorities Committee

/ls

Report of the Programs and Planning Committee of the Faculty of Graduate Studies on course proposals/modifications/deletions.

Preamble

The Programs and Planning Committee of the Faculty of Graduate Studies met on September 18, 2000 and made the following recommendation regarding course deletions and introductions in the Faculty of Agricultural and Food Sciences.

Observations

1. There are four (4) course deletions from the Department of Soil Science.
2. There are two (2) course deletions from the Department of Plant Science.
3. There are six (6) courses to be introduced in the Department of Soil Science
4. The Faculty of Agricultural & Food Sciences approved all course deletions and introductions.
5. A statement of Library support was included with each new course proposal.
6. Reasons for the changes accompany the course number and title, which are included below.

Recommendation

The Programs and Planning Committee of the Faculty of Graduate Studies recommends that the Faculty Council of Graduate Studies approve the course proposals/deletions as indicated below.

SOIL SCIENCE

Courses to be deleted:

040.706 Soil Mineralogy (6)
 040.709 Advanced Soil Genesis and Classification (6)
 040.715 Pesticide Analysis (3)
 040.716 Special Problems in Pesticide Analysis (3)

Reason for the deletions:

Courses have not been offered recently and/or had low enrolment. Information pertinent to today's students needs contained in the courses being deleted has been incorporated with new topics into the new courses being introduced in the Department.

Course to be Introduced:

040.7xy Topics in Soil Fertility (3) Advanced study of behaviour and crop requirements for selected nutrients (except for nitrogen, as covered on 040.714). Students will be required to review literature and prepare seminars on assigned topics.
Prerequisites: 040.452 or consent of instructor.

Reason for new course:

Currently, the offering of graduate level courses in this topic area is focused on only one nutrient, in 040.714 Soil Nitrogen. The introduction of this new course will allow students to explore the behaviour of P, K, S and micro-nutrients in soil and the role of these elements in crop nutrition.

- Course to be introduced:** 040.7xz Principles of Scientific Research and Communication (3)
Principles of scientific research; management skills; writing skills; oral and poster presentation; preparation of research proposal and thesis (pass/fail). These topics will focus on aspects of soil science and will give students experience in writing and presenting scientific material to increase their professionalism as soil scientists. *Prerequisite:* Consent of instructor.
- Reason for new course:** Graduate students require specific formal training in the principles of scientific research and communication.
- Courses to be introduced:** 040.7xw Topics in Landscape Characterization and Processes I (3)
An examination of methods of landscape characterization and of landscape processes, their impacts, interactions and modelling.
Prerequisite: Consent of instructor.
- 040.7xx Topics in Landscape Characterization and Processes II (3)
A continuation of 040.7xw. *Prerequisite:* Consent of instructor.
- Reason for new courses:** Understanding of landscape characterization and processes are essential to understanding, monitoring and affecting our environment for a broad range of purposes. A course with such content is not currently offered.
- Course to be introduced:** 040.7zu Topics in Soil Science (3) Several courses in soil science are sectioned into modules. Modules of one credit hour on special topics are also available. Students may select three modules from the various courses or from special topics for 40.7zu.
- Reason for new course:** Graduate student education in Soil Science requires students to obtain in-depth knowledge in a particular area of study or specialization, as well as background knowledge on several aspects of Soil Science. In order to facilitate the latter, several soil science courses have been sectioned into modules of one credit hour on special topics.
- Course to be introduced:** 040.7xy Pesticide Residues in Food, Water and Soil (3).
Discussion and application of research protocols for examining pesticide fate in the environment and for quantifying pesticide residues in food, water and soil. *Prerequisite:* consent of instructor.
- Reason for new course:** No such course is offered at the graduate level that covers both theoretical and practical aspects of pesticide residue analysis in food, water and soil.

Net Change: 0 Credit Hours

PLANT SCIENCE

151

Courses to be deleted:

39.747 Plant Virology (3)
39.751 Plant Tissue Culture (3)

Reason for deletions:

Due to staff changes, the Department of Plant Science no longer has the expertise to teach these courses.

Net Change: -6 Credit Hours

Copies of the course proposal forms are available in the Faculty of Graduate Studies Office for review

Endorsed by Executive Committee, September 28, 2000

Approved by Faculty Council, November 7, 2000

PLANT SCIENCE

151

Courses to be deleted:

39.747 Plant Virology (3)
39.751 Plant Tissue Culture (3)

Reason for deletions:

Due to staff changes, the Department of Plant Science no longer has the expertise to teach these courses.

