

Senate  
Senate Chamber  
Room 245 Engineering Building  
WEDNESDAY, December 5, 2001  
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 end of the Senate meeting.

### II MATTERS RECOMMENDED FOR CONCURRENCE WITHOUT DEBATE

1. Report of the Senate  
Committee on Medical Qualifications:  
Dr Ian Gibson Page 17
2. Report of the Senate Committee  
on Curriculum and Course Changes: Part A Page 36
3. Proposed Academic Schedule for 2002-2003 Page 115

### III MATTERS FORWARDED FOR INFORMATION

1. Report of the Senate Committee on Awards Page 122
2. Statement of Intent:  
Ph.D. Program in Cancer Control Page 130
3. Statement of Intent:  
B.Sc. Minor in Ecology Page 143
4. *In Memoriam:*  
Dr R Imogene McIntire Page 147
5. *In Memoriam:*  
Mr Warren Herbert Belyea Page 148

**IV REPORT OF THE PRESIDENT**

1. Status Report Re: Task Force Report Page 149
2. President's Report December 5, 2001 Page 155

**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 7, 2001**

**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 172
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. a) Report of the Senate Committee on Curriculum and Course Changes: Part B Page 173
- b) Report of the Senate Planning and Priorities Committee on Undergraduate Changes with Resource Implications or Course Additions Beyond Nine Credit Hours Page 208
- c) Report of the Senate Planning and Priorities Committee on Undergraduate Changes with Resource Implications or Course Additions Beyond Nine Credit Hours Page 210

2. **Report of the Faculty Council of Arts on a Proposal for an Arts Co-op Program** Page 216
  - a) **Report of the Senate Committee on Curriculum and Course Changes** Page 225
  - b) **Report of the Senate Planning and Priorities Committee** Page 227
3. **Report of the Senate Committee on Appeals**

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

#### X ADDITIONAL BUSINESS

1. **Report of the *ad hoc* committee to Consider Issues Relating to the Academic Schedule** Page 229
2.
  - a) **Proposal for a Faculty of Earth, Environment and Resource Sciences** Page 234
  - b) **Proposal for a School of Environmental Studies** Page 252
  - c) **Report of the Senate Planning and Priorities Committee** Page 283
3. **Proposal to Establish a Chair in Business Leadership** Page 292

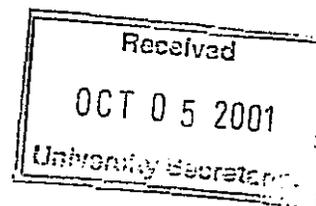
#### XI ADJOURNMENT

/sgp



UNIVERSITY  
OF MANITOBA

17  
Faculty of Medicine



October 3, 2001

Office of the Dean  
753 McDermot Avenue  
Winnipeg, Manitoba  
Canada R3E 0W3  
Telephone: (204) 789-3557  
Fax: (204) 789-3928

Ms. Bev Sawicki  
Secretary  
313 Admin Bldg.  
Fort Garry Campus

Dear Ms. Sawicki:

Re: Senate Committee Approval for Registration  
and Licensure of Dr. Ian Gibson Under  
Section 64 of the Medical Act

The Senate Committee on Medical Qualifications met on Monday, October 1, 2001 to consider the above. All members (Dr. G. Bristow, Chair, Dr. A. Chochinov, Dr. W. Pope, Dr. S. Barakat and Dr. B.W. Kirk) were present except for Dr. Karen Ogden who had previously reviewed and approved of the recommendation.

On the basis of C.V. review, letters of reference review as well as a personal interview by myself of Dr. Ian Gibson on September 5, 2001, the committee unanimously approved Dr. Ian Gibson's registration and licensure under Section 64 of the Medical Act in the areas of Adult Surgical Pathology and Adult and Pediatric Nephropathology. It is expected that once in Winnipeg, Dr. Gibson will make representation to the College of Physicians and Surgeons of Manitoba with the support of the Faculty of Medicine for recognition as a specialist under Sections 12(2) of the regulations.

Dr. Gibson is an excellently trained, well experienced academic pathologist who is well known to many of our local nephrologists who spoke in his favour.

Thank you for your consideration.

Sincerely,

G. Bristow, M.D., FRCPC  
Associate Dean (Academic)

Copy to: Dr. W. Orr

Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

IAN W. GIBSON

CURRICULUM VITAE

PERSONAL DETAILS

19

Name: Ian William Gibson  
Date of Birth: 22.11.63  
Place of Birth: Elderslie, Scotland  
Nationality: British  
Marital Status: Married  
Home Address: 5 Threave Place  
West Acres  
Newton Mearns  
GLASGOW  
G77 6YD  
Home Telephone: 0141 639 1690  
E-mail: gcl059@clinmed.gla.ac.uk

PROFESSIONAL QUALIFICATIONS

1985 BSc Honours in Anatomy, 1st Class  
1988 MB ChB. with Commendation  
1995 Membership, Royal College of Pathologists  
1995 MD with Honours (Bellahouston Medal)

MEMBERSHIP OF LEARNED SOCIETIES

1. General Medical Council (Registration Number: 3300387)
2. The Medical and Dental Defence Union of Scotland
3. The Royal College of Pathologists
4. The Association of Clinical Pathologists
5. British Division of the International Academy of Pathology

A: SCHOOL

1968 - 1981: Paisley Grammar School

1981 Dux Medal Winner

B: UNIVERSITY

**1981 - 1988: University of Glasgow Medical School**  
Intercalated Degrees in Medicine and Science (Anatomy)

**1985 BSc Honours in Anatomy, 1st Class**

**1988 MB ChB with Commendation**

**Prizes**

**1985 Stuart Brown Memorial Prize in Anatomy**  
Thesis Title: "An Ultrastructural Study of the Endometrium during the Oestrous Cycle and Early Pregnancy in the Rat."

**1986 Cappell Award**  
An award for the best dissertation giving evidence of independent study and research in the broad subject area of Pathology, submitted by a student who is reading for the degree of MB ChB at the Universities of Glasgow, Aberdeen, Edinburgh and Dundee.

**1987 MacLeod Medal and Prize**  
Awarded to the best project/dissertation by a 4th year medical student, University of Glasgow.

Dissertation Title (for the above two awards):  
"The Peripolar Cell: A Scanning and Transmission Electron Microscopic Search in Rat and Human Kidney."

- August 1988 -  
January 1989:** Pre-registration House Surgeon - Mr H Forrest  
Western Infirmary/Gartnavel General Hospitals, Glasgow
- February 1989 -  
July 1989:** Pre-registration House Physician - Prof Sir A Goldberg  
Western Infirmary, Glasgow
- August 1989 -  
July 1991:** SHO / Registrar, University Department of Pathology  
Western Infirmary, Glasgow
- August 1991 -  
July 1992:** Registrar, Department of Pathology  
Victoria Infirmary, Glasgow
- August 1992 -  
December 1994:** Career Registrar / Senior Registrar  
University Department of Pathology  
Western Infirmary, Glasgow
- January 1995 -  
July 1995:** Senior Registrar, Department of Pathology  
Stobhill NHS Trust, Glasgow
- August 1995 -  
July 1996:** James Heggie Travelling Fellow in Renal Pathology  
Department of Laboratory Medicine and Pathology  
University of Alberta, Edmonton, Alberta, Canada
- August 1996 -  
December 1996:** Senior Registrar  
University Department of Pathology  
Western Infirmary, Glasgow
- January 1997 -  
May 1997:** Locum Consultant Pathologist  
Department of Pathology  
Monklands and Bellshill Hospitals NHS Trust
- June 1997 -  
July 1997:** Locum Consultant Pathologist  
Department of Pathology  
Crosshouse Hospital, Ayrshire
- August 1997 -  
March 2001:** Consultant Histopathologist / Cytopathologist  
Department of Pathology  
Victoria Infirmary, Glasgow
- April 2001 -  
present:** Consultant Histopathologist with special interest in  
Renal Pathology  
University Department of Pathology  
Western Infirmary, Glasgow

## 1. Diagnostic Histopathology and Cytopathology

I have almost twelve years of experience in general diagnostic surgical pathology, cytopathology and hospital autopsies. I have three years of experience in performing fiscal (medicolegal) autopsies.

From 1989 - 1995, I trained in the **Glasgow School of Pathology**, with rotations in the pathology departments of the Western Infirmary, Victoria Infirmary and Stobhill Hospital. At all times during this period, I participated fully in the general diagnostic service with appropriate supervision, reporting surgical specimens, frozen sections, cytology cases and performing hospital autopsies. I also had full-time periods of training in Cytopathology (Glasgow Royal Infirmary), Neuropathology (Institute of Neurological Sciences, Southern General Hospital, Glasgow) and Paediatric Pathology (Royal Hospital for Sick Children, Glasgow).

In May 1993, I passed the **MRCPath Part 1 Diploma in Histopathology**. Since that time, I have had responsibility for independantly reporting surgical pathology and cytology specimens and autopsies.

In March 1995 I completed general training by passing the **MRCPath Part 2 General Examination in Histopathology**. I am registered as a **Member of the Royal College of Pathologists**. Since February 1997, I have been included in the **Specialist Register (Specialty: Histopathology)** established by the **General Medical Council** under the European Specialist Medical Qualifications Order 1995.

Since January 1997, I have worked as **Locum Consultant / Consultant Pathologist**, with responsibility for surgical specimens, cervical cytology, non-gynaecological cytology and autopsies, reporting independantly at consultant level. I have been responsible for supervising trainee pathologists and I have served on appointment committees for trainee pathology posts.

From August 1997 to March 2001, I worked as **Consultant Histopathologist / Cytopathologist** at the **Victoria Infirmary, Glasgow** with two other Consultant Pathologist colleagues.

During my time as Consultant Pathologist at the Victoria Infirmary, I developed **specialist experience in haematopathology**. The department had approx. 40 new lymphoma diagnoses per year. I helped upgrade the department's immunocytochemical work-up of lymphoma cases. I had responsibility for lymphoma pathology registration and follow-up with the **Scottish and Newcastle Lymphoma Group**.

**1. Diagnostic Histopathology and Cytopathology (contd)**

Also while Consultant Pathologist at the Victoria Infirmary, I developed specialist experience in the performance and interpretation of **Fine Needle Aspiration Cytology**, particularly in the field of **Head and Neck Cancer**.

Since April 2001, I have practiced general surgical pathology for 3 sessions per week as **Consultant Histopathologist** at the **University Department of Pathology, Western Infirmary, Glasgow**.

Throughout my experience in pathology, I have developed close ties with clinical colleagues, and I have had responsibility for organizing and conducting regular **clinicopathological meetings** with divisions of surgery and medicine, and with various other specialist departments. At the Victoria Infirmary, I was responsible for regular meetings with the departments of **Medicine, Gastroenterology, Dermatology and Haematology**.

Since 1998, I have participated in the **Scotland and Northern Ireland EQA Scheme in Histopathology**. In 1998 - 1999, I served for two years on the **Management Team** for the **Scotland and Northern Ireland EQA Scheme in Histopathology**. I have recently began participating in the **NHS Breast Screening Programme Histopathology EQA Scheme**. From 1997 to 2000, I participated in the **Cervical Cytology Proficiency Test** and **Scottish Educational Slide Circulation Scheme** for cervical cytology.

I recently was invited to become a member of the **Scottish Pathology Consistency Group**. This is a group of **Scottish consultant pathologists** who have been studying consistency of histopathological reporting in routine surgical pathology practice.

I am registered with **The Royal College of Pathologists for Continuing Professional Development**.

## 2. Specialist Training in Kidney Pathology

From 1989 - 1995, I trained in kidney pathology and kidney transplant pathology at the Western Infirmary, Glasgow under Dr IAR More, Consultant Renal Pathologist. I also received training and developed expertise in renal direct immunofluorescence microscopy. During this period, I was involved in organizing and conducting regular clinicopathological meetings with nephrologists from the Glasgow Renal Units of the Western Infirmary, Royal Infirmary, and Stobhill Hospital.

In 1995, I was awarded the **James Heggie Travelling Fellowship** from the University Department of Pathology, Glasgow, and a **Pathological Society of Great Britain and Ireland Travelling Fellowship**. This allowed me to complete specialist training in renal pathology with a one year period of study under **Professor Kim Solez** at the **University of Alberta, Edmonton, Canada** from July 1995 - July 1996.

During the year spent in Edmonton, I participated in the renal biopsy service for the University of Alberta Division of Nephrology and Transplantation, which covers the province of Alberta and parts of eastern British Columbia. I actively participated in weekly clinicopathological conferences with the nephrologists and transplant immunologists. I particularly benefited from Professor Solez's experience in the pathology of renal transplantation, gaining experience in the pathology of the most recently described types of immunological graft rejection. I also pursued several research projects in Professor Solez's laboratory, in the field of renal transplantation and acute renal failure (see below).

In October 1995, I attended the course **Renal Biopsy in Medical Diseases of the Kidney - Comprehensive Review and Update - Pathology, Pathogenesis and Clinical Pathological Correlations** at Columbia University College of Physicians and Surgeons, New York City. This four day lecture course covered all aspects of renal pathology, and was an opportunity to meet leading renal pathologists in North America.

In April 2001, I was appointed as **Consultant Histopathologist with special interest in Renal Pathology** at the **University Department of Pathology, Western Infirmary, Glasgow**. The renal biopsy service of the department handles between 450 and 500 samples a year, of which approx. 180 are renal transplant biopsies. Light microscopy, direct immunofluorescence and electron microscopy is routinely carried out on most biopsies. The samples are mainly submitted from the renal units within North Glasgow Hospitals, but also include cases from hospitals elsewhere in the West of Scotland including Lanarkshire, Ayrshire and Dumfries and Galloway.

## 2. Specialist Training in Kidney Pathology (contd)

My present post will involve regular renal clinicopathological conferences once per month with nephrologists in both the Western Infirmary and the Royal Infirmary. There is a significant commitment to teaching of renal pathology and renal transplant pathology to the trainee pathologists and the specialist registrars in nephrology.

I have participated in the **UK National Renal Pathology EQA Scheme** since 1993, and in the **UK National Renal Transplant Pathology EQA Scheme** since 1996. I have regularly attended review meetings of cases for these EQA schemes. I am a member of the **UK Renal Pathology Group** and of the **Scottish and Newcastle Renal Pathology Group**.

I have regularly participated in regional, national and international meetings in renal pathology, nephrology and renal transplantation. I attended the **European Renal Association Congresses** in Glasgow, UK in September 1993, in Athens, Greece in June 1995 and in Nice, France in September 2000. I attended the **American Society of Nephrology Annual Meeting** in San Diego, California in November 1995. I have attended the last four **Banff Conferences on Allograft Pathology** in Banff, Alberta (July 1995, March 1997, June 1999 and April 2001). I have participated in the conference discussions and published reports on the future development of the **Banff International Classification System for Renal Allograft Pathology** (see paper nos.7 and 11).

I have been asked to referee manuscripts relevant to renal pathology submitted to **Nephrology Dialysis Transplantation**, **Kidney International** and **American Journal of Kidney Diseases**.

I regularly peruse the on-line and internet resources in nephrology and renal pathology, e.g. the WWW home pages of the **Renal Pathology Society**, **International Society of Nephrology**, **American Society of Nephrology**, **CyberNephrology**, **American Society of Transplant Physicians**, **Transplant Pathology Internet Services**, **American Journal of Kidney Diseases** and the electronic journal **Hypertension Dialysis Clinical Nephrology**. Since 1995, I have subscribed to the **NEPHROL** mailing list, an on-line discussion group in the field of nephrology, transplantation and renal pathology. This permits daily communication with colleagues from around the world, helping to keep fully up-to-date with ideas and advances in renal pathology.

**3. Specialist Training in Ultrastructural Pathology**

From 1989 - 1995, I trained in general ultrastructural pathology at the Western Infirmary, Glasgow under Dr IAR More. In addition to renal ultrastructural pathology, I gained experience in interpretation of muscle biopsies, and a wide range of tumour ultrastructural pathology. My research work (see below) has involved extensive experience with both scanning and transmission electron microscopy.

**1. Undergraduate**

During my BSc training, I performed an investigation of the rat uterine mucosa during the oestrous cycle and early pregnancy.

For 2 months in 1986 (funded by an SHHD grant) and 1 month in 1987 (my senior undergraduate elective), I performed a scanning electron microscopic investigation of the glomerular peripolar cell. This work involved developing a new technique in glomerular microdissection, to allow scanning microscopy of the vascular pole of the glomerulus (see presentation no. 1 and paper no. 1).

**2. Postgraduate**

During my time in pathology in Glasgow, I have been part of an established research team in the Western Infirmary, investigating morphological aspects of renal physiology and pathology. This has been in collaboration with Dr GMB Lindop and Dr IAR More. I have regularly presented aspects of this research work at departmental, national and international meetings in Europe and North America. My personal contributions have included:-

a) **Species Survey of the Glomerular Peripolar Cell** - see invited review paper no. 1, paper nos. 1, 3, 4 and presentation nos. 1, 3, 5, 7, 12.

b) **Morphology and Pathology of the Human Renal Glomerulus** - see paper nos. 2, 5 and presentation nos. 2, 4, 6, 9, 10. I was awarded **Proxime Accessit, Association of Clinical Pathologists, Research Prize 1993** for a paper on parietal podocytes in the human glomerulus.

c) **Studies in Chronic Allograft Nephropathy and Atubular Glomeruli** - see invited lecture nos. 1, 2, paper nos. 9, 10 and presentation nos. 8, 11, 13, 14, 15, 16, 18.

d) **Studies in Lithium Nephropathy** - through collaboration with Dr N. Marcussen, Aarhus, Denmark, see presentation no. 21.

e) **Studies in Radiation Nephropathy** - through collaboration with Dr E. Cohen, Medical College of Wisconsin, USA, see presentation no. 22.

While working in the laboratory of Professor Kim Solez, in Edmonton, Canada, I undertook research projects in:-

a) **Renal Allograft Rejection Diagnosis** - see paper no. 8.

b) **Acute Renal Failure - Experimental Models and Therapeutic Intervention**

A proposal for the degree of **Doctor of Medicine (MD)** was accepted by the **Faculty of Medicine, University of Glasgow**, in January 1991.

Thesis Title: "**Scanning Electron Microscopy of the Mammalian Renal Glomerulus in Health and Disease.**"

Dr GBM Lindop acted as supervisor.

In May 1995, I was awarded the degree of **MD with Honours**.

In October 1995, I was awarded a **Bellahouston Medal** for an outstanding MD thesis submitted to the Faculty of Medicine, University of Glasgow, in session 1994 - 1995.

### TEACHING EXPERIENCE

During my BSc in Anatomy, I demonstrated in practical classes in histology, embryology and neuroanatomy to the undergraduate medical students.

Whilst in Pathology, I have been a tutor in small-group teaching and a demonstrator in practical histopathology classes and in post-mortem teaching, to the undergraduate medical and dental students.

I give undergraduate and postgraduate lectures in subjects related to renal pathology and transplantation, cell ultrastructure and various general aspects of pathology.

I have also helped supervise the practical aspects of projects for both BSc and MSc Pathology courses.

In November 1994, I was appointed the status of **Honorary Clinical Lecturer** by the **Faculty of Medicine, University of Glasgow**.

In November 1999, I was appointed the status of **Honorary Clinical Senior Lecturer** by the **Faculty of Medicine, University of Glasgow**.

1. In 1990, in collaboration with Dr GBM Lindop and Dr IAR More, I successfully applied for a research grant, to fund employment of a technician for two years.

Title: **A new technique to study the vascular and tubular poles of the glomerulus in human renal diseases.**

Awarding Body: **Greater Glasgow Health Board, Research Support Group**

Amount: £20,481

2. In 1995, I was awarded the **James Heggie Travelling Fellowship** (£18,000) from the University Department of Pathology, Glasgow, and a **Pathological Society of Great Britain and Ireland Travelling Fellowship** (£7,500). These awards funded my period of study in renal pathology at the University of Alberta, Canada in 1995 - 1996.

3. In 1997, in collaboration with Dr GBM Lindop and Dr IAR More, I received a **University of Glasgow Medical Faculty Equipment Grant**, to purchase for the Department of Pathology, Western Infirmary, a critical point drying apparatus for the preparation of tissue for scanning electron microscopy

4. In 1997, in collaboration with Dr GBM Lindop, I successfully applied for a **Wellcome Vacation Scholarship**, to provide a subsistence allowance for a medical student during a summer vacation research period.

Title: **The pathogenesis of atubular glomeruli in rats with chronic lithium nephropathy.**

Awarding Body: **The Wellcome Trust**

Amount: £1,000

5. In 1998, in collaboration with EP Cohen MD, Medical College of Wisconsin, USA, we were awarded a Research Travel Grant to fund a visit to Glasgow in February 1999 by Dr Cohen to discuss ongoing research collaboration in models of chronic renal failure.

Title: **Glomerulotubular neck stenosis in chronic renal failure.**

Awarding Body: **Burroughs Wellcome Fund**

Amount: US\$2,700

**A. Invited Lectures**

1. Scanning electron microscopic observations in rejected renal allografts.  
Kidney Transplant Pathology - Long Course  
XXI International Congress of the International Academy of Pathology  
Budapest, Hungary, October 1996
2. Glomerular lesions observed in chronic rejection: transplant glomerulopathy  
De Novo Glomerular Lesions in Renal Transplantation Symposium  
XXXVII Congress of the European Renal Association / European  
Dialysis and Transplant Association  
Nice, France, September 2000

**B. Invited Review Papers**

1. Gardiner, DS; I Downie; **IW Gibson**; IAR More; GBM Lindop  
The glomerular peripolar cell: a review.  
**Histology and Histopathology** 6: 567-573, 1991
2. **Gibson IW**; IAR More  
Glomerular Pathology: Recent Advances  
**Journal of Pathology** 184: 123-129, 1998

**C. Refereed Papers**

1. **Gibson, IW**; IAR More; GBM Lindop  
A scanning electron-microscopic study of the peripolar cell of the rat renal glomerulus.  
**Cell Tissue Research** 257: 201-206, 1989
2. **Gibson, IW**; I Downie; TT Downie; SW Han; IAR More; GMB Lindop  
The parietal podocyte: a study of the vascular pole of the human glomerulus.  
**Kidney International** 41: 211-214, 1992
3. Downie, I; DS Gardiner; TT Downie; **IW Gibson**; C Kenyon; IAR More; GBM Lindop  
Non-granulated peripolar cells exist in the rat glomerulus.  
**Cell Tissue Research** 268: 567-570, 1992

**C. Refereed Papers (contd)**

4. **Gibson IW; DS Gardiner; TT Downie; IAR More; GBM Lindop**  
A comparative study of the glomerular peripolar cell and the renin-secreting cell in twelve species of mammal.  
**Cell Tissue Research 277: 385-390, 1994**
5. **Gibson IW; TT Downie; IAR More; GBM Lindop**  
Immune complex deposition in Bowman's capsule is associated with parietal podocytes.  
**Journal of Pathology 173: 53-59, 1994**
6. **Burden, AD; IW Gibson; RSC Rodger; DM Tillman**  
IgA anticardiolipin antibodies associated with Henoch-Schonlein purpura.  
**Journal of the American Academy of Dermatology 31:857-860, 1994**
7. **Solez K; H Benediktsson; T Cavallo; B Croker; AJ Demetris; C Drachenberg; S Emancipator; PN Furness; LW Gaber; IW Gibson, J Gough; R Gupta; P Halloran; P Hayry; M Kashgarian; N Marcussen; ZA Massy; MJ Mihatsch; K Morozumi; I Noronha; S Olsen; J Papadimitriou; LC Paul; M Picken; LC Racusen; EL Ramos; P Randhawa; DC Rayner; D Rush; F Sanfilippo; ETaskinen; K Trpkov; L Truong; Y Yamaguchi; S Yilmaz**  
Report of the Third Banff Conference on allograft pathology (July 20-24, 1995) on classification and lesion scoring in renal allograft pathology.  
**Transplantation Proceedings 28: 441-444, 1996**
8. **Gibson IW; N Marcussen; RW Brown; K Solez; LD Truong**  
The use of immunocytochemistry (LCA and Leu-7) in diagnosis of renal allograft rejection.  
**Transplantation Proceedings 28: 457-464, 1996**  
See also <<http://www.med.ualberta.ca/isn/000i0070.htm>>
9. **Gibson IW; TT Downie; IAR More; GBM Lindop**  
Atubular glomeruli and glomerular cysts - a possible pathway for nephron loss in the human kidney.  
**Journal of Pathology 179: 421-426, 1996**
10. **Gibson IW; TT Downie; IAR More; GBM Lindop**  
Tuft-to-capsule adhesions and their precursors: differences between the vascular and tubular poles of the human glomerulus.  
**Journal of Pathology 184: 430-435, 1998**

**C. Refereed Papers (contd)**

11. Racusen LC; K Solez; RB Colvin; SM Bonsib; MC Castro; T Cavallo; BP Croker; AJ Demetris; CB Drachenberg; AB Fogo; PN Furness; LW Gaber; **IW Gibson**, D Glotz; JC Goldberg; J Grande; PF Halloran; HE Hansen; B Hartley; PJ Hayry; CM Hill; EO Hoffman; LG Hunsicker; AS Lindblad; N Marcussen; MJ Mihatsch; T Nadasdy; P Nickerson; TS Olsen; JC Papadimitriou; PS Randhawa; DC Rayner; I Roberts; S Rose; D Rush; L Salinas-Madrigal; DR Salomon; S Sund; E Taskinen; K Trpkov; Y Yamaguchi  
The Banff 97 working classification of renal allograft pathology.  
**Kidney International** 55: 713-723, 1999

**D. Presentations and published abstracts**

1. **Gibson, IW**; IAR More; GBM Lindop  
The glomerular peripolar cell - a scanning electron microscopic study in the rat.  
Pathological Society of Great Britain and Ireland  
Winter Meeting, London, January, 1988  
Abstract: **Journal of Pathology** 154: 36A, 1988
2. **Gibson, IW**; I Downie; SW Han; TT Downie; DS Gardiner; IAR More; GBM Lindop  
Parietal podocytes in the human kidney: a scanning and transmission electron microscope study.  
Association of Clinical Pathologists  
Caledonian Branch 69th General Meeting, Glasgow, March 1990
3. Lindop, GBM; DS Gardiner; **IW Gibson**; I Downie; TT Downie; IAR More  
The glomerular peripolar cell - does it exist? - morphological evidence from normal and disease states.  
Association of Clinical Pathologists  
Caledonian Branch 70th General Meeting, Dundee, November 1990
4. **Gibson, IW**; I Downie; SW Han; TT Downie; IAR More; GBM Lindop  
The parietal epithelium of human Bowman's capsule; a heterogeneous cell population.  
Pathological Society of Great Britain and Ireland  
Winter Meeting, Cambridge, January, 1991  
Abstract: **Journal of Pathology** 163: 166A, 1991

D. Presentations and published abstracts (contd)

5. Downie, I; DS Gardiner; TT Downie; **IW Gibson**; C Kenyon; IAR More; GBM Lindop  
Granulated and non-granulated peripolar cells in the rat glomerulus.  
Pathological Society of Great Britain and Ireland  
Winter Meeting, Cambridge, January, 1991  
Abstract: **Journal of Pathology** 163: 165A, 1991
6. **Gibson, IW**; I Downie; TT Downie; IAR More; GBM Lindop  
The parietal podocyte: a route for filtration out of the human Bowman's capsule.  
Renal Association  
Spring Meeting, Birmingham, April 1991  
Abstract: **Nephrology Dialysis Transplantation** 6: 907, 1991
7. Lindop, GBM; **IW Gibson**; I Downie; IAR More  
The comparative anatomy of the glomerular peripolar cell in mammals: a scanning electron microscope study.  
Pathological Society of Great Britain and Ireland  
Summer Meeting, Belfast, July 1991  
Abstract: **Journal of Pathology** 164: 360A, 1991
8. **Gibson IW**; F MacPherson; IAR More; GBM Lindop  
Glomerular cysts in human kidney: a scanning electron microscope study.  
Pathological Society of Great Britain and Ireland  
Winter Meeting, London, January 1992  
Abstract: **Journal of Pathology** 167: 127A, 1992
9. **Gibson IW**; TT Downie; IAR More; GBM Lindop  
Immune complex deposition in human Bowman's capsule due to parietal podocytes.  
Association of Clinical Pathologists  
Caledonian Branch 75th General Meeting, Aberdeen, March 1993
10. **Gibson IW**; TT Downie; IAR More; GBM Lindop  
Parietal podocytes result in immune complex deposition in-Bowman's capsule.  
Pathological Society of Great Britain and Ireland  
Summer Meeting, Edinburgh, July 1993  
Abstract: **Journal of Pathology** 170: Supplement, 1993

D. Presentations and published abstracts (contd)

11. **Gibson IW; TT Downie; IAR More; GBM Lindop**  
Acquired glomerulocystic change in human kidney: a scanning electron microscope study.  
XXX Congress of the EDTA, European Renal Association  
Glasgow, Scotland, September 1993  
Abstract: **Nephrology Dialysis Transplantation** 8: 1039, 1993
12. **Lindop GBM; DS Gardiner; IW Gibson; C Kenyon; IAR More**  
Effect of altered renal perfusion and manipulation of dietary sodium on the glomerular peripolar cell and the juxtaglomerular apparatus.  
XXXTH Congress of the EDTA, European Renal Association  
Glasgow, Scotland, September 1993  
Abstract: **Nephrology Dialysis Transplantation** 8: 888, 1993
13. **Gibson IW; IAR More; GBM Lindop**  
Connections between the capillary tuft and Bowman's capsule in normal and pathological human glomeruli.  
- Pathological Society of Great Britain and Ireland  
Winter Meeting, London, January 1994  
Abstract: **Journal of Pathology** 172: Supplement, 1994  
- Presented also at the Royal College of Pathologists for the opening of the new College premises by the Patron, Her Majesty the Queen, 16th February, 1994
14. **Gibson IW; IAR More; GBM Lindop**  
Atubular glomeruli in normal and pathological human kidney: a scanning electron microscope study.  
- Association of Clinical Pathologists  
Caledonian Branch 77th General Meeting, Dundee, March 1994  
- Pathological Society of Great Britain and Ireland  
Summer Meeting, Glasgow, July 1994  
Abstract: **Journal of Pathology** 173: Supplement, 1994
15. **Gibson IW; IAR More; GBM Lindop**  
Atubular glomeruli: an important type of glomerular damage in renal allografts.  
XXXIITH Congress of the EDTA, European Renal Association  
Athens, Greece, June 1995
16. **Gibson IW**  
Atubular glomeruli in chronic allograft nephropathy: a scanning electron microscopy study.  
Third Banff Conference on Allograft Pathology  
Banff, Canada, July 1995

D. Presentations and published abstracts (contd)

17. **Gibson IW**, M Minimasawa, AG Jardine, GBM Lindop  
Renin gene expression in progressive and non-progressive IgA nephropathy.  
Pathological Society of Great Britain and Ireland  
Winter Meeting, London, January 1997  
Abstract: **Journal of Pathology** 181: Supplement 52A, 1997
18. **Gibson IW**  
Tubular pole abnormalities in chronic allograft nephropathy.  
Fourth Banff Conference on Allograft Pathology  
Banff, Canada, March 1997  
See also <<http://www.med.ualberta.ca/isn/000i011d.htm>>
19. **Gibson IW**; G Stewart  
Early renal transplant dysfunction due to antibody-mediated rejection - a case report.  
Fourth Banff Conference on Allograft Pathology  
Banff, Canada, March 1997
20. Walker SH, A Balsillie, TT Downie, **IW Gibson**, IAR More, GBM Lindop  
Scanning electron microscopy of acellular glomeruli - a novel technique for the study of glomerular adhesions.  
Pathological Society of Great Britain and Ireland  
Summer Meeting, Sheffield, July 1997  
Abstract: **Journal of Pathology** 182: Supplement 36A, 1997
21. Williamson D; **IW Gibson**; N Marcussen; S Christensen; A Balsillie; TT Downie; IAR More; GBM Lindop  
Atubular glomeruli in lithium-induced chronic nephropathy in rats: a correlated light and scanning electron microscope study.  
Pathological Society of Great Britain and Ireland  
Winter Meeting, Cambridge, January, 1999  
Abstract: **Journal of Pathology** 187: Supplement 34A, 1999
22. McPhee TG; **IW Gibson**; A Balsillie; TT Downie; IAR More; EP Cohen; GBM Lindop  
Radiation nephropathy in the rat - A model of tuft-to-capsule adhesions.  
Pathological Society of Great Britain and Ireland  
Winter Meeting, Maastricht, Holland, January, 2001  
Abstract: **Journal of Pathology** 193: Supplement 43A, 2001

October 1, 2001

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

---

---

**Preamble**

1. The terms of reference for the Senate Committee on Curriculum and Course Changes (SCCCC) are found in Section 8.21 of the *Senate Handbook*. SCCCC is "to recommend to Senate on the introduction, modification or abolition of undergraduate programs, curricula or courses".
2. Since last reporting to Senate, the Senate Committee on Curriculum and Course Changes (SCCCC) met on October 9, 19, 25 and 26, 2001 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 Food Science**

Since the Department of Food Science has taken over the teaching of **034.354 Food Engineering Fundamentals**, the course is being deleted and renumbered as **078.3XX Food Engineering Fundamentals**.

**Agroecology Program**

Recent changes in the offering of the required course **128.325 Environmental Assessment** means that the course is no longer suitable for the program. Therefore, it is being deleted from the program.

Course **065.451 Application in Agroecology** presently consists of an undergraduate thesis and four modules, which are presented in lecture slots by instructors and addresses issues in agroecology. The total work required for a student to perform well in the thesis and the modules is much more than for a normal three-credit hour course. To remedy this, the thesis component of 065.451 is being moved to a separate three-credit hour course. The modules on agroecological issues will form the modified 065.451.

Course **065.4AB Agroecology Research Project** represents the undergraduate thesis component of existing course 065.451 and will be a required course in the Agroecology Program.

#### Animal Systems Program

Course **035.428 Applied Animal Genetics** is being included in the Group 3 restricted electives.

#### Agribusiness Program

Introduction of new course **061.3XX Agribusiness Portfolio Management** is being proposed as well as the deletion of **061.423 Agricultural Law**. As part of the course, students will write the Canadian Securities examination. The new course is to be added to the Group 2 restricted electives in the Agribusiness Program.

#### Agriculture/Science Toxicology Courses

Course **065.2XX Introductory Toxicology** was originally proposed by an Agri/Science Committee in 1994 to eliminate duplication of basic toxicological concepts in several courses. This course is being simultaneously proposed in the Faculty of Science with departmental numbers 001, 022 and 128.

Course **065.2XY Toxicological Principles** will be introduced as a 1.5 credit course in the Faculties of Science and Agricultural and Food Sciences. It is intended to eliminate duplication of basic toxicological concepts in several courses in both faculties. This is the first half of the proposed 065.2XX Introductory Toxicology.

#### Pork Production Manager Certificate Program

The expansion of the hog industry in Manitoba has resulted in a need for qualified managers to run various pork production facilities. Since training required for these positions was not available in Manitoba, the pork industry through the Manitoba Pork Council and the University of Manitoba and the Assiniboine Community College entered into an agreement to develop a training program. Funding from the provincial government and private companies in the pork industry allowed the development of a curriculum and initial delivery of courses designed to address industry needs. The result is the Pork Production Manager Certificate Program. The Certificate requires the completion of 240 hours of instruction through a number of core courses and a series of electives in the areas of: Production Management, Human Resource Management, Facilities Management, and Business Management.

The Senate Committee on Curriculum and Course Changes approved, on behalf of Senate, the proposal for a Pork Production Manager Certificate Program, together with the introduction of the following courses:

924.110 Genetics (4 contact hours)

The goal of this course is to give unit managers an understanding of how genetics affects the productivity of his/her herd. This course will deal with heritability, and genetic pyramids, as well as how genetic selection affects herds. In addition, instruction will include the breed differences in relation to carcass quality, and lean gain.

924.111 Basics of Nutrition (4 contact hours)

This course will provide managers with information on how nutritional factors can influence herd performance. It is designed to help managers become aware of and understand practical aspects of nutrition. The importance of nutrients and feeding strategies in relation to each stage of production will be an integral part of this course.

924.112 Animal Health (12 contact hours)

This course challenges the participants to make sound management decisions regarding the health of their herds based on their ability to gather facts, interpret data and critically assess information. Participants will be given real life herd health problems and will work as a group or as individuals to search for solutions. The challenge that will ultimately face the participants is to find long term solutions, which will not cost money.

924.113 Reproduction (4 contact hours)

The goal of this course is to assist the students in learning and understanding the fundamentals of swine reproduction upon which they can build management strategies to optimize reproductive performance of the breeding herd.

924.114 Farrowing (4 contact hours)

Through the mixture of theory and practical applications, the student will learn the process of farrowing. Students will also learn how to reduce pre-weaning mortality and other management problems in the farrowing barn.

924.115 Finishing (4 contact hours)

The course will teach the students the physiology of the growing pig. Students will learn about management practices used to optimize performance. They will also learn to set production targets and how to monitor actual performance regularly and effectively.

924.116 Understanding Swine Behaviour (12 contact hours)

Upon completion of this course, students will be able to: recognize normal behaviour patterns at all phases of production; identify management practices that accommodate normal behaviour; recognize and address behavioural problems; recognize management approaches necessary in alternative housing systems and select equipment that accommodates goals of swine management practices.

924.117 Production Planning (8 contact hours)

This course will teach the student to make confident management decisions pertaining to setting production goals and dealing with biological variation in commercial pork production. Upon successful completion of this module the student will be able to apply planning

principles of production flow so as to ensure maximum productivity.

924.118 A.I. & Boar Management (8 contact hours)

The goal of this course is to teach students to apply the knowledge of reproductive physiology to both artificial insemination and natural breeding systems. The students will learn how to deal with the challenges to maximizing breeding efficiency in modern hog production.

924.119 Nursery Barn Management (8 contact hours)

The goal of this course is to provide managers with an understanding of the physiological, social, and environmental needs of the nursery pig. Through this increased understanding of the nursery pig's requirements, managers will be able to meet the challenges of providing vigorous pigs to the feeder barn.

924.120 Finishing Barn Management (8 contact hours)

This course will teach the students how to strive for optimum performance and profitability of the pork production unit. The student will gain an understanding of the physiological requirements and potential of the pig. The student will also learn the importance of considering the effectiveness of the entire pork production unit.

924.121 Sow Barn Management (8 contact hours)

The goal of this course is to teach students how to ensure that the physiological needs and management requirements of the gilt, sow and boar in the sow barn are met so that production goals are reached.

924.130 Leadership Styles (8 contact hours)

This course will teach the students the principles of effective leadership. It will also help the participants to understand the different styles of leadership as well as to determine their own leadership style. From this knowledge, the participants will learn how to improve their communication with their employees, their superiors and others.

924.131 Conflict Management (8 contact hours)

This course will teach students effective strategies to manage conflict. It will also help the participants to understand their own style of handling conflict as well as to learn when and how to use other styles of conflict management.

924.132 Situational Leadership (16 contact hours)

This course recognizes the fundamental changes in the role of the manager today. In particular, the course highlights the changes from manager as boss, evaluator, judge and critic to manager as partner, facilitator, cheerleader, supporter and coach. This course will teach students to find out what their employees need to accomplish their personal and organizational goals, to use a variety of leadership styles to meet those needs and to set up a communication process for reaching agreements on what the manager and employee can expect from each other as they work together.

924.133 Performance Management (8 contact hours)

Understanding what motivates people will help managers lead their employees to high productivity in the barn.

924.134 Communications (8 contact hours)

Students will learn the process of communication and the importance of possessing good listening skills. They will also learn how to recognize barriers to communication and how to overcome these barriers. The students will be able to practice their communication skills in activities and exercises in this course.

924.135 Time & Stress Management (8 contact hours)

The unit manager will learn to identify the symptoms of stress as they pertain to him/her and to the barn staff. Students will learn some coping strategies in reducing stress in the workplace. Time management will be addressed by identifying time management problems and how to manage time more effectively.

924.136 Team Building (8 contact hours)

Students will learn the principles of team building. Moreover, students will learn to recognize individual and team strengths and weaknesses as well as how to build an effective team with the people who work in the barn.

924.137 Interviewing and Selection (8 contact hours)

Students will learn the hiring process from assessing their goals and labour needs to interviewing, making the offer, as well as orienting (inducting) the new employee.

924.138 Employee Handbook (4 contact hours)

This course will teach the students how to develop an Employee Handbook (Policy Book). They will also learn the advantages and disadvantages of an Employee Handbook.

924.150 Ventilation & Heating Systems (12 contact hours)

The objective of this section is to provide instruction in the principles of environmental control within the hog barn. Students will gain an understanding of the basic principles upon which barn environments are designed and how they interact. Upon completion they should be able to understand why changes occur within a barn and how best to respond to these changes.

924.151 Manure Management (4 contact hours)

The goal of this course is to give managers an understanding of the importance of good manure management on his/her farm.

924.152 Preventative Maintenance (8 contact hours)

The objective of this course is to establish the importance of regular maintenance on building systems and equipment used in hog barns. The various systems within a barn will be discussed as well as the maintenance required for these systems. Maintenance schedules will be discussed as a way to maintain optimal system operation and to reduce the incidence of equipment failure and possible emergency situations.

924.153 Emergency Management (8 contact hours)

The goal of this course is to make managers aware of the health and safety issues of pork production so that their workplaces can be made as safe as possible.

924.154 Barn Siting & Design (8 contact hours)

The objective of this section is to provide the guidelines and standards applicable to the

design and siting of a hog barn as well as the operating procedures that may go hand-in-hand with certain aspects of the design.

924.155 More on Manure Management (4 contact hours)

The goal of this course is to provide managers with a comprehensive understanding of manure management as it pertains to the application of manure to cropland and the treatment of manure by biological and chemical processes.

924.156 Community Relations (4 contact hours)

The objective of this course is to address concerns that affect communications with respect to swine production facilities. Students will be made aware of how to develop and maintain good farm-neighbour relationships and recognize how these relationships will increase farming success.

924.170 Applied Mathematics & Statistics (4 contact hours)

This course will teach the participants the importance of statistical analysis in pork production, the pre-course refresher will prepare the participant in learning and appreciating various aspects of plotting data graphically and interpretation of data through the use of basic statistics. Using this knowledge, the participants will learn extrapolation, inferences and trend analysis which can be used for setting goals and targets. This course will use practical application and examples relevant to daily operations in the pork production industry.

924.171 Intermediate Swine Record Systems (16 contact hours)

This course will enable students to have a better analytical understanding of reports generated from record keeping systems. Moreover, students will learn how to implement problem-solving strategies.

924.172 Advanced Production Analysis (8 contact hours)

The course will teach the students the principles of effective production analysis. Participants will learn that production planning is essential for effective monitoring and analysis. They will learn the basics of production planning and how production analysis is used to determine the effectiveness of the production plan. Students will also work with various monitoring and analysis tools and techniques.

924.173 Introduction of Swine Record Systems (12 contact hours)

This course will introduce students to swine record keeping systems. Introduction to Swine Record Systems will provide training in data entry and report interpretation of swine record keeping systems.

924.174 Financial Performance Analysis (8 contact hours)

The goal of this course is to teach students the fundamentals of financial analysis. They will be given the tools to measure the financial performance of their operation. Students will also learn how to make capital budgeting decisions and investment decisions using financial analysis.

924.175 Marketing (8 contact hours)

This course will teach students the local situation in marketing hogs in Manitoba and in the world as well as give them an understanding of what happens to their hogs in the packing

plant. Students will also learn the factors that determine market price as well as develop some pricing options in hog marketing.

924.176 Introductory Statistical Process Control (4 contact hours)

This course will provide participants with some insight into the importance of statistical analysis and interpretation in pork production. The students will learn the use of trend analysis in the introduction to the use of Statistical Process Control (SPC). This knowledge will help to create a basis for more in-depth future study. Interpretation and inferences, obtained from the more advanced use of SPC, can be used for reviewing present operations and setting new goals and targets.

## APPENDIX II

## The Program

This 240-hour program is divided into core and elective courses. Students wishing to receive a Certificate must take all of the core courses (160 credits) and at least 80 credits of the elective courses. Electives can be chosen from any of the areas of study.

Section	Credits	Core/elective
Production Management	52	Core courses
Human Resource Management	48	Core courses
Facilities Management	32	Core courses
Business Management	32	Core courses
	80	Elective courses

*Core Courses***Production Management - Core**

Course Name	Credits
Genetics	4
Basics of Nutrition	4
Animal Health	12
Reproduction	4
Farrowing & Nursery	4
Finishing	4
Understanding Swine Behaviour	12
Production Planning	8

**Human Resource Management - Core**

Course Name	Credits
Leadership Styles	8
Conflict Management	8
Situational Leadership	16
Performance Management	8
Communications	8

**Facilities Management - Core**

Course Name	Credits
Ventilation & Heating Systems	12
Manure Management	4
Preventative Maintenance	8
Emergency Management	8

**Business Management - Core**

Course Name	Credits
Intermediate Swine Record Systems	16
Advanced Production Analysis	8
Applied Mathematics & Statistics	4

*Elective Courses***Production Management - Elective**

Course Name	Credits
A.I. & Boar Management	8
Nursery Barn Management	8
Finishing Barn Management	8
Sow Barn Management	8

**Human Resource Management - Elective**

Course Name	Credits
Time & Stress Management	8
Team Building	8
Employee Handbook	4
Interviewing & Selection	8

**Facilities Management - Elective**

Course Name	Credits
Barn Siting & Design	8
Community Relations	4
More on Manure Management	4

**Business Management - Elective**

Course Name	Credits
Introduction of Swine Record Systems	12
Financial Performance Analysis	8
Marketing	8
Introductory Statistical Process Control	4

**3. Faculty of Architecture****Department of Environmental Design**

The Environmental Design Program is proposing a modification to course 079.266 Construction Materials and Assemblies II. This course will be moved into the first year

of the program so that the technical information provided by the course will be made available to students at a critical point earlier in their studies, as well as be more supportive of other first year courses in the program. In order to make this move the required course must be given a 100 level number. There is no increase in the total number of credit hours required of first year students as a result of this change. Course *079.160 Introduction to Design*, a previously required first year course, now becomes a course available only to University 1 students wanting to know more about the Faculty of Architecture and the design process.

#### 4. School of Art

The School of Art is proposing the deletion of **054.125 Foundation Sculpture** from the diploma program in order to bring the program into concurrence with the degree programs, which do not begin specialized studio work until second year. A second year sculpture course currently exists. It will remain available to the diploma program, but the requirement that all diploma students take a sculpture course will be removed. No such requirement exists in the degree program.

#### 5. Faculty of Arts

##### Department of Anthropology

Course **076.337 Ethnology of Sub-Saharan Africa (076.337F Ethnologie de l'Afrique sous-saharienne)** will be deleted, as the department wishes to offer the course at the 200-level in order to be consistent with other ethnology/area courses offered. It is being introduced as **076.2XX Ethnology of Sub-Saharan Africa (076.2XXF Ethnologie de l'Afrique sous-saharienne)**.

##### Canadian Studies Program

The list of approved courses is being modified to include three Native Studies courses: 032.332 Aboriginal Organizations, 032.334 Circumpolar Cultures, and 032.426 Sacred Lands and Sacred Spaces of Indigenous Peoples.

##### Department of Economics

Course **018.231 Canadian Economic Problems (018.231F Les problèmes économiques du Canada)** is being modified in order to broaden and bring the calendar description up to date.

Course **018.239 Introduction to Environmental Economics** is a required course in the proposed Environmental Studies Program. Although the pre-requisite is routinely waived for students from the Environmental Science program, it will be amended in order to clarify current practice and to make the proposed program consistent with the pre-requisite for 018.239.

##### Department of French, Spanish and Italian

Due to recent retirements, all professors in the Spanish section are new hires, and in the near future there will be more new hires. Course **044.2XX Special Studies** will allow these people to try new courses in their areas of expertise before submitting them as permanent courses. Presently there is an equivalent course at the advanced level, *044.327 Special Studies*, but the department needs a course at the intermediate level, where most language instruction and introduction to culture courses are taught.

Course **044.3XX Contemporary Spanish Cinema** is being introduced. Recent Spanish movies reflect the last 25 years in Spain, from the death of General Franco to the present. This period is a burgeoning area of scholarship that presently is not covered by any of the courses offered. The recently hired Spanish professor has expertise in this area.

### Interdisciplinary

Course **099.111W Introduction to University** is to be modified. Credit hour restriction modified to allow students who have started in summer session and others who have started part time an opportunity to take 099.111. Increased class capacity means the course is available to more students without a significant impact on the effectiveness of the course.

### Department of Philosophy

Course **015.2AA Mind and Body** is being introduced. It will: a) accommodate expertise of recently hired staff; and b) provide a link between introductory courses and honours courses in the same general area.

### Department of Political Studies

Course **019.153 Introduction to International Relations** is to be deleted. It is being introduced as a 200-level course, **019.2XX Introduction to International Relations**.

Course **019.156W Introduction to Canadian Government (019.156F Introduction au système gouvernemental canadien)** is being deleted. It is being introduced as **019.2XYW Introduction to Canadian Government (019.2XYW Introduction au système gouvernemental canadien)**.

Course **019.151 Introduction to Contemporary Ideologies** is being deleted.

Course **019.493 Foreign Policies of the Powers** is to be deleted. This course has in reality been a U.S. foreign policy course, and accordingly it is being introduced as **019.4XX American Foreign Policy**.

Course **019.3XX Feminist Political Theory** is being introduced, as the Political Studies department does not presently have any courses in the *Calendar* on gender and politics. Such courses are now considered to be a standard part of Political Science curriculums. The addition of a Feminist Political Theory course also accommodates the expertise and teaching interest of new faculty.

### Department of Religion

The following courses are being deleted: **020.131 Food: Religious Concepts and Practices**, **020.134 Religion and Modern Thought**, **020.134F La religion et la pensée moderne**, **020.138 God and Evil**, **020.240 Introduction to the Bible**, **020.245 Religious Ethics**, **020.245F Éthique religieuse**, **020.247 Death and Concepts of the Future**, **020.265 Field Studies in Biblical Lands**, **020.272 Dimensions of Religiosity in Contemporary Canadian Literature**, **020.376 Jesus of Nazareth**, **020.376F Jésus de Nazareth**, **020.447 Method and Theory in the Study and Interpretation of Religion**, **020.451 The Hermeneutics of Religion I: Western Religions**, **020.452 The Hermeneutics of Religion II: Eastern Religions**, and **020.456 Studies in Body History**.

Course **020.247 Death and Concepts of the Future** is being renumbered to a 100-level, **020.1XA Death and Concepts of the Future**. This is in keeping with its difficulty and with program changes underway in the Department, changes that make World Religions courses, such as this one, the program point of entry.

Similarly, course **020.245 Religious Ethics (020.245 Éthique religieuse)** is being renumbered, to **020.1XB Ethics in World Religions (020.1XB Éthique religieuse)**.

Course **020.131 Food: Religious Concepts and Practices** is presently a 6 credit hour course. It is being changed to a 3 credit hour course, **020.1XC Food: Religious Concepts and Practices**. This will allow for more flexible timetabling and greater frequency in offering the course.

Course **020.138 God and Evil** is being deleted. It is being introduced as **020.1XDW Evil in World Religions**, and includes a minor change to update the *Calendar* description.

Courses **020.1XX Religion and the Media**, **020.3XA Indian Philosophy**, **020.3XB Indian Religion and Society**, **020.3XC Gender in Early Christianity**, **020.3XD Jesus and the Gospel Writings**, **020.4XA Early Christian Gnosticism**, **020.4XB The Sayings of Jesus**, are being introduced to accommodate the expertise of a new faculty member.

Course **020.240 Introduction to the Bible**, which is a 6 credit hour course, is being deleted and replaced with two 3 credit hour courses, **020.2XA Introduction to the Hebrew Scriptures** and **020.2XB Introduction to the New Testament**. In keeping with advances in the field, the Hebrew Bible and the New Testament are best treated in separate offerings, rather than as a unity.

Course **020.134 Religion and Modern Thought** is being renumbered to a 300-level to accommodate the level of difficulty involved in the course and to complement program revision underway in the Department. The new course is **020.3XE Religion and Modern Thought (020.3XE La religion et la pensée moderne)**.

Course **020.2XX Theory of Nature** is being introduced; this course will be a core component of the proposed Environmental Studies B.A.

Course **020.4XC Incorporations of History** is being introduced to accommodate faculty expertise and curriculum revision underway in the Department.

Course **020.456 Studies in Body History**, which is a 6 credit hour course, is being modified to a 3 credit hour course, **020.4XD Studies in Body History**. This will allow for more frequent offerings and to complement program revisions underway in the Department.

Courses **020.4XE Research Methods for the Academic Study of Religion** and **020.4XF Thesis Seminar** are being introduced to accommodate a curricular need in the Department.

Course **020.451 The Hermeneutics of Religion 1: Western Traditions** is being deleted. It will be introduced as **020.4XG Theoretical Approaches: Western Religions**, which will update the course and make slight changes to the course description, and will accommodate the expertise of new faculty members.

Similarly, course **020.452 The Hermeneutics of Religion 2: Eastern Traditions** will become **020.4XH Theoretical Approaches: Eastern Religions**.

Course **020.2XX Theory of Nature** is being introduced as a core component of the proposed Environmental Studies B.A.

Course **020.259W Religion and Social Issues** is being modified in order to update the *Calendar* description.

## 6. Faculty of Education

The Faculty is recommending that, effective September 2002, the normal maximum time allowed for completion of the Bachelor of Education program be six (6) years from the date of first registration.

Course **132.1XA La pédagogie du français de base aux niveaux intermédiaire et de la jeune enfance** is being introduced, as the new two-year Faculty of Education B.Ed. Program demands a change in philosophy and approach for the FL2 (French Second Language) courses.

Courses **132.1XB Education in the Senior Years Integrated Programs 1** and **132.1XC Education in the Senior Years Integrated Programs 2** are being introduced, as changes to the B.Ed. program require that courses be adapted to fit the requirements of the Education/Music and Education/Human Ecology integrated programs.

Course **132.2XA Teaching Music in Early/Middle Years** is being introduced, as reforms to the new Bachelor of Education programs in the Faculty have required that a new program be framed for the Integrated Bachelor of Music/Bachelor of Education Program. This situation also calls for a new curriculum and instruction course for K-8 music specialists.

Courses **132.169 Recent Developments in C:HSS** and **132.179 Recent Developments in C:MNS** are to be modified; this is a title change to accommodate the departmental merger.

Courses **132.5AA Developing Competency Skills in Enterprise Education 1**, **132.5AB Developing Competency Skills in Enterprise Education 2**, and **132.5AI Recent Developments in Mathematics Education** are being introduced.

Course **132.5AJ Teaching Language and Literacy in the Content Areas** is being introduced to broaden the scope of the course to include literacy as well as reading.

With the deletion of other courses in the Language and Literacy domain, a course is needed to encompass a broader focus than just reading. Accordingly, **132.5AK Foundations of Literacy** is being introduced. This also reflects changes in the field.

Because a large number of courses are being deleted, special topics course **132.5AL Current Issues in Language and Literacy** will be an opportunity to make material available for students in language and literacy on an *ad hoc* basis, depending on changes in the field and dependent on the expertise available within the faculty.

The following courses are being deleted: **132.502 Drama for the Elementary School**, **132.503 Readers Theatre in the School Setting**, **132.505 Theory and Practice of Teaching Ceramics and Sculpture**, **132.508 Theory and Practice of Teaching Drawing**, **132.509 Theory and Practice of Teaching Painting**, **132.510 Theory and Practice of Teaching the Fabric Arts 1**, **132.511 Theory and Practice of Teaching the Fabric Arts 2**, **132.517 School Chorus**, **132.518 School Orchestra**, **132.520 Music: Advanced String Methods**, **132.521 Music: Advanced Brass Methods**, **132.522 Music: Advanced Woodwinds Methods**, **132.523 Advanced Percussion Methods**, **132.526 Introduction to Foundations of Reading**, **132.527 Reading Curriculum**, **132.528 Theory and Practice of Teaching Reading 1 (Elementary)**, **132.529 Theory and Practice of Teaching Reading 2 (Elementary)**, **132.530 Theory and Practice of Teaching Reading (Secondary)**, **132.531 Teaching Reading in the Content Areas (Secondary)**, **132.532 Seminar in Language Arts 1**, **132.533 Practical Issues in the Language Arts 2**, **132.534 Historical Perspectives in the Teaching of Literature**, **132.535 Theory and Practice of Teaching English (Secondary)**, **132.545 Readings in Curriculum: Mathematics and Natural Sciences 1**, **132.546 Readings in Curriculum: Mathematics and Natural Sciences 2**, **132.553 Theory and Practice of Teaching French**, **132.554 L'enseignement du français**, **132.558 Materials and Methodology in History**, **132.560 Materials and Practice in Geographic Education**, **132.561 Political and Civic Education in Schools**, **132.562 Labour Studies in Schools**, **132.564 Teaching About Third World Development Issues**, **132.565 Computers and the Teaching of Social Studies**, **132.568 Theory and Practice of Teaching Home Economics**, **132.571 Theory and Practice of Teaching Health Sciences**, **132.572 Theory of Teaching Mathematics**, **132.573 Methods and Materials in the Teaching of Secondary-School Mathematics**, **132.574 Methods and Materials in Elementary-School Mathematics**, **132.575 Workshop in Mathematics Education**, **132.576 Computers and the Teaching of School Mathematics and Science**, **132.580 Methods and Materials in the Teaching of Elementary School Science**, **132.581 Methods and Materials in the Teaching of Senior High School Science**, **132.590 Outdoor Education**, **132.591 Self-Appraisal Techniques**, **132.592 Self-Appraisal Techniques**, **132.593 Environmental Education in the School Curriculum**, **132.595 Curriculum and Instruction 1**, **132.596 Curriculum and**

Instruction 2, 132.597 Curriculum and Instruction 3, and 132.598 Theory and Practice of Teaching Elementary Physical Education. With the amalgamation of the two curriculum departments, there was opportunity to do some "Calendar cleaning". In some cases, with the departments' amalgamation, there were cases of obvious duplication. Many of the courses were also created by and "connected" to staff who have since retired. The declining number of staff in Education has also meant that there is less room in teaching schedules for staff to teach 500 level courses on load. Accordingly, the many specialized courses have been replaced by a few more generic offerings.

Course 132.506 Theory and Practice of Teaching Secondary Art 1 is being deleted. It is being replaced by 132.5AC Theory and Practice of Teaching Art in the Senior Years 1. The change in course title will conform to new undergraduate program structure.

Similarly, 132.507 Theory and Practice of Teaching Secondary Art 2 will be replaced by 132.5AD Theory and Practice of Teaching Art in the Senior Years 2. Course 132.512 Music in the Elementary School 1 will be replaced by 132.5AN Music in the Early Years/Middle Years School 1. Course 132.513 Music in the Elementary School 2 will be replaced by 132.5AO Music in the Early Years/Middle Years School 2.

Courses 132.514 Special Methods in Music 1, 132.515 Special Methods in Music 2, 132.516 School Band, 132.519 School Music Productions, and 132.525 Music: Advanced Choral Methods are being modified in order to reflect program and stream specific changes in the faculty.

Course 132.539 The Teaching of Written Composition (Secondary) is being modified by the removal of the "secondary" designation from the title of the course.

Courses 132.541 Readings in Curriculum: Humanities and Social Sciences 1, 132.542 Readings in Curriculum: Humanities and Social Sciences, 132.543 Recent Developments in Curriculum: Humanities and Social Sciences 1, and 132.544 Recent Developments in Curriculum: Humanities and Social Sciences 2 are being deleted. They will be replaced by 132.5AE Readings in Curriculum, Teaching and Learning 1, 132.5AF Readings in Curriculum, Teaching and Learning 2, 132.5AG Recent Developments in Curriculum, Teaching and Learning 1, and 132.5AH Recent Developments in Curriculum, Teaching and Learning 2. The change in title accommodates the recent departmental merger.

## 7. Faculty of Engineering

### Department of Biosystems Engineering

During the fall of 1999, in response to statements issued by the Canadian Engineering Accreditation Board, the Department of Biosystems Engineering undertook to develop a sequence of three courses that would provide students with an integrated design experience. Accordingly, courses 034.214 Introduction to Biosystems Engineering, 034.326 Design Methods for Machines for Biosystems, and 034.413 Design Project will be deleted. These "Design Trilogy" courses will be replaced by 034.2DT Biosystems Engineering Design Trilogy 1, 034.3DT Biosystems Engineering Design Trilogy II, and

### 034.4DT Biosystems Engineering Design Trilogy III.

Course **034.323 Physical Properties of Biological Materials** will be deleted. It is being replaced by **034.3XY Engineering Properties of Biological Materials**. The title has been modified to better reflect the content of the course. In the ten years of offering this course, it underwent small and steady modifications to reflect the current status in this field. These include physical, optical, thermal and electromagnetic properties.

#### 8. Faculty of Human Ecology

The description for course **030.412 Senior Thesis** is being broadened to include both non-laboratory and laboratory research. This course is designed for students with a strong GPA, > 3.0, who wish to carry out independent work in a more specialized area. This involves direct interaction with a faculty person requiring a more intense supervisory role. This means that only a small number of students can be admitted into this course depending on the availability of a staff member. Consequently, a caveat that an application is required due to limited enrolment needs to be added after the course description.

Foods and Nutrition Major students will be able to take either 002.131 or 002.132.

#### 9. Faculty of Law

Currently the Faculty of Law has a discrete and compulsory second year program of at least 31 credit hours and an elective third year program. The Faculty wishes to maintain the compulsory second year courses but introduce a greater opportunity for students to take some elective courses in second year to allow for a degree of early specialization.

To facilitate the above curriculum changes, a number of courses are being changed from 4 credit hours to 3 credit hours: **Business Organization Law, Family Law, Introduction to Advocacy, and Introduction to Taxation.**

A two credit hour course is being introduced: **Civil Procedure**. This has been taught as a part of first year courses (primarily *Legal Methods*). The Faculty Council has decided that it should be taught in a discrete two credit hour course in second year. This will permit a more focused analysis of civil procedure and co-ordination among the *Evidence, Introduction to Advocacy, and Civil Procedure* courses.

#### 10. Faculty of Management

The Department of Accounting and Finance has identified the area of personal financial planning as an emerging major area of finance. A course in Personal Financial Planning has been offered as a selected topic in finance for three years and has been well received by both finance and non-finance majors. Accordingly, **009.3XX Personal Financial Planning** is being introduced.

The Department of Business Administration reviewed the course in Labour Relations and proposed modifications to the course description and name to reflect the current focus in the discipline. The Department identified the course in Taxation and Business as a course in which there is limited interest and that has not been offered in many years, and proposed

that it be deleted. Accordingly, **027.341 Labour Relations** and **027.410 Taxation and Business** are being deleted. Course **027.3YY Labour and Employment Relations** is to be introduced.

There are three courses that currently include 027.341 as a pre-requisite, which would require modification to include new course 027.3YY. Accordingly, the following courses are being modified: **027.343 Selected Topics in Industrial Relations**, **027.448 Collective Bargaining and Administration**, and **027.452 Comparative Industrial Relations and Human Resource Management**.

The Department of Marketing reviewed its course offerings and proposed a number of changes to update course content to better reflect contemporary changes and circumstances. The Department proposed modifications to the course descriptions and names of four courses to make them more up to date and to reflect current thinking in the field. Accordingly, the following courses are being deleted: **118.321 Retail Management**, **118.326 Physical Distribution Systems**, **118.329 Advertising Management**, and **118.440 Industrial Marketing Strategy**. They will be replaced by: **118.3AA Retail and Channel Management**, **118.3BB Supply Chain Logistics**, **118.3CC Integrated Marketing Communications**, and **118.4AA Business-to-Business Marketing**.

The Marketing Department identified two courses in which the Faculty has only limited interest and that have not been offered in several years. Accordingly, they are being deleted: **118.320 Marketing Channel Systems** and **118.328 Mathematical Models in Marketing**.

The Marketing Department proposed the introduction of two new courses relating to emerging areas that should be included in the marketing curriculum: **118.3DD Services Marketing** and **118.3EE Competitive Intelligence**. Services Marketing has been taught as a selected topic in Marketing for a number of years and has proven to be an extremely popular offering. Competitive Intelligence is a rapidly emerging area of marketing research that would enhance the curriculum as well.

The Warren Centre for Actuarial Studies and Research proposed pre-requisite changes for two courses to provide a more appropriate sequencing of course material: **010.414 Actuarial Modeling Methods** and **010.434 Actuarial Modeling Methods 3**.

The recommended changes in Business Administration courses affect the Human Resources Management/Industrial Relations major requirements. The changes in the Marketing courses affect the Entrepreneurship/Small Business major requirements and the Marketing major requirements.

The Warren Centre for Actuarial Studies and Research works closely with the Society of Actuaries to ensure that its course offerings cover topics included in the series of standard examinations set by the Society. The Warren Centre currently offers two post-baccalaureate diploma programs to prepare graduates with a limited prior actuarial educational background for careers as professional actuaries or researchers and to prepare them to write the Society examinations. Changes to the topics covered in the examinations has prompted the Warren Centre to amend its list of core courses required in the Advanced

Diploma in Actuarial Studies. The current requirements include 010.353 and gives students an option of completing 010.424 or 010.434. The Warren Centre proposes to change the core requirements by deleting 010.353 as a requirement and requiring both 010.424 and 010.434. The total credit hours of core courses does not change. No students will be disadvantaged because none have taken 010.353 yet.

Over the past several years the Faculty has experienced a very low demand for the Business/Government Relations major. In 2000-01 only two students out of the 1420 undergraduates in the Faculty declared Business/Government Relations as their major. Due to retirements and disability leave, there are no longer sufficient faculty members with the expertise or interest in teaching the courses offered in the major. It is proposed that the Business/Government Relations major be deleted. The remaining students who have declared the major will be accommodated by allowing them to substitute other courses for any outstanding requirements they may still have.

The Faculty requires all students in the B.Comm. (Hons.) degree program to complete a course in Ethics. Students may choose any course from an approved list. It is proposed that 027.358F Ethique et responsabilite sociale (Ethics and Social Responsibilities), which is taught at St Boniface College, be added to the list of courses that satisfy the Ethics requirement in the B.Comm. (Hons.) degree program.

In recent years the Faculty of Management has experienced a significant increase in the number of applicants for admission to its undergraduate program. Since the Faculty has an annual quota, many applicants who meet the minimum requirements are rejected because students with higher admission GPAs fill the admission quota. Some students who are rejected in one year continue taking business courses and reapply in a subsequent year(s). Some students continue this practice until they have completed virtually all of the degree requirements, but they never achieve the grade point average requirement that would enable them to be admitted. It is proposed that non-business students be limited to 36 credit hours of courses offered by the Faculty of Management. This proposal would allow students who are unsuccessful in their first admission attempt an opportunity to take business courses in a subsequent year(s) in an attempt to improve their GPA so they can apply again. However, if they are unsuccessful in their second application the limitation would force students to reassess their educational goals. The Faculty does not wish to mislead students who desire admission but cannot compete academically.

In addition, enrolment in courses offered by the Faculty is at an all time high, and faculty resources are being strained to accommodate the demand.

The proposal would allow students who have not been admitted to the Faculty but have amassed up to 36 credit hours of business courses an opportunity to apply those courses towards a Minor in Management (Business) which is available in several faculties. It would also prevent students from using up too many of their attempts on ineligible course work which could prevent them from completing another degree program.

This proposal would not impact students in the Minor in Management (Business) or students taking courses under the traditional reserve system.

## 11. Faculty of Nursing

The Faculty of Nursing is proposing a number of revisions to the Baccalaureate Program for Registered Nurses (BPRN). The Faculty will cover all costs associated with the introduction of new courses to support this revised program.

Factors influencing the need for this revision include: the paradigm shift in health care to a Primary Health Care Model, dynamics in the political and economic climate, and decreasing enrolments in post diploma educational programs for registered nurses. There is a trend in Western Canada and globally towards shorter curricula to meet the educational needs of active practicing registered nurses.

Findings from the studies conducted by the Manitoba Nursing Research Institute on graduates and current students, consultations with the Course Leaders in the BPRN, focus groups with the practice community, and a comprehensive literature review supported the need for change in the program.

Course **049.4XX Nursing Leadership: Practice & Issues** is being introduced. This course is a combination of 049.419 Leadership in Nursing Practice and 049.417 Issues & Trends in Nursing and Health Care. Since students in the BPRN are active practicing registered nurses, the blending of the two courses is believed to be more advantageous for the learner as concepts in each of the courses are related and are not experienced in isolation in nursing practice.

Course **049.3XX Seminar in Professional Nursing Foundations** will be introduced. This course is offered for BPRN students to transition into the university system. It combines academic skills, nursing informatics and the use of nursing theory to guide nursing practice.

Course **049.319 Theoretical Bases of Nursing** will be deleted.

## 12. Faculty of Pharmacy

Pharmacy undergraduate students complete a core course in fourth year, first semester in Pharmacy Administration. This is a basic management course that is offered in response to a request from the profession some years ago. The current elective expands upon the core program to introduce a health economics/policy analysis perspective. Pharmacy students are minimally exposed in the program to the more global application of how pharmaceuticals affect health and health care. Therefore, the Faculty is recommending that course **046.454 Pharmacy Practice Management** be deleted. It will be replaced by **046.4XX Pharmaceutical Health Policy**.

The grading for **046.447 Current Topics** will be changed to a pass/fail basis. The major component which was readily examinable will be moved to another course. Pass/fail is more appropriate for what remains.

## 13. Faculty of Physical Education and Recreation Studies

Course **123.406 Person Centred Leisure Education** is to be modified by the addition of pre-requisites.

14. Faculty of ScienceBiology Major Program

The program is being changed by increasing the number of credit hours at the 200 level in Year 3 from 9 to 15 to provide more flexibility in course selection.

Department of Botany

Courses 001.337 Pollution Biology and 001.417 Advanced Plant Physiology are being deleted.

Course 001.434 Microscopy and Plant Microtechnique is being placed into the *Not Currently Offered* category.

Course 001.2XX Introductory Toxicology is being introduced. This course was originally proposed by a joint Agriculture/Science committee in 1994 to eliminate duplication of basic toxicological concepts in several courses. It would replace the existing 001.337 Pollution Biology.

Course 001.2XY Toxicological Principles will be introduced. This is the first half of the proposed 001.2XX Introductory Toxicology. It is intended to eliminate duplication of basic toxicological concepts in several courses in the Faculties of Science and Agricultural & Food Sciences. It could be taken in combination with other 1.5 credit hour courses offered by the Environmental Science program and could serve as a pre-requisite for other existing or modified toxicology courses in the Faculty of Agricultural and Food Sciences, e.g. 035.311, 038.425, 038.454, 078.430, 078.450.

Course 001.3XX Bryology will be introduced. A new faculty member wishes to introduce a course in one of her areas of specialization. The course will fill a significant gap in offerings and will cover an area of plant diversity that is not currently presented in any of the universities in Manitoba. A similar course was offered very successfully in the 1970s.

Course 001.4XX Advanced Plant Stress Physiology will be introduced. This course will be taught by a new faculty member. It represents a change in focus, and is a replacement for 001.417 Advanced Plant Physiology, which is being dropped.

Department of Computer Science

The following courses are to be deleted: 074.206 Discrete Structures and Programming, 074.227 Introduction to Object Orientation, 074.437 Numerical Methods in Linear Algebra, and 074.440 Optimization.

Courses 074.2DS Data Structures and Algorithms, 074.200 Object Orientation, 074.2PP Programming Practices, 074.3DC Distributed Computing, 074.3TC Technical Communication in Computer Science, 074.4PM Project Management, and 074.4TO Topics in Computer Science are being introduced as part of the department's ongoing curriculum review and in part to meet accreditation requirements.

Courses **074.208 Analysis of Algorithms**, **074.303 Automata Theory and Formal Languages**, **074.310 Concepts of Imperative Programming Languages**, **074.317 Analysis of Algorithms and Data Structures**, **074.319 Introduction to Artificial Intelligence**, **074.329 Introduction to Compiler Construction**, **074.348 Non-Imperative Programming Language Concepts**, **074.362 Professional Practice in Computer Science**, **074.371 User Interfaces**, **074.429 Compiler Construction 2**, and **074.453 Introduction to Simulation and Model Building** are being modified by changing the structure of the pre-requisites.

Course **074.222 Introduction to Assembler Language Programming** is to be modified. Structured labs are being added to assist students to understand the course material, and the pre-requisite and co-requisite are being changed to a pre-requisite of **074.2DS**.

Course **074.223 Introduction to Digital Logic** is being modified. Structured labs are being added to assist students to understand the course material.

The following courses are being modified by changing the structure of the pre-requisites and by adding a lab: **074.335 Software Engineering 1**, **074.338 Databases Concepts and Usage**, and **074.343 Operating Systems**.