Net Change: -6 Credit Hours

Copies of the course proposal forms are available in the Faculty of Graduate Studies Office for review

Endorsed by Executive Committee, September 28, 2000

Approved by Faculty Council, November 7, 2000

**Report of the Programs and Planning Committee of the Faculty of Graduate Studies on
course proposals/modifications/deletions.**

Preamble

The Programs and Planning Committee of the Faculty of Graduate Studies met on September 18, 2000 and made the following recommendation regarding course introductions in the Faculty of Medicine.

Observations

1. There is one (1) interdisciplinary course to be introduced in the Department of Physiology, co-sponsored by the Department of Biochemistry and Medical Genetics.
2. There is one (1) course to be introduced in the Department of Community Health Sciences.
3. The Faculty of Medicine approved all course introductions.
4. A statement of Library support was included with each new course proposal.
5. Reasons for the changes accompany the course number and title, which are included below.

Recommendation

The Programs and Planning Committee of the Faculty of Graduate Studies recommends that the Faculty Council of Graduate Studies approve the course proposals as indicated below.

PHYSIOLOGY/BIOCHEMISTRY AND MEDICAL GENETICS

Course to be introduced:

036.7xx Developmental Biology (3) Emphasize current principles of organ system development and its application to transgenic approaches to gene function in the context of a whole, developing organism. *Prerequisites:* 036.709 or 22.215 and/or 022.307 or consent of instructor. Offered in January 2001 and in alternate years thereafter.

Reason for new course:

There is currently no graduate level course in Developmental Biology in either the Faculty of Science or Medicine. Today there is an increased emphasis on the use of gene targeting and functional genomics to develop animal models of disease. Students will benefit from the emphasis on applying the principles of developmental biology and gene technology approaches to the study of developmental and disease processes.

Net Change: +3 Credit Hours

COMMUNITY HEALTH SCIENCES**Course to be introduced:**

93.7xx Managing Health Systems (3) An internet -based course involving students from Europe and Canada. The course provides a greater understanding of the health care systems of participating countries through comparative analysis of topics such as health service funding and delivery issues, impact of health system reform and evidence based management.

Reason for new course:

This unique international course is in demand by students and will enrich the current complement of courses offered in the Community Health Sciences program.

Net Change: +3 Credit Hours

Copies of the course proposal forms are available in the Faculty of Graduate Studies Office for review

Endorsed by Executive Committee, September 28, 2000

Approved by Faculty Council, November 7, 2000

Report of the Programs and Planning Committee of the Faculty of Graduate Studies on course proposals/modifications/deletions.

Preamble

The Programs and Planning Committee of the Faculty of Graduate Studies met on September 18, 2000 and made the following recommendation regarding the modification of course 030.719 in the Faculty of Human Ecology.

Observations

1. The modification is to the calendar description to clarify application procedures and the relationship of the course requirements for the Department.
2. The Faculty of Human Ecology approved the course modification.
3. Reasons for the changes accompany the course number and title, which are included below.

Recommendation

The Programs and Planning Committee of the Faculty of Graduate Studies recommends that the Faculty Council of Graduate Studies approve the course modification as indicated below.

Course to be modified:

030.719 Applied Clinical Nutrition (6) Experience in the application of nutrition theory to the management of nutrition related disease in a clinical setting supervised by registered dietitians. *Prerequisites:* Undergraduate coursework which meets the requirements for admission to the Canadian Dietetic Association. Acceptance into the M. Sc. Program and approval of the Department Head.

Modification to Calendar Description:

030.719 Applied Clinical Nutrition (6) Experience in the application of nutrition theory to the management of nutrition related disease in a clinical setting supervised by registered dietitians. *Prerequisites:* Undergraduate coursework which meets the requirements for admission to Dietitians of Canada and acceptance into the M. Sc. Program in Foods and Nutrition. Application required, enrolment limited. Not to be used toward fulfillment of the minimum 12 credit hours required in the program.

Reason for modification:

To use the current name of the professional Association.
To clarify application procedures.
To clarify the relationship of this course to the M. Sc. Course requirements for the department.