The following courses are being modified by the addition of a lab: **074.430 Computer Networks** and **074.451 Introduction to Parallel Computation**.

#### Computer Science - Mathematics Joint Program

Computer Science **074.206** is being deleted in Year 2 and replaced by **074.2DS**, reducing the number of credit hours from 33 to 30 in Year 2. The total number of credit hours for this program is being reduced from 123 to 120.

#### Environmental Science Program

Course **128.100 Environmental Science 1: Concepts** is to be modified, by the deletion of **001.337** from the list of restrictions.

Courses **128.2XX Introductory Toxicology** and **128.2XY Toxicological Principles** are being introduced to accommodate the expertise of new staff. The Environmental Science Program is in the process of developing a Toxicology focus area, and the courses are introducing new material into the program.

#### Department of Geological Sciences

Course **007.4XY Global Change** is being introduced to add a course in an extremely important and rapidly developing topic in earth sciences, and to satisfy professional registration requirements.

#### Department of Mathematics

The title of course **136.275 Calculus** is being changed to **136.275 Intermediate Calculus**,

as another course (136.169) has the same title.

The pre-requisite for course **136.370 Applied Complex Analysis** is being modified due to a change in Physics and Astronomy courses.

Service course **136.313 Linear Spaces for Physicists** is being modified for the same reason.

### Department of Microbiology

There are a number of program changes.

### Department of Zoology

Course **022.343 Behavioural Ecology** will be deleted. It is to be replaced by a new course, **022.3XX Animal Behaviour**. This is being done in order to accurately reflect changes in course content and approach commensurate with updating material and change in instructor.

Course **022.448 Animal Behaviour** will be deleted. It is to be replaced by a new course, **022.4XY Behavioural Ecology and Cognitive Ethology**. This is being done in order to accurately reflect changes in course content and approach commensurate with updating material and change in instructor.

Courses **022.2XX Introductory Toxicology** and **022.2XY Toxicological Principles** will accommodate the expertise of new staff.

Course **022.4XX Genes and Development** is being introduced to accommodate the expertise of a new staff member and to increase the number of courses available to students interested in developmental biology, an important and growing area of biology. This course will be offered in alternate years and will complement and be coordinated with the Molecular Developmental Biology course (022.415).

Course **022.354 Comparative Environmental Physiology** is being modified. It is felt by the instructors teaching the course that the existing pre-requisites provide general students with insufficient background in physiology to handle the concepts presented in 022.354. The new pre-requisite courses (or course combination) will ensure an adequate understanding of animal function.

The following courses are being modified due to the introduction of a co-operative option in Zoology: **022.398 Work Term 1**, **022.399 Work Term 2**, **022.498 Work Term 3**, and **022.499 Work Term 4**.

Arising from the name and number change of 022.343, the following are being modified: **022.421 Models for Behavioural Ecology** and **022.424 Biodiversity of Vertebrates: Biology of Birds**.

Course **022.481 Fishery Biology and Management** is being modified. 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. The pre- or co-requisite is to be changed to 022.348 (Population Ecology) from 005.313 (Statistical Analysis of Designed Experiments).

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

---

Three courses from the Faculty of Agricultural and Food Sciences are being added.

#### **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**

Biosystems/Food Science  
 Agroecology Program  
 Animal Systems Program  
 Agribusiness Program  
 Agriculture/Science Toxicology Courses

#### **Faculty of Architecture**

Department of Environmental Design

#### **School of Art**

#### **Faculty of Arts**

Department of Anthropology  
 Canadian Studies Program  
 Department of Economics  
 Department of French, Spanish and Italian  
 Interdisciplinary  
 Department of Philosophy  
 Department of Political Studies  
 Department of Religion

#### **Faculty of Education**

#### **Faculty of Engineering**

Department of Biosystems Engineering

Faculty of Human Ecology

Faculty of Law

Faculty of Management

Faculty of Nursing

Faculty of Pharmacy

Faculty of Physical Education and Recreation Studies

Faculty of Science

Biology Major Program

Department of Botany

Department of Computer Science

Computer Science - Mathematics Joint Program

Environmental Science Program

Development of Geological Sciences

Department of Mathematics

Department of Microbiology

Department of Zoology

Courses Acceptable in Other Faculties and Schools for Credit in Science

Respectfully submitted,

Professor B L Dronzek, Chair

Senate Committee on Curriculum and Course Changes

/sgp

S:\University Secretariat\REPORTS AND SUBMISSIONS\SenateFourCs\Observations.wpd

1. Faculty of Agricultural and Food Sciences

Biosystems/Food Science

Course to be deleted:

034.354 Food Engineering Fundamentals

Course to be introduced:

078.3XY Food Engineering Fundamentals (0-0: 3-L) 3

Applications of engineering fundamentals to unit operations in the food industry. Not to be held with the former 034.329. Cannot be held for credit in the Faculty of Engineering. *Pre-requisite: 034.353 or the former 034.319.*

**NET CHANGE IN CREDIT HOURS: 0**

Agroecology Program

Course 128.325 Environmental Assessment is to be removed as a required course in the Agroecology Program.

Course to be introduced:

065.4AB Agroecology Research Project +3

Completion of independent research project for which preliminary work was done in 065.351. Students perform research and meet regularly with supervisors beginning in September. Progress reports are required, and final results will be presented in written and verbal reports in April. *Pre-requisite: 065.351.*

Course to be modified:

065.451 Applications in Agroecology (0-0:3-0) 3

Integration of information on ecological principles, agricultural production technology and environmental and socio-economic issues through in-depth studies of issues and problems in agroecology. *Pre-requisite: 065.351.*

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

Animal Systems Program

Course 035.428 Applied Animal Genetics is to be included in the Group 3 restricted electives.

Agribusiness Program

Course to be deleted:

061.423      Agricultural Law      -3

Course to be introduced:

061.3XX      Agribusiness Portfolio Management (3-0:0-0)      +3

The application of portfolio management to agribusiness, including asset allocation, portfolio construction and analysis, and operation of investment instruments and capital markets. *Pre-requisite: Major in Agribusiness or Accounting and Finance, and 60 credit hours, or permission from instructor.* Recommended GPA of 2.8 or higher. Not for credit with 009.220.

**NET CHANGE IN CREDIT HOURS:      0**

**Agriculture/Science Toxicology Courses**

Courses to be introduced:

065.2XX      Introductory Toxicology      +3

A survey of general principles underlying the effects of toxic substances on biological systems, including consideration of the history, scope and applications of toxicology, the mechanisms of toxic action, and some major types of toxicants. Not to be held with 022.2XX, 022.2XY, 001.2XX, 001.2XY, 065.2XY, 128.2XX, 128.2XY and the former 001.337. *Pre-requisites: 071.125 (C) and 002.131 (or the former 002.128) or 002.132.*

065.2XY      Toxicological Principles      +1.5

A survey of general principles underlying the effects of toxic substances on biological systems, including consideration of the history, scope and applications of toxicology, and the mechanisms of toxic action. Not to be held with 022.2XX, 022.2XY, 001.2XX, 001.2XY, 065.2XX, 128.2XX, 128.2XY and the former 001.337. *Pre-requisites: 071.125 (C) and 002.131 (or the former 002.128) or 002.132.*

**NET CHANGE IN CREDIT HOURS:      +4.5**

**2. Faculty of Architecture****Department of Environmental Design**

Course to be deleted:

079.266      Construction Materials and Assemblies 2      -3

Course to be introduced:

079.1XX      Construction Materials and Assemblies 2 (3-L:0-0)      +3

An examination of structural and construction systems applied in a variety of building and site conditions. Introduction of the principles associated with foundation system selection and design. Masonry, timber framing structural systems and basic principles of building enclosure are reviewed through lectures, laboratory assignments and design studio projects. *Pre-requisite: 079.169.* May not be held for credit with the former 079.266.

**NET CHANGE IN CREDIT HOURS:      0**



<i>Total credit hours</i>		54
<b>Painting</b>		
054.333	Advanced Drawing 2	6
054.360	Painting 2	9
058.411	Painting Workshop	15
	A minimum of four elective Fine Arts courses	24
<i>Total credit hours</i>		54
<b>Photography</b>		
054.333	Advanced Drawing 2	6
054.349	Advanced Photography 2	9
058.415	Photography Workshop	15
	A minimum of four elective Fine Arts courses	24
<i>Total credit hours</i>		54
<b>Printmaking</b>		
054.333	Advanced Drawing 2	6
054.342	Advanced Painting	6
054.364	Printmaking 2	9
058.406	Printmaking Workshop	15
	A minimum of three elective Fine Arts courses	18
<i>Total credit hours</i>		54
<b>Sculpture</b>		
Students must choose either 054.223 or 054.227 (whichever was not selected in second year) for a total of at least six credit hours:		
054.223	Ceramics 1	
	or	
054.227	Printmaking I	6
054.333	Advanced Drawing 2	6
054.365	Sculpture 2	9
058.414	Sculpture Workshop	15
	A minimum of three elective Fine Arts courses	18
<i>Total credit hours</i>		54

NOTE: Diploma students may elect courses in Art History as well as studio art courses for their elective Fine Arts courses.

4. Faculty of ArtsDepartment of Anthropology

Course to be deleted:

076.337	Ethnology of Sub-Saharan Africa	-3
076.337	Ethnologie de l'Afrique sous-saharienne	-3

Course to be introduced:

076.2XX Ethnology of Sub-Saharan Africa +3  
 A survey of culture and society in traditional and contemporary Africa. *Pre-requisite: one of: 076.120, 076.122, 076.236, the former 076.336, or written consent of the instructor.* Students may not hold credit for 076.2XX and the former 076.337.

076.2XXF Ethnologie de l'Afrique sous-saharienne (B) +3  
 Le cours est un compte rendu de la culture des sociétés traditionnelles et contemporaines de l'Afrique sous-saharienne. *Préalable : un des cours suivants: 076.120, 076.122, 076.236 ou l'ancien 076.336, ou l'autorisation du professeur.* On ne peut se faire créditer à la fois le 076.2XX et l'ancien 076.337.

NET CHANGE IN CREDIT HOURS: 0

Canadian Studies Program

Add to the list of approved courses: 032.332 Aboriginal Organizations, 032.334 Circumpolar Cultures, and 032.426 Sacred Lands and Sacred Spaces of Indigenous Peoples.

NET CHANGE IN CREDIT HOURS: 0

Department of Economics

Courses to be modified:

018.231 Canadian Economic Problems (6)  
 Application of economic theory to a broad range of problems such as agriculture, trade, foreign ownership, regional disparities, competition policy, education. *Pre-requisite: 018.120 or both 018.121 and 018.122.*

018.231F Les problèmes économiques du Canada (6)  
 Application de la théorie économique aux problèmes actuels du Canada : les disparités régionales, l'agriculture, l'échange, la pratique concurrentielle, la propriété étrangère et l'éducation, etc. *Préalable : le 018.120 ou tous les deux 018.121 et 018.122.*

018.239 Introduction to Environmental Economics (3)  
 The economics of management of water, air and land resource quality, and the economics of conservation. The economic implications of environmental standards, licensing, criteria and pollution charges will be illustrated by current issues. Students may not hold credit for

both 018.239 and 061.239. *Pre-requisite: 018.120 or both 018.121 and 018.122 or consent of instructor.*

NET CHANGE IN CREDIT HOURS: 0

Department of French, Spanish and Italian

Courses to be introduced:

044.2XX Special Studies +3

The content of this course is variable, depending on the needs and interests of students and instructors. A tutorial form is used. *Pre-requisite: any 100-level Spanish course or written consent of department head.*

044.3XX Contemporary Spanish Cinema +3

A survey of Contemporary Spain through its cinema and other cultural manifestations. All the class readings, class lectures, movies and examinations are in Spanish. *Pre-requisite: any 200-level Spanish course or written consent of department head.*

NET CHANGE IN CREDIT HOURS: +6

Interdisciplinary

Course to be modified:

099.111W Introduction to University (3)

A seminar course designed to help students make the transition from high school to university by imparting the knowledge, skills, and attitudes requisite for success in university study. Each section limited to 30 students. Open only to students who have completed less than 12 credit hours.

NET CHANGE IN CREDIT HOURS: 0

Department of Philosophy

Course to be introduced:

015.2AA Mind and Body +3

An introduction to theories of the mind and body, including dualism, identity theory and functionalism. The course deals with topics such as consciousness, thought, and desire. *Pre-requisite: six credit hours in 100-level philosophy or 30 hours of university credit.*

NET CHANGE IN CREDIT HOURS: +3

Department of Political Studies

Courses to be deleted:

019.151	Introduction to Contemporary Ideologies	-6
019.153	Introduction to International Relations	-6
019.156W	Introduction to Canadian Government	-6
019.156F	Introduction au système gouvernemental canadien	-6
019.493	Foreign Policies of the Powers	-6

Courses to be introduced:

019.2XX	<u>Introduction to International Relations</u>	+6
An introduction to the analysis of international political action and interaction. The course examines the manner in which the foreign policies of states are formulated and the conflict, <i>competition and cooperation produced by state interaction. Examples are drawn mainly from international events since 1945, with appropriate references to earlier periods. Students may not hold credit for both 019.2XX and the former 019.153.</i>		
019.2XYW	<u>Introduction to Canadian Government</u>	+6
A survey of the Canadian political institutions and processes including contemporary Canadian federalism, the parliamentary system, political parties and interest groups. Students may not hold credit for both 019.2XY and the former 019.156.		
019.2XYF	<u>Introduction au système gouvernemental canadien</u>	+6
Une revue à la fois des institutions et des processus politiques canadiens, y compris les systèmes parlementaire et fédéral, les partis politiques et les groupes d'intérêt.		
019.3XX	<u>Feminist Political Theory</u>	+3
An examination of feminist approaches to the status and participation of women in political life. The course also includes feminist discourse on ethical issues and state policy.		
019.4XX	<u>American Foreign Policy</u>	+6
An analysis of the foreign policy of the United States from 1945 to the present, focusing on the explanation of the foreign policy decisions taken and the policy-making process giving rise to them. Students may not hold credit for both 019.4XX and 019.493. <i>Pre-requisite: written consent of department head.</i>		
<b>NET CHANGE IN CREDIT HOURS:</b>		<b>-3</b>

Department of Religion

Courses to be deleted:

020.131	Food: Religious Concepts and Practices	-6
020.134	Religion and Modern Thought	-6
020.134F	La religion et la pensée moderne	-6
020.138	God and Evil	-3
020.240	Introduction to the Bible	-6
020.245	Religious Ethics	-3
020.245F	Éthique religieuse	-3
020.247	Death and Concepts of the Future	-6
020.265	Field Studies in Biblical Lands	-6

020.272	Dimensions of Religiosity in Contemporary Canadian Literature	-6
020.376	Jesus of Nazareth	-6
020.376F	Jésus de Nazareth	-6
020.447	Method and Theory in the Study and Interpretation of Religion	-6
020.451	The Hermeneutics of Religion 1: Western Religions	-3
020.452	The Hermeneutics of Religion 2: Eastern Religions	-3
020.456	Studies in Body History	-6

Courses to be introduced:

020.1XA	<u>Death and Concepts of the Future (C)</u>	+3
The course investigates theories, images, and rituals of death, dying and the afterlife in selected world religions. Students may not hold credit for both 020.1XA and the former 020.247.		
020.1XB	<u>Ethics in World Religions (C)</u>	+3
Examination of the ethical teachings of world religious traditions. Attention will be given to such questions as the nature of the good or virtue, the place of law or commandments, the relationship between religion and morality, the concepts of moral community and the moral self. Students may not hold credit for both 020.1XB and the former 020.245.		
020.1XBF	<u>Éthique religieuse (C)</u>	+3
Un examen de la pensée éthique de représentants d'une ou de plusieurs traditions religieuses. Une attention spéciale est portée sur des sujets comme la nature du bien et ce la vertu, la place des lois ou commandements, et en relation entre la religion et la moralité. On ne peut se faire créditer à la fois le 020.1XB et l'ancien 020.245.		
020.1XC	<u>Food: Religious Concepts and Practices (C)</u>	+3
This course explores the cultural (communal and social) dimensions of the major World Religions through examination of food concepts and practices. Topics studied include: food symbols and rituals in the theory of religion; food proscription and endorsements ("dietary laws"); food in ritual time and space ("menus" and "liturgies"); concepts of plenty and concepts of dearth (ethics of food distribution); food and communication; food and gender/ food and the body; feasting and fasting; food, religion and "consumer culture". Students may not hold credit for both 020.1XC and the former 020.131.		
020.1XDW	<u>Evil in World Religions (C)</u>	+3
The course introduces students to perspectives on evil in selected world religions. Students may not hold credit for both 020.1XD and the former 020.138.		
020.1XX	<u>Religion and the Media (C)</u>	+3
This course investigates representations of religion in popular media. Through study of a range of media, from newspapers to the internet, the course explores cultural stereotypes about religion, asking how religions are represented, and how they represent themselves, in popular culture.		
020.2XA	<u>Introduction to the Hebrew Scriptures (A)</u>	+3

An introduction to the historical and critical study of the writings of the "Old Testament", the Hebrew Scriptures. Students may not hold credit for both 020.2XA and the former 020.240.

020.2XB Introduction to the New Testament (A) +3

An introduction to the historical and critical study of the Christian "New Testament". Students may not hold credit for both 020.2XB and the former 020.240.

020.3XA Indian Philosophy (B) +3

This course introduces some of the main philosophical schools of Hindu and Buddhist thought, emphasizing the living history of interaction and debate between the various traditions.

020.3XB Indian Religion and Society (C) +3

This course investigates selected topics in religion and society in the region of the Indian sub-continent. Topics will vary from year to year, ranging from a focus on marriage to a study of Buddhist monks and the politics of civil war in Sri Lanka.

020.3XC Gender in Early Christianity (C) +3

This course examines the light shed by ancient writings on the role(s) of women in ancient Christian groups, and on the ideologies of gender promoted or assumed by these groups. Thus the focus, while predominately on women, will extend to the way in which gender identities were constructed and adhered to by males and females in early Christianity.

020.3XD Jesus and the Gospel Writings (A) +3

The aim of this course is to develop a sophisticated understanding of the New Testament Gospels and their sources, and the ideas these writings were intended to communicate; also to reconstruct the outlines of a history of the earliest traditions about Jesus based on the analysis of these writings.

020.3XE Religion and Modern Thought (C) +6

Our awareness of religion as a distinct area of human activity makes us modern. Since around 1500 C.E., intellectual developments, closely matched by social, political and economic changes, have altered radically the ways in which we relate to the world. Religious discourse has been an integral part of these changes. This course traces ongoing discussion concerning the nature of religion and its diverse roles in the public sphere. The course gives special attention to the themes of reformation, colonialism, confessionalism, nationalism, enlightenment, revolution, romanticism, industrialization, and imperialism. Students may not hold credit for both 020.3XE and the former 020.134.

020.3XE La religion et la pensée moderne (C) +6

Études des idées contenues dans certaines idéologies, telles que le marxisme, la théorie de l'évolution, les méthodes d'interprétation biblique et la psychologie moderne, contestant les positions traditionnelles des religions. Revues des réfutations apportées par certains penseurs contemporains et des solutions transmises par les mouvements religieux. On ne peut se faire créditer à la fois le 020.3XE et les anciens 020.134 et 020.127.

020.4XA Early Christian Gnosticism (A) +3

This course constitutes a partial introduction to the historical and critical study of earliest Christianity and the writings of the Christian "New Testament". The main emphasis will lie

on a study of the New Testament and contemporary writings that show strong mystical and Gnostic-leaning tendencies. Above all, the course will focus on the Gospel of Thomas, the Gospel of John, and other New Testament writings related to the Gospel of John. *Pre-requisite: written consent of the Department Head.*

020.4XB      The Sayings of Jesus (A)      +3  
This course examines the sayings gospel "Q" and the Gnostic Gospel of Thomas in detail, focusing on both their literary and historical dimensions. *Pre-requisite: written consent of the Department Head.*

020.4XC      Incorporations of History (C)      +3  
This course explores social formation in relation to "religious" representation. Using examples drawn from Western, mainly Christian, traditions, the course traces the discursive construction of a wide range of social institutions as bodies. *Pre-requisite: written consent of Department Head.*

020.4XD      Studies in Body History (C)      +3  
A study in the religious-cultural history of the body, this course explores the multiple meanings given to the body, sexuality and sexual difference in historical and contemporary religious traditions. The course gives particular attention to theories of representation of body, and includes study of both written and performative sources. Students may not hold credit for both 020.4XD and the former 020.456. *Pre-requisite: written consent of the Department Head.*

020.4XE      Research Methods for the Academic Study of Religion (A,B)      +3  
A survey of current techniques and resources. This course introduces students to such topics as: literature searches and area assessments; effective use of abstracts; handbooks and electronic resources; critical bibliography; academic publishing; research ethics and research sponsorship. Particular attention will be given to the diversity of disciplinary traditions and conventions as they affect the academic study of religion. *Pre-requisite: written consent of Department Head.*

020.4XF      Thesis Seminar (A,B)      +3  
This course introduces students to all aspects of dissertation and research-paper writing, from effective planning and drafting to editorial techniques and typescript presentation. Particular emphasis will be on practices of peer criticism and on how to revise written work in response to such criticism. *Pre-requisite: written consent of Department Head.*

020.4XG      Theoretical Approaches: Western Religions (C)      +3  
This course explores theoretical approaches to the study of western religions, focusing in any given year on one of the following: theories of representation, theories of interpretation, theories of contestation. Students may not hold credit for both 020.4XG and the former 020.451. *Pre-requisite: written consent of the Department Head.*

020.4XH      Theoretical Approaches: Eastern Religions (C)      +3  
This course explores theoretical approaches to the study of eastern religions, focusing in any given year on one of the following: theories of representation, theories of interpretation, theories of contestation. Students may not hold credit for both 020.4XH and the former 020.452. *Pre-requisite: written consent of the Department Head.*

020.2XX Theory of Nature

+3

While the content of this course will vary year-to-year, its constant purpose will be to introduce students to some of the many ways in which "Nature" has been theorized. The course will explore historical and cultural contexts in which selected theories of nature have developed. It will also explore implications of different theories of nature for environmental ethics.

Course to be modified:

020.259W Religion and Social Issues (C) (3)

The course examines selected ethical-social issues such as abortion, euthanasia, new genetic and reproductive technologies, and environmental and ecological issues with reference to one or more of the world's religious traditions.

**NET CHANGE IN CREDIT HOURS:**

**-3**

5. Faculty of Education

Effective September 2002, the normal, maximum time allowed for completion of the Bachelor of Education program will be six (6) years from the date of first registration.

Courses to be deleted:

132.169	Recent Developments in C:HSS	-3
132.179	Recent Developments in C:MNS	-3
132.506	Theory and Practice of Teaching Secondary Art 1	-3
132.507	Theory and Practice of Teaching Secondary Art 2	-3
132.512	Music in the Elementary School 1	-3
132.513	Music in the Elementary School 2	-3
132.539	The Teaching of Written Composition (Secondary)	-3
132.541	Readings in Curriculum: Humanities and Social Sciences 1	-3
132.542	Readings in Curriculum: Humanities and Social Sciences 2	-3
132.543	Recent Developments in Curriculum: Humanities and Social Sciences 1	-3
132.544	Recent Developments in Curriculum: Humanities and Social Sciences 2	-3

132.502	Drama for the Elementary School	-6
132.503	Readers Theatre in the School Setting	-3
132.505	Theory and Practice of Teaching Ceramics and Sculpture	-6
132.508	Theory and Practice of Teaching Drawing	-3
132.509	Theory and Practice of Teaching Painting	-3
132.510	Theory and Practice of Teaching the Fabric Arts 1	-3
132.511	Theory and Practice of Teaching the Fabric Arts 2	-3
132.517	School Chorus	-3
132.518	School Orchestra	-3
132.520	Music: Advanced String Methods	-3
132.521	Music: Advanced Brass Methods	-3
132.522	Music: Advanced Woodwinds Methods	-3
132.523	Advanced Percussion Methods	-3
132.526	Introduction to Foundations of Reading	-3
132.527	Reading Curriculum	-3
132.528	Theory and Practice of Teaching Reading 1 (Elementary)	-3
132.529	Theory and Practice of Teaching Reading 2 (Elementary)	-3
132.530	Theory and Practice of Teaching Reading (Secondary)	-3
132.531	Teaching Reading in the Content Areas (Secondary)	-3
132.532	Seminar in Language Arts 1	-3
132.533	Practical Issues in the Language Arts 2	-3
132.534	Historical Perspectives in the Teaching of Literature	-6
132.535	Theory and Practice of Teaching English (Secondary)	-6
132.545	Readings in Curriculum: Mathematics and Natural Sciences 1	-3
132.546	Readings in Curriculum: Mathematics and Natural Sciences 2	-3
132.553	Theory and Practice of Teaching French	-6
132.554	L'enseignement du français	-6
132.558	Materials and Methodology in History	-3
132.560	Materials and Practice in Geographic Education	-3
132.561	Political and Civic Education in Schools	-3
132.562	Labour Studies in Schools	-3
132.564	Teaching About Third World Development Issues	-3
132.565	Computers and the Teaching of Social Studies	-3
132.568	Theory and Practice of Teaching Home Economics	-6
132.571	Theory and Practice of Teaching Health Sciences	-6
132.572	Theory of Teaching Mathematics	-3
132.573	Methods and Materials in the Teaching of Secondary-School Mathematics	-3
132.574	Methods and Materials in Elementary-School Mathematics	-3
132.575	Workshop in Mathematics Education	-3
132.576	Computers and the Teaching of School Mathematics and Science	-6
132.580	Methods and Materials in the Teaching of Elementary School Science	-3
132.581	Methods and Materials in the Teaching of Senior High	





- 132.5AF Readings in Curriculum, Teaching and Learning 2 +3  
Readings and research in special areas of curricular study related to curriculum, teaching and learning.
- 132.5AG Recent Developments in Curriculum, Teaching and Learning 1 +3  
An opportunity to examine the theoretical bases for, and practical application of, recent or emerging developments in the area.
- 132.5AH Recent Developments in Curriculum, Teaching and Learning 2 +3  
A continuation of certain topics of 132.5AG to extend and develop the study previously undertaken in these areas.

Courses to be modified:

- 132.514 Special Methods in Music 1 (3)  
An advanced study of the Orff method as it applies to Early and Middle years schools with emphasis on ensemble performance. The course is designed for the music specialist. Students may not hold credit for both 132.514 and the former 063.554.
- 132.515 Special Methods in Music 2 (3)  
An advanced study of the Kodaly method as it applies to Early and Middle years schools with emphasis on the contributions of the method to fine choral performance. The course is designed for the music specialist. Students may not hold credit for both 132.515 and the former 063.555.
- 132.516 School Band (3)  
An advanced study of the methods for initiating and continuing a band in Middle and Senior years schools with emphasis on the contributions of a band program to Middle years education. Students may not hold credit for both 132.516 and the former 063.556.
- 132.519 School Music Productions (3)  
A study of the principles and procedures for presenting school music productions. Students may not hold credit for both 132.519 and the former 063.559.
- 132.525 Music: Advanced Choral Methods (3)  
Advanced methods in choral instruction and conducting through a study of choral literature related to school music programs. students may not hold credit for both 132.525 and the former 063.565.

**NET CHANGE IN CREDIT HOURS:**

**-147**

6. Faculty of EngineeringDepartment of Biosystems Engineering

Courses to be deleted:

034.214	Introduction to Biosystems Engineering	-3
034.326	Design Methods for Machines for Biosystems	-4
034.413	Design Project	-3
034.323	Physical Properties of Biological Methods	-4

Courses to be introduced:

034.2DT      Biosystems Engineering Design Trilogy I (3-3:0-0)      +4  
 Biosystems Engineering and its place in the professions of engineering and agronomy. Design concepts, with an emphasis on team building and technical communication skills. Philosophy of project planning. Preparation of a conceptual design by teams in response to a design assignment submitted by industry. Written report, presented orally. *Pre-requisite: 130.140.*

034.3DT      Biosystems Engineering Design Trilogy II (3-3:0-0)      +4  
 Advanced design concepts associated with Biosystems Engineering, with emphasis on the principles of safety and human factors engineering. Theory of project planning. Preparation of a preliminary design by design teams in response to a design assignment submitted by industry. Written report with engineering drawings, presented orally. *Pre-requisite: 034.2DT.*

034.4DT      Biosystems Engineering Design Trilogy III (3-3:0-0)      +4  
 Advanced design concepts, with emphasis on the principle of quality control. Application of project planning techniques. Principles of owning and operating an engineering consulting company. Preparation of a final design by design teams in response to a design assignment submitted by industry. Written report with cost of services rendered, presented orally. *Pre-requisite: 034.3DT.*

034.3XY      Engineering Properties of Biological Materials (0-0:3-3)      +4  
 Engineering properties of biological and interacting materials within the system. Relationship between composition, structure, and properties of plant, animal, and human tissues. Definition and measurement of mechanical, thermal, electromagnetic, chemical and biological properties and their variability. Use of these properties in engineering calculations. *Pre-requisites: 136.210 (or the former 006.260), 023.280 or 025.222, 034.214.*

**NET CHANGE IN CREDIT HOURS:**      +2

7. Faculty of Human Ecology

To be included in the Calendar for 2002-2003 as a footnote to the Foods and Nutrition Program:

"Either course 002.131 *University 1 Chemistry: An Introduction to Physical Chemistry*, or course 002.132 *University Chemistry 1: An Introduction to Organic Chemistry*, will be accepted for students taking the Foods and Nutrition Major. However, course 002.132 is the preferred course."

Course to be modified:

030.412 Senior Thesis (3)

The preparation and presentation of a report based on a survey of the literature or on a research project on an approved topic. *Pre-requisite: completion of 84 credit hours in the Foods and Nutrition Program.* Application required. Enrolment limited.

**NET CHANGE IN CREDIT HOURS:**

**0**

8. Faculty of Law

## Courses to be deleted:

045.228	Business Organization Law	-4
045.256	Family Law	-4
045.257	Introduction to Advocacy	-4
045.259	Introduction to Taxation	-4

## Courses to be introduced:

045.2AA	<u>Business Organization Law (3-0:0-0) or (0-0:3-0)</u> <u>or (2-0:1-0) or (1-0:2-0)</u>	+3
---------	---	----

A study of the major legal, practical and policy issues arising out of the formation and operation of business organizations in Canada, with a particular focus on business corporations. Students will examine major principles of Canadian corporate law, including corporate personality, management power, majority rule and minority protection.

045.2AB	<u>Family Law (3-0:0-0) or (0-0:3-0) or (2-0:1-0) or (1-0:2-0)</u>	+3
---------	--	----

An overview of key legal issues regarding familial relationships and family breakdown in Canadian society. Topics include cohabitation, marriage, separation, divorce, child custody and access, spousal and child support and property division.

045.2AC	<u>Introduction to Advocacy (3-0:0-0) or (0-0:3-0) or (2-0:1-0) or (1-0:2-0)</u>	+3
---------	--	----

A detailed study of the conduct of a case from its inception through to trial. The course requires that students prepare and conduct a trial. Grading: Pass/Fail.

045.2AD	<u>Introduction to Taxation (3-0:0-0) or (0-0:3-0) or (2-0:1-0) or (1-0:2-0)</u>	+3
---------	--	----

Introduction to the principles of federal income taxation with primary emphasis on the taxation of individuals and problems mutual to individuals and corporations.

045.2AE	<u>Civil Procedure (2-0:0-0) or (0-0:2-0) or 1-0:1-0)</u>	+2
---------	---	----

An introduction to the rules of civil procedure.

**NET CHANGE IN CREDIT HOURS: -2**

## SECTION 5: PROGRAM REQUIREMENTS

This Section describes the program requirements that are in effect for the 2002-2003 academic year. However, prospective students should be aware that the Faculty of Law regularly reviews its curriculum to ensure that it continues to meet the current needs of our students. As part of that process, courses may be added to, or deleted from, the required program, and the number of credit hours assigned to individual courses may change. Additionally, the number of credit hours required in each year of the program is also subject to change.

### 5.1 First Year

Each full-time student is required to take all of the following courses:

Course No.		Credit Hours
045.110	Contracts	6
045.114	Criminal Law and Procedure	5
045.146	Constitutional Law	5
045.147	Legal Methods	5
045.148	Torts and Compensation Systems	5
045.149	Legal System	2
045.150	Property	<u>5</u>
Total credit hours		33

### 5.2 Second Year and Third Year

In Second Year each student must take:

45.2AA	Business Organization Law	3
45.2AC	Introduction to Advocacy	3
45.260	Evidence	4
45.262	Legal Negotiation: Skills and Strategies for Effective Representation	3
45.2AE	Civil Procedure	2
45.353	Administrative Law	<u>3</u>
Total credit hours		18

In either Second Year or Third Year each student must take:

45.249	Trusts	3
45.2AB	Family Law	3
45.2AD	Introduction to Taxation	<u>3</u>
Total credit hours		9

In Second Year each student must take one of the following:

**Perspective Electives:**

045.307	Gender and the Law	3
045.309	Children and the Law	3
045.313	Crime, Law and Society	2
045.319	Law and Literature	3
045.320	Immigration and Refugee Law	2
045.328	Limits of Law	3
045.331	Aboriginal Peoples and the Law	3
045.338	Issues in Law and Bio Ethics	3
045.341	Canadian Legal History	3
045.348	Restitution	2
045.349	Research Paper	2
045.360	Environmental Law	3
045.362	Comparative Law	3
045.374	International Law	3
045.376	Jurisprudence	2
045.394	Canadian Charter of Rights and Freedoms	3
045.398	Current Legal Problems B	3
	Aboriginal Peoples and Land Claims	
	International Business Law	
	International Trade Law	
	The Legislative Process	

Each student in **Second Year** must take a minimum of 32 credit hours of courses to a maximum of 34 credit hours, comprising (i) the courses required to be taken in Second Year, above, (ii) any of the courses which may be taken in either Second or Third Years, above, (iii) the required Perspective Elective, above, (iv) additional Perspective Electives, above, and (v) any of the Third Year Doctrinal and Miscellaneous Electives, below, subject to pre-requisites and co-requisites. The Third Year Clinical courses, below, are not available to Second Year students. The choice of courses is subject to faculty approval.

Each student in **Third Year** is required to take whichever of 45.249 Trusts, 45.256 Family Law, and 45.259 Introduction to Taxation was not taken in Second Year, plus a Perspective Elective, above, excluding 45.329 Research Paper if it was taken in Second Year, plus

45.393 The Legal Profession and Professional Responsibility 3

The rest of a **Third Year** student's credit hours, comprising a minimum of 32 credit hours to a maximum of 34 credit hours, shall be selected from additional Perspectives Electives, above, and

the Doctrinal, Miscellaneous and Clinical Electives, below:

**Doctrinal and Miscellaneous Electives**

045.240	Wills and Succession	3
045.251	Problems in Contract and Tort	2
045.253	Debtors' and Creditors' Rights	2
045.301	Agency	2
045.304	Sales and Consumer Law	2
045.305	Commercial Law	3
045.306	Transportation Law	3
045.311	Advanced Taxation 1	3
045.312	Advanced Taxation 2	3
045.321	Competitions A*	2
045.322	Competitions B*	3
045.324	Current Legal Problems C	2
045.325	Current Legal Problems D	3
045.326	Insurance Law	4
045.333	Employment Law	3
045.339	Securities Law	2
045.345	Remedies	3
045.350	Intellectual Property	4
045.360	Environmental Law	3
045.361	Landlord and Tenant	2
045.368	Land Titles	3
045.369	Real Estate Transactions	3
045.377	Labour-Management Relations	3
045.378	Corporate Law and Policy	3
045.382	Manitoba Law Journal*	2
045.383	Legal Aid Clinic*	2
045.385	Conflict of Laws	3
045.386	Business Planning and Finance Law	2
045.388	Municipal and Planning Law	3
045.395	Criminal Procedure	3
045.397	Current Legal Problems A	2
	Advanced Issues in Intellectual Property	
	Dispute Resolution: Theory and Practice	
045.398	Current Legal Problems B	3
	Advanced Legal Research	

xxx.xxx Non-Law University Elective 3

\* Only one of the electives with an asterisk can be selected for credit.

**Clinical Electives**

45.314 Clinical Administrative Law	4
45.325 Current Legal Problems D Advanced Family Law	3
45.327 Clinical Family Law	6
45.330 Clinical Criminal Law	8
45.389 Solicitors Transactions	3
45.398 Current Legal Problems B Advanced Advocacy	3

**Third Year** students may take 45.389 Solicitors Transactions plus either 45.314 Clinical Administrative Law or 45.398 Advanced Advocacy. No student can take two of 45.314 Clinical Administrative Law, 45.325 Advanced Family Law, and 45.398 Advanced Advocacy. No student can take a second Clinical Elective with either 45.327 Clinical Family Law or 45.330 Clinical Criminal Law.

9. Faculty of Management

Courses to be deleted:

027.341	Labour Relations	-3
027.410	Taxation and Business	-3
118.320	Marketing Channel Systems	-3
118.321	Retail Marketing	-3
118.326	Physical Distribution Systems	-3
118.328	Mathematical Models in Marketing	-3
118.329	Advertising Management	-3
118.440	Industrial Marketing Strategy	-3

Courses to be introduced:

009.3XX	<u>Personal Financial Planning</u>	+3
An introduction to financial planning techniques used in professional practice. Topics include financial assessment, income tax planning, risk management, insurance, debt and credit management, investments, retirement planning, and estate planning. <i>Pre-requisite: 009.220.</i>		
027.3YY	<u>Labour and Employment Relations</u>	+3
This course is to enhance knowledge and understanding of labour and employment relations in Canada and beyond. It addresses various issues and debates about these relations; their history, structure, and functioning; management employment relations practices; the role of labour unions; collective bargaining; and contemporary developments and alternatives.		
118.3AA	<u>Retail and Channel Management</u>	+3
The study of the functions performed by traditional and e-commerce distributors. Topics include location and competitive analysis, promotion, merchandising, buying, design, selection and historical development. <i>Pre-requisite: 118.221.</i>		
118.3BB	<u>Supply Chain Logistics</u>	+3
The course provides an international/global orientation to logistics and supply chain management. <i>Pre-requisite: 118.221.</i>		
118.3CC	<u>Integrated Marketing Communications</u>	+3
The process of using promotional tools in a unified way so that a synergistic communications is created. The course examines the roles of advertising, sales promotion, direct marketing, and the internet within this broader framework. <i>Pre-requisite: 118.221.</i>		
118.4AA	<u>Business to Business Marketing</u>	+3
The study of marketing management and its decision-making implications within the industrial and commercial marketplace. <i>Pre-requisite: 118.221.</i>		
118.3EE	<u>Competitive Intelligence</u>	+3
An examination of the information sources and analytical techniques required by business to develop the competitive intelligence necessary to successfully compete in today's		

marketplace. *Pre-requisites: 009.111, 009.200, and 118.322.*

118.3DD Services Marketing

+3

An examination of the differences in the marketing of goods versus services. Topics covered include service process design and management, problem identification and resolution, positioning issues, the importance of human resources, and promotional issues. *Pre-requisite: 118.221.*

Courses to be modified:

027.343 Selected Topics in Industrial Relations (3)

Analysis of specific topics or issues in the employment relationships in an industrial society. *Pre-requisites: 027.3YY (or former 027.341), 027.244, or consent of instructor.*

027.448 Collective Bargaining and Administration (3)

Detailed examination of the elements and issues in contract negotiation and administration and of the legal framework imposed on public and private negotiations. Comparison of Canadian industrial relations system with other national systems. *Pre-requisite: 027.3YY (or former 027.341).*

027.452 Comparative Industrial Relations and Human Resource Management (3)

To provide an international perspective on industrial relations (IR) and human resource management (HRM) through analysis and comparison of IR systems and HRM practices across selected countries and of current development therein. Also covers theories and issues relevant to these topics. Students are encouraged, but not required, to complete 027.3YY (or former 027.341) prior to taking this course.

010.414 Actuarial Modeling Methods 1 (3)

Estimation and Fitting of Survival Models. May not hold with the former 010.488 Topic Survival Models. *Pre-requisite: 010.323.*

010.434 Actuarial Modeling Methods 3 (3)

Classical, Bayesian and Buhlmann Credibility Models. The connection between Credibility Theory and Experience Rating. Underlying assumptions for the different methods. Simulation in Estimating and Fitting Actuarial Models. May not hold with the former 010.488 Topic Credibility Theory. *Pre-requisite: 010.424.*

**NET CHANGE IN CREDIT HOURS:**

**0**

**That the requirements for the Human Resources Management/Industrial Relations major be changed**

**From: 027.341, plus any three of the following: 027.343, 027.441, 027.442, 027.448 or 027.452**

**To: 027.3YY (or the former 027.341), plus any three of the following: 027.343, 027.441, 027.442, 027.448 or 027.452**

**That the requirements for the Entrepreneurship/Small Business major be changed**

**From: 118.310, 118.410, 009.347 plus one of 009.305, 009.325, 009.353, 010.405 (or former 010.451), 027.305, 027.308, 118.321, 118.322, or 118.427**

**To: 118.310, 118.410, 009.347 plus one of 009.305, 009.325, 009.353, 010.405 (or former 010.451), 027.305, 027.308, 118.322, 118.3AA (or former 118.321) or 118.427**

**That the requirements for the Marketing major be changed**

**From: 118.322, 118.323, 118.421 and 3 hours from 118.320, 118.321, 118.324, 118.325, 118.326, 118.328, 118.329, 118.330, 118.424, 118.427 or 118.440.**

**To: 118.322, 118.323, 118.421 and 3 hours from the former 118.320, 118.324, 118.325, the former 118.328, 118.330, 118.3AA (or the former 118.321), 118.3EE, 118.3DD, 118.3BB (or the former 118.326), 118.3CC (or the former 118.329), 118.424, 118.427 or 118.4AA (or the former 118.440).**

**The Asper School of Business recommends that the core requirements for the Advanced Diploma in Actuarial Studies be changed**

**From:** 005.350, 005.360, 010.202, 010.212, 010.221, 010.313, 010.323, 010.333, 010.353, 010.414, and 010.424 or 010.434

**To:** 005.350, 005.360, 010.202, 010.212, 010.221, 010.313, 010.323, 010.333, 010.414, 010.424, and 010.434.

**The Asper School of Business recommends that Senate approve the deletion of the Business/Government Relations major from the list of majors offered in the Bachelor of Commerce (Honours) degree program.**

**The Asper School of Business recommends that the Ethics requirement be changed:**

**From:** One of the following courses: 015.229, 015.274, 015.275, 015.279, 015.283, 015.284, or 020.245.

**To:** One of the following courses: 015.229, 015.274, 015.275, 015.279, 015.283, 015.284, 020.245, or 027.358F.

**The Asper School of Business recommends that students who have not been admitted to the Asper School of Business shall be limited to an aggregate total of 36 credit hours of courses offered by the Asper School while registered in another faculty, school, or division.**



**Faculty of Nursing  
Baccalaureate Program for Registered  
Nurses**

**Program Requirements  
Effective September 97 Admission**

Year 1	Credit Hours
49.211 Health Assessment of Individuals	3
49.319 Theoretical Bases of Nursing	3
49.320 Nursing of Individuals and Families with Long Term Illness and Disability	4
<i>or</i>	
49.323 Nursing of Individuals with Mental Illness and Their Families	4
<i>or</i>	
49.324 Adult Intensive Care Nursing I	4
<i>or</i>	
49.339 Nursing in Rural Environments	3
49.321 Nursing Research Methods	4
49.322 Community Health Nursing I	4
05.100M Basic Statistical Analysis I	3
22.133 Physiology of the Human Body	3
60.122 Essential of Microbiology <sup>1</sup>	3
Science Elective	<u>6</u>
	32
Year 2	
49.416 Community Health Nursing II	4
49.417 Issues and Trends in Nursing and Health Care	3
49.419 Leadership in Nursing Practice	3
49.420 The Teaching-Learning Process in Nursing Practice	3
49.421 Independent Study in Nursing	4
49.422 Law and Ethics in Nursing Practice	3
Electives <sup>2</sup>	<u>15</u>
	35
Total credits	67

Four (4) academic terms to complete

**Faculty of Nursing  
Baccalaureate Program for Registered  
Nurses**

**Proposed Revisions  
Target Date - September 2002 (for new  
admissions)**

Core Courses	Credit Hours
05.100M Basic Statistical Analysis I	3
49.3XX Professional Nursing Foundations	2
49.321 Nursing Research Methods	3
49.322 Community Health Nursing I	4
49.4XX Nursing Leadership: Prac. & Issues	4
49.420 The Teaching-Learning Process in Nursing Practice	3
49.421 Independent Study	4
49.422 Law and Ethics in Nursing Practice	<u>3</u>
	26

**Electives/ Streams**

Students will select a combination of courses which allow them to focus in a specific area of interest. Ten (10) credit hours will be selected in nursing and 9 credit hours in non-nursing courses.

	Credit Hours
Nursing Courses - 10	
Non-nursing electives - 9	
Nursing course options (for a total of 10 credits):	
49.211 Health Assessment	(3)
49.220 Topics in Aging	(3)
49.320 Nursing of Individuals and Families with Long Term Illness and Disability	(4)
49.323 Perspectives on Mental Health Nursing	(4)
49.324 Adult Intensive Care Nursing I	(4)
49.333 Women and Health	(3)
49.334 Providing Care in a Culturally Diverse Society	(3)
49.335 Counseling Skills for Nursing	(3)
49.337 Primary Care Skills (FNIHB)*	(4)
49.339 Nursing in Rural Environments	(4)
49.340 Men' Health: Concerns, Issues and Myths	(3)
49.416 Community Health Nursing II	(4)
49.425 Palliative Care	(3)
	<u>19</u>
Total credits	45

Three (3) academic terms to complete

\*First Nations and Inuit Health Branch



12. Faculty of Physical Education and Recreation Studies

Course to be modified:

123.406 Person Centered Leisure Education (3)

A detailed examination of person centered leisure education with an emphasis on both theoretical and practice models and their application to the recreation services delivery system. *Pre-requisites: 123.140 and 123.306.*

**NET CHANGE IN CREDIT HOURS:**

**0**

13. Faculty of Science

92

**BIOLOGY MAJOR PROGRAM**

Program Change

2002-2003

**Proposed Program**

**4.2 Biology Program**

Program Co-ordinator: Michael Sumner

Program Office: 208 Buller Building

Telephone: 204 474 9732

**4.2.1 Program Information**

The Introductory Biology unit administers the Biology Four Year Major program and is responsible for teaching 071.125, which is a required course for further work in Botany, Microbiology and Zoology, and for teaching 071.100, 071.101, 071.134, 071.201.

4.2 Biology Program, Department Code: 071			
UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
FOUR YEAR MAJOR	120 CREDIT HOURS		
002.130, 002.131, 071.125, 005.100 <sup>2</sup>	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)	6 credit hours at the 200, 300 or 400 level from each department (Botany, Microbiology and Zoology) with a maximum of 15 credit hours at the 200 level	6 credit hours at the 300 or 400 level from each department (Botany, Microbiology and Zoology)
Plus 3 credit hour of Mathematics or Physics from: 136.120, 136.130 <sup>1</sup> , 136.150 <sup>1</sup> , 016.102 or 016.105	Plus 001.246 and 022.228		
Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	3 credit hours from GROUP 1 (Botany): 001.201, 001.202, 001.211, 001.221, 001.229 3 credit hours from GROUP 2 (Microbiology): 060.210, 060.211 3 credit hours from GROUP 3 (Zoology): 022.232, 022.260, 022.215, 022.253 3 credit hours from GROUP 4 (Ecology) 060.228, 001.237 or 065.237		
	Plus an additional 3 credit hours from either Group 1, 2, 3 or 4.		
A "W" course must be taken in University 1 or Year 2			
30 Hours	30 Hours	30 Hours	30 Hours

**NOTES:**

<sup>1</sup>136.151, 136.152, 136.153 or 136.169 may be taken in place of 136.150; 136.131 may be taken in place of 136.130 and vice versa.

<sup>2</sup>Completion of 005.100 in University 1 or Year 2 will satisfy the university mathematics requirement.

<sup>3</sup>IMPORTANT: The four year Major program need not be completed in the manner prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program with a view to satisfying the prerequisites of the required courses.

The change is:

1. The number of credit hours at the 200 level in Year 3 have been increased from 9 to 15 to provide more flexibility in course selection.

DEPARTMENT OF BOTANY  
 Course Changes  
 2002-2003

93

DELETIONS:

001.337 Pollution Biology (3)L

001.417 Advanced Plant Physiology (3)L

PLACED IN THE 'NOT CURRENTLY OFFERED CATEGORY':

001.434 Microscopy and Plant Microtechnique (3)L

ADDITIONS:

001.2XX **Introductory Toxicology** (3)

A survey of general principles underlying the effects of toxic substances on biological systems, including consideration of the history, scope and applications of toxicology, the mechanisms of toxic action, and some major types of toxicants. Not to be held with 001.2XY, 128.2XX, 128.2XY, 022.2XX, 022.2XY, 065.2XX, 065.2XY and the former 001.337.  
*Prerequisites:* 071.125 (C), and 002.131 (or the former 002.128) or 002.132.

001.2XY **Toxicological Principles** (1.5)

A survey of general principles underlying the effects of toxic substances on biological systems, including consideration of the history, scope and applications of toxicology, and the mechanisms of toxic action. Not to be held with 001.2XX, 128.2XX, 128.2XY, 022.2XX, 022.2XY, 065.2XX, 065.2XY and the former 001.337.  
*Prerequisites:* 071.125 (C), and 002.131 (or the former 002.128) or 002.132.

001.3XX **Bryology** (3)L

The biology, ecology, and evolution of bryophytes. Laboratory will consist of an examination of the diversity of bryophytes using morphological and molecular characters.  
*Prerequisite:* 001.211.

001.4XX **Advanced Plant Stress Physiology** (3)L

Selected topics on plant responses to environmental stress at the physiological and biochemical levels. Laboratory will consist of supervised projects in the above areas. Offered in 2002-2003 and in alternate years thereafter. Not to be held with the former 001.417. *Prerequisites:* 001.301 (or the former 001.317) or 039.350; 002.221 (or the former 002.220) and 002.237(060.237) (or the former 002.235 (060.235)) or 002.278 (060.278) (or the former 002.240 (060.240)).

Total Credit Hours Added	+10.5
Total Credit Hours Deleted	-9
Net Change	+1.5

DEPARTMENT OF COMPUTER SCIENCE  
 Course Changes  
 2002-2003

DELETIONS:

074.206	Discrete Structures and Programming (Note: 074.206E will be retained)	(6)L
074.227	Introduction to Object Orientation	(3)
074.437	Numerical Methods in Linear Algebra	(3)
074.440	Optimization	(3)

ADDITIONS:

074.2DS	<b>Data Structures and Algorithms</b> Introduction to the representation and manipulation of data structures. Topics will include lists, stacks, queues, trees, and graphs. Not to be held with the former 074.206. Prerequisites: 074.102 (or the former 074.120 or 074.123), and a C average in one of 136.130 or 136.131 (or the former 013.146) and one of 136.150, 136.151, 136.152, 136.153 or 136.169 (or the former 006.125, 013.139, or 013.159).	(3) L
074.200	<b>Object Orientation</b> Design and development of object-oriented software. Topics will include inheritance, polymorphism, data abstraction and encapsulation. Examples will be drawn from several programming languages. Not to be held with the former 074.227. Prerequisite: 07A 2DS (or the former 074.206).	(3)L
074.2PP	<b>Programming Practices</b> Introduction to issues involved in "real-world" computing. Topics will include memory management, debugging, compilation, performance, and good programming practices. Not to be held with the former 074.225. Prerequisite: 074.2DS (or the former 074.206).	(3)L
074.3DC	<b>Distributed Computing</b> Introduction to distributed computing. Topics include task models, server side computing, database connectivity, information sharing. Prerequisite: 074.2 DS (or the former 074.206).	(3)
074.3TC	<b>Technical Communication in Computer Science</b> This course is designed to help students become more effective and confident writers in the context of the computing profession. Students will be introduced to a broad range of written and oral presentation styles used in the computing workplace. Prerequisite: Students must be enrolled in third year (or higher) of a majors or honours programme in the Department of Computer Science.	(3)

- 074.4PM Project Management (3)**  
Introduction to the issues involved in managing large, complex software projects. Prerequisite: 074.335 (or the former 074.331).
- 074.4T0 Topics in Computer Science (3)**  
This course will examine topics of interest at the fourth-year level. Specific topics will vary from year to year. Topics will be selected from current research in computer science. Prerequisite: Departmental permission.

Courses to be modified:

- 074.208 Analysis of Algorithms (3)**  
Methods of analyzing the time and space requirements of algorithms. Average case and worst case analysis. Models of computation. *Pre-requisite: 074.2DS (or the former 074.206) and 074.213 (or the former 074.239), 005.100 (or the former 005.101 or 005.221) is strongly recommended).*
- 074.222 Introduction to Assembler Language Programming (3) L**  
Programming at the machine language and assembler language level. A comparison of several contrasting computer architectures and their effect on programming. Not to be held with the former 074.240. *Pre-requisite: 074.2DS (or the former 074.206).*
- 074.223 Introduction to Digital Logic (3) L**  
An introduction to design and construction of digital logic circuits. Combinatorial circuits, sequential circuits, state machines, data buses, memories and simple computer architecture. Not to be held with 024.222 or the former 074.240. *Pre-requisites: 074.102 (or the former 074.120 or 074.123).*
- 074.303 Automata Theory and Formal Languages (3)**  
An introduction to automata theory, grammars, formal languages and their applications. Topics: finite automata, regular expressions and their properties; context-free grammars, pushdown automata and properties of context-free languages; Turing machines. Applications: lexical analysis, text editing, machine design, syntax analysis, parser generation. Not to be held with the former 074.327. *Pre-requisites: 074.2DS (or the former 074.206) and 074.208.*
- 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-requisite: 074.2DS (or the former 074.206) and 074.222.*
- 074.317 Analysis of Algorithms and Data Structures (3)**  
Fundamental algorithms for sorting, searching, storage management, graphs, databases and computational geometry. Correctness and analysis of those algorithms using specific data structures. An introduction to lower bounds and intractability. Not to be held with the former 074.328. *Pre-requisites: 074.2DS (or the former 074.206) and 074.208 or the former 074.212.*
- 074.319 Introduction to Artificial Intelligence (3)**  
Principles of artificial intelligence: problem solving, knowledge representation and manipulation; the application of these principles to the solution of 'hard' problems. Not to be held with the former 074.426. *Pre-requisite: 074.2DS (or the former 074.206).*
- 074.329 Introduction to Compiler Construction (3)**

Introduction to the standard compiler phases: scanning, parsing, symbol-table management, code generation, and code optimization. The emphasis is on the simpler techniques for compiler construction such as recursive descent. Not to be held with the former 074.333. *Pre-requisites: 074.2DS (or the former 074.206) and 074.222 (or the former 074.240). 074.2PP is recommended.*

074.335      Software Engineering 1 (3) L

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: 074.200 or the former 074.206 and 074.213 (or the former 074.239).*

074.338      Databases Concepts and Usage (3) L

An introduction to database systems including the relational, hierarchical, network and entity-relationship models with emphasis on the relational model and SQL. Not to be held with the former 074.332. *Pre-requisite: 074.2DS (or the former 074.206).*

074.343      Operating Systems (3) L

Operating systems, their design, implementation, and usage. Not to be held with the former 074.450 or 074.460. *Pre-requisites: 074.2DS (or the former 074.206) and 074.222 (or the former 074.240). 074.2PP is recommended.*

074.348      Non-Imperative Programming Language Concepts (3)

Alternative programming language paradigms and specific languages which implement them. Functional programming in APL and LISP. Declarative programming and Prolog. Not to be held with the former 074.220 or 074.425. *Pre-requisite: 074.2DS (or the former 074.206).*

074.362      Professional Practice in Computer Science (3)

Ethical, moral, and legal issues in the development and use of computer systems; standards of practice; implications of advanced computer systems. Not to be held with the former 074.224 or 074.324. *Pre-requisite: 074.2DS (or the former 074.206).*

074.371      User Interfaces (3)

User interfaces; human factors; principles of user interface design; tools for building user interfaces; assessment and evaluation of user interfaces. *Pre-requisite: 074.2DS (or the former 074.206).*

074.429      Compiler Construction 2 (3)

A detailed examination of compiler construction techniques for modern imperative languages. Symbol tables, scanners, parsers, type checking, code generation, procedure linkage, diagnostics, code optimization. Includes the actual implementation of a useful subset of a modern language as a course project. Not to be held with the former 074.415. *Pre-requisites: 074.200 and 074.329 (or the former 074.333). 074.2PP is recommended.*

074.430      Computer Networks (3) L

Principles of computer networks: computer and data communications, local area networks, data link and network layer protocols. Not to be held with the former 074.467 or 074.468. *Pre-requisite: 074.343 (or the former 074.450 or 074.460).*

074.451      Introduction to Parallel Computation (3) L

An overview of the architectures of current parallel processors and the techniques used to program them. Not to be held with the former 074.441 or 024.446. *Pre-requisites: 074.337 (or the former 074.341) and 074.343 (or the former 074.450 or 074.460).*

**DEPARTMENT OF COMPUTER SCIENCE**  
**Program Change**  
**2002-2003**

**Proposed Program**

**COMPUTER SCIENCE, Department Code: (074)**

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
<b>HONOURS</b>			
<b>120 CREDIT HOURS</b>			
074.101 and 074.102 (B),  136.130 <sup>1</sup> and 136.150 <sup>1</sup> , with a (C) average  Plus 6 credit hours from the Faculty of Arts, which should include the "W" course  005.100 (C) <sup>2</sup> which must be taken in University 1 or Year 2	074.2DS, 074.208, 074.213, 074.222, 074.223	074.303, 074.317, 074.337, 074.343  Plus 6 credit hours of 300 level Computer Science courses	21 credit hours of 400 level Computer Science courses
A "W" course must be taken in University 1 or Year 2 <sup>4</sup>			
30 Hours	30 Hours	30 Hours	30 Hours
<b>HONOURS COOPERATIVE OPTION<sup>3,5</sup></b>			
<b>120 CREDIT HOURS</b>			
074.101 and 074.102 (B)  136.130 <sup>1</sup> and 136.150 <sup>1</sup> with a (C) average  Plus 6 credit hours from the Faculty of Arts, which should include the "W" course  005.100 (C) <sup>2</sup> which must be taken in University 1 or Year 2	074.2DS, 074.208, 074.213, 074.222, 074.223	074.303, 074.317, 074.337, 074.343  Plus 6 credit hours of 300 level Computer Science courses	21 credit hours of 400 level Computer Science courses
A "W" course must be taken in University 1 or Year 2 <sup>4</sup>			
30 Hours	30 Hours	30 Hours	30 Hours
<b>FOUR YEAR MAJOR<sup>5,7</sup></b>			
<b>120 CREDIT HOURS</b>			
074.101 and 074.102 (C+)  136.130 <sup>1</sup> and 136.150 <sup>1</sup> , with a (C) average  Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	074.2DS, 074.208, 074.213, 074.222, 074.223	074.343  Plus 27 credit hours of 300 or 400 level Computer Science courses of which 6 credit hours must be at the 400 level  Plus 15 credit hours approved by the department	074.298, 074.398, 074.498 must be completed prior to the last academic term
A "W" course must be taken in University 1 or Year 2 <sup>4</sup>			
<b>MAJOR COOPERATIVE OPTION<sup>3,5,7</sup></b>			
<b>120 CREDIT HOURS</b>			
074.101 and 074.102 (C+)  136.130 <sup>1</sup> and 136.150 <sup>1</sup> , with a (C) average  Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	074.2DS, 074.208, 074.213, 074.222, 074.223	074.343 Plus 27 credit hours of 300 or 400 level Computer Science courses of which 6 credit hours must be at the 400 level  074.298, 074.398, 074.498 must be completed prior to the last academic term  Plus 15 credit hours approved by the department	
A "W" course must be taken in University 1 or Year 2 <sup>4</sup>			
<b>THREE YEAR GENERAL</b>			
074.101 and 074.102 <sup>4</sup>	074.2DS		
	Plus a minimum of 9 credit hours from 200 and (or) 300 level Computer Science Courses		
<b>MINOR</b>			
074.101 and 074.102 <sup>4</sup>	074.2DS		
	Plus a minimum of 9 credit hours from 200 and (or) 300 level Computer Science Courses		

## NOTES:

<sup>1</sup>136.131 may be taken in place of 136.130; 136.151, 136.152, or 136.153 or 136.169 may be taken in place of 136.150..

<sup>2</sup>It is recommended that 005.200 be taken as an elective.

<sup>3</sup>Entry to the Honours Cooperative Option and four-year Major Cooperative Option is in third year. Employment terms follow 3A (September-December), 3B (May-August) and 4A (January-April). Students in the Cooperative Option must complete three employment terms and receive a passing grade in 074.298, 074.398 and 074.498 prior to the last academic term.

<sup>4</sup>Note that 074.102 has a corequisite requirement of 136.130<sup>1</sup> and 136.150<sup>1</sup>.

<sup>5</sup>Additional information on how students may select their courses can be found at the end of this section.

<sup>6</sup>The courses required in this program will satisfy the university mathematics requirement.

<sup>7</sup>**IMPORTANT:** The four year Major 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. Students in the Cooperative Option should be aware that while other arrangements are possible, they may jeopardize their chances of obtaining employment by selecting such arrangements. Students should discuss their planned sequence of courses with the department prior to making adjustments to the sequence above.

<sup>8</sup>**IMPORTANT:** at most 90 credit hours of computer science and mathematics courses can be included in a majors or honours programme. (Letters in brackets indicate minimum prerequisite standing for further study).

---

The changes are:

1. Computer Science 074.206 has been deleted as a required course in the Major, Honours, General, Minor and Cooperative programs and has been replaced by 074.2DS.
2. The 12 credit hours approved by the department has been changed to 15 credit hours in the Four Year Major and Major Cooperative Option.
3. Footnote 8 has been added as Major, Honour and Cooperative students will now require 30 credit hours of courses outside the departments of Computer Science and Mathematics for accreditation purposes. This requirement of 30 credit hours has also been added to the calendar text for the Major, Honours and Cooperative Options program.
4. The credit hours of Computer Science courses at the 200 and/or 300 level in the General and Minor programs has been increased from 6 to 9.

## COMPUTER SCIENCE-MATHEMATICS JOINT PROGRAM

Program Change

2002-2003

## Proposed Program

## 4.5.4 Computer Science-Mathematics Joint Program (074M)

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

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
<b>JOINT HONOURS</b>			
<b>120 CREDIT HOURS</b>			
074.101 and 074.102 (B), 136.130 <sup>1</sup> (B), 136.169 (B), (or 136.150 <sup>1</sup> and 136.170 <sup>1</sup> (B)), 005.100 (C)	074.2DS, 074.208 <sup>1</sup> , 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 6 credit hours from the Faculty of Arts, which should include the "W" course		Plus an additional 3 credit hours of 300 or 400 level Computer Science <sup>4</sup>	
		136.375 or 136.376, 136.335 (or 136.330 and 136.331), 136.340, 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<sup>2</sup>

30 Hours	30 Hours	30 Hours	30 Hours
<b>JOINT HONOURS COOPERATIVE OPTION</b>			
<b>120 CREDIT HOURS</b>			
074.101 and 074.102 (B), 136.130 <sup>1</sup> (B), 136.169 (B), (or 136.150 <sup>1</sup> and 136.170 <sup>1</sup> (B)), 005.100 (C)	074.2DS, 074.208 <sup>1</sup> , 074.222, 074.223, 074.298 <sup>3</sup> , 136.220, 136.235, 136.275 plus one of 136.260 or 136.280	074.303, 074.317, 074.337, 074.343, 074.398 <sup>5</sup> , 074.430, 074.431 (or 074.442), 074.498 <sup>5</sup>	
		Two of 074.329, 074.335, 074.338	
		One of 074.429, 074.435, 074.438	
Plus 6 credit hours from the Faculty of Arts, which should include the "W" course		Plus an additional 3 credit hours of 300 or 400 level Computer Science <sup>4</sup>	
		136.375 or 136.376, 136.335 (or 136.330 and 136.331), 136.340, 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<sup>2</sup>

30 Hours	30 Hours	30 Hours	30 Hours

<sup>1</sup> 136.131 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.

<sup>2</sup> The courses required in this program will satisfy the University mathematics requirement. 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.

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

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

<sup>5</sup> The work terms 074.298, 074.398 and 074.498 will be completed in the summers following Year 2, Year 3 and Year 4, respectively. (Letters in brackets indicate minimum prerequisite standing for further study).

The change is:

1. Computer Science 074.206 has been deleted in Year 2 and replaced by 074.2DS, reducing the number of credit hours from 33 to 30 in Year 2. The total number of credit hours for this program has been reduced from 123 to 120.

**ENVIRONMENTAL SCIENCE PROGRAM****Course Changes**

2002-2003

**ADDITIONS:**

- 128.2XX**      **Introductory Toxicology**      **(3)**  
 A survey of general principles underlying the effects of toxic substances on biological systems, including consideration of the history, scope and applications of toxicology, the mechanisms of toxic action, and some major types of toxicants. Not to be held with 128.2XY, 001.2XX, 001.2XY, 022.2XX, 022.2XY, 065.2XX, 065.2XY and the former 001.337.  
*Prerequisites:* 071.125 (C) and 002.131 (or the former 002.128) or 002.132.
- 128.2XY**      **Toxicological Principles**      **(1.5)**  
 A survey of general principles underlying the effects of toxic substances on biological systems, including consideration of the history, scope and applications of toxicology, and the mechanisms of toxic action. Not to be held with 128.2XX, 001.2XX, 001.2XY, 022.2XX, 022.2XY, 065.2XX, 065.2XY and the former 001.337.  
*Prerequisites:* 071.125 (C) and 002.131 (or the former 002.128) or 002.132.

**MODIFICATION:**

- 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 responses of natural and managed systems to disturbance; population growth; biodiversity and conservation; and environmental sustainability. Not to be held for credit with 053.262 or 071.134 or the former 001.337.

<b>Total Credit Hours Added</b>	<b>+4.5</b>
<b>Total Credit Hours Deleted</b>	<b><u>- 0</u></b>
<b>Net Change</b>	<b>+4.5</b>



## DEPARTMENT OF GEOLOGICAL SCIENCES

## Program Change

2002-2003

## Proposed Program

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
<b>HONOURS GEOLOGY (007G) 129 CREDIT HOURS</b>			
007.123 (B), or 007.124 (B), or (or 007.134 (B) or 007.144 (B) and one of : 007.135, 007.136, or 007.137 (B))	007.206, 007.239, 007.244, 007.250, 007.252, 007.253, 007.260, 007.277	007.311, 007.313, 007.331, 007.349, 007.390, 007.430, 007.449 <sup>1</sup> , 007.452, 007.467, 007.485 <sup>2</sup> , 007.487, 007.489	
Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	Plus 6 credit hours of electives	Plus 18 credit hours of Geological Sciences electives from the recommended additional electives listed in the text above	
Plus 18 credit hours of electives		Plus 9 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			
30 Hours	30 Hours	36 Hours <sup>1</sup>	33 Hours
<b>HONOURS GEOPHYSICS (007P) 126 CREDIT HOURS</b>			
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)) <sup>1</sup>	007.206, 007.250, 007.253, 016.237, 136.210 <sup>2</sup> , 136.211 <sup>2*</sup>	007.244, 007.252, 007.313, 007.374, 007.381, 007.425, 007.432, 007.433, 007.467, 007.474 <sup>1</sup> , 007.481, 007.483, 007.487, 016.260, 016.261, 016.265, 136.310 <sup>3</sup> , 136.311 <sup>3*</sup>	
Plus 6 credit hours from the Faculty of Arts, which should include the "W" course	Plus 9 credit hours of electives, which could include 074.101	Plus 3 credit hours of electives as approved by the department	
Plus 6 credit hours of electives which could include 074.101	074.101, which must be taken by the end of Year 3		
A "W" course must be taken in University 1 or Year 2 <sup>1</sup>			
30 Hours	32 Hours	64 credit hours for year 3 and 4 <sup>1</sup>	
<b>FOUR YEAR MAJOR IN GEOLOGY<sup>1</sup> (007G) 120 CREDIT HOURS</b>			
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+))	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 6 credit hours from the Faculty of Arts, which may include the "W" course	Plus 18 credit hours of Science electives	Plus 9 credit hours of Geological Sciences electives	
A Science background is recommended			
A "W" course and an "M" course must be taken in University 1 or Year 2			
<b>FOUR YEAR MAJOR IN GEOPHYSICS<sup>1</sup> (007P) 120 CREDIT HOURS</b>			
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)) <sup>1</sup>	007.206, 007.250, 007.253, 016.237, 136.210 <sup>2</sup> , 136.211 <sup>2*</sup>	007.244, 007.252, 007.313, 007.374, 007.381, 016.260, 016.261, 136.310 <sup>3</sup> , 136.311 <sup>3*</sup>	
Plus 6 credit hours from the Faculty of Arts, which may include the "W" course		Plus 9 credit hours from: 007.425, 007.426, 007.432, 007.433, 007.474, 007.483	
		074.101 which must be taken by the end of Year 3	
A "W" course and an "M" course must be taken in University 1 or Year 2 <sup>1</sup>			
<b>THREE YEAR GENERAL</b>			
Minimum of 12 credit hours from 200 and 300 level courses			
<b>MINOR</b>			
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		

## NOTES:

<sup>1</sup>136.169 may be taken in place of 136.151 and 136.171.

<sup>2</sup>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. See the departmental office at the beginning of each year for information.

<sup>3</sup>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.

<sup>4</sup>Geology: Year 3-30 hours in Regular Session, six hours (007.449) in following Summer Session. Geophysics: Year 3-28 hours in Regular Session, six 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.

<sup>5</sup>136.370 and 136.381 may be taken in place of 136.310 and 136.311.

<sup>6</sup>The courses required in this program will satisfy the university mathematics requirement.

<sup>7</sup>For the purposes of students in the Geophysics Honours and Major program, this course will count as the full four credit hours.

<sup>8</sup>IMPORTANT: The four year Major program need not be completed in the manner prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.

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

The changes are:

1. Physics 016.240 has been deleted from Year 2 of the Honours Geophysics programs and the electives have been increased by 3 credit hours.
2. Physics 016.250 has been replaced by Physics 016.265 in Year 3 or 4 of the Honours Geophysics program.

DEPARTMENT OF MATHEMATICS  
 Course Changes  
 2002-2003

MODIFICATIONS:

- 136.275 Intermediate Calculus (6)**  
 Sequences, series and power series. Differentiation and integration of real-valued functions of several real variables. Not to be held with 136.270, 136.271 or the former 013.239, 013.249, 013.234, 006.227, 006.237, 006.228, 006.238, 006.243 or 006.244. *Pre-requisites: a grade of "C+" or better in 136.130 or 136.131 (or the former 013.146), and a grade of "C+" or better in one of 136.169, 136.170, 136.171 or 136.173 (or the former 013.149, 013.159, or 006.126).*
- 136.370 Applied Complex Analysis (3)**  
 Concepts and techniques of complex variable theory in the context of applied mathematics. Not to be held with 136.311 (or the former 006.343) or 136.371 (or the former 013.372) or the former 006.325. *Pre-requisites: 136.270 (or the former 013.239) and either 136.271 (or the former 013.249) (or 136.275 (or the former 013.234)) or 016.237 or consent of department.*

DEPARTMENT OF MATHEMATICS  
 Service Course Change  
 2002-2003

MODIFICATION:

- 136.313 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 136.270 (or the former 013.239) and 016.237.*

(This change has the support of the Department of Physics & Astronomy.)

DEPARTMENT OF MATHEMATICS  
 Program Change  
 2002-2003

Proposed Program:

---

APPLIED MATHEMATICS FOUR YEAR MAJOR WITH COMPUTER SCIENCE OPTION<sup>1</sup> 120 CREDIT HOURS

---

136.120, 136.130<sup>1</sup>, 136.150<sup>1</sup> and 136.230, 136.260, 136.270, 136.240, 136.360, 136.370, 136.375, 136.380, 136.381, 136.382  
 136.170<sup>1</sup> (or 136.169)<sup>1</sup>; 074.101, 136.271, 136.280, 074.2DS  
 074.102

Plus 6 credit hours from the Faculty of Arts, which may include the "V" course

Plus 005.100 and 005.200; plus an additional 6 credit hours from option 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 2<sup>2</sup>

---

NOTES

<sup>1</sup> 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.

<sup>4</sup> The courses required in this program will satisfy the university mathematics requirement.

<sup>2</sup> IMPORTANT: 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 above for the minimum requirements for entry to a four year Major. (Letters in brackets indicate minimum prerequisite standing for further study.)