Net Change: 0 Credit Hours

Copies of the course proposal forms are available in the Faculty of Graduate Studies Office for review

Endorsed by Executive Committee, September 28, 2000

Approved by Faculty Council, November 7, 2000

Report of the Programs and Planning Committee of the Faculty of Graduate Studies on course proposals/modifications/deletions.

Preamble

The Programs and Planning Committee of the Faculty of Graduate Studies met on October 16, 2000 and made the following recommendation regarding course introductions and deletions in the Faculty of Education.

Observations

1. There are 3 courses to be introduced and 7 courses to be deleted in the Department of Educational Administration, Foundations and Psychology.
2. There are 5 courses to be introduced and 4 courses to be deleted in the Department of Curriculum, Teaching and Learning
3. The restructuring of the Masters Programs in Education is to bring the Faculty in line with national norms and increase its competitiveness.
4. The Faculty of Education approved all course introductions and deletions.
5. A statement of Library support was included with each new course proposal.
6. Reasons for the changes accompany the course number and title, which are included below.

Recommendation

The Programs and Planning Committee of the Faculty of Graduate Studies recommends that the Faculty Council of Graduate Studies approve the course proposals/deletions and minor restructuring of the M.Ed. Program as outlined below.

EDUCATIONAL ADMINISTRATION, FOUNDATIONS AND PSYCHOLOGY.

Course to be introduced:

129.7xx Design and Analysis of Educational Research (Quantitative) (3) A study of the use of quantitative methods of analyzing educational research data. Descriptive and inferential procedures commonly used in educational research will be discussed and students will learn to use statistical packages. The course will also address when it is appropriate to employ quantitative designs and present common designs and their associated analyses. *Prerequisite:* 129.580. Students may not hold credit for both 129.7xx and the former 129.681 or the former 43.535 or 43.611.

Reason for new course:

To meet the needs of the revised M.Ed. Program and to reflect present expertise in the Faculty.

Course to be introduced:

129.7xy Advanced Topics in Educational Research (3) An advanced study of special topics in educational research with an in-depth study

of specific topics which will change from year to year. *Prerequisite:* 129.580 Introduction to Educational Research (3) and permission of the instructor. Students may not hold credit for both 129.7xy and the former 129.783.

Reason for new course:

To meet the needs of the revised M.Ed. Program and to reflect present expertise in the Faculty.

Course to be introduced:

129.7xz Field Experience in Inclusive Special Education (6) A minimum of 200 hours of supervised placement in an inclusive special education setting. Scheduled seminars facilitate directed study and discussion. *Prerequisite:* 18 credit hours at the 500-level in Inclusive Special Education or its equivalent. Students may not hold credit for the former 129.764 or 43.706.

Reason for new course:

The title of the course is being revised to match the graduate program in this field. Replaces 129.764.

Courses to be deleted:

129.680 Design of Educational Research (3)
129.681 Quantitative Analysis of Educational Research (3)
129.729 History of Canadian Education before Confederation (3)
129.731 Topics in the History of British Education (3)
129.732 Topics in the History of American Education (3)
129.764 Practicum Seminar in Special Education (3)
129.783 Advanced Statistical Methods in Education (3)

Reasons for deletions:

129.680 and 681 are being amalgamated into a single course at the 700 level. 129.729, 731 and 732 have not been taught for ten years. 129.764 is being re-titled. 129.783 because of lack of enrolment.

Net Change: -12 Credit Hours

CURRICULUM TEACHING AND LEARNING

Course to be introduced:

132.7fs Final Seminar in Curriculum, Teaching and Learning (3) Seminar and workshop on processes and products in writing and defending an M.Ed. final inquiry paper. Both qualitative and quantitative research models will be acknowledged. *Prerequisite:* Minimum 24 credit hours completed in a comprehensive M.Ed. Program.

Reason for new course:

There is a need in the comprehensive route for students to participate in collaborative research experiences in order to prepare them for completion of the final comprehensive project. This course addresses this concern.

Course to be introduced:

132.7sl Theory and Research in a Second Language Acquisition (3). Examination of the development of the field of second language acquisition study, including historical views, issues, theories and models in relation to language universals, cognitive development, language mastery, and second language acquisition and learning. *Prerequisites:* 132.161 or 162 and 126.120 Introduction to Linguistics (6)

Reason for new course:

The current TESL program lacks a course that focuses on the second language learner and the processes of language/learning acquisition. This new course addresses this need.