---

The change is:

1. Computer Science 074.206 has been deleted in Year 2 and replaced by 074.2DS.

# MATHEMATICS-PHYSICS & ASTRONOMY JOINT PROGRAM

## Program Changes

2002-2003

### Proposed Program:

#### MATHEMATICS - PHYSICS AND ASTRONOMY JOINT PROGRAM (136P)

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
<b>JOINT HONOURS</b>	<b>129 CREDIT HOURS</b>		
136.130 <sup>1</sup> (B), 136.151 <sup>1</sup> and 136.171 <sup>1</sup> (B),(or 136.169 (B)), 016.105 (B) (or 016.102 (B+)) <sup>2</sup> and 016.107 (B), 005.100, 074.101	016.226, 016.250, 016.260 <sup>3</sup> , 016.261, 016.265, 136.220, 136.235, 136.275, 136.280	136.323, 136.335 (or 136.330 and 136.331), 136.370 or 136.371, 136.376, 016.341, 016.365, 016.369 <sup>5</sup> , 016.370	136.380, 136.481 <sup>4</sup>  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, 016.347  Plus 3 credit hours from 300 and 400 level Physics Honours courses
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 <sup>6</sup>			
30 Hours	30 Hours	36 Hours	33 Hours

<sup>1</sup>136.131 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.

<sup>2</sup>016.103 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.

<sup>3</sup>The corequisite of 016.237 is waived. It is recommended that students audit 016.237 in second year.

<sup>4</sup>The courses required in this program will satisfy the University mathematics requirement. 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

<sup>5</sup>The prerequisite of 016.237 is waived.

<sup>6</sup>The prerequisite of 136.381 has been waived for students who have completed 016.369 and 0016.370.

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

### The changes are:

1. Physics 016.240 has been deleted from Year 2, reducing the specified credit hours from 36 to 33 and the total for the program from 132 to 129.
2. Footnote 5 has been added to 016.369 in Year 3 and footnote 5 has been changed to footnote 6.

## DEPARTMENT OF MICROBIOLOGY

Program Change  
2002-2003

## Proposed Program

Option List<sup>1</sup> for All Microbiology Programs:

*Botany:* 001.2XX, 001.221, 001.229, 001.237, 001.246, 001.301, 001.322, 001.325, 001.346, 001.405, 001.413, 001.416, 001.4XX, 001.421

*Chemistry:* 002.228, 002.229, 002.238, 002.247, 002.339, 002.347, 002.436, 002.437, 002.462, 002.463

*General Agriculture:* 065.2XX

*Environmental Science:* 128.2XX

*Zoology:* 022.2XX, 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, 022.4XX

*Food Sciences:* 078.415, 078.428

*Medical Microbiology:* 097.701<sup>2</sup>

*Mathematics:* 136.201

<sup>1</sup> Other suitable options may be selected with permission of the department.

<sup>2</sup> 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.

4.11.3 Microbiology, Department Code: 060			
UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
<b>HONOURS</b>			
120 CREDIT HOURS			
071.125, 002.130, 002.131	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
Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 <sup>1</sup> , 136.150 <sup>1</sup> , 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 must be taken in University 1 or Year 2 <sup>4</sup>		Plus 15 credit hours of Microbiology courses <sup>2,5</sup> Microbiology courses <sup>2,5</sup> or from the option list (see above)	and 12 credit hours chosen from Microbiology courses <sup>2,5</sup> or from the option list (see above)
30 Hours	30 Hours	30 Hours	30 Hours
<b>HONOURS COOPERATIVE OPTION</b>		120 CREDIT HOURS	
071.125, 002.130, 002.131	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, 060.348 060.398, 060.399, 060.498 and/or 060.499	060.401, 060.447, 060.460, 060.461
Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 <sup>1</sup> , 136.150 <sup>1</sup> , 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 must be taken in University 1 or Year 2 <sup>4</sup>		Plus 21 credit hours of Microbiology courses <sup>2,5</sup> Microbiology courses <sup>2,5</sup> or from the option list (see above)	and 12 credit hours chosen from Microbiology courses <sup>2,5</sup> or from the option list (see above)
30 Hours	30 Hours	30 Hours	30 Hours
<b>FOUR YEAR MAJOR<sup>6</sup></b>		120 CREDIT HOURS	

071.125, 002.130, 002.131 060.210, 060.211, 060.236 (002.236), 060.237 (002.237), 001.246, 002.221, 002.222, 022.228 33 credit hours of Microbiology courses<sup>2,3</sup> including 15 credit hours at the 400 level<sup>1</sup>

Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130<sup>1</sup>, 136.150<sup>1</sup>, 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

Plus 9 credit hours from Microbiology courses<sup>2,3</sup> or from the option list (see above)

A "W" course must be taken in University 1 or Year 2<sup>4</sup>

MAJOR COOPERATIVE OPTION <sup>5</sup>		120 CREDIT HOURS
071.125, 002.130, 002.131	060.210, 060.211, 060.236 (002.236), 060.237 (002.237), 001.246, 002.221, 002.222, 022.228	060.301, 060.341
Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 <sup>1</sup> , 136.150 <sup>1</sup> , 016.102 or 016.105		27 credit hours of Microbiology courses <sup>2,3</sup> including 15 credit hours at the 400 level <sup>1</sup>
Plus 6 credit hours from the Faculty of Arts, which may include the "W" course		Plus 9 credit hours from Microbiology courses <sup>2,3</sup> or from the option list (see above)
Plus 005.100 which must be taken in University 1 or Year 2		060.398, 060.399, 060.498 and/or 060.499

A "W" course must be taken in University 1 or Year 2<sup>4</sup>

THREE YEAR GENERAL		12 credit hours of Microbiology at the 200 and (or) 300 level
MINOR		
002.130, 002.131, 071.125 (C)		12 credit hours of Microbiology at the 200 and (or) 300 level

<sup>1</sup>136.131 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.

<sup>2</sup>097.701 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.

<sup>3</sup>060.401, 060.453 and 060.457 cannot be selected.

Completion of 005.100 in University 1 or Year 2 will satisfy the University mathematics requirement.

<sup>4</sup>060.402 and 060.458 cannot be selected.

<sup>5</sup>IMPORTANT: The four year Major program need not be completed in the manner prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.

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

The changes are:

1. Botany 001.2XX, 001.325, 001.405, 001.421, 001.4XX; Zoology 022.2XX, 022.4XX; General Agriculture 65.2XX; Environmental Science 128.2XX have been added as options in the Microbiology Honours and Major programs.
2. Botany 001.434 has been deleted from the options list as it has been placed in the 'Not Currently Offered' category.
3. Human Genetics 125.302, a required course in the Honours Genetics program, may be used as an upper level Microbiology course in the Bachelor of Science General program. (This proposal has the support of the instructor in the Faculty of Medicine).

## MICROBIOLOGY-CHEMISTRY JOINT PROGRAM IN BIOTECHNOLOGY

Program Change

2002-2003

### Proposed Program

4.11.7 Microbiology - Chemistry Joint Program in Biotechnology, Department Code: 060T			
UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
<b>JOINT HONOURS 120 CREDIT HOURS</b>			
002.130, 002.131, 071.125, 016.105 and 016.107 (or 016.102 and 016.103), 136.150 <sup>1</sup> and 136.170 <sup>1</sup> (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 must be taken in University 1 or Year 2 <sup>2</sup>			
30 Hours	30 Hours	30 Hours	30 Hours

**Notes:**

<sup>1</sup> 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.

<sup>2</sup> The courses required in this program will satisfy the university mathematics requirement. 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.

**The optional courses are:**

*Chemistry:* 002.336, 002.337, 002.338, 002.349, 002.358, 002.436, 002.437, 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, 002.471.

*Microbiology:* 060.301, 060.343, 060.345, 060.346, 060.348, 060.401, 060.432, 060.453, 060.454.

*Other departments in Science:* 001.201, 001.202, 001.301, 001.322, 001.346, 001.4XX, 005.100, 005.200, 016.220, 016.227, 016.228, 022.215, 022.228, 022.353, 022.354, 022.415, 022.460, 022.4XX, 074.101, 074.102, 074.126, 074.127, 136.120, 136.130, 136.131, 136.201, 136.270, 136.271, 136.280, 136.353, 136.382.

*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.

**The changes are:**

1. Botany 001.4XX has replaced 001.417 in the list of optional courses.
2. Zoology 022.4XX has been added to the list of optional courses.

## DEPARTMENT OF ZOOLOGY

Course Change

2002-2003

## DELETIONS:

- 022.343 Behavioural Ecology (3)L
- 022.448 Animal Behaviour (3)L

## ADDITIONS:

- 022.2XX **Introductory Toxicology** (3)  
A survey of general principles underlying the effects of toxic substances on biological systems, including consideration of the history, scope and applications of toxicology, the mechanisms of toxic action, and some major types of toxicants. Not to be held with 022.2XY, 001.2XX, 001.2XY, 065.2XX, 065.2XY, 128.2XX, 128.2XY and the former 001.337. *Prerequisites:* 071.125 (C) and 002.131 (or the former 002.128) or 002.132.
- 022.2XY **Toxicological Principles** (1.5)  
A survey of general principles underlying the effects of toxic substances on biological systems, including consideration of the history, scope and applications of toxicology, and the mechanisms of toxic action. Not to be held with 022.2XX, 001.2XX, 001.2XY, 065.2XX, 065.2XY, 128.2XX, 128.2XY and the former 001.337. *Prerequisites:* 071.125 (C) and 002.131 (or the former 002.128) or 002.132.
- 022.3XX **Animal Behaviour** (3)L  
An introduction to the study of animal behaviour including key concepts from the parent disciplines of ethology and comparative psychology, the genetic and physiological bases of behaviours, and evolutionary aspects introducing optimality and game theoretical models characteristic of modern behavioural ecology. Laboratory work involves the design and execution of a behavioural project at the Assiniboine Park Zoo. Not to be held with the former 022.343. *Prerequisites:* 022.237 (001.237 or 065.237) and 022.232 or consent of instructor.
- 022.4XX **Genes and Development** (3)  
An indepth examination of selected topics in embryonic development, emphasizing the genetic control of the cell and molecular mechanisms that direct embryogenesis. The course will focus primarily on vertebrate development, but insights provided by studies on invertebrates will also be covered. *Prerequisites:* 022.228 and 022.215 or consent of instructor.
- 022.4XY **Behavioural Ecology and Cognitive Ethology** (3)L  
Examines proximate and ultimate questions relating to mating and parental behaviour, communication, social parasitism and animal intellect to provide insight into the intimate relationship between behavioural evolution and the environment. Laboratory and field exercises complement major topics considered in lectures. Not to be held with the former 022.448. *Prerequisite:* 022.3XX (or the former 022.343) or consent of instructor.

**MODIFICATIONS:**

- 022.354 Comparative Environmental Physiology (3)L**  
 Change the prerequisite from: "071.125 with a minimum grade of "C", or 071.100 and 071.101 with a minimum average grade of "C+" (or the former 071.123 with a minimum grade of "C+")".  
 to:  
 022.232 and 022.260, or 022.133 or 022.253 or 022.353 (or the former 022.245) or consent of instructor".
- 022.398 Work Term 1 (0)**  
 Change the phrase "for students registered in the Ecology Cooperative Option" to "or students registered in the Zoology or Ecology Cooperative Option". Add the phrase "for students in the Ecology Cooperative Option" to the end of the sentence "This course is also offered by Botany as 001.398."
- 022.399 Work Term 2 (0)**  
 Change the phrase "for students registered in the Ecology Cooperative Option" to "for students registered in the Zoology or Ecology Cooperative Option". Add the phrase "for students in the Ecology Cooperative Option" to the end of the sentence "This course is also offered by Botany as 001.399."
- 022.421 Models for Behavioral Ecology (3)**  
 Change the prerequisite from "022.343, 022.348 and 005.200 or consent of the instructor" to "022.3XX (or the former 022.343), 022.348 and 005.200 or consent of the instructor."
- 022.424 Biodiversity of Vertebrates: Biology of Birds (3)**  
 Change the corequisite from "022.343 or consent of instructor" to "022.3XX (or the former 022.343) or consent of instructor."
- 022.481 Fishery Biology and Management (3)**  
 Change the prerequisite from "005.313 (or the former 005.333) or consent of instructor" to "022.348 or consent of instructor."
- 022.498 Work Term 3 (0)**  
 Change the phrase "for students registered in the Ecology Cooperative Option" to  
 to  
 " for students registered in the Zoology or Ecology Cooperative Option". Add the phrase "for students in the Ecology Cooperative Option" to the end of the sentence "This course is also offered by Botany as 001.498."
- 022.499 Work Term 4 (0)**  
 Change the phrase "for students registered in the Ecology Cooperative Option" to " for students registered in the Zoology or Ecology Cooperative Option". Add the phrase "for students in the Ecology Cooperative Option" to the end of the sentence "This course is also offered by Botany as 001.499."

<b>Total Credit Hours Added</b>	<b>+13.5</b>
<b>Total Credit Hours Deleted</b>	<b>- 6</b>
<b>Net Change</b>	<b>+ 7.5</b>

COURSES ACCEPTABLE IN OTHER FACULTIES AND SCHOOLS FOR CREDIT IN THE FACULTY OF  
SCIENCE

Course Changes  
2002-2003

DEPARTMENT OF FOOD SCIENCE

ADDITION:

078.424      **Analysis of Water and Wastes**      (3)L  
Introduction to the principles and application of standard methods  
employed in the analysis of water in the food processing industry.

DEPARTMENT OF GENERAL AGRICULTURE

ADDITIONS:

065.2XX      **Introductory Toxicology**      (3)  
A survey of general principles underlying the effects of toxic substances on  
biological systems, including consideration of the history, scope and applications  
of toxicology, the mechanisms of toxic action, and some major types of toxicants.  
Not to be held with 065.2XY, 001.2XX, 001.2XY, 022.2XX, 022.2XY, 128.2XX,  
128.2XY and the former 001.337 *Prerequisites:* 071.125 (C) and 002.131 (or the  
former 002.128) or 002.132.

065.2XY      **Toxicological Principles**      (1.5)  
A survey of general principles underlying the effects of toxic substances on  
biological systems, including consideration of the history, scope and applications  
of toxicology, and the mechanisms of toxic action. Not to be held with 065.2XX,  
001.2XX, 001.2XY, 022.2XX, 022.2XY, 128.2XX, 128.2XY and the former 001.337.  
*Prerequisites:* 071.125 (C) and 002.131 (or the former 002.128) or 002.132.

Total Credit Hours Added	+7.5
Total Credit Hours Deleted	<u>0</u>
Net Change	+7.5

**CURRENT****Faculty of Science  
Section 2: Admissions  
2.4 Second Degree Students**

Students possessing a first degree from a recognized university program and who have a minimum cumulative Grade Point Average of 2.00 (or a 2.30 adjusted grade point average) on all previous university work are eligible for admission as Second Degree students.

Requirements for a Bachelor of Science degree following a degree in another faculty or school, or at another university, are available in the general office.

**PROPOSED****Faculty of Science  
Section 2: Admissions  
2.4 Second Degree Students**

Students possessing a first degree from a recognized university program and who have a minimum cumulative Grade Point Average of 2.00 (or a 2.30 adjusted grade point average) on all previous university work are eligible for admission as Second Degree students.

The Second Degree requirements may be shortened by up to 60 credit hours, and once admitted to a Second Degree Program students will be expected to conform with all continuation and graduation requirements as described in Section 3 below.

Specific information on requirements for a Bachelor of Science degree following a degree in another faculty or school, or at another university, is available in the general office.

**CURRENT REGULATION****B.Sc. (General): Academic Regulations**

A student must complete 90 credit hours (equivalent to 15 full courses) with passing grades ("D" or better) in each course and with a minimum Grade Point Average of 2.00 on the 90 credit hours which constitute the degree to qualify for the degree of Bachelor of Science (General).

A student will be allowed to attempt 138 credit hours (equivalent to 23 full courses) in which to complete degree requirements. This total includes failures, repeated courses, courses taken as a Special Student, and others deemed as extra to the degree. Hours of credit for which a student registers without subsequent withdrawal are called attempted credit hours (or simply, attempts).

**PROPOSED CHANGE**

A student must complete 90 credit hours (equivalent to 15 full courses) with passing grades ("D" or better) in each course and with a minimum Grade Point Average of 2.00 on the 90 credit hours which constitute the degree to qualify for the degree of Bachelor of Science (General).

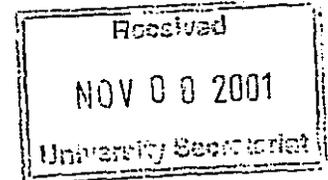
Hours of credit for which a student registers without subsequent withdrawal are called attempted credit hours (or simply, attempts). There is no limit in the number of attempts within the B.Sc. (General), provided a student does not exceed 48 credit hours of failed and/or repeated courses.



UNIVERSITY  
OF MANITOBA

115  
Student Records Office

400 University Centre  
Winnipeg, Manitoba  
Canada R3T 2N2  
Telephone (204) 474-9423  
Fax (204) 275-2589  
student\_records@umanitoba.ca



**Date:** November 8, 2001  
**To:** Ms. B. Sawicki, University Secretary  
**From:** Richard Levin, Director, Student Records *RL*  
**Re:** Proposed Academic Schedule for 2002-2003

---

Please find attached the Proposed Academic Schedule for 2002-2003 as reviewed by each faculty and school, the Director of Admissions and Rabbi Stern for distribution to Senate Executive.

It is sometimes the case that we receive late changes from faculties/schools. In this event, we will provide an updated schedule as early as possible.

RL/db

Enclosure

Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

# Academic Schedule 2002-2003

## Regular Session: September 2002 - April 2003

### Summer Session: May 2002 - August 2002

- Spring Intersession May 6 - June 28, 2002
- Spring/Summer Evening May 6 - August 10, 2002
- Summer Day July 2 - August 24, 2002

## MARCH 2002

March 1 Friday Last date for receipt of applications to Environmental Design, Medical Rehabilitation (including Physical Therapy degree completion students), Nursing (Two Year Baccalaureate Program for R.N.s), Pharmacy and Social Work. Students planning to take courses through the Distance Education Program should consult the academic schedules/important dates contained in the *Distance Education Program Guide*.

Last date for receipt by the Faculty of Graduate Studies of applications and recommendations from graduate departments for Canadian applicants applying for May 2002. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

March 18 - 22 Monday - Friday Mid-term break for first- and second-year Medicine.

March 29 GOOD FRIDAY University closed. No classes or examinations.

## APRIL 2002

April 1 Monday Last date for receipt of applications for admission (including complete and official documentation) to the Faculty of Arts for 2002 Spring Intersession, Spring/Summer Evening and Summer Day courses.

Last date for receipt of applications for admission to the Post Baccalaureate Certificate in Education for 2002 Spring Intersession and Spring/Summer Evening courses

Last date for receipt of final documentation from applicants to Nursing (Two Year Baccalaureate program for Registered Nurses)

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

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 2002.

Last date for receipt by the Faculty of Graduate Studies of applications and recommendations from graduate departments for international applicants applying for September, 2002. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

April 1 - 26 Monday - Friday Community Pharmacy Practice for all third-year Pharmacy students

April 5 Friday Intermediate Fieldwork ends for second-year Occupational Therapy students

April 6 Saturday Language reading tests for graduate students.

April 15 Monday Summer Fieldwork 1 commences for second-year Occupational Therapy students.

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

April 29 Monday Summer Internship commences for second and third-year Physical Therapy students.

Summer Fieldwork 2 begins for third-year Occupational Therapy students

April 29 - May 2 Monday - Thursday Auditions for prospective Bachelor of Music degree students.

## MAY 2002

May 1 Wednesday Last date for receipt, by the Faculty of Graduate Studies, of applications and recommendations from graduate departments for Canadian applicants applying for July 2002. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

Last date for receipt of applications for final consideration for the Asper School of Business, Integrated Human Ecology/Education Program, the Integrated Music/Education Program, Nursing, Physical Education and Recreation Studies and for direct admission to Music, Fine Arts and Engineering plus internal and external transfers to Engineering in the 2002-2003 Regular Session. Students planning to take courses through the Distance Education Program should consult the academic schedules/important dates contained in the *Distance Education Program Guide*.

Recommended date for submission of undergraduate applications to University 1. (see also July 3, 2002)

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.

Nursing Summer Term starts.

May 3 Friday Last date for registration in Spring Intersession and Spring/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 Spring Intersession/first term Spring/Summer Evening exam series in June.

Medicine 4 clerkship closes.

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

May 6 Monday Classes begin in Spring Intersession and Spring/Summer Evening.

May 6 - 10 Monday - Friday First portfolio competition for entry to School of Art.

May 6 - 15 Monday - Wednesday Medical Council of Canada examinations.

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

Last day of classes for 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 Convocation.

## JUNE 2002

**June 3 Monday** Last date for receipt of undergraduate applications by mail for admission to the Faculty of Arts. Applications to the Faculty of Arts will be accepted in-person with complete official documentation up to July 1.

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 2002 Summer Day Courses.

Last date for receipt of official documentation (e.g. transcripts) from applicants to Dental Hygiene for the 2002-2003 Regular Session.

Deadline date for receipt of complete and official university transcripts requested by Enrolment Services/Admissions for the Faculty of Social Work (except Distance Education Students - See June 7).

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 to register and pay fees for Challenge for Credit where the final examinations are held during the Spring/Summer Evening exam series in August.

Last date for submission of final official transcripts for any course work completed in the 2001-2002 academic year from applicants to the 2002-2003 After Degree B.Ed. program.

Convocation ceremony, Collège Universitaire de Saint-Boniface.

**June 7 Friday** Deadline for submission of complete and official university transcripts requested by Enrolment Services/Admissions for Social Work (Distance Education), Physical Therapy, Environmental Design and Business applicants whose qualifying year is complete. (see also July 26)

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

**June 10 Monday** Deadline for receipt by Faculty of Graduate Studies of Annual Progress Reports for masters' and Ph.D. students.

Deadline for submission of complete and official university transcripts requested by Enrolment Services/Admissions for the program of Environmental Design

**June 10 - August 2 Monday - Friday** Supplemental examination period in Dentistry and Dental Hygiene.

**June 24 Monday** Last date for receipt in Graduate Studies Office of Ph.D. theses (for distribution) from students expecting to graduate in October.

**June 25 Tuesday** Classes end in Spring Intersession.

**June 28 Friday** Exams end in Spring Intersession.

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

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.

**June 30 Sunday** Last date for receipt of applications for admission to the Agriculture Diploma program.

## JULY 2002

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

**July 2 Tuesday** Classes begin in Summer Day.

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

Last date for receipt by the Faculty of Graduate Studies of applications and recommendations from graduate departments for Canadian applicants applying for September 2002. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

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

**July 4 Thursday** Last date for receipt of undergraduate applications by mail for admission to University 1, the Continuing Education Division (General Studies), and the Faculty of Science for the 2002-2003 Regular Session.

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.

### NOTES:

- 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 30.

- 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 special students, with complete documentation, will continue to be accepted until August 30.

- Manitoba high school applicants who apply between May 31 and July 4 must make their own arrangements for high school records to be delivered to Enrolment Services/Admissions 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.

**July 15 Monday** 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 3 above and in August 30 following).

Deadline for submission of complete and official transcripts from Business applicants whose qualifying year is now complete.

## AUGUST 2002

**August 1 Thursday** Last date for receipt of applications for admission to the Post Baccalaureate Certificate in Education program for the 2002-2003 Regular Session.

Last date for receipt by the Faculty of Graduate Studies of applications and recommendations from graduate departments for International applicants applying for January 2003. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

Last date to apply for graduation in October 2002 via the telephone registration system.

**August 5 Monday CIVIC HOLIDAY** University closed. No classes or examinations.

**August 8 Thursday** Classes end in Spring/Summer Evening.

**August 10 Saturday** Exams end in Spring/Summer Evening.

**August 12 Monday** First term begins in third- and fourth-year Dentistry.

**August 19 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 21 Wednesday** Classes end in Summer Day.

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

**August 22 - 23 Thursday - Friday** In-person registration in Medicine.

**August 24 Saturday** Exams end in Summer Day.

**August 26 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 2002.

August 30 Friday Last date for in-person undergraduate applications for admission to University 1, Science and Continuing Education Division (General Studies) with complete official documentation.

## SEPTEMBER 2002

September 2 Monday **LABOUR DAY** University closed. No classes or examinations.

September 3 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 3 - 4 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 4 Wednesday Last day to register and pay fees without penalty for all programs except the Agriculture Diploma (September 13).

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 *2002-2003 Distance Education Program Guide*.

September 5 Thursday Classes begin in most faculties and schools (including evening classes) except Education courses in the Bachelor of Education. (See *Registration Guide*)

September 5 - 18 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 7 Saturday Language reading tests for graduate students.

September 13 Friday Orientation in Agriculture Diploma.

Last date to register and pay fees, without financial penalty, for Agriculture Diploma.

September 16 Monday Classes begin in Agriculture Diploma.

September 18 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 25) 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.) (For Education courses in the Bachelor of Education see the *Registration Guide*)

Last date to apply for graduation in February 2003 via the telephone registration system.

September 25 Wednesday Last date for registration revisions in first term 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 26 Thursday 2002 School Counsellors Admissions Seminar.

September 27 Friday Basic Fieldwork 2 ends for second-year Occupational Therapy students.

## OCTOBER 2002

October 1 Tuesday 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 2003.

**NOTE:** Applications for admission to the Faculty of Arts to take on-campus courses starting in January 2003 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.

October 4 Friday Medicine 3 (ITC) ends.

October 7 Monday Clinical Clerkship in Medicine begins.

October 14 Monday **THANKSGIVING** University closed. No classes or examinations.

October 21 Monday Enrolment Services/Financial Aid and Awards: Entrance Scholarship Presentation and Reception.

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

October 22 Tuesday Enrolment Services/Admissions Evening of Excellence

October 23 - 24 Wednesday-Thursday Thirty-Fifth Annual Fall Convocation.

October 25 Friday First term lectures end for fourth-year Pharmacy.

October 28 Monday Last date for distribution of masters' theses/practica (to examining committee) by students expecting to graduate in February 2003.

October 28 - November 1 Monday - Friday Examination period for first term of fourth-year Pharmacy.

## NOVEMBER 2002

November 1 Friday 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.

**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 10, 2002.

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 *2002-2003 Distance Education Program Guide*.

Last date for receipt by the Faculty of Graduate Studies of applications and recommendations from graduate departments for Canadian applicants applying for January 2003. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

Last date for the receipt of applications for admission to Medicine for the 2003-2004 Regular Session.

November 4 Monday Orientation for experiential rotations for all fourth-year Pharmacy students.

November 11 Monday **REMEMBRANCE DAY** University closed. No classes or examinations.

November 12 Tuesday First term experiential rotations begin in fourth-year Pharmacy.

November 13 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.

November 29 Friday Last date for receipt of University 1 and Engineering applications for consideration for advanced early admission for Manitoba/Northwestern Ontario high school applicants.

Last day of lectures in Agriculture Diploma.

## DECEMBER 2002

December 2 Monday Last date for receipt of applications for Advanced Early Admission to University 1 and Engineering

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

Last date for receipt of applications by the Faculty of Graduate Studies of applications and recommendations from graduate departments for international applicants applying for May 2003. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

December 2 - 9 Monday - Monday Examination period in Agriculture Diploma.

December 4 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 6 Friday 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 Friday - Thursday Examination period. Students are reminded that they must remain available until all examination and test obligations have been fulfilled.

December 6 Friday Last day of lectures in Law.

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

Last day of lectures in all years of Dentistry, and all years in Dental Hygiene.

December 7 Saturday Examinations begin in Law.

December 9 - 18 Monday to Wednesday Examination period for first, second- and third-year Dentistry.

December 10 Tuesday Last date for application (in-person) for admission to University 1, the Continuing Education Division and the Faculty of Science for second term credit courses. Applicants must provide complete official documentation at the time of application.

December 11 - 18 Wednesday to Wednesday Examination period for fourth-year Dentistry and all years of Dental Hygiene.

December 13 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 Thursday End of examinations and first term.

Clinics end in third and fourth-year Dentistry.

December 20 Friday Last working day. University closes until January 2.

Medicine 4 Clerkship closes until January 2.

## JANUARY 2003

January 2 Thursday University re-opens. Classes begin the following Monday.

Medicine 4 Clerkship resumes.

January 6 Monday 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.

Advanced fieldwork begins in third-year Occupational Therapy.

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 2003.

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

January 6 - 17 Monday - Friday Period for registration and registration revisions in second term half-courses in all programs except Agriculture Diploma (see January 15).

January 8 Wednesday Supplemental examinations for Agriculture Diploma.

January 11 Saturday Language reading tests for graduate students.

January 13 Monday Second term experiential rotations begin in fourth-year Pharmacy.

January 15 Wednesday 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 17 Friday 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 15) 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 2002-2003 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 to apply for graduation in May 2003 via the telephone registration system.

January 22 Wednesday Last date for receipt of applications for admission to Dentistry for the 2003-2004 Regular Session.

January 27 Monday Last date for receipt, in Graduate Studies office, of PH.D. thesis (for distribution) from students expecting to graduate in May 2003.

## FEBRUARY 2003

February 1 Saturday Last date for receipt of applications to the Faculty of Law.

February 3 Monday Last date for receipt of applications for Early Consideration to University 1, Engineering, Music and Fine Arts for the 2003-2004 Regular Session.

Last date for receipt of applications by the Faculty of Graduate Studies for applications and recommendations from graduate departments for international applicants applying for July 2003. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

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

Last date for the receipt of applications to the After-Degree Bachelor of Education Program including the Supplementary Application Form, the Statement of Interest in Teaching and official transcripts.

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.

Auditions for prospective Bachelor of Music degree students.

Last date for distribution of masters' theses/practica (to examining committee) by students expecting to graduate in May of 2003.

Application deadline for Nursing Summer term.

February 7 Friday Second term experiential rotations end in fourth-year Pharmacy.

February 10 Monday Second term lectures begin in fourth-year Pharmacy.

February 14 Friday Advanced Fieldwork ends for third-year Occupational Therapy students.

Selected Studies Block begins for third-year Occupational Therapy students.

February 17 - 21 Monday - Friday MID-TERM BREAK No classes or examinations, except for Medicine, fourth-year Pharmacy, second-year and third-year Occupational Therapy and Physical Therapy students.

February 18-19 Tuesday-Wednesday Information Days for high school students

February 24 - 28 Monday - Friday Mid-Term Break for second-year Occupational Therapy.

February 28 Friday Last date for receipt of applications for admission to the Master of Nursing for September 2003 admission.

## MARCH 2003

March 3 Monday Last date for receipt of applications to Environmental Design, Medical Rehabilitation (including Physical Therapy degree completion students), Nursing (Two-Year Baccalaureate Program for R.N.s), Pharmacy and Social Work. Students planning to take courses through the Distance Education Program should consult the academic schedules/important dates contained in the *Distance Education Program Guide*.

Last date for receipt by the Faculty of Graduate Studies of applications and recommendations from graduate departments for Canadian applicants applying for May 2003. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

Intermediate Fieldwork begins for second-year Occupational Therapy students.

March 7 Friday 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).

March 17 - 21 Monday - Friday Mid-Term break for first- and second-year Medicine.

March 19 Wednesday 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 7; 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*. UMBREG telephone registration closes at 5:30 p.m.

March 21 Friday Last day of lectures in third-year Pharmacy.

March 24 - 28 Monday - Friday Examination period for third-year Pharmacy.

March 25 Tuesday Last day of lectures in Agriculture Diploma.

March 26 - April 3 Wednesday - Thursday Final examinations in Agriculture Diploma.

March 29 Saturday Language reading tests for graduate students.

March 31 - April 25 Monday - Friday Community pharmacy practice for third-year Pharmacy.

## APRIL 2003

April 1 Tuesday 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, 2003.

Last date for receipt of applications by the Faculty of Graduate Studies of applications and recommendations from graduate departments for international applicants applying for September 2003. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

Last date for receipt of applications (including all complete and official documentation) to the Faculties of Arts and Science for 2003 Spring Intercession, Spring/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 2003 Spring Intercession and Spring/Summer Evening courses

Last date for receipt of final documentation for applicants to the Nursing Two Year Baccalaureate Program for Registered Nurses.

NOTE: Consult the *2003 Summer Session Calendar* regarding deadline dates for admission to University 1 and the Continuing Education Division (General Studies), for courses offered during Spring Intercession, Spring/Summer Evening and Summer Day.

April 3 Thursday End of examinations and second term for the Agriculture Diploma.

April 4 Friday Lectures and all clinics close for Dental Hygiene 1 and 2.

April 7 - 11 Monday - Friday Examination period for Dental Hygiene 1 and 2.

April 11 Friday Final lectures in all faculties and schools, Medicine, and courses in the Bachelor of Education (see *Registration Guide*).

Intermediate Fieldwork ends for second-year Occupational Therapy students.

April 12 - 30 Saturday - Wednesday Examination period - Students are reminded that they must remain available until all examination and test obligations have been fulfilled.

April 14 Monday Examinations begin in Law.

Examinations begin in 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 14 - 17 Monday - Thursday Examination period for fourth year Dentistry.

April 17 Thursday Last day of lectures in fourth-year Pharmacy.

Term ends for third-year Occupational Therapy students.

April 18 GOOD FRIDAY University closed. No classes or examinations

April 21 Monday Exams begin in Fourth-year Pharmacy.

April 25 Friday Graduation ceremony for School of Agriculture.

Last day of lectures in Dentistry years 1 and 2.

April 28 Monday Summer Fieldwork 2 begins for third-year Occupational Therapy students.

April 28 - May 9 Monday to Friday Examination period for first-, and second-year Dentistry.

April 29 - May 2 Tuesday - Friday Auditions for prospective Music majors.

April 30 Wednesday End of examinations and second term in those Faculties and Schools where examinations commenced April 12.

## MAY 2003

May 1 Thursday 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 of applications and recommendations from graduate departments for Canadian applicants applying for July 2003. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

Nursing Summer term starts

May 2 Friday Last date for registration in Spring Intersession and Spring/Summer Evening courses without late registration fee.

Medicine 4 Clerkship closes.

Last day of exams and lectures for third-year Dentistry.

May 3 Saturday Annual traditional graduation Powwow in honour of Aboriginal graduates.

May 5 Monday Classes begin in Spring Intersession and Spring/Summer Evening Session.

May 9 Friday Basic Fieldwork 1 ends for first-year Occupational Therapy students.

May 12 - 23 Monday - Friday Exam period for third-year Dentistry.

May 13 - 14 Tuesday - Wednesday Medical Council of Canada examinations.

May 15 Thursday Last day of lectures in second-year Medicine.

May 16 Friday Last day of classes in first- and second-year Medicine.

May 19 Monday VICTORIA DAY University closed. No classes or examinations.

May 23 Friday Summer Fieldwork 1 ends for second-year Occupational Therapy students.

May 28 - 29 Wednesday - Thursday One Hundred and Twenty Fourth Annual Spring Convocation.

## JUNE 2003

June 2 Monday Convocation ceremony at Collège universitaire de Saint-Boniface.

Supplemental exams for Agriculture Diploma.

June 6 Friday Summer Fieldwork 2 ends for third-year Occupational Therapy students.

June 16 Monday Deadline for receipt, by the Faculty of Graduate Studies, of Annual Progress Reports for Master's and PH.D. students.

June 23 Monday Last date for receipt, in Graduate Studies Office, of PH.D. thesis (for distribution) from students expecting to graduate in October 2003.

June 30 Monday Last date for distribution of Master's thesis/practica (to examining committee) by students expecting to graduate in October 2003.

Last date for receipt of application for admission to the Agriculture Diploma Program.

## JULY 2003

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

July 2 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 2004. Graduate departments may have earlier deadlines. Applicants are urged to confirm the deadline with the department to which they are applying.

## Deadline Dates

Where deadline dates fall on a weekend or statutory holiday, the normal closing time of the next working day will be used.

## 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 dates for the registration in each faculty and school for the 2002-2003 session are published in the *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: 204 474 9423

November 21, 2001

Report of the Senate Committee on Awards respecting AwardsPreamble

The Senate Committee on Awards (SCOA) terms of reference include the following responsibility:

"On behalf of Senate, to approve and inform Senate of all new offers and amended offers of awards that meet the published guidelines presented to Senate on November 3, 1999, and as thereafter amended by Senate. Where, in the opinion of the Committee, acceptance is recommended for new offers and amended offers which do not meet the published guidelines or which otherwise appear to be discriminatory under Policy No. 419, such offers shall be submitted to Senate for approval." (Senate, April 5, 2000)

At its meeting on October 25, 2001, SCOA reviewed seven new award offers, 12 award amendments, and two withdrawals and reports as follows.

Observation

On behalf of Senate, the Senate Committee on Awards approved and recommends that the Board of Governors approve six new awards, 12 award amendments, and two withdrawals as set out in Appendix "A" of the Report of the Senate Committee on Awards (dated November 6, 2001). These award decisions comply with the published guidelines of November 3, 1999, and are reported to Senate for information.

Respectfully submitted,

*Ewa Morphy for*

Professor R. Baydack, Chair  
Senate Committee on Awards  
RB/em

## SENATE COMMITTEE ON AWARDS REPORT TO SENATE - NOVEMBER 6, 2001

## APPENDIX "A"

## OFFERS

GEORGE A. SCHULTZ BURSARY IN NORTH AMERICAN NATIVE HISTORY

Mrs. Viola Schultz, widow of the late Dr. George A. Schultz of the Department of History at the University of Manitoba, offers to the University a one-time bursary in her husband's memory. George Schultz, a scholar of Aboriginal history, taught at the University of Manitoba from 1966 until his retirement in 1991, serving as Head of the Department of History for eight years. He authored numerous articles on native Americans and his book, *An Indian Canaan*, was published in 1972. Both students and colleagues admired his fair-minded integrity. Dr. Schultz passed away in March of 2001.

This bursary, valued at \$2,000, shall be offered to a graduate student who:

- (1) is enrolled full-time in the Faculty of Graduate Studies at the University of Manitoba, specifically in the Department of History;
- (2) is conducting research or has proposed to conduct research in the area of North American native history;
- (3) has achieved a minimum cumulative grade point average (on graduate and undergraduate courses) of 3.0 (or equivalent);
- (4) has demonstrated financial need on the standard University of Manitoba bursary application form.

The selection committee shall be named by the Head of the Department of History.

DAISY PAULLEY MEMORIAL BURSARY

Tom Paulley (M.A. / '80) and his brother, Garth Paulley, have established an endowment fund at the University of Manitoba to honour the memory of their mother, Daisy Paulley. Mrs. Paulley was active in politics for most of her adult life, with involvements with both the Co-operative Commonwealth Federation youth group and later with the NDP, for which she served as the President of the Wolseley NDP constituency. She was actively involved in many women's groups within the party. She was also the donor of two awards at the University of Manitoba, one in the Faculty of Agricultural and Food Sciences, in memory of her husband, and one in the School of Music, in memory of her parents. The purpose of this fund is to assist students enrolled in the Department of Political Studies.

Each year, beginning in 2003, an annual bursary will be offered to an undergraduate student who:

- (1) is enrolled full-time in the Faculty of Arts at the University of Manitoba, with a declared major or in the honours program in Political Studies;

## SENATE COMMITTEE ON AWARDS REPORT TO SENATE - NOVEMBER 6, 2001

- (2) has achieved a minimum cumulative grade point average of 3.0;
- (3) has demonstrated financial need on the standard University of Manitoba bursary application form.

The selection committee shall be named by the Head of the Department of Political Studies.

**STINSON BURSARY IN ENVIRONMENTAL SCIENCE**

Margaret (B.I.D. / '60) and Hartley Stinson (B.Arch. / '60) have established an endowment fund at the University of Manitoba. The purpose of this fund is to provide financial assistance to students of Environmental Science.

Each year, starting in the winter of 2003, a bursary valued at the available annual income from the fund, shall be offered to a student who:

- (1) is enrolled full-time in the second, third or fourth year of a four-year Bachelor of Science degree in the Faculty of Science at the University of Manitoba;
- (2) has declared a major or honours program in Environmental Science;
- (3) has achieved a minimum cumulative grade point average of 2.5;
- (4) has demonstrated financial need on the standard University of Manitoba bursary application form.

The selection committee shall be named by the Director of the Environmental Science Program.

**LYDIA FRIESEN MEMORIAL BURSARY IN FINE ARTS**

Mrs. Lydia Friesen has bequeathed a generous gift to the University of Manitoba. This gift has created a bursary endowment fund which will provide much needed educational support to students in the School of Art at the University of Manitoba. Mrs. Friesen worked as a teacher all her life, while actively and passionately pursuing her love of art as a hobby. She not only enjoyed and appreciated the creations of others, but she was an avid painter and maker of ceramics. She also enrolled in numerous courses to hone her craft.

A bursary, valued at the available annual income from the fund (initially approximately \$500), will be offered for the first time in the fall of 2003. It will be offered to students who:

- (1) are enrolled full-time in the School of Art at the University of Manitoba;
- (2) have achieved a minimum cumulative grade point average of 3.0;
- (3) have chosen to specialize in painting, sculpture, ceramics, or drawing;
- (4) have demonstrated financial need on the standard University of Manitoba

## SENATE COMMITTEE ON AWARDS REPORT TO SENATE - NOVEMBER 6, 2001

bursary application form.

The selection committee shall be named by the Director of the School of Art.

**CLASS OF 1976 BURSARY IN DENTISTRY**

The Class of 1976 in Dentistry, on the occasion of their 25<sup>th</sup> graduation reunion, has established an endowment fund at the University of Manitoba. The available annual income from the fund shall provide a bursary each year (starting in the year 2002). The bursary will be valued at \$2000, to be awarded to the recipient in two installments. The first installment of \$1000 will be awarded to the recipient in the first year of study in the Faculty of Dentistry. The second installment of \$1000 will be awarded to the recipient in the second year of study in the Faculty of Dentistry.

The recipient of the bursary must meet the following criteria:

- (1) must be enrolled in the first year of study in the Faculty of Dentistry at the University of Manitoba;
- (2) must be a resident of Manitoba;
- (3) must have demonstrated financial need on the standard University of Manitoba bursary application form and must be assessed as the student with the highest financial need among eligible applicants.

In order to receive the second installment of the bursary, the recipient must have successfully completed the first year of study in the Faculty of Dentistry in his/her first attempt, been promoted to the second year of the program and must enrol in this second year in the consecutive year.

The selection committee shall be named by the Dean of the Faculty of Dentistry.

**NANCIE J. MAURO (nee TOOLEY) GRADUATE SCHOLARSHIP  
IN ONCOLOGY RESEARCH**

An endowment fund has been established at the University of Manitoba in memory of Nancie J. Mauro (nee Tooley). Nancie Tooley was born and raised in Winnipeg. She attended the University of Manitoba, from which she obtained a Bachelor of Arts degree in 1950, with a special focus on Music and Literature. Nancie was a dedicated student government member and continued to support her alma mater following graduation. In 1951, she married Arthur Mauro and together, they raised a close family of four children. Nancie always held fast to the belief that one has a duty to give back to society and she lived this motto to the fullest. She was an active volunteer with many organizations, from the Junior League in her younger years to her most recent commitment to the Canadian National Institute for the Blind, to which she gave generously of her time by recording books for the blind. She was also always a great support to her husband, Arthur V. Mauro, during his tenure as Chancellor of the University of Manitoba, a position he held from 1992 to 2001.

## SENATE COMMITTEE ON AWARDS REPORT TO SENATE - NOVEMBER 6, 2001

The available annual income from the fund shall support two scholarships of equal value (initially approximately \$5000 each). The first scholarships shall be available in the year 2003. They will be offered to students who:

- (1) are enrolled full-time in the Faculty of Graduate Studies (Masters or Ph.D. program) at the University of Manitoba, specifically either in the Faculty of Nursing or the Faculty of Medicine; or are in the Postgraduate Medical Education Program, either as residents or as fellows;
- (2) have achieved a minimum cumulative grade point average of 3.5 (or equivalent) in the graduate and undergraduate programs;
- (3) are conducting or have proposed to conduct research in the area of Oncology and have been judged by the selection committee as demonstrating the greatest promise (among the applicants) as researchers in this field.

The recipients of this award may hold it with any other award. Eligible students will be required to submit a letter of application to the Faculty of Graduate Studies. The application letter will provide a summary of the research that the student is conducting or plans to conduct and will outline the relevance of the research to the study of Oncology. The Faculty of Graduate Studies will set the deadline date for applications each year.

If there is no qualified student in a given year, this award will NOT be offered to students pursuing research in other areas. In addition, if only one qualified student is selected, the award will be valued at half of the available annual income from the fund (it shall not be doubled for one recipient). In both cases, excess income shall be capitalized with the corpus of the fund.

This fund will be administered according to the investment policies and practices currently employed by The University of Manitoba for all other endowment funds.

The selection committee shall be named by the Dean of the Faculty of Graduate Studies, and shall include at least one academic representative from each of the Faculties of Nursing and Medicine.

## AMENDMENTS

### SUSAN LOADMAN MEMORIAL PRIZE

The terms of reference for this prize are to be amended. Firstly, the award will now be called the Susan Loadman Memorial Award. Secondly, the terms will be broadened to include, for consideration, students who are graduating from the LL.B. program in the Faculty of Law at the University of Manitoba and are continuing to graduate level legal studies either at the University of Manitoba or at another university.

## SENATE COMMITTEE ON AWARDS REPORT TO SENATE - NOVEMBER 6, 2001

**W.E. MUIR SCHOLARSHIP FOR GRADUATE STUDENTS  
IN BIOSYSTEMS ENGINEERING**

Several changes are to be made to the terms of reference of this award. Firstly, the award will no longer be offered as a travel grant, but rather strictly as a scholarship, (not related to the travel costs or needs of a recipient). It will be based on academic performance only. The terms will specify that it is open to students in both the M.Sc. and Ph.D. programs in Biosystems Engineering. Another change will state that the award can only be held by any one student only twice (only once in the masters program and once in the doctoral program, or only twice in the doctoral program). The terms will explicitly state that the recipient must be under the supervision of an academic staff member (Adjunct, Assistant, Associate, or Full Professor) in the Department of Biosystems Engineering. This award can be held with other awards. An additional change will indicate that only one award is being offered each year for the time being (previously, the income from the fund was split among eligible applicants). Finally, the selection committee will now be the Biosystems Engineering Ph.D. Selection Committee, which shall receive award recipient recommendations each year.

**WILLIAM AND OLGA DANYLUK BURSARY**

The terms of reference for this bursary are to be amended. Firstly, the award will now be open to students of the Faculties of Arts, Science, and Human Ecology (previously, it was open to Arts only). An addition is to be made to the stipulation that recipients are to be members of St. Andrew's College. Now, in addition to membership, recipients will have to be involved in the activities of the college, as judged by the Principal of the College. Finally, the terms will state that when the fund generates \$1,000, two bursaries of \$500 each will be offered in these three areas and when the fund generates \$1500, three bursaries will be offered, preferably one in each of the three stated Faculties.

**FUTURE LEADER AWARD IN OCCUPATIONAL THERAPY**

The terms of reference for this award are being amended. Previously, the terms stated that the recipient must have participated in a Role-Emerging Fieldwork Placement *and* in one or more of the following activities:

- student council
- an occupational therapy research project
- a successful application to the School of Medical Rehabilitation Endowment Fund
- a national occupational therapy conference
- publication of an article (peer-reviewed or non peer-reviewed)
- a continuing education course / workshop outside of regular classes
- community organizations for one or more years

As the Role-Emerging Fieldwork Placement is not available to students every year, the terms are being amended to state that the recipient must have participated in the placement *and/or at least three of the above listed activities*. Two other activity options are being added to the above

## SENATE COMMITTEE ON AWARDS REPORT TO SENATE - NOVEMBER 6, 2001

list:

- participation in Manitoba Society of Occupational Therapists, Association of Occupational Therapists of Manitoba and/or Canadian Association of Occupational Therapists student activities or committees
- involvement in planning or implementing Occupational Therapy Week events

Finally, the terms will now state that students will now apply for this award (not be nominated) and that the competition will take place in the summer/early fall, rather than in the spring, as previously noted.

#### ED ANDERSON AWARD

Upon request from the University of Manitoba Students' Union, the group which sponsors this award, its name is to be amended to reflect the commitment and involvement of the donors of the award. The award will now be called the UMSU — Ed Anderson Award.

#### MCCRORIE-WEST FAMILY FELLOWSHIP FOR ALZHEIMER RESEARCH

Upon request from the donor contact for this award, its terms are to be amended. Currently, the terms state that the award is to be valued at the available annual income from the fund. The terms are to be amended to indicate that the award is to be valued at \$2,500 a year, starting in 2001. Once the fund generates \$3,000 a year, then the award value is to be increased to \$3,000 a year.

#### VITALY BUTENKO ASSISTANCE AWARD

The terms of reference for this bursary currently state that recipients must be enrolled full-time in an undergraduate or graduate program in either the Faculty of Management, Faculty of Law, Faculty of Arts (Economics), or the Master of Business Administration program. With the donor's approval, the Faculty of Science is being added to the list of eligible Faculties (both graduate and undergraduate programs). This addition comes into effect for the 2001 award.

#### ENGINEERING CLASS OF 1946 SCHOLARSHIPS

The financial allocations of these four awards are to be amended. Recently, the terms were amended to state that three undergraduate scholarships will each be valued at 20% of the income from the fund and that the new graduate scholarship will be valued at 40% of the fund. However, the donor contacts for this award prefer that the three undergraduate awards be valued at \$1000 each and that the balance of the income from the fund support the graduate scholarship. Thus, the graduate scholarship will be the only one of the four awards which will fluctuate in value from year to year.

## SENATE COMMITTEE ON AWARDS REPORT TO SENATE - NOVEMBER 6, 2001

**DR. A.W. HOGG UNDERGRADUATE SCHOLARSHIPS**

The terms of reference of this scholarship are to be amended. Two Hogg Scholarships were previously offered to students in the Faculty of Architecture, one in the undergraduate Interior Design program and one in the undergraduate Environmental Design program. As the Interior Design program is no longer offered as an undergraduate degree, only one Hogg Scholarship will now be offered in the Faculty of Architecture, to a student in the Bachelor of Environmental Design program.

**R.A.C. MEMORIAL SCHOLARSHIP**

The terms of reference of this scholarship are to be amended. It was previously offered to students in the undergraduate Interior Design program in the Faculty of Architecture. As the delivery of the Interior Design curriculum has been altered, the bursary will now be offered to a student either in the final year of the Bachelor of Environmental Design degree program and enrolled in the Interior Environment Option, or to a student in the Pre-Masters Qualifying year for the Master of Interior Design program.

**VICTORIA C. HULL MEMORIAL AWARD**

The terms of reference of this bursary are to be amended. It was previously offered to students in the undergraduate Interior Design program in the Faculty of Architecture. As the delivery of the Interior Design curriculum has been altered, the bursary will now be offered in the final year of the Bachelor of Environmental Design degree program to a student who is enrolled in the Interior Environment Option.

**SARI GOLDEN MEMORIAL BURSARY**

The terms of reference of this bursary are to be amended. It was previously offered to students in the undergraduate Interior Design program in the Faculty of Architecture. As the delivery of the Interior Design curriculum has been altered, the bursary will now be offered in the final year of the Bachelor of Environmental Design degree program to a student who is enrolled in the Interior Environment Option.

**WITHDRAWALS****XI PSI PHI ALUMNI SCHOLARSHIP**

Due to discontinued funding for this award, it is to be withdrawn, with the last award being made in the fall of 2001.

**SCARROW & DONALD AWARDS**

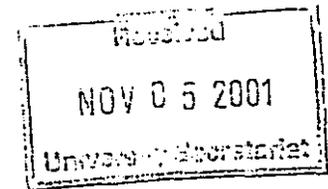
As requested by the donors of these awards, these scholarships are to be withdrawn after they are offered for the last time in the fall of 2001.



UNIVERSITY  
OF MANITOBA

Office of the President

130



202 Administration Building  
Winnipeg, Manitoba  
Canada R3T 2N2  
Fax: (204) 261-1318

1 November 2001

Dr. Leo LeTourneau  
Executive Director  
Council on Post-Secondary Education  
410 - 330 Portage Avenue  
Winnipeg, Manitoba  
R3C 0C4

Dear Dr. LeTourneau,

**Statement of Intent - Ph.D. Program in Cancer Control**

On behalf of the University of Manitoba, I submit herewith a "Statement of Intent" with respect to a new Ph.D. program in Cancer Control, which is to be jointly offered by the Faculty of Nursing and the Department of Community Health Sciences.

This is an innovative new program, which will make available to Manitobans doctoral-level training in cancer control, that is, the conduct of research and the translation of knowledge from research into strategies and actions to prevent cancer and to increase survival and quality of life for those touched by cancer. Initially, we expect relatively few students to pursue this option, but over time we anticipate that others from outside Manitoba will choose to enter this program. Further details of the proposed program are attached to the "Statement of Intent".

Because this program will make use of existing courses and staff members, we are able to implement it without additional financial resources. We hope to implement this program in September 2002.

If during your Council's consideration of this "Statement of Intent" additional information is required, please contact me directly.

Sincerely yours,



Richard A. Lobdell  
Vice-Provost (Programs)

RAL/dg

Encl.

cc Emőke J. E. Szathmáry, President and Vice-Chancellor  
James S. Gardner, Vice-President (Academic) and Provost  
Fernando de Toro, Dean, Faculty of Graduate Studies  
David Gregory, Dean, Faculty of Nursing  
Brian Hennen, Dean, Faculty of Medicine  
Beverly Sawicki, University Secretary

132  
❖ Council On Post-Secondary Education  
**STATEMENT OF INTENT**

**Institution**

- |  |  |
|--|--|
| <input type="checkbox"/> Brandon University                      | <input type="checkbox"/> Assiniboine Community College |
| <input checked="" type="checkbox"/> University of Manitoba       | <input type="checkbox"/> Keewatin Community College    |
| <input type="checkbox"/> University of Winnipeg                  | <input type="checkbox"/> Red River Community College   |
| <input type="checkbox"/> Collège universitaire de Saint-Boniface |  |

**Program Overview**

● **Program Name: Joint PhD Program in Cancer Control**  
[Cancer Control is the conduct of research and the translation of knowledge from research into strategies and actions to prevent cancer and to increase survival and quality of life for those touched by cancer.]

● **Credential to be offered: PhD**

● **Does the program require accreditation from a licencing group?**  YES  NO  
If yes, name group

● **Length of the program:** \_\_\_\_\_  3 Years  Months  Semesters

● **Proposed program start date:** 01/09/02  
Day/Month/Year

● **Which department(s) within the Institution will have responsibility for the program?**

**Faculty of Nursing and Department of Community Health Sciences, Faculty of Medicine**

● **As compared to other programs your institution will be proposing, is the priority of this program:**  
 High  
 Medium  
 Low

● **Is this a new program?**  YES  NO

● **Is this a revision of an existing program:**  YES  NO  
If YES, name program  
What are the impacts of changing this program?

This is a new program. Students focusing on cancer nursing at the PhD level have had to study at universities in the United States or the United Kingdom. A few have chosen to study locally in Individual Interdisciplinary Programs at the University of Manitoba.

● **Will the program be available to part-time students?**  YES  NO

● **Will this program have a cooperative education component?**  YES  NO  
If YES, how long with the field placement be?

● **Will the program contain an option to assess the prior learning of students, to grant credit for the skills/knowledge already present?**  YES  NO  
Provide Details

● **Will there be distance delivery options?**  YES  NO  
Provide Details

The Faculty of Nursing has extensive distance delivery capacity (videoconference and WebCT). Use of these modalities will be available to students on a case-by-case basis.

● **Will this program be delivered jointly with another institution?**  YES  NO  
If YES, name the institution

● **Are similar programs offered in Manitoba or other jurisdictions?**  YES  NO  
If YES, indicate why this program is needed (e.g., area of specialization)

This is a unique national program that will provide training for the next generation of nurse scientists in cancer control.

● **What articulation, block transfer or credit transfer arrangements will you be looking at developing for this program?**  
Students will be expected to have 15 pre- or co-requisite credits from Master's or equivalent study.

<sup>1</sup>National Cancer Institute of Canada (NCIC) (1998). Board approved definition of cancer control. Toronto, Canada.

## 1. Program Description

### ● Describe the program and its objectives:

The proposed program is a joint Ph.D. between the Faculty of Nursing and the Department of Community Health Sciences to be offered at the University of Manitoba. The program will provide a sequenced and structured process to produce a major shift toward evidence based nursing practice in cancer control including three domains of nursing: cancer care, palliative care, and cancer prevention.

Targeted candidates will be those students seeking a Ph.D. degree in order to strengthen their academic capacity in knowledge synthesis and dissemination/uptake in the field of oncology nursing. The overarching program goal will be to produce a strong cadre of academic investigators and clinical scientists who have been "raised" in a different model - one where independent investigation is maintained but one which is also directly responsive to the concerns and experiences of practicing colleagues in the area of cancer care. The program will involve significant interactions between the Ph.D. students and their professors, leading investigators, practicing clinicians, program managers, and policy makers. The Ph.D. students will be expected to participate in activities to develop evidence based nursing protocols for transfer to cancer agencies across Canada, and to evaluate the effect of the new protocols on patient outcomes.

This program will also provide a model for joint PhD programs in other areas of health care, both locally and nationally. This model provides for efficient use of scarce financial and human resources while maximizing benefits both for the students and academic units. As well, there is the potential for direct benefit to health care agencies and consumers of health care.

### ● Provide an overview of the content to be taught in this program:

In addition to a thesis, the academic requirements will include core courses on cancer nursing research, principles of epidemiology of cancer, management and organizational behaviour, philosophy of nursing science, advanced biostatistics, clinical trials, and a selected readings course related to the student's focus of study for a total of 21 credit hours. The new Ph.D. program will require minimal additional resources from the University of Manitoba, as most courses are already offered by the Faculty of Nursing, the Department of Community Health Sciences, Faculty of Medicine, and the Faculty of Management.

## 2. Enrollment

### ● What is the program's initial projected enrollment?

Initially two or three new students are anticipated on an annual basis. These students will be drawn from the Master's stream of oncology at the Faculty of Nursing, University of Manitoba, as well as graduates from other Canadian universities.

### ● What is the projected enrollment for the 2<sup>nd</sup> and 3<sup>rd</sup> years?

The number of student admissions is expected to increase somewhat over time as the Ph.D. program becomes established reaching a stationary state enrollment throughout the three years of approximately 12 students.

### ● Describe the expected student profile?

The program is expected to attract students from across Canada as well as locally, who are seeking careers as clinical scientists, academic researchers, or senior health care administrators with responsibility for the transfer of research findings into clinical and community practice. Students would be expected to have a background in some aspect of cancer care and a completed master's degree in nursing or a related discipline.

● What labour market need is the program expected to meet?

There is a recognized scarcity of nurses with PhD preparation in both knowledge generation and the translation of knowledge into practice settings. To address this need, the Government of Canada funded the Canadian Health Services Research Foundation to provide a series of Chairs in Nursing Care and Health Services Research. The funding for the Chairs supports the development of innovative educational programs to address the shortage of nurse scientists. In total 12 Chairs were funded across Canada including one in the field of cancer care for Dr. Lesley Degner of the Faculty of Nursing. Support for Dr. Degner's Chair includes a 10 year commitment totaling approximately 1.7 million dollars. This funding supports new personnel to teach in the proposed PhD program as well as student training stipends and tuition and innovative program development.

With PhD preparation that spans both the disciplines of nursing and community health sciences, the graduates of this proposed program will be prepared to assume a variety of health science and health care leadership roles. For example, graduates could be employed as nurse scientists in clinical agencies, as directors of evidenced based nursing practice in large hospitals, or to assume leadership positions in cancer control activities both locally and nationally.

● Are there currently jobs in Manitoba in this field?  YES  NO  
If yes, where (geographic location and industry)?

Positions include the University of Manitoba, CancerCare Manitoba, Manitoba Health and Winnipeg Regional Health Authorities, Manitoba Division of the Canadian Cancer Society.

● What is the future job forecast for individuals with this education/training/credential?

Excellent! There is an acute shortage of personnel with the background of clinical care, research training and understanding of organizational issues which affect the use of knowledge in practice environments.

● How does this program fit with Manitoba's stated economic, social and other priorities?

In the document, "Achieving Accountability" the Manitoba government addresses the need to improve the overall quality of the province's health care system with a refocus on accountability to individuals in Manitoba (Manitoba Health, 1999)<sup>7</sup>. As part of the strategy to bring decision-making closer to the community, the Manitoba government decentralized health care planning by establishing local regional health authority (RHAs) boards that are charged with a broad provincial policy direction to plan, manage, deliver, monitor and evaluate health services within their regions. As part of their accountability role, the RHAs are vested with authority to initiate practice-based research, participate in provincial research, and establish 'best practice' standards to ensure that Manitoba citizens receive the same high quality care. Due to increased pressure on resources and a desire to ensure services are appropriate in meeting the health care needs of individuals, the health policy of the Manitoba government has advanced a focus on delivering clinically effective care that is based on best practice. The Manitoba government and other provincial governments across Canada are supportive of the development of evidence based practice as they see its advantages in terms of improved efficiency in the delivery of health care through identification of effective treatments. A key goal is to improve health care delivery by making health care decision-making more evidence based.

The need for effective use of resources is particularly evident in the field of cancer care. CancerCare Manitoba predicts that the number of Manitobans living with cancer will

<sup>7</sup> Manitoba Health (1999). Achieving accountability. Winnipeg: Manitoba health, regional Support Services.

increase by 80% over the next 25 years (CancerCare Manitoba, 2001a)<sup>3</sup>. Furthermore, the predicted need for nurses in the oncology ambulatory sector alone will double over the next decade. There is also a vital need to increase primary prevention, early detection, and public health efforts throughout the province to reduce the incidence of cancer and the resultant burden on the health care system (CancerCare Manitoba, 2001b)<sup>4</sup>. Nurse leaders emerging from the PhD program in cancer control will be generating new knowledge to enhance the delivery of health services in all health sectors (hospitals, clinics and the community). They will also play an important role in educating future nurses through undergraduate and graduate nursing programs.

● What agencies, groups, institutions will be consulted regarding development of the program?

CancerCare Manitoba and other cancer agencies throughout Canada, the Canadian Cancer Society, the National Cancer Institute of Canada, Health Canada, the Canadian Institutes of Health Research, the Winnipeg Regional Health Authority, the Manitoba Centre for Health Policy and Evaluation.

● Is there any other information relevant to this program?

The existing administrative, academic, and technological structures of the Faculty of Nursing and the Department of Community Health Sciences along with the new resources provided by the CHSRF Chair Award described above are fully capable of supporting this new program.

In addition, the Canadian Health Services Research Foundation has recently awarded \$600,000 (yearly for five years) jointly to the University of British Columbia and the University of Manitoba to support a regional training centre in health services research, with funds for student fellowships and curriculum development. This award is timely and will benefit the proposed new PhD program. As well, the Faculty of Nursing is part of a national training centre in research utilization and policy development that will provide PhD fellowships for full time students. Students in the joint PhD program will qualify to apply for these awards.

4. Financial Information

● Projected Program Costs:	Salary	\$7,200 (initial)
	Operating	0
	Capital	N/A
	<b>Total cost</b>	<b>\$7,200 (initial)</b>
● Projected Program Revenue:		\$3,700 (ongoing)
	Tuition	\$8,206 (initial)
	Other	N/A
	<b>Total revenue</b>	<b>\$49,236 (fully established)</b>

(see attached budget)

Submitted by:

**David Gregory (Dean)**

Faculty of Nursing

Name (print) Position

David Gregory  
Signature

SEPTEMBER 19, 2001  
Date

**Kue Young (Head)**

Department of Community Health Sciences

Name (print) Position

Kue Young  
Signature

20/9/2001  
Date

Brian Hennen  
Brian Hennen, MD, CCFP (A, 2011)  
Dean, Faculty of Medicine

<sup>3</sup>Cancer Care Manitoba, (2001a). Cancer capacity planning study - Infrastructure requirements. Edmonton: KPMG Consulting.

<sup>4</sup>Cancer Care Manitoba, (2001b). Cancer capacity planning study - primary prevention, early detection and community health assessments for cancer control. Edmonton: KPMG Consulting.

**PhD Program Budget**

09-Jul-01

Course Development:

		Total
Nursing - Philosophy of Science (3 credits)	3,500	
Community Science - courses are existing	0	
		3,500

Teaching Resources:

Nursing - 1 - 3 credit courses	3,700	
(includes Faculty plus Faculty supported from the CHSRF award)		
Community Science - students incorporated in current classes	0	
		3,700

Operating Expenses<sup>1</sup>:

Nursing - Associate Dean's Office - .05 FTE	2,142	
Nursing - CHSRF Chair Program Assistant - .1 FTE	2,982	
Nursing - MNRI serves Graduate Students with support	0	
		0

**TOTAL: 7,200**

**No additional funding will be required, the existing infrastructure plus funding from the CHSRF award will support this program.**

<sup>1</sup>Offered in kind

**Tuition Revenue - PhD Program**

16-May-01

	1st year	2nd year	3rd year	4th year	5th year	6th year
# of students =	2	3	3	4	4	4
Year 1	8,206	12,309	12,309	16,412	16,412	16,412
Year 2	0	8,206	12,309	12,309	16,412	16,412
Year 3	0	0	8,206	12,309	12,309	16,412
<b>TOTAL: (21 credits)</b>	<b>8,206</b>	<b>20,515</b>	<b>32,824</b>	<b>41,030</b>	<b>45,133</b>	<b>49,236</b>
<b>Difference/increase each year</b>		<b>12,309</b>	<b>12,309</b>	<b>8,206</b>	<b>4,103</b>	<b>4,103</b>

h:\spreadsheets\PhD Tuition.xls

137

## **Proposed Joint PhD Program in Cancer Control Between**

### **The Faculty of Nursing and the Department of Community Health Sciences**

#### **Program Overview**

The proposed program is a joint PhD in cancer control between the Faculty of Nursing and the Department of Community Health Sciences, Faculty of Medicine. Cancer control is the conduct of research and the translation of knowledge from research into strategies and actions to prevent cancer and to increase survival and quality of life for those touched by cancer (National Cancer Institute of Canada, 1998). The program will provide a sequenced and structured process to produce a major shift toward evidence based nursing practice in cancer control in three domains: cancer care, palliative care, and cancer prevention. Targeted candidates will be those students seeking a PhD degree in order to strengthen their academic capacity in knowledge generation and knowledge dissemination/uptake in the field of oncology nursing. The overarching program goal will be to produce a strong cadre of academic investigators and clinical scientists who have been "raised" in a different model - one where independent investigation is maintained but one which is also directly responsive to the concerns and experiences of practicing colleagues in the area of cancer care. The program will involve significant interactions between the PhD students and their professors, leading investigators, practicing clinicians, program managers, and policy makers. The Ph.D. students will be expected to participate in activities to develop evidence based nursing protocols for transfer to cancer agencies across Canada, and to evaluate the effect of the new protocols on patient outcomes.

#### **Needs To Be Addressed by the Program**

There is a recognized scarcity of nurses with PhD preparation in both knowledge generation and the translation of knowledge into practice settings. To address this need, the Government of Canada funded the Canadian Health Services Research Foundation (CHSRF) to provide a series of Chairs in Nursing Care and Health Services Research. The funding for the Chairs supports the development of innovative educational programs to address the shortage of nurse scientists. In total 12 Chairs were funded across Canada including one in the field of cancer care for Dr. Lesley Degner. Support for Dr. Degner's Chair includes a 10 year commitment totaling approximately 1.7 million dollars. This funding supports new personnel to teach in the proposed PhD program as well as student training stipends and tuition and innovative program development.

With PhD preparation that spans both the disciplines of nursing and community health sciences, the graduates of this proposed program will be prepared to assume a variety of health sciences and health care leadership roles. For example, graduates could be employed as nurse scientists in clinical agencies, as directors of evidenced based nursing practice in large hospitals, or assume leadership positions in cancer control activities both locally and nationally.

## Objectives of the Program

The program will be a Doctor of Philosophy degree with a focus on specialization in cancer control. The primary objective of the program is to provide doctoral studies in knowledge generation, critical appraisal, synthesis, and dissemination/uptake of research through the joint educational program. To meet long-term capacity requirements for cancer control services across Canada, the proposed program will also produce nurse leaders with specialized knowledge and skills in evidence-based practice principles. These nurse leaders will serve as players on expert teams in the cancer control arena, including those found in Health Canada, provincial health departments, cancer care agencies, regional health authorities, and non-governmental organizations (e.g., Canadian Cancer Society/National Cancer Institute of Canada, and the Canadian Association of Provincial Cancer Agencies).

Specific objectives of this program are to:

- provide excellent doctoral-level education in the specialty area of oncology nursing to students with varying interests and clinical backgrounds in cancer control
- provide a workable model for the integration of science and practice on a national basis to meet evolving recommendations for long-term capacity requirements for cancer control services
- produce a strong cadre of academic investigators who are expected to develop independent investigation but are strongly influenced by the realities of practice
- foster a learning environment that stimulates in students an attitude of critical inquiry in order to promote a health care system that is responsive to best nursing practice in the field of cancer control
- provide students with a variety of 'traditional' and innovative learning approaches in addition to course work
- enhance the existing body of oncology nursing knowledge by generating knowledge of national and international relevance in the broad fields of cancer care, palliative care, and cancer prevention
- provide opportunities for students to serve governmental and non-governmental agencies across Canada by helping to stimulate the development of research programs that are directly responsive to the concerns and experiences of clinical practice colleagues in cancer control
- create opportunities for students to interact with individuals in other UM units, academic institutions, governments, non-governmental organizations, and cancer agencies.

## Description of the Program

PhD students in the joint program will be required to:

- conduct original research,
- synthesize and state the relevance of their research in a thesis, and
- demonstrate a contribution to evidence based practice in cancer nursing through

## dissemination and utilization of research-based evidence

**Strengths of the Program**

The following strengths exist in the specific details of the program. First, the program will foster collegial linkages initiated by students at the Master's and PhD levels that will lay the foundation for a strong network of practitioners, educators, researchers, program managers, and policy makers in the next generation, thereby reducing the isolation of one group from the other that is commonly seen today. Second, the program will provide a potential resource based on a cadre of investigators who will serve a major role in assisting front line managers to know where to turn when they wish to make practice changes that are informed by the latest evidence. Third, the program will promote the preparation of Ph.D. students who will have a focus not only on knowledge generation, but also on knowledge synthesis and dissemination or uptake. Fourth, the proposed program will create a generation of investigators to assume expanded scientific roles and to provide leadership for a new approach to science in nursing - 'evidence based nursing practice' in Canada. In their training, these investigators will be taught how to assume shared responsibility with nursing administrators, health care organizations, and individual professional nurses to move research-based knowledge into practice and to strengthen the research-to-practice continuum through research utilization. Fifth, the program will promote the potential linkage of nursing to the broader arena of research cancer policy in a way that does not currently exist.

Sixth, there is a salient need for strategies to reduce the projected increased burden of cancer across Canada. The proposed PhD program addresses the need for doctorally prepared nurses who can contribute to more comprehensive cancer control programs that not only involve cancer care (or treatment), but also implement appropriate prevention programs. Consistent with the principles for developing a national cancer prevention system (CancerCare Manitoba, 2001), the students will not only develop specialized knowledge and skills in population-based public health approaches, stakeholder collaboration and service integration, and accountability for resource utilization, but also be capable of staying abreast of current and emerging research as directed by the fundamentals of evidence-based practice.

**Expected Student Profile**

The program is expected to attract students from across Canada as well as locally, who are seeking careers as clinical scientists, academic researchers, or senior health care administrators with responsibility for the transfer of research findings into clinical and community practice. Students would be expected to have a background in some aspect of cancer care or prevention, or are planning a future career in cancer care or prevention, and have a completed master's degree in nursing or a related discipline.

**Required Courses (21 credits)**

49.716 Cancer Nursing Research (3 credits)

49.7XX Philosophy of Nursing Science (3 credits) (to be developed)

- 49.711 Readings in Selected Topics (3 credits)  
 93.748 Biostatistics II (3 credits)  
 93.728 Advanced Biostatistics (3 credits) or  
 93.736 Clinical Trials (3 credits) or  
 49.721 Qualitative Research Methods in Nursing (3 credits)  
 93.756 Epidemiology of Cancer (3 credits)  
 27.603 Organization Theory and Behaviour (3 credits) or  
 27.744 Doctoral Seminar in Organizational Theory (3 credits)

### **Linkage Between Joint PhD Program Objectives and Required Courses**

To meet the objectives of the joint Ph.D. program, the **Cancer Nursing Research** course will provide students with an up-to-date knowledge on recent advances in cancer nursing research. As a result, doctoral students will appreciate, comprehend, and eventually participate in the promotion of nursing practice that is based on a state-of-the science in cancer care, palliative care, and cancer prevention. The course **Philosophy of Nursing Science** will provide students with the theoretical basis underpinning scientific models including nursing models. In addition, this course will provide the historical context for the development of cancer nursing research. Depending on a student's needs and area(s) of concentration, an appropriate focus will be developed in the **Readings in Selected Topics** course. The concentrated training offered in the courses, **Biostatistics II** and **Advanced Biostatistics**, promises to promote the acquisition of expertise not only in data analysis, but also specific evidence-based practice skills in the critical appraisal of evidence. The **Clinical Trials** course will promote competencies in students in relation to the conduct of systematic reviews on relevant clinical topics in cancer control commensurate with evidence-based practice principles. **Qualitative Research Methods in Nursing** or equivalent will be offered to students as an alternate to either **Advanced Biostatistics** or **Clinical Trials** to guide them in the appropriate use of qualitative inquiry and methods, depending on their research interest and research methodology needs. The **Epidemiology of Cancer** course will promote new competencies in students that will allow them to appreciate an expanded definition of the patient that includes population health in the cancer field. This course focuses on the etiology of cancer, medical interventions, and potential for prevention. Either one of the courses on **Organizational Theory** will offer students a complex grounding in understanding organizational systems to facilitate the dissemination of best practice innovations and the uptake of research findings in the health care workplace.