Course to be introduced:

132.7xx Historical and Contemporary Approaches to Curriculum (3). Historical Developments of curriculum as a field of study and inquiry, including the philosophical, social, political, and cultural contexts of curriculum.

Reason for new course:

The course will replace 132.730 and 132.740.

Course to be introduced:

132.7xz Internationalization of Technical and Vocational Education and Training (3) An exploration and critical evaluation of basic assumptions underlying the theories and values of globalization and the internationalization of technical and vocational education and training (TVET). Emphasis will be placed on the examination of how these theories and values influence institutions, programs, policies and practices in TVET.

Reason for new course:

Part of the restructuring of the M.Ed. Program.

Course to be introduced:

132.7xy Theory and Practice of Curriculum Design and Development (3) An examination of the theory and practice of the design, development, implementation and evaluation of curricula for K-12 and adult/post-secondary levels. *Prerequisite:* 132.7xx Historical and Contemporary Approaches to Curriculum, or written consent of instructor.

Reason for new course:

Part of the restructuring of the M.Ed. Program.

Courses to be deleted:

132.741 Curriculum: Advanced Theory and Management (3)
132.731 Curriculum Theory and Design (3)
132.730 Perspectives on Curriculum (3)
132.740 Research Application in Curriculum (3)

Reason for deletions:

132.741 and 731 are being amalgamated into a single course because of an amalgamation of the two departments, C:MNS and C:HSS. 132.730 and 740 are being replaced by a single course, 132.7xx Historical and Contemporary Approaches to Curriculum (3).

Net Change:

3 Credit Hours

Copies of the course proposal forms are available in the Faculty of Graduate Studies Office for review

Endorsed by Executive Committee, October 24, 2000

Approved by Faculty Council, November 7, 2000



Office of the Associate Dean

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September 7, 2000

TO: Dr Tony Secco, Associate Dean, Faculty of Graduate Studies

FROM: Dr Alexander Gregor, Associate Dean (Graduate Programs and Research),
Faculty of Education

SUBJECT: Master of Education (M.Ed.) Supplementary Regulations

I am appending a proposed comprehensive revision of the Supplementary Regulations for the M.Ed. program.

This revision has as its principal feature a return to a common format for all the areas of specialization within the M.Ed. program. For a number of reasons, the decision was made in the mid-1980's to permit a range of formats within what had previously been a uniform program. More recently, this approach has resulted in a number of problems for the Faculty: in issues of internal consistency and in efficient utilization of Faculty resources. Quite apart from these considerations of practicality, however, the decision to return to a common format of 30 credit hours has been propelled by patterns at the national level. The proposed format reflects the Canadian norm for M.Ed. programs, which for competitive as well as academic reasons we should obviously match as closely as possible. Importantly, this national pattern has reassured us that with the new format we can meet national expectations and standards in the full range of our programs, notwithstanding a substantial decrease in associated credit hours in some cases.

Internally, the return to the common Faculty format will have substantial academic benefit as well. The review process has allowed us to reconfigure our areas of specialization to reflect the current and projected areas of research strength within the Faculty, and to ensure that all graduate work is based on that foundation. The review has also provided the opportunity to build in a stronger element of collaborative and shared coursework across the areas of specialization. The revised format also reflects better the current and projected Faculty financial resources (which have changed rather dramatically from the mid-1980's). Most specifically, the arrangement will allow us to provide a two-year cycling of required program courses, which will ensure that students can progress in a timely fashion.

As indicated in the appended sheet, the over-all reduction in courses *per se* is comparatively modest (9 credit hours). A much more substantial reduction is obvious, however, in the total credit hours that must be made available on a per student basis under the new format. Taking the sample enrolment of 1999-2000, this per student allocation declines, on average, approximately 18%, releasing urgently needed resources for the support and development of the graduate program as a whole.