### **Enrollment**

Initially two or three new students are anticipated on an annual basis. These students will be drawn from the Master's stream of oncology and other specialties at the Faculty of Nursing, University of Manitoba, as well as graduates from other Canadian universities. The number of student admissions is expected to increase somewhat over time as the Ph.D. program becomes established reaching a stationary state enrollment throughout the three years of approximately 12 students.

## Program Structure

The program is designed for three years of full time study.

## References

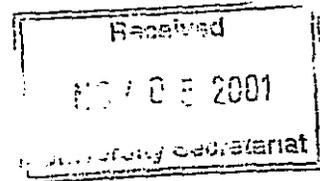
Cancer Care Manitoba. (2001). Cancer capacity planning study - primary prevention, early detection and community health assessments for cancer control. Edmonton: KPMG Consulting.

National Cancer Institute of Canada (NCIC) (1998). Board approved definition of cancer control. Toronto, Canada.

file:H:\PhD proposal summary Sept, 2001



143



UNIVERSITY  
OF MANITOBA

Office of the President

1 November 2001

202 Administration Building  
Winnipeg, Manitoba  
Canada R3T 2N2  
Fax: (204) 261-1318

Dr. Leo LeTourneau  
Executive Director  
Council on Post-Secondary Education  
410 - 330 Portage Avenue  
Winnipeg, Manitoba  
R3C 0C4

Dear Dr. LeTourneau,

**Statement of Intent - B.Sc. Minor in Ecology**

On behalf of the University of Manitoba, I submit herewith a "Statement of Intent" with respect to a new B.Sc. Minor in Ecology.

You will see that this is not really a "new" program offered within our Faculty of Science, which in fact has been teaching individual courses in the general subject area for many years. Instead, we propose to issue a new credential to those students who successfully complete the 18 credit hours specified in the "Statement of Intent". This will be especially useful for students who are pursuing a Major in an allied field, such as Botany, Zoology, Biology, Environmental Science, Geography, and Geology.

If during your Council's consideration of this "Statement of Intent" additional information is required, please contact me directly.

Sincerely yours,

Richard A. Lobdell  
Vice-Provost (Programs)

Encl.  
RAL/dg

cc Emőke J. E. Szathmáry, President and Vice-Chancellor  
James S. Gardner, Vice-President (Academic) and Provost  
James Jamieson, Dean, Faculty of Science  
Beverly Sawicki, University Secretary



## 1. Program Description

- Describe the program and its objectives:

There is no change involved to the overall program of Ecology or its objectives. Introducing a Minor will simply allow students in other academic disciplines to indicate an area of academic focus on their transcript.

- Provide an overview of the content to be taught in this program:

There will be no change in the content taught in the program as a whole. In order to earn the Minor, students will be required to take 1/22.237 Principles of Ecology, 1.354 Community Ecology, 22.348 Population Ecology, plus a total of 9 credit hours selected from a list of ecologically related courses taught in both departments. The total number of credit hours needed for the Minor is 18.

## 2. Enrollment

- What is the program's initial projected enrollment? 5-10
- What is the projected enrollment for the 2<sup>nd</sup> and 3<sup>rd</sup> years? 10-15
- Describe the expected student profile?

Students likely to be interested in declaring a Minor in Ecology include those pursuing majors in related fields, such as Botany, Zoology, Biology, Environmental Science, Geography, and Geology.

## 3. Labour Market Information

- What labour market need is the program expected to meet?

Prospective employers in such areas as Environmental Education, Environmental Consulting, and Governmental agencies involved with Parks and Environmental Resources frequently require employees with an ecological background to supplement their other academic qualifications. Given the growing interest in ecological topics in education, this Minor may also be of benefit to prospective teachers.

- Are there currently jobs in Manitoba in this field? ● YES   □ NO  
If yes, where (geographic location and industry)?

Many occupational opportunities of the type listed in the previous section exist both in Winnipeg and in rural areas, as well as across Canada. Because this is a Minor as opposed to a Major, it is not expected that this would fulfill the entire job qualifications.

- What is the future job forecast for individuals with this education/training/credential?

Forecasts of jobs in these areas are good.

- How does this program fit with Manitoba's stated economic, social and other priorities?

Ecological knowledge, both theoretical and applied, is fundamental to the economic and social well-being of all jurisdictions, both provincial and national.

- What agencies, groups, institutions will be consulted regarding development of the program?

The departments of Botany and Zoology have been consulted.

- Is there any other information relevant to this program ?

The Faculty of Science has recently allowed students to declare Minors in areas of secondary interest. It therefore seems appropriate that such a Minor should be offered in Ecology. Interactions between organisms and their environment are the essence of ecology, and thus the field has strong linkages to a variety of academic linkages.

No new expenditures or courses will be necessary to the put this Minor in place.

#### 4. Financial Information

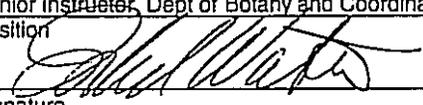
- Projected Program Costs:                      Salary  
   Operating  
   Capital  
   Total cost 0
- Projected Program Revenue:                      Tuition (10 X \$1200) = 12,000  
   Other\_  
   Total revenue \$12,000

---

Submitted by:

Isobel Waters  
Name (print)

Senior Instructor, Dept of Botany and Coordinator, Ecology Program  
Position

  
Signature

13 July 2001  
Date

IN MEMORIUM  
DR. R. IMOGENE McINTIRE

*Dr. Imogene McIntire, formerly a professor at the University of Manitoba, passed away in August at the age of 86. Born on April 14, 1919 in Lexington, Kentucky, Dr. McIntire held degrees from Ball State University and Indiana State Teacher's College, and a doctorate from Penn State University.*

*Dr. McIntire started the Early Childhood Education program at the University of Manitoba and remained as a strong mentor and professor to her students for 19 years.*

*Previous to her employment with the University of Manitoba, Dr. McIntire worked for the University of Cincinnati, and taught in the American public school system for many years. One highlight of her teaching career was when she traveled to Japan at the end of the Second World War to teach military dependents for one year.*

*Dr. McIntire is survived by Dorothy Urbahus of Indiana.*



## IN MEMORIUM

## MR. WARREN HERBERT BELYEA

Mr. Warren Herbert Belyea, formerly a professor of the Faculty of Education and the Faculty of Music, passed away August 4, 2001 at the age of 83. Born in Winnipeg on December 22, 1917, Mr. Belyea received a bachelor of arts from St. John's College, and a bachelor and master of education from the University of Manitoba.

In addition to his work as a professor, Mr. Belyea was known previously as a teacher in the Winnipeg School Division. He was also a highly respected private music instructor and strong supporter of the Winnipeg Music Competition Festival. Mr. Belyea held honorary lifetime memberships of the music festival and of the Manitoba Music Educators Association. Mr. Belyea was also a gifted composer, painter, poet and choir director.

In the Second World War, Mr. Belyea served with the 14th Field Regiment, RCA, Third Canadian Division and participated in the D-Day invasion.

He is survived by his wife Audrey, daughters Margaret and Olivia, son-in-laws John and Bruce and six grandchildren.





UNIVERSITY  
OF MANITOBA

149  
Office of the President

202 Administration Building  
Winnipeg, Manitoba  
Canada R3T 2N2  
facsimile (204) 275-7925

TO: Members of Senate

FROM: Dr. Emőke J.E. Szathmáry, President and Vice-Chancellor

DATE: November 14, 2001

SUBJECT: Status Report Re: Task Force Report

---

Attached are reports from the Continuing Education Division and St. John's College relating to the Bi-Annual Report on the Status of Recommendations in the Task Force Report (as of July 1, 2001).

They were omitted from the Report circulated to Senate at its October 3 meeting.

Attach.  
/kdt

## Continuing Education Division

Since 1997, CED's activities have been guided by a set of strategic priorities. The Division's Management Team meets in the fall to review these priorities and to identify strategies and action plans for the next budget year. CED's seven strategic priorities are: to improve program quality; to enhance program innovation; to strengthen and extend internal and external partnerships; to promote program-relevant research; to promote service quality and satisfaction; to promote good fiscal and management practice; and, to foster a healthy workplace.

### *People*

- A Development Coordinator: Instructional Design and Educational Technology has been appointed to assist nondegree program developers to integrate instructional technology into program design in ways that increase access and flexibility for students.
- An orientation program that stresses key organizational values, including service quality, has been developed for new support staff, the largest staff component in CED.
- CED completed its Employment Equity Review; an Employment Equity Committee is being established to oversee implementation of the recommendations resulting from the review and to address equity concerns raised by staff.
- CED continues to set aside budget funds to support the professional development of academic and support staff.
- With funding from the Faculty of Nursing, the ACCESS Program hired an advisor to assist ACCESS nursing students.
- Summer Session promoted the development of staff teaching in Summer Session 2001 by providing a complimentary registration for any workshop offered in UTS Spring Workshop Series.
- CED's Courses in High School program offered two courses to eleven Senior 4 students – nine of the students subsequently registered at the U of M this fall.
- Aboriginal Focus Programs academic staff appointments have included hiring two Instructor I continuing appointments, and promoting two staff from Instructor I to Instructor II
- An Aboriginal Focus Programs academic staff member has been appointed to the Winnipeg Child and Family Services Board by Tim Sale, Minister of Family Services and Housing.

### *Products*

- Senate approved the Diploma in Child and Family Services, a partnership that includes the Faculties of Social Work, Arts, and Human Ecology. The program received COPSE funding in the amount of \$631,100.00 over four years.

- CED began working with the Faculties of Education, Arts, and Science on community-based delivery of Arts, Science and Education degrees to Nisichawayasihk Cree Nation (Nelson House).
- A new certificate program, the Certificate Program in Interdisciplinary Studies, and revisions to the Applied Counselling Program were approved by the Senate Committee on Curriculum and Course Change on behalf of Senate.
- Canadian Forces University Program (CFUP), which continues to show strong increases in registration, implemented plans to establish a Campus Manitoba site in Comox, BC.
- CED Council approved several letters of intent for new certificate programs or major certificate program revisions. Included are proposals for an advanced certificate in Human Resource Management and two new certificate programs in Information Technology.
- As part of CED's Strategic Marketing Priorities, the Division has increased its level of awareness in the community through profiles of graduates and programs in local and national media.
- Aboriginal Focus Programs offered its first program in the Certificate Special Education Teacher Assistant (SETA) in Northern Saskatchewan.
- The Summer Session Innovation Fund supported the development of two new courses focused on Aboriginal student and culture, Aboriginal Games and Activities (Physical Education and Recreation Studies), and Colonizers and the Colonized: Opening the Circle (Native Studies and the Aboriginal Students Centre). The latter course integrates an academic course with an orientation program for incoming Aboriginal students. A number of other courses that featured a multidisciplinary, collaborative or community-oriented focus were supported through the Summer Session Innovation Fund, including Field Topics in Environmental Science, Religion and the Media, and Manitoba Prairie Landscape: Then and Now.
- A new Summer Session travel/study course to Pangnirtung on Baffin Island provided students with the opportunity to experience and study in a traditional Inuit community. The course, a collaborative effort of Native Studies, Environmental Science, and Summer Session, attracted students from the University of Manitoba, Trent University, College Universite Saint Boniface, and the University of Edinburgh (Scotland).

### *Partnerships*

- Language Studies Area joined Englishworld.ca, a consortium of western Canadian universities interested in delivering on-line ESL courses internationally, and began development on two nondegree ESL reading courses.
- Canadian Virtual University (CVU), a consortium of 13 universities including the University of Manitoba, continued to expand its institutional base to meet its objectives of developing a seamless portal for distance education. CVU enables learners to access 175 programs available online or through other distance delivery modes.
- Along with the I.H. Asper School of Management, and the Faculties of Engineering, Architecture, and Agriculture, CED participated in the development of a proposal for an on-line MBA.

- CED developed a partnership with Creative Retirement Manitoba to deliver university based short courses and workshops to seniors in Manitoba.
- The Courses in High School program partnered with Sisler High School to offer Introduction to Psychology (17.120) and Introductory Computer Science I (74.101).
- Off-Campus Study and the Faculty of Nursing initiated a partnership with the Canadian Mennonite University to offer two first year Nursing courses on the new CMU campus in south Winnipeg.
- Through advisory committees and the day to day work involved in program planning and implementation, CED maintains links with dozens of community agencies, professional associations, and business organizations, as well as with institutions in the province, nationally and, in the case of our Intensive English program, internationally.
- The Division was invited to assist business and government to increase employee awareness of continuing education opportunities by participating in their sponsored education events. (Palliser Furniture, Investors Group and HRDC (Human Resources and Development Canada) ).
- CED partnered with Enrolment Services in a "pilot" evening format for the annual Information Days event to target working professionals and parents of high school students.
- A variety of community and university partnership agreements were developed within Aboriginal Focus Programs, including Metis Family and Community Institute, Southeast Child and Family Services, Child Protection and Support Branch, Dept. of Family Services & Housing, First Nation and Inuit Health Branch, Brandon University, Saskatchewan Indian Federated College.

#### *Process*

- The second development phase of the Continuing Education Information System, which included the development of a marketing module, was completed. IST conducted a review of system functionality and performance and made several recommendations that resulted in performance improvements. CED also completed a building rewiring project.
- A review of CED's centralized services (registration and record keeping, payroll and finance, marketing etc.) was initiated to improve service quality and effectiveness.
- Summer Session has worked with UM Info and Administrative Computing Systems to develop web-based information for students.
- CED developed a proposal to enhance its web site and create an interface with the Division's information system.
- Recruitment and marketing coordination efforts continue between Aboriginal Focus Programs and other Aboriginal services on-campus through the Aboriginal Recruitment Coordination Committee

*People*

- Dr David Stewart was appointed St John's College Dean of Studies for a three-year term commencing July 1, 2001
- Sponsored, along with the Faculty of Arts and central administration, the creation of a Canadian Studies Coordinator three-year term Assistant Professor position to be held at St John's College. After a national search, former St John's Dean of Studies, Dr. Kathryn Young, was appointed to this position
- Marjorie Ward Lecture in 2001, "From Colony to Covenant: The Church's Mission among the First Nations" was given by Archbishop Michael Peers, Primate of the Anglican Church of Canada. Archbishop Peers holds an Honorary Doctor of Divinity from St John's College
- At the 134<sup>th</sup> annual St John's College convocation, on November 5, 2000, Associate Chief Judge Murray Sinclair received the honorary degree of Doctor of Canon Law (honoris causa) and gave the convocation address, the Right Rev. Larry Robertson received the honorary degree of Doctor of Divinity (juris dignitatis) and the Rev. Dr. Egil Grislis received the honorary degree of Doctor of Divinity (honoris causa)
- At the 135<sup>th</sup> annual St John's College convocation, on November 4, 2001, Dr Thomas Symons will receive the honorary degree of Doctor of Canon Law (honoris causa) and will give the convocation address, Bishop Telmor Sartison will receive the honorary degree of Doctor of Divinity (honoris causa) and Dr Miriam Hutton will be made an Honorary Fellow

*Products*

- New Scholarships and Bursaries:
  - Alfred H. Shephard Bursary - for a member with clear financial need
  - St John's College Exchange Student Scholarship in Canadian Studies – room and board for a member studying Canadian Studies from a university that has an exchange agreement with the U of M
  - R. Kelly McGinnis Memorial Scholarship - for a first year medicine student
  - Helen & Bill Battershill Scholarship - for a member entering second year who achieved high standing in two courses from the Department of History and/or English in first year
  - G. L. Broderson Memorial Award - for a member who achieves the highest grade in a Canadian Literature Course (reactivated)
- Two very successful conferences were organized by the St John's College Faculty of Theology:
  - "After the Jubilee - What? The Churches' Response to Global Debt Forgiveness." Oct 27 – 28, 2000. Keynote was Dr. John Mihevc, Chair of the Africa desk of the Ecumenical Council for Economic Justice.
  - "Rediscovering Richard Hooker: His Thought for Our Times", November, 2000. This Richard Hooker conference marked the 400 anniversary of his death. SJC, 29 Nov/00. The Rev. Dr. Egil Grislis (UM), an international Hooker scholar, was our distinguished speaker.

*Process*

- The St John's College Student Association have initiated a mentorship program whereby first-year students are paired with an experienced student and are included in activities that enhance their experience of college and university life
- Three positions were added to the St John's College Council which allow for representation of alumni in College governance

*Partnerships*

- Capital Campaign
- The Friends of St John's College organization was revitalized
- The Intensive English Program of the Continuing Education Division have reserved a block of rooms in our Residence and the College provided a liaison person to deal with the integration of these students into the community
- In conjunction with Summer Session and the Departments of Philosophy and Religion, the St John's College Faculty of Theology mounted its third annual Summer Institute of Theology whereby U of M credit courses (Ethics of War and Peace, Introduction to World Religions), as well as non-credit courses (Theology and Practice of Healing Ministry, Spirit in Motion - Exploring the Sacred Through Movement) were offered

- St John's College is working in partnership with the Fort Garry School Division to provide a university level experience for selected grade 12 students from Tec de Monterrey, Mexico City, Mexico. This summer, students were housed in St John's Residence for one month (late July to late August), and were registered in two grade 12 credit courses, Economics and Philosophy, which were taught in St John's classrooms by Fort Garry School Division teachers. The students moved to Home Stay in late August and will complete a full semester of grade 12 before returning to Mexico in mid December. This will be an annual event.

**PRESIDENT'S REPORT December 5, 2001**

My last report to Senate was submitted for its meeting on October 3, 2001. This report is organized into sections on General, Academic, Research, Administrative and External matters. Part B contains the list of external engagements during the time period of this report.

**I. GENERAL****1. Installation and Fall Convocation**

The installation of Dr. William Norrie as twelfth Chancellor of the University of Manitoba took place October 17, followed by the first session of Convocation. A second session of Convocation was held October 18 where Dr. Margaret Newall received an honorary degree in recognition of her life work of promoting healthy families and ameliorating the destructive effects of family violence. Dr. Norrie was welcomed with great warmth by members of the University, governments and the general community. He is already seen to be, and trusted to be "the University's friend in the community"

**1. Estimates Meeting**

Members of the Council on Post Secondary Education visited the University on October 19, 2001 to review the Estimates of Operating Requirements for 2002-2003 as approved by the Board of Governors on September 26. Representing the University were Mr. Soubry, Chair of the Board of Governors, the President and the Vice-Presidents. Mr. Soubry began the presentation, and then turned matters over to me. After my introductory comments, each vice-president summarized the issues relating to his/her portfolio and I summarized the estimates submission. Questions followed. Our presentation appeared to be well-received but we recognize that many factors, in addition to our submission, are taken into account prior to the finalization of the University's grant allocation from the Province.

**2. Annual Rankings of MBA Programs**

The 2001 ranking of MBA programs by *Canadian Business* magazine demonstrates how changes in assumptions and methodology impact on rankings. Dr. Jerry Gray, Dean of the I.H Asper School of Business, is blunt "the changes made this year by *Canadian Business* should cause everyone to question not only the credibility of the ranking, but the basic motives of the magazine itself". For example, in the overall ranking, the I.H Asper School went from 7<sup>th</sup> last year to 14<sup>th</sup> this year; Laurier went from 8<sup>th</sup> to 17<sup>th</sup>; St. Mary's from 15<sup>th</sup> to 6<sup>th</sup>, and McMaster from 12<sup>th</sup> to 7<sup>th</sup>. Given that schools do not make major changes in their MBA programs from year to year the major shifts in the rankings are due to arbitrary changes in methodology.

The I.H Asper School drop from 2<sup>nd</sup> to 11<sup>th</sup> in the value added category is due solely to a change in the assumptions made in the data, and in the methodology used to calculate value added. In this category, the New Brunswick MBA program went from being

were low \$9,000 versus \$46,500 at the I.H Asper School of Business). McMaster went from 16<sup>th</sup> in the value added category last year to 1<sup>st</sup> this year, again because of the low salaries of their entering students (\$18,000).

Two other factors in the rankings affected our standing. A new factor was introduced this year in the percentage of graduates who found jobs outside of Canada which was deemed to be a measure of the global focus of the program. The other measure was the number of graduates employed three months after graduation. The I.H Asper School of Business scored low on this compared to others because of our 11 month program. Many of our graduates do not begin looking for employment until the program is completed, whereas, in two year programs, the job search begins early in the second year and normally results in a job soon after graduation. (It is worth noting that the Rotman School of Business at the University of Toronto, and the Ivey School at Western, do not participate in the survey.)

#### 4. *Maclean's* 2001 University Rankings

The 2001 university rankings (Medical-Doctoral category) placed The University of Manitoba 15<sup>th</sup> out of 15 participating universities, a decline from last year's 14<sup>th</sup> position, and the second decline in two years. Our 13<sup>th</sup> position 3 years ago was the highest rank The University of Manitoba has ever attained in *Maclean's* survey.

*Maclean's* assesses Medical-Doctoral universities on 23 factors (one more than last year), and assigns weight to the factors according to criteria known only to the magazine. The most highly weighted factor is the 15<sup>th</sup>, the so-called "reputational survey", which has a weight of 15% attached. The next is the entrance average, which carries a weight of 11% (1% less than in previous years). A few factors carry very low weights (e.g., 1%). In all, the magazine claims to assess six areas of importance - the student body (6 factors), classes (3 factors), faculty (4 factors), finances (3 factors), library (4 factors) and reputation (2 factors). With some exceptions, the magazine primarily employs input measures, and the participating universities provide the data in a format prescribed by *Maclean's*.

This year the University's ranking decreased on a total of 11 factors, increased on 4, had no change in 7, and a new factor (international 1<sup>st</sup> year) was introduced this year. The cumulative weights assigned to the 11 factors on which we dropped ranks is 43.6%. The weights of factors on which we went up was only 14.3%.

Of the 11 factors on which we decreased ranks, 7 were budget-related:

- operating budget from 9<sup>th</sup> to 14<sup>th</sup>
- 3<sup>rd</sup> and 4<sup>th</sup> year class sizes from 5<sup>th</sup> to 9<sup>th</sup>
- 1<sup>st</sup> and 2<sup>nd</sup> year class sizes from 12<sup>th</sup> to 13<sup>th</sup>
- classes taught by tenured faculty from 6<sup>th</sup> to 7<sup>th</sup>
- student services (% of budget) from 13<sup>th</sup> to 14<sup>th</sup>

- library expenses from 5<sup>th</sup> to 7<sup>th</sup> (tied with McGill)
- library acquisitions from 12<sup>th</sup> to 15<sup>th</sup>

Other factors on which we decreased in rank were:

- proportion who graduate from 11<sup>th</sup> to 14<sup>th</sup>
- international (graduate) from 14<sup>th</sup> to 15<sup>th</sup>
- student awards from 10<sup>th</sup> to 11<sup>th</sup> (tied with Western)
- alumni support from 6<sup>th</sup> to 7<sup>th</sup>

The University's ranking increased on the following four factors:

- out of province first year students from 12<sup>th</sup> to 11<sup>th</sup>
- faculty with PhDs from 10<sup>th</sup> to 8<sup>th</sup> (tied with McGill)
- Social Sciences & Humanities Grants from 14<sup>th</sup> to 13<sup>th</sup>
- scholarships & bursaries (% of budget) from 15<sup>th</sup> to 14<sup>th</sup>

The University remained in the 15<sup>th</sup> position on the most heavily weighted ranks, the incoming entrance average (though it increased to 80.5), and the reputational survey.

Comment. The easiest way for a university to increase its overall ranking is to increase its entrance average. Traditionally the University of Manitoba has had a philosophical commitment to accessibility. As the only medical-doctoral institution in Manitoba, we recognize that, if our entrance average were high, we would shut out a large number of students who have the capacity to benefit from a university education, but who for a variety of reasons (varying standards of secondary education across the province, necessity for part-time work during high school, etc.) do not have top grades on leaving high school. In Ontario, if one wants to study at a medical-doctoral university, but cannot meet the minimum entrance average required at Queen's (85%), one can choose to attend any of the 4 other medical-doctoral institutions that have lower entrance requirements than does Queen's. In Manitoba such students would have to leave the province.

With respect to the reputational survey, it is worth noting that it is a poor instrument, since it requires all participating institutions (47, including primarily undergraduate and comprehensive) to be ranked across the nation, and within a region, to rank as well the regional institutions according to the ranker's perception of "highest quality", "most innovative", "leaders of tomorrow", and "best overall". The rankers whose opinion are sought include (1) high school guidance counselors, (2) university officials, (3) CEOs, (4) "heads of organizations" and (5) corporate recruiters, respectively. The western region includes Manitoba, Saskatchewan, Alberta and British Columbia. According to *Maclean's* only 14.3% of the 7,255 individuals polled across the country returned the survey – yet the survey is the most heavily weighted factor of all.

*Why participate in Maclean's survey?* The University of Manitoba dropped out of the survey over a two year period. We resumed participation in 1996 when we learned that our absence from the survey was hurting us locally and internationally. Locally, a common attitude was that the University did not want to be "accountable" to its community, and preferred not to be assessed by the available survey instrument. Internationally, students who were thinking about studying in Canada interpreted our absence as meaning an absence of accreditation, and thus international applications to Manitoba were severely curtailed. Though the survey is flawed because it overemphasizes differences, employs primarily input measures, and relies most heavily on an instrument that does not meet accepted statistical standards (70% return rate is considered minimally adequate for validity in surveys), to be absent from *Maclean's* survey would be counterproductive. We have chosen to participate, and take pride in pointing to the fact that our students were 11<sup>th</sup> in terms of national awards received, that our researchers supported by SSHRC grants are increasing their rate of success, and our alumni support remains high - even though the elimination of a membership fee (to belong to the Alumni Association) has created the impression that alumni support for our institution has decreased. All these achievements have occurred in a time when the University is recovering from years of cut-backs to its provincial grant, and in which fiscal restrictions remain stringent.

## 5. 125<sup>th</sup> Anniversary

In 2002 we will celebrate the 125<sup>th</sup> Anniversary of The University of Manitoba. This is a significant milestone in our history. It provides all of us with the opportunity to survey our past, celebrate our achievements, and reflect on the triumphs that distinguish this venerable institution. Best of all, as we do at each great milestone, we look ahead to a reinvigorated future, as a leader of the economic, social and cultural development of Manitoba.

Two important announcements were made on November 14, 2001 relating to the University's 125<sup>th</sup> Anniversary. First was the public "launch" of The University of Manitoba: An Illustrated History, a new book by Professor Jack Bumsted (History), filled with photographs, stories, people and events that have shaped the University's 125 years as Western Canada's oldest university. Second was the announcement by Pam LeBoldus, Chair of the 125<sup>th</sup> Anniversary Committee of some of the major events planned to date for 2002. These include the "University Showcase" (St. Vital Shopping Centre); revival of the 1940 Glee Club production "You Can't Beat Fun" (Walker Theatre - but not at the 1940 admission cost of \$1.00, .75¢, and .50¢); birthday celebrations on the founding date of February 28; travelling pictorial history; special lecture series; commemorative stamp from Canada Post; Homecoming weekend; and a gala evening with the Winnipeg Symphony Orchestra to conclude the celebrations (November 23, 2002).

## 6. Functional Foods and Nutraceuticals

On November 2, 2001, Premier Gary Doer, and The Honourable Ron Duhamel, visited the University to announce \$12million contribution (\$6m the Province and from the Federal Government, respectively) toward the construction of the \$25 million state-of-the-art Centre for research and development in the nutraceutical and functional food industry, one of the fastest-growing areas of opportunity in food production. On November 16, 2001, CIBC announced a \$1 million gift to support the Centre. The new Centre will be constructed on the Research Park. The balance of the funding will come from industry partners and research sources.

## II. ACADEMIC MATTERS

### 1. November 1, 2001 enrolment

The official reporting date for the 2001-2002 session is November 1. Enrolment as of this date is 7.5% higher than the previous year, with an additional 1640 students such that enrolment stands at 23,618 compared to 21,978 in November 2000. Undergraduate enrolment increased by 8.1% to 20,534, while graduate enrolment increased by 3.9% to 2,693 students. Credit hours increased by 6.6%. Despite strike action, the 2.7% drop in credit hours between the end of course change and November 1, was slightly less than the corresponding drop last year of 2.9%. International students increased by 15.6% from 847 to 979 students, with undergraduates comprising 65% of international enrolment and graduate students forming 35%. New admissions in undergraduate international students are up 19.7%. University 1 students increased by 12% to 4,711 students.

### 2. Celebrations of Excellence

Enrolment Services hosted two events in October:

#### a) Entrance Scholarship Presentation and Reception October 15, 2001

The event honored 160 entrance award recipients who attended with their parents and guests. Each recipient received an award certificate.

#### b) Evening of Excellence, October 16, 2001

The Annual Evening of Excellence is designed for outstanding Senior 4 (Grade 12) students and their parents and has become a very popular and successful fall tradition. This year's attendance was about 2200 compared to about 1700 last year. Students had the opportunity to explore their future career fields and meet one-on-one with University faculty, staff and students at the Academic and Support Services Fair set up in the Max Bell Field House. The evening began with a brief plenary session that included messages of welcome from the President, University 1, and Enrolment Services. The fair featured booths and

displays from 72 units to showcase the diversity of programs and services at the University of Manitoba.

### 3. Samples of activities and special achievements

#### Faculty of Arts

- ▶ Dr. Joe Pear, Psychology, has been elected the 2002 recipient of the Fred S. Keller Award for Distinguished Contributions to Education sponsored by Division 25 of the American Psychological Association.
- ▶ Dr. John Adair, Professor Emeritus, Psychology, was recently given the Inter-American Psychology Award at the Conference of the Society of Psychology in Santiago, Chile.
- ▶ Dr. Myroslav Shkandrij, German and Slavic Studies, and guest curator of the Winnipeg Art Gallery, was largely responsible for the exhibition of "The Phenomenon of the Ukrainian Avant-Garde, 1910-1935", bringing together over 70 works, including some of the best and most representative pieces produced during this period. The exhibition and the accompanying catalogue (edited by Dr. Shkandrij) examines the contribution to the "isms" of the avant-garde made by artists who were either Ukrainian or lived in Ukraine.
- ▶ Physical Anthropology and Archaeology, Canadian Edition, co-authored by Prof. Robert Hoppa, Anthropology, and Carol R. Ember and Melvin Ember, has just been released by Prentice Hall, Toronto. The book is the first Canadian text for physical anthropology and archaeology students, and includes Canadian examples and a section on archaeological techniques and ideas.

#### Asper School of Business

- ▶ Asper School of Business students have made an impressive showing on the national professional examinations of the Society of Actuaries. In the series of the four professional examinations administered since November 2000, the average pass rate for all Canadian writers was 33%, while the average pass rate for Asper School students was 49%

#### Faculty of Dentistry

- ▶ The Faculty has published its inaugural newsletter called inciDENTals

#### Faculty of Engineering

- ▶ At the Annual Meeting of the Canadian Society for Agricultural Engineering, Martin Petrak received 1<sup>st</sup> prize in the Student Design Competition, and Neil Stephenson and Jake DeBruyn received 2<sup>nd</sup> and 3<sup>rd</sup> place respectively in the Master Science Thesis category. Dr. Digvir Jayas, Biosystems Engineering, received the John Clark Award.

- ▶ Dr. Ostap Hawaleshka, Professor Emeritus, has been awarded the Order of Canada for his work in founding the Science and Technology Centre in the Ukraine.
- ▶ The Faculty's first Engineer-in-Residence, Mal Symonds, former Director of Engineering Services at Bristol Aerospace, and Past-President of the Association of Professional Engineers and Geoscientists of Manitoba, is a new member of the Design Education Group. His area of expertise is in design engineering and management.

### Libraries

- ▶ Shelley Sweeney, Head, Archives & Special Collections, and Brian Hubner, Acquisition and Access Archivist, were responsible for the successful launch and demonstration of *The Winnipeg Tribune* Web site on October 9, 2001. Over 60 people attended, including former *Tribune* staffers, photographers, editors and paper carriers. Highlighting the evening were talks given by two well-known Winnipeg newspapermen, Gordon Sinclair, Jr. and Val Werier. Both of the latter had long associations with the *Tribune* and had interesting and insightful memories to share at this event. The *Tribune* archives were turned over for retention to the University of Manitoba after the newspaper closed 21 years ago. The collection contains over 2.5 million clippings, 500,000 photographs and 157 reels of microfilm.

### Faculty of Physical Education and Recreation Studies

- ▶ The Manitoba Bisons hosted and won the Hardy Trophy Final vs. the Regina Rams on Sunday, November 11, 2001 at the Canad Inns Stadium. They hosted the McMaster University Marauders on November 17, and won the Churchill Bowl. This win enables the Bisons to compete in the national final, the Vanier Cup, on December 1, in the Sky Dome, in Toronto.

### St. John's College

- ▶ The Right Reverend Donald Phillips, the Anglican Bishop of the Diocese of Rupert's Land, was installed as the Twelfth Chancellor of St John's College. At the same ceremony, new members of the College took part in the annual Matriculation Ceremony, in which new members sign the membership book that dates back to the beginning of St John's in 1866. Also at this ceremony, Dr. David Stewart, was introduced as the Dean of Studies and the new robes of office for the Chancellor, Vice-Chancellor and Esquire Bedells were dedicated.
- ▶ At St John's College 135th Annual Convocation. Dr. Thomas Symons, founding president of Trent University and a major force in Canadian Studies was made an honorary Doctor of Canon Law. Bishop Telmor Sartison, the recently retired National Bishop of the Evangelical Lutheran church, was made an honorary Doctor of Divinity. Dr. Miriam Hutton, a retired faculty member in Social Work and a respected member of the Anglican Diocese of Rupert's Land, was made an Honorary Fellow of St John's College.

## Faculty of Science

- ▶ Dr. Elizabeth Worobec, Microbiology, has been appointed as a member of the Visiting Fellowships in Canadian Government Laboratories and NATO Science Fellowship Selection Committee for a three-year period ending February 28, 2004.

### III. RESEARCH MATTERS:

#### 1. Honours and Distinctions

- ▶ Dr. Henry Friesen, Distinguished Professor Emeritus of Medicine and senior fellow at the University of Manitoba's Centre for Advancement of Medicine, was inducted into the Canadian Medical Hall of Fame (CMHF). Dr. Friesen was honoured for his medical research achievements and for transforming Canada's health research funding agency into the Canadian Institutes of Health Research. The October 11 event was held at the Hotel Fort Garry - the first time the ceremony was held outside of Ontario - and over 500 people attended. In addition to the induction event, the CMHF sponsors a youth symposium and this year it proudly hosted the Henry Friesen Youth Symposium on Health Professions. Approximately 250 Manitoba high school students attended the October 12 day-long event.
- ▶ Dr. Jim Graham, Civil & Geological Engineering, was awarded the Legget Medal, the most prestigious award given in this country by the Canadian Geotechnical Society. Dr. Graham joins a select group of 14 geotechnical professionals that have already received this award. The medal is awarded annually to a member of the geotechnical community whose contributions to geotechnique in Canada have had a lasting impact on the profession.
- ▶ Dr. Emery Lajtai, Civil and Geological Engineering, was awarded the annual Canadian Geotechnical Society's National Thomas Roy Award for his contributions to engineering geology in Canada.
- ▶ Dr. Norman Frohlich, Business Administration, has been named as a member of the new Panel on Research Ethics (PRE). The 11-member panel was announced by the presidents of the Canadian Institutes of Health Research, the Social Sciences and Humanities Research Council of Canada and the Natural Sciences and Engineering Council of Canada and it will become the cornerstone of a new governance structure for the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS). The panel's mandate includes the promotion of high ethical standards of conduct in research involving humans as well as advising on the ongoing development and evolution of the TCPS.

#### 2. Research Funding Received and/or Applied For

- ▶ Dr. Annemieke Farenhorst and Dr. David Lobb, Soil Science, received a four-year group grant, totalling \$446,447 from the NSERC Strategic Projects program in support of their research on "Tillage erosion and its impacts on soil characteristics and pesticide fate processes at the large-scale." Co-investigators include Dr. Michael Lindstrom from the U.S. Department of Agriculture Soil Conservation Research Lab in Morris, Minnesota and Dr. Eduard Topp from the Agriculture & Agri-Food Canada Crop Protection and Food

Research Centre in London, Ontario. This research is directed at developing tools that can be used to assess which tillage operations, practices and systems need to be implemented for minimizing soil degradation and environmental pollution by pesticides.

- ▶ Dr. Brent Fedirchuk, Physiology, received a three-year grant, totalling \$201,143 from the Canadian Neurotrauma Research Program in support of his research on "Reconfiguration of spinal motoneuron firing properties during motor behaviours." This is one of 21 awards made possible through an alliance of seven partners including the Rick Hansen Institute, the NeuroScience Canada Foundation, the Canadian Neuroscience Partnership, the John Ryan Regeneration Tour, the Alberta Paraplegic Foundation, the Ontario Neurotrauma Foundation, the British Columbia Neurotrauma Initiative and the Canadian Institutes of Health Research. The funds are administered by the CIHR.
- ▶ Dr. John O'Neil, Community Health Sciences, received a five-year grant, totalling \$2,500,000 from CIHR's Aboriginal Capacity and Developmental Research Environments (ACADRE) program to establish a "Centre for Aboriginal Health Research - ACADRE Training Program." The training program will create a collaborative research environment where scientists and Aboriginal communities and organizations can work together to produce new knowledge addressing health issues in Aboriginal communities. The grant will support the development of a cadre of Aboriginal health researchers at the Manitoba First Nations Centre for Aboriginal Health Research at the University of Manitoba. This is one of four regional centres funded by CIHR.
- ▶ Forty-eight researchers submitted applications to the recent Social Sciences and Humanities Research Council (SSHRC) competitions, requesting a total of \$1,926,519. Thirty-eight of these were to the Standard Research Grants Program and 10 were to the Initiative on the New Economy (INE) Program.

### 3. Related Initiatives/Events

- ▶ The first annual Dr. Arnold Greenberg Lecture was given by Dr. Josef Penninger on Oct. 9 at the Bannatyne campus. Dr. Greenberg, director of the Manitoba Institute of Cell Biology, died of colon cancer earlier this year. Dr. Penninger, a University of Toronto researcher, was behind several key discoveries including breakthroughs about bone loss in autoimmune disorders, osteoporosis, tooth loss, arthritis and various kinds of cancer. He is considered a world expert on inflammation and autoimmune disease and the pride of Canada's research community. Over 500 people attended the lecture.
- ▶ Dr. John O'Neil, Community Health Sciences, and the director of the Centre for Aboriginal Health, delivered two Research Information Sessions on October 2, one at the Manitoba Legislative Building for ministers and deputy ministers and one for government departments at Union Centre. This is the fourth session that has taken place and plans are in the works to continue these sessions along with the University of Winnipeg and Brandon University. Three ministers attended the first session and over 80 people from a variety of departments attended the second session. The idea behind the sessions is to provide an opportunity for researchers to share and discuss research findings which are relevant to the Province of Manitoba.

- ▶ Dr. Alan Bernstein, president of the Canadian Institutes of Health Research (CIHR), visited the University on Oct. 11. The purpose of the day-long visit was to discuss health research initiatives and opportunities for the University with CIHR with the University's Deans/Associate Deans and Directors, as well as meeting health researchers. Marcel Chartrand, director of communications for CIHR, accompanied Dr. Bernstein.
- ▶ The first lecture in the Get to Know Research ...at your University public lecture series was delivered by Dr. Jim House, Animal Science. Over 30 people attended the lecture, "How do you like your folic acid? Scrambled or sunny-side up?" which was held at the Winnipeg Art Gallery on October 28.

#### IV. ADMINISTRATIVE MATTERS

The Systems Development Steering Committee is responsible for the overall development and coordination of the University's key administrative support systems. Three separate sub-committees are developing alternatives to the existing outdated Human Resources, Financial, and Student Information systems. The development and/or replacement will be phased in over the next three year time frame. First to be developed will be a new Human Resource system to support the administration of human resources. A systems supplier (DLGL) has been selected and implementation will begin in 2002. This will be followed by the acquisition or development of the Financial and Student Information systems in 2002 and 2003.

#### V. EXTERNAL MATTERS

##### 1. Alumni Affairs

- ▶ Another successful Homecoming was held September 20-23 with 14 class reunions and approximately 500 attendees at the gala banquet. In addition, first year student Rya Ralston won the first term tuition draw held during the Bison football game. On the Sunday, a total of 87 alumni and friends attended the President's Luncheon for graduates of the classes of 1931 and 1941.
- ▶ The Alumni Association has started planning out of province events and the first confirmed visit, a networking event for alumni of the Faculty of Management who have graduated within the last 10 years, will be held in Toronto in March 2002.
- ▶ The process of selecting a new name for the Alumni Journal is underway. The selection committee met in October and established a shortlist from 63 submissions received. The committee is seeking the professional advice of a communications and focus-testing group to take the project to the next stage.
- ▶ Alumni Relations Manager Sandra Woloschuk was awarded the Council for Advancement and Support of Education (CASE) Association of Student Advancement Programs Outstanding Advisory Award Student Alumni Ambassador President, Maria Paletta, was awarded the 2001 CASE Peter Buchanan Scholarship. Four student ambassadors will also receive Youth Services Manitoba bursaries from the provincial government.

## 2. Public Affairs

- ▶ External communications before, during and after both the CAW and UMFA strikes were coordinated by Public Affairs which also assisted in the coordination of all internal communications. John Danakas, Director, served as University spokesperson in both situations, fielding in excess of 500 media enquiries.
- ▶ As part of the continuing marketing program, a second series of billboards promoting the University of Manitoba have gone up in over 20 locations across Winnipeg, beginning October 24.
- ▶ "Interstitial" television promotions have been produced and began airing on CKY5 and Global. The 60-second spots showcase outstanding Manitobans and Manitoba initiatives and are sponsored by the University of Manitoba. The first three subjects are Professor Lawrence Ritchey, Music, who works with an autistic musical savant; Dr. Frank Plummer, Medical Microbiology, who is working on a vaccine for AIDS; and Dr. Christine Wu, Mechanical and Industrial Engineering, who develops prosthetics for children. The spots highlight teaching, research and community service excellence at the University and celebrate our 125<sup>th</sup> Anniversary.

## 3. Development Communications and Special Events

- ▶ Campaign brochures for major campaign components and for the alumni campaign have been completed. These brochures all carry the campaign look and slogan; *Building on Strengths: Campaign for the University of Manitoba*.
- ▶ Planning was done for the second Remembrance Day ceremony at 11:00 am on November 9, 2001. The ceremony, hosted by Chancellor Norrie, pays tribute to those who planted the Memorial Avenue of Elms from 1918 to 1923, and to those who have fought in the world wars, the Korean war and in conflicts since then.

## 4. Private Funding

- ▶ As of October 31, 2001 the Campaign achievement was \$126,368, 267 including the \$50 million commitment from the Province of Manitoba. The Campaign has also received commitments for ten, \$1 million + gifts to date. Scott Fortnum of DVA Navion will be the Campaign Director until August 2002.
- ▶ Announcements of major gifts were made, including: Arthur Mauro, \$1 million to create the Centre for Peace and Justice on September 8, 2001 (front page of *Winnipeg Free Press*); Scotiabank, \$750,000 to the I.H Asper School of Business (in Toronto with Premier Doer in attendance) on October 15, 2001; Jim and Sandra Pitblado from Toronto, \$1 million to the Faculty of Law to create the Pitblado Scholarships on October 22. All announcements received high profile in the media, especially in the *Winnipeg Free Press*.
- ▶ The Isbister Legacy Society Tea was held on September 22, 2001 (during Homecoming weekend), with approximately 40 major donors and members of the Isbister Legacy Society attending. A highlight of the event was a performance by the University Singers.

▶ Planning was completed for:

a) the 14<sup>th</sup> annual Donor's Night at the Book store on November 15, 2001.  
Approximately 400 donors attended.

b) the public launch of *Building on Strengths: Campaign for the University of Manitoba*, to be held on November 22, 2001.

c) a four-page special on *Building on Strengths: Campaign for the University of Manitoba* for the December Alumni Journal.

d) The *Planning Matters* newsletter was distributed to approximately 40,000 alumni and staff during November.

**PART B - Notable Events (External)**  
**Emőke J. E. Szathmáry**  
**September 24, 2001 - November 17, 2001**

---

Monday, September 24, 2001

- Attend meeting of the St. Boniface General Hospital Board of Directors

Tuesday, September 25, 2001

- Present remarks at Opening Assembly, Faculty of Dentistry

Wednesday, September 26, 2001

- Co-chair meeting of the Minister of Health Advisory Committee on Diabetes

Thursday, September 27, 2001

- Present remarks, with Vice-Presidents, at UMSU Council Meeting

Friday, September 28, 2001

- Attend lunch meeting with University benefactor

Saturday, September 29, 2001

- Attend meeting of Delta Kappa Gamma International Society of women educators to be inducted as Honorary Member of Epsilon Chapter (Manitoba)
- Attend dinner Chair of Canada World Youth Board of Directors

Sunday, September 30, 2001

- Present remarks at Kildonan Community Church 150<sup>th</sup> Anniversary Commemoration Service

Tuesday, October 2, 2001

- Attend meeting with Stuart Murray, Leader of Official Opposition Party and Presidents of Universities and Colleges in Manitoba
- Attend Associates' Annual General Meeting and Dinner

Wednesday, October 3, 2001

- Attend St. John's College Annual Matriculation Ceremony and Installation of the Right Reverend Donald Phillips, Bishop of Rupertsland, as Chancellor of the College

Tuesday, October 9, 2001

- Attend lunch meeting the Jim Feir, Hong Kong Consul
- Present remarks at Official Launch of the Winnipeg Tribune Website

Wednesday, October 10, 2001

- Visit of the Manitoba Federal Liberal Caucus to the University
- Present remarks at the Allen Gift Announcement for Architecture

Thursday, October 11, 2001

- Meet with Allan Bernstein, President, Canadian Institutes for Health Research
- Attend Canadian Medical Hall of Fame Induction Ceremony, Reception and Dinner

Friday, October 12, 2001

- Participate in Prime Minister's Urban Task Force Conference

Monday, October 15, 2001

- Present remarks at Asper School Endowment Campaign Kickoff in Toronto with Premier Doer

Tuesday, October 16, 2001

- Meet with delegation from Nanjing University and sign Memorandum of Understanding
- Present remarks at Annual Evening of Excellence

Wednesday, October 17, 2001

- Host dinner and present remarks at Installation of Dr. William Norrie, as 12<sup>th</sup> Chancellor of the University of Manitoba

Thursday, October 18, 2001

- Host dinner at 37 King's Drive for Honorary Degree recipient Dr. Margaret Newall
- Meet with Kelly McQuillen, Manager, Manager, Diabetes & Chronic Diseases Unit, Manitoba Health

Friday, October 19, 2001

- Present remarks at Faculty of Graduate Studies Reception for 2001 Award Recipients

Saturday, October 20, 2001

- Present Harvest Bowl trophy at Bisons Football game
- Present remarks at 20<sup>th</sup> Anniversary Reunion Dinner and Dance, Inner-City Social Work Program

Sunday, October 21, 2001

- Present remarks at Inauguration of Dr. August Konkell, President, Providence College, Otterburne, Manitoba

Monday, October 22, 2001

- Present remarks at announcement of Pitblado family gift to Faculty of Law
- Attend dinner in honour of Jim and Sandra Pitblado

Tuesday, October 23, 2001

- Attend presentation of 2001 National Post Awards for Business

Wednesday, October 24, 2001 - Thursday, October 25, 2001

- Attend AUCC meetings in Ottawa and participate in a panel discussion on access by aboriginal peoples to universities, and as a presenter at the Seminar for New Presidents
- Meet with Senator Sharon Carstairs

Monday, October 29, 2001

- Attend meeting of St. Boniface General Hospital Board of Directors

Friday, November 2, 2001

- Meet with University benefactor

Saturday, November 3, 2001

- Attend St. John's College Convocation Dinner

Sunday, November 4, 2001

- Attend St. John's College Convocation Lunch and Ceremony

Monday, November 5, 2001

- Attend meeting, with Vice-President Goldie, and University benefactors

Tuesday, November 6, 2001 - Saturday, November 10, 2001 - Trip to Hong Kong

Thursday, November 8, 2001

- Meet with alumni
- Meet with University benefactor

Friday, November 9, 2001

- Meet with University benefactor
- Meet with Canadian Consul General to Hong Kong
- Have dinner with alumni (Architecture and Music)

Wednesday, November 14, 2001

- Present remarks at release of Jack Bumsted book and announcement of 125<sup>th</sup> Anniversary events for University of Manitoba

Thursday, November 15, 2001

- "Growing Together 2001 - Vision for Sustainable Economic Development in Manitoba" conference sponsored by Crocus Fund and Winnipeg Free Press
  - participate in Plenary panel presentation and discussion
  - participate in presentations on workshop on Workplace Development

Friday, November 16, 2001

- Attend meeting of Manitoba Business Advisory Council
- Present remarks at announcement of CIBC gift

- Present greetings at 100<sup>th</sup> Birthday celebration for Doris Saunders, Professor Emerita of English
- Attend Reception & Dinner as Honorary Patron of Crossroads 2001, A Women's Sharing Circle

Saturday, November 17, 2001

- Attend Crossroads 2001, A Women's Sharing Circle conference
- Attend Churchill Bowl game between Manitoba Bisons and McMaster Marauders, and present Churchill Bowl

November 21, 2001

## Report of the Senate Executive Committee

### Preamble

1. The terms of reference for the Senate Executive Committee are found in Section 7.2 of the *Senate Handbook*.
2. The Senate Executive Committee held its regular monthly meeting on November 21, 2001.

### Observations

1. Speaker for the Senate Executive Committee

Dean Anne Percival will be the Speaker for the Executive Committee for the December meeting of Senate.

2. Comments of the Senate Executive Committee

Other comments of the Executive Committee accompany the report on which they are made.

Respectfully submitted,

Dr R Lobdell, Acting Chair  
Senate Executive Committee

/sgp

**Report of the Senate Committee on Curriculum and Course Changes Part B - Submitted to Senate for Ordinary Debate**

---

**Preamble**

1. The terms of reference for the Senate Committee on Curriculum and Course Changes (SCCCC) are found in section 8.21 of the *Senate Handbook*. SCCC is "to recommend to Senate on the introduction, modification or abolition of undergraduate programs, curricula or courses".
2. This part of the report contains observations and recommendations on course change proposals for units where the net increase is more than nine credit hours. The Senate Planning and Priorities Committee was provided with copies of these proposals as well.

**Observations**

1. **School of Art**

The School of Art is proposing a revision to its Graphic Design program, in order to: a) *broaden and specify content to prepare students for the traditional design profession and the expanding opportunities offered by the information revolution;* and b) *take advantage of the resources (academic and financial) within the university context.*

The revised curriculum will offer concentrations in technology, graphic design theory, *criticism and elements of production and management.*

Instruction in the first two years of the Bachelor of Fine Arts Studio Programs is essentially basic in nature and is concerned with the fundamental principles of design and representation. Beginning with the fine arts studio electives in second year, the student may select a program which will provide specialized study in one or more of the following: ceramics, drawing, graphic design, painting, photography, printmaking, sculpture and video.

There will be no change to the total number of hours in the program, or to the balance *between electives and studio courses.* The revised program will allow students to be more selective. The diploma concentration in graphic design will be deleted in its entirety, effective the 2002-2003 academic year. Students currently in the diploma program with graphic design as their area of concentration will be permitted to complete their program of study in accordance with the phase-in plan for the revised program.

2. **Faculty of Arts**

**Department of English**

In 1994, the Collège universitaire de Saint-Boniface introduced two English-as-a-second-language courses, the first (004.104) for written expression and the second (004.105) for oral expression. Initially, these courses were intended to meet the particular requirements

of students. In practice, all students interested in English as a second language have been taking both courses. In view of this fact and in order to integrate written and oral expression, the Collège has been teaching both of these three-credit courses on a parallel basis over two semesters. It has therefore been decided to normalize this situation by integrating oral and written expression objectives into two courses. The first would be a pre-requisite for the second, unless the linguistic profile of a student indicated that he or she had sufficient mastery of the language to integrate the second course. Accordingly, **004.104F Anglais langue seconde - Expression écrite** and **004.105F Anglais langue seconde - Expression orale** will be deleted, and courses **004.1XXF Anglais langue seconde I** and **004.1YYF Anglais langue seconde II** are being introduced.

Courses **004.132 Literary Topics 2** and **004.133 Writing about Literature, Media and Society 1** are to be deleted.

Course **004.13A Introduction to Literary Analysis**, which is being introduced, is intended for students who have taken 004.131 (or the former 004.132) and who wish to pursue further studies in English. It is designed to ensure that students with only 004.131 (or the former 004.132) would acquire the additional reading and writing skills and experience of the kind provided in 004.120 and 004.126.

Courses **004.2AB Literature of Africa and/or the Caribbean** and **004.2AC Literature of Australia, New Zealand, and/or South Asia** are to be introduced, for the following reasons: 1) it is vital to introduce all undergraduate studies to a variety of literatures produced around the world. Not only will it help diversify their knowledge, but it will also help to ground them in more traditional canonical literature by allowing them a point of comparison; 2) the ethnic diversity and multicultural makeup of the student body needs to be reflected in the course offerings; 3) such a course will help prepare undergraduate students for graduate schools across the country where postcolonial theories and literatures are now routinely taught at an advanced level; 4) this is the only university in the country not to offer regular world literature written in English/postcolonial literature courses; and 5) there is a wealth of fine and exciting literature that students deserve to be taught.

The following courses are being introduced: **004.4AA Honours Seminar 1**, **004.4AB Honours Seminar 2**, **004.4AC Honours Seminar 3**, and **004.4AD Honours Seminar 4**. One-term courses will allow more variety of courses and more flexibility for students and for staffing. The current six-hour seminars will be kept for courses that require two terms. By cross-listing Honours seminars with graduate seminars (most of which are one term), the Department should be able to offer more seminars for Honours students to choose from.

Course **004.126W Twentieth-Century Literature in English** is to be modified to include countries other than Canada, Britain and the United States. This is because literatures from Australia, New Zealand, South Africa, the Caribbean, and other countries have become increasingly important to the study of literature in English.

As a result of the introduction of 004.13A and the deletion of 004.132 and 004.133, the pre-requisite for a number of courses needs to be modified.

### Department of History

Course **011.254W North American Indian** is to be deleted. It will be replaced by **011.2XXW Aboriginal History of Canada**. The current course title being used (North American Indian) risks offending students, as "Indian" is not a term that most Aboriginal people use for themselves today. In addition, the course as now taught covers only Canada, and "North American" in the title is inaccurate.

Courses **011.212W The Shaping of Modern Ireland** and **011.479 Selected Problems in the North Atlantic Community** will be deleted.

Course **011.3XX Popular Culture, Crime and Punishment in England, 1550-1850** draws on the particular research strengths of the instructor. It is a popular subject area with undergraduate students and will offer students an introduction to a growing sub-field of English history.

The History department does not presently have any courses on the calendar specifically dealing with *Canadian women's history*. The addition of course **011.3XY History of Women in Canada** reflects changing historical scholarship and responds to student interest. This course will complement History 011.271 and will also accommodate the expertise and interest of new faculty members.

Course **011.4XX England in the Long Eighteenth Century** will complement other social and cultural history courses in Medieval, European and Early Canadian History.

Gender history is an increasingly significant area of historical scholarship. The History department does not presently have any senior undergraduate or graduate course on the calendar dealing with gender history. The addition of course **011.4XY Gender History in Canada**, which will explore both the international and Canadian literature on gender history, reflects changing historical scholarship and responds to student interest.

Courses **011.4YY Issues in Modern Asian History 1: Selected Topics** and **011.4YZ Issues in Modern Asian History 2: Selected Topics** will accommodate a new faculty member with expertise in the history of modern China. The courses will introduce new developments in the field of Asian history.

### Department of Native Studies

The Department of Native Studies is proposing the introduction of an Aboriginal Governance "stream" for the already-existing Advanced B.A. Degree in Native Studies. General liberal arts knowledge and skills remain a critical educational tool for Aboriginal communities, where critical thinkers with excellent reading, writing and secondary research skills allow the degree of flexibility and creativity demanded by the current level of community development. The program was developed in response to a request from the Sagkeeng First Nation, and will be delivered at Sagkeeng to a selected cohort of students. Contingent upon space limitations, small numbers of students may also participate in this program on-campus.

No additional resources are being requested. The Continuing Education Division will administer the program on the Sagkeeng First Nation on a cost-recovery basis, and students will only be admitted to the program at the University of Manitoba campus if there is space in existing courses. The program does not involve any new courses, and it will be coordinated by the Department of Native Studies and the Continuing Education Division using existing staff.

Courses **032.2AA The Native Peoples of the Subarctic** and **032.2AB Inuit Society and Culture** will be introduced as an area of interest to a new faculty member. Completes culture area survey in Department curricula.

Course **032.3AA Aboriginal Organizations** is being introduced. Originally this course was a 6 credit course with a field placement component. The theoretical and field components were separated several years ago. It has become clear that students require both components in order to achieve a thorough and more complete understanding of Aboriginal organizations. These components are most effectively offered in a six credit course.

Course **032.4XX Indigenous People's Material Culture** is being introduced. The demand for a course in material culture is supported by students interested in the arts, humanities, fine arts and museum studies fields.

Course **032.4XY Advanced Selected Topics in Native Studies** is to be introduced. Development of a fourth year selected topics course is necessary for instructors to have the option of developing selected topics at the advanced level which do not include a field work component.

Course **032.124 The Native Peoples of Canada, Part 2** is being modified by adding the phrase "This course may include a field trip component" in order to allow for field trips and experiential learning in the course.

### 3. Faculty of Engineering

#### Department of Electrical & Computer Engineering

Four courses are being introduced: **024.475 Contemporary Topics in Electrical Engineering I**, **024.476 Contemporary Topics in Electrical Engineering II**, **024.477 Contemporary Topics in Electrical Engineering III**, and **024.478 Contemporary Topics in Electrical Engineering IV**. This will allow the offering of elective topics which may not become permanent fixtures in the curriculum because of the resource implication of offering them every year. Such courses will also allow new hires to teach a 4<sup>th</sup> year elective course in his/her area of specialization; if the course is successful, then it could be made a permanent part of the curriculum.

Course **024.358 Signal Analysis 3E** is to be deleted. It will be replaced by **024.3XX Signal Processing I**. The title has been modified to better reflect the content of the course.

Similarly, course **024.373 Discrete Time Signals & Systems** will be deleted, and replaced by **024.4XX Signal Processing II**.

#### 4. Faculty of Science

##### Ecology Program

The Faculty of Science is proposing the introduction of a Minor in Ecology. The minor will consist of a total of 18 credit hours, 9 of which are required.

Pre-requisites needed for required courses are not included in the 18 credit hour total. Students are not allowed to use courses as credit towards both a major and a minor.

The Faculty of Science has submitted a Statement of Intent.

##### Genetics Program

It is proposed that an honours cooperative option be introduced. Students interested in alternating academic terms and terms of paid employment as part of their Honours Genetics program may enter the cooperative option in their third year in Genetics Honours. The five year program will provide students with a minimum of 12 months of paid employment by the time they graduate. It will enable them to obtain work experience in research and industry with participating firms, government agencies and university units.

##### Microbiology - Chemistry Joint Program in Biochemistry

It is proposed that an honours cooperative option be introduced, for the honours and major programs. Students interested in alternating academic terms and terms of paid employment as part of their program may enter the honours biochemistry cooperative option in their third year. The five year program will provide students with a minimum of 12 months of paid employment by the time they graduate. It will enable them to obtain work experience in research and industry with participating firms, government agencies and university units.

##### Department of Physics and Astronomy

Course **016.280 Astronomy** will be deleted.

Course **016.240 Gases, Liquids and Solids** will be placed into the "Not Currently Offered" category.

The following courses are being introduced: **016.2XY Observational Astronomy, 016.3XY Stars, 016.3XZ Medical Physics and Physiological Measurement, 016.4XY The Phenomenology of Galaxies, and 016.4XZ Astronomy Project.**

The following courses are being modified: **016.220 Electricity and Magnetism (016.220F Electricité et magnétisme), 016.237 Introduction to Theoretical Physics, 016.250 Modern Physics 1, 016.260 Electromagnetic Field Theory, 016.261 Circuit Theory and Introductory Electronics, 016.265 Classical Mechanics 1, 016.357 Physics of Materials 1, 016.458 Lasers & Modern Optics, 016.463 Physics of Materials 2, and 016.464 Introduction to Quantum Mechanics for Advanced Students 1.**

Department of Zoology

It is proposed that a cooperative option be added to the honours and major program. This is the same option as that described earlier for the genetics program and for the microbiology - chemistry joint program in biochemistry.

Recommendations

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

School of ArtFaculty of Arts

Department of English  
Department of History  
Department of Native Studies

Faculty of Engineering

Department of Electrical and Computer Engineering

Faculty of Science

Ecology Program  
Genetics Program  
Microbiology - Chemistry Joint Program in Biochemistry  
Department of Physics and Astronomy  
Department of Zoology

Respectfully submitted,

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

/sgp

1. School of Art

The diploma concentration in graphic design will be deleted in its entirety, effective the 2002-2003 academic year.

SCHOOL OF ART  
GRAPHIC DESIGN PROGRAM REVISION

Courses to be deleted:

Course# Course	Date of Course Deletion	Credit Hour Change
054.228 Graphic Design 1(6)	2003R	-6
054.347 Advanced Graphic Design (6)	2004R	-6
054.366 Graphic Design 2 (9)	2004R	-9
054.451 Advanced Graphic Design 2 (6)	2005R	-6
058.409 Commercial Problems	2005R	-15
Total Credit Hour Change:		-24

Courses to be Introduced in 2003R:

Course#	Course	Credit Hour Change
054.2AA	<u>Design Studio 1</u>	+3

An introduction to the creative use of design elements and principles applied to problems in Graphic Design. The course provides a grounding in the concepts, techniques and skills required to solve specific problems, develop a personal design process and acquire a deeper understanding of visual media. *May not be held for credit with the former 054.228*

054.2AB	<u>Design Studio 2</u>	+3
---------	------------------------	----

A continuation of the investigation of the creative use of advanced design elements and principles applied to problems in Graphic Design. The course provides a grounding in concepts, techniques and skills required to solve specific problems, develop a personal design process and acquire a deeper understanding of visual media. *Prerequisite 054.2AA or written permission of the instructor. May not be held for credit with the former 054.228*

054.2BB	<u>Digital Design Technology</u>	+3
---------	----------------------------------	----

This course is an introduction to the computer as a creative tool and to explore industry standard software for use in creative design applications such as advertising, print media, environmental graphics, illustration and image manipulation. *Prerequisite or Co-requisite 054.2AA or written permission of the instructor.*

054.2BC	<u>History of Visual Communication</u>	+3
---------	--	----

An introduction to the of western visual communication history from pre-Hellenistic cultures to the beginning of the twentieth century in the context of cultural and technological factors. *Prerequisite 054.103 & 054.104 or 054.105 & 054.106 or 079.166 & 079.167 or written permission of the instructor.*

054.2CC	<u>Design Theory and Criticism 1</u>	+3
---------	--------------------------------------	----

An introduction to the nature of the design process and the principles of visual perception and visual language with a focus on the cultural and commercial roles of visual communication design practice. *Prerequisite 054.103 & 054.104 or 054.105 & 054.106 or 079.166 & 079.167 or written permission of the instructor.*



Revised Graphic Design Curriculum (BFA General and Honours)  
(When fully implemented in 2005R)

**First Year**

004.120W	Representative Literary Works	or		
004.126W	Twentieth-Century Literature in English			6 cr.
054.120	Fundamentals of Drawing	2 x 4.5 =		9 cr.
054.122	Basic Design	2 x 4.5 =		9 cr.
054.124	Introduction to Art A	2 x 3 =		6 cr.
054.127	Health Hazards in the Arts			1 cr.
054.199	Field Trip			0 cr.
Academic Electives				6 cr.
Total Year 1 credit hours				37 cr.

**Second Year**

54.2AA	Design Studio 1			3 cr.
54.2AB	Design Studio 2			3 cr.
54.2BB	Digital Design Technology			3 cr.
54.2BC	History of Visual Communication 1			3 cr.
54.2CC	Design Theory & Criticism 1			3 cr.
Studio Electives		2 x 3 =		6 cr.
Art History Electives		2 x 3 =		6 cr.
Academic Electives				6 cr.
Total Year 2 credit hours				33 cr.

**Third Year**

54.3AA	Design Studio 3			4.5 cr.
54.3AB	Design Studio 4			4.5 cr.
54.3BB	New Media Design			3 cr.
54.3BC	History of Visual Communication 2			3 cr.
Studio Electives		2 x 3 =		6 cr.
Art History Electives		2 x 3 =		6 cr.
Academic Electives				6 cr.
Total Year 3 credit hours				33 cr.

Total credits for BFA General Degree or entrance to Honours year 103 cr

**Fourth Year**

54.4AA	Design Studio 5			4.5 cr.
54.4AB	Design Studio 6			4.5 cr.
54.4CC	Design Theory & Criticism 2			3 cr.
54.4CD	Production and Professional Practice			3 cr.
Studio Electives		3 x 3 =		9 cr.
Academic Electives				9 cr.
Total Year 4 credit hours				33 cr.

Total BFA Honours credit hours 136 cr

2. Faculty of ArtsDepartment of English

## Courses to be deleted:

004.104F	Anglais langue seconde - Expression écrite	-3
004.105F	Anglais langue seconde - Expression orale	-3
004.132	Literary Topics 2	-3
004.133	Writing about Literature, Media and Society 1	-3

## Courses to be introduced:

004.1XXF Anglais langue seconde I +3  
 Révision et approfondissement de la grammaire anglaise. Élargissement du vocabulaire propre à la langue soutenue et sensibilisation aux pièges posés par les gallicismes d'ordre lexical et syntaxique. Étude pratique de l'anglais parlé dans diverses situations. Expressions idiomatiques. Amélioration de la prononciation. Apprentissage des principes de base et exercices pratiques d'art oratoire en anglais. On ne peut se faire créditer le 004.1XX et l'ancien 004.104. *Préalable : Réussite du test de classement. Ce test est assorti d'un seuil minimum et d'un seuil maximum afin d'exclure les étudiants et étudiantes dont la connaissance de l'anglais est trop faible ou trop forte aux fins du cours.*

004.1YYF Anglais langue seconde II +3  
 Suite du 004.104. Révision et approfondissement de la grammaire anglaise. Élargissement du vocabulaire propre à la langue soutenue et sensibilisation aux pièges posés par les gallicismes d'ordre lexical et syntaxique. Étude des principes fondamentaux de rédaction : style, organisation et argumentation. Étude pratique de l'anglais parlé dans diverses situations. Expressions idiomatiques. Amélioration de la prononciation. Apprentissage des principes de base et exercices pratiques d'art oratoire en anglais. On ne peut se faire créditer le 004.1YY et l'ancien 004.105. *Préalable : le 004.1XX ou l'ancien 004.104 ou la recommandation du Service de perfectionnement linguistique.*

004.13AW Introduction to Literary Analysis +3  
 This course is intended to prepare students who have completed 004.131 or the former 004.132 for further study in English. It will provide them with the additional reading and writing skills and experience required for successful study in upper-level courses. *Prerequisite: 004.131 or the former 004.132.*

004.2AB Literature of Africa and/or the Caribbean +3  
 This course will explore the literatures of Africa and the Caribbean by writers from Nigeria, South Africa, Kenya, Zimbabwe, Grenada, Jamaica, and/or Trinidad. We will also examine the theories often associated with postcolonialism - theories of marginality, power, alterity, ethnicity, race, locality, space, the subaltern, mimicry, hybridity, nationalism, diaspora, class, migration, multiculturalism, minority discourse, resistance, and historical revisionism - in a comparative context. Accordingly, we will be reading both fictional and theoretical works. The central objective of this course is to offer an overview of some contemporary world literature written in English. Students will also be encouraged to examine the texts from a variety of complementary literary perspectives including new historicism, feminism,

and Marxism. *Pre-requisite: 004.120, or 004.126, or both 004.131 and 004.13A.*

004.2AC Literature of Australia, New Zealand, and/or South Asia +3  
 This course will explore the literatures of Australia, New Zealand, the Pacific Islands, Singapore, India, Pakistan, and/or Bangladesh. We will also examine the theories often associated with postcolonialism - theories of marginality, power, alterity, ethnicity, race, locality, space, the subaltern, mimicry, hybridity, nationalism, diaspora, class, migration, multiculturalism, minority discourse, resistance, and historical revisionism - in a comparative context. Accordingly, we will be reading both fictional and theoretical works. The central objective of this course is to offer an overview of some contemporary world literature written in English. Students will also be encouraged to examine the texts from a variety of complementary literary perspectives including new historicism, feminism, and Marxism. *Pre-requisite: 004.120, or 004.126, or both 004.131 and 004.13A.*

004.4AA Honours Seminar 1 +3  
 This course may vary from year to year depending on the needs and interests of instructors and students. *Pre-requisite: written consent of the department head.*

004.4AB Honours Seminar 2 +3  
 This course may vary from year to year depending on the needs and interests of instructors and students. *Pre-requisite: written consent of the department head.*

004.4AC Honours Seminar 3 +3  
 This course may vary from year to year depending on the needs and interests of instructors and students. *Pre-requisite: written consent of the department head.*

004.4AD Honours Seminar 4 +3  
 This course may vary from year to year depending on the needs and interests of instructors and students. *Pre-requisite: written consent of the department head.*

Courses to be modified:

004.126W Twentieth-Century Literature in English (6)  
 An introduction to the study of literature, with emphasis on the development of reading and writing skills. Poetry, prose and drama from Canada, Britain, the United States, and other countries. Texts for each section will be announced. English 40S or the former English 300 are strongly recommended but English 40G or the former 301 or 305 will also be accepted. Also given at Collège universitaire de Saint-Boniface.

As a result of the introduction of 004.13A and the deletion of 004.132 and 004.133, the pre-requisite for the following courses will be modified to read: "*Pre-requisite: 004.120, or 004.126, or both 004.131 and 004.13A*": 004.206, 004.210, 004.215, 004.226, 004.228, 004.229, 004.253, 004.286, 004.305, 004.306, 004.307, 004.310, 004.311, 004.315, 004.316, 004.326, 004.3238, 004.329, 004.219, 004.247, 004.254, 004.255, 004.260, 004.276, 004.285, 004.287, 004.288, 004.289, 004.290, 004.293, 004.294, 004.295, 004.296, 004.297, 004.298, 004.299, 004.319, 004.353, 004.360, 004.366, 004.367, 004.380, 004.387, 004.388, 004.390, 004.391, 004.392, 004.393.

**NET CHANGE IN CREDIT HOURS: +15**

8.10.3 English, Department Code: 004			
UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
GENERAL MAJOR <sup>1,2,3</sup> TOTAL 30 CREDIT HOURS			
004.120, or 004.126, or both 004.131 and 004.13A	24 credit hours in general courses to include at least 9 credit hours of Literature Prior to the Twentieth Century.		
ADVANCED MAJOR <sup>1,2,3</sup> TOTAL 48 CREDIT HOURS			
004.120, or 004.126, or both 004.131 and 004.13A	12 credit hours in general courses <sup>4</sup> to include at least 15 credit hours of Literature Prior to the Twentieth Century.		
MINOR <sup>1,3</sup> TOTAL 18 CREDIT HOURS			
004.120, or 004.126, or both 004.131 and 004.13A	12 credit hours in general courses to include at least 6 credit hours of Literature Prior to the Twentieth Century.		
HONOURS SINGLE <sup>1,3</sup>			
004.120, or 004.126, or both 004.131 and 004.13A	<ul style="list-style-type: none"> <li>• 004.280 (in Year 2).</li> <li>• 24 credit hours of Literature Prior to the Twentieth Century, of which 12 credit hours is to be in literature prior to 1700 selected from the following English courses (004): 206, 210, 215, 305, 306, 307, 310, 311, 