.../2

In summary, the proposed revisions to the M.Ed. Supplementary Regulations do, I believe, allow us to:

- (i) enhance the rigour and standards of the program, in line with discussions already underway within the Faculty of Graduate Studies;
- (ii) ensure that the M.Ed. program is appropriately based on the Faculty's current and projected areas of research excellence;
- (iii) have the program reflect in a realistic way the Faculty's current and projected resource base;
- (iv) bring the M.Ed. program into better alignment with national standards and patterns;
- (v) put the program in a more competitive position *vis-à-vis* those other national programs;
- (vi) ensure better consistency and equity across the areas of specialization within the M.Ed. program; and
- (vii) better serve our graduate students, by ensuring that their coursework is made available in a timely and ensured fashion.

You will be aware that our internal deliberative machinery involves fully the Faculty's various constituencies, all of whom have been part of the development and approval of this new format. With that support and collaboration, the proposed revision to the Supplementary Regulation provides an exciting and realistic new base for the Faculty's graduate and research enterprise.

PROPOSED MASTER OF EDUCATION SUMMARY SHEET

OVERVIEW

The proposed Master of Education Program changes will result in the introduction of eight new courses for 27 credit hours. At the same time, there will be the deletion of eleven courses for 36 credit hours, resulting in a net change of -9 credit hours as follows:

PROPOSED NEW COURSES for 2001-2002

COURSE NO.	COURSE TITLE	CR. HRS
129.7XX	Design and Analysis of Educational Research (Quantitative)	3
129.7XY	Advanced Topics in Educational Research	3
129.7XZ	Field Experience in Inclusive Special Education	6
132.7FS	Final Seminar in Curriculum, Teaching and Learning	3
132.7SL	Theory and Research in Second Language Acquisition	3
132.7XX	Historical and Contemporary Approaches to Curriculum	3
132.7XY	Theory and Practice of Curriculum Design and Development	3
132.7XZ	Internationalization of Technical and Vocational Education and Training	3
		+27

PROPOSED COURSE DELETIONS for 2001-2002

COURSE NO.	COURSE TITLE	CR.HRS.
129.680	Design of Educational Research	3
129.681	Quantitative Analysis of Educational Research	3
129.729	History of Canadian Education before Confederation	3
129.731	Topics in the History of British Education	3
129.732	Topics in the History of American Education	3
129.764	Practicum Seminar in Special Education	6
132.731	Curriculum Theory and Design	3
132.741	Curriculum: Advanced Theory and Management	3
132.730	Perspectives on Curriculum	3
132.740	Research Application in Curriculum	3
129.783	Advanced Statistical Methods in Education	3
		36

Net course changes: +27 -36 =

-9

Report of the Programs and Planning Committee of the Faculty of Graduate Studies on course proposals/modifications/deletions.

Preamble

The Programs and Planning Committee of the Faculty of Graduate Studies met on October 16, 2000 and made the following recommendation regarding course introductions and deletions in the Faculty of Arts.

Observations

1. There is one course being introduced in the Department of Anthropology.
2. There are three courses to be deleted in the Geography Department
3. The Faculty of Arts Council approved the course introduction and deletions.
4. A statement of Library support was included with the course proposal.
5. Reasons for the introduction and deletion accompany the course number and title, which are included below.

Recommendation

The Programs and Planning Committee of the Faculty of Graduate Studies recommends that the Faculty Council of Graduate Studies approve the course introduction and deletions as indicated below.

ANTHROPOLOGY

Course to be introduced: 076.7xx Advanced Faunal Analysis in Archaeology (3) The course will cover the major theoretical, methodological and practical issues in the analysis of archaeological faunal remains. Topics are addressed through lectures, demonstrations and laboratory exercises. *Prerequisite:* 076.399 or written consent of instructor.

Reason for new course: The course has been offered as a topics course every two years for the past decade. There is sufficient demand to introduce the course formally into the curriculum.

Net Change: 3 Credit Hours

GEOGRAPHY

Courses to be deleted: 053.722 Geography of Tourism and Recreation (3)
053.732 Machine Spatial Reasoning Models (3)
053.733 Historical Evidence of Climatic Change (3)

Reason for the deletions: Expertise is no longer available in the Faculty because of death/resignation/retirement.

Net Change: -9 Credit Hours

Copies of the course proposal form is available in the Faculty of Graduate Studies Office for review

Endorsed by Executive Committee, October 24, 2000

Approved by Faculty Council, November 7, 2000

**Report of the Programs and Planning Committee of the Faculty of Graduate Studies on
course proposals/modifications/deletions.**

Preamble

The Programs and Planning Committee of the Faculty of Graduate Studies met on October 16, 2000 and made the following recommendation regarding a course deletion in the Botany Department of the Faculty of Science.

Observations

1. The Faculty of Science approved the course deletion.
2. Reasons for the deletion accompany the course number and title, which is included below.

Recommendation

The Programs and Planning Committee of the Faculty of Graduate Studies recommends that the Faculty Council of Graduate Studies approve the course deletion as indicated below.

Course to be deleted: 001.732 Computer Applications in Microscopy (3)

Reasons for deletions: The course has not been offered for more than 5 years and the department does not anticipate having an instructor for the course in the foreseeable future.

Net Change: -3 Credit Hours

Copies of the course proposal form is available in the Faculty of Graduate Studies Office for review

Endorsed by Executive Committee, October 24, 2000

Approved by Faculty Council, November 7, 2000

**Report of the Programs and Planning Committee of the Faculty of Graduate Studies on
course proposals/modifications/deletions.**

Preamble

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2. Reasons for the deletion accompany the course number and title, which is included below.

Recommendation

The Programs and Planning Committee of the Faculty of Graduate Studies recommends that the Faculty Council of Graduate Studies approve the course deletion as indicated below.

Course to be deleted:

001.732 Computer Applications in Microscopy (3)

Reasons for deletions:

The course has not been offered for more than 5 years and the department does not anticipate having an instructor for the course in the foreseeable future.

Net Change: -3 Credit Hours

Copies of the course proposal form is available in the Faculty of Graduate Studies Office for review

Endorsed by Executive Committee, October 24, 2000

Approved by Faculty Council, November 7, 2000

Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

December 5, 2000

Report of the Senate Committee on Nominations

Preamble

1. The terms of reference for the Senate Committee on Nominations (SCN) are found in Section 8.31 of the *Senate Handbook*.
2. Since its previous reports to Senate, the SCN has sought and received nominations for positions on various Senate Committees. The Office of the University Secretary has polled members of the Committee in order to obtain their approval for these nominations.

Observations

1. The SCN last reported to Senate in October when undergraduate students were nominated to Senate Committees. Since then, the Student Nominating Sub-Committee has received nominations of one more undergraduate and a number of graduate students to sit on various Senate Committees.
2. Since its July report to Senate, two members of the academic staff resigned from Senate Committees; two new nominees are herewith presented for Senate approval.
3. The Minister of Culture and Heritage contacted the Office of the University Secretary with a request that nominations be submitted for a representative of the University to sit on the Public Libraries Board. Inasmuch as Ms Carolynne Presser had served a three-year term on the Board and was eligible for renomination, the Committee agreed that she be nominated to a second term. Ms Presser was willing to serve and the Office of the University Secretary wrote to the Minister of Culture and Heritage to inform her of this action.

Recommendation

That Senate approve the list of nominations to Senate Committees as detailed in Appendix A of the Report of the Senate Committee on Nominations dated December 5, 2000.

Respectfully submitted,

Professor B. Dronzek, Chair
Senate Committee on Nominations

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Senate Committee on Nominations
December 5, 2000

APPENDIX A

Committee	Name	Faculty	Term Ending
Senate Committee on Academic Review	Mr. J. Kuffner (S)	Management	14.10.01
Senate Committee on Admissions	Mr. J. Kuffner (S)	Management	14.10.01
Senate Committee on Admission Appeals	Mr. J. Kuffner (S)	Management	14.10.01
Senate Committee on Animal Care	Mr. Fred Laberge	Graduate Studies	14.10.01
Senate Committee on Appeals (regular)	Mr. E. Latif (S)	Graduate Studies	14.10.01
Senate Committee on Awards	Prof. William Diehl-Jones ¹	Nursing	31.05.01
Senate Committee on the Ethics of Research Involving Human Subjects	Mr. Paul Zita	Graduate Studies	14.10.01
Senate Committee on Joint Masters' Programs	Mr. E. Janzen	Graduate Studies	30.05.01
Senate Committee on University Research	Prof. D. Thompson ²	Engineering	31.05.01
	Mr. Paul Zita	Graduate Studies	14.10.01
	Ms. Amanda Jones	Graduate Studies	14.10.01

¹Replacing Prof. R. Dean who was completing a three-year term begun by Prof. J. Butcher.

²Completing a three-year term begun by Prof. N. Bassim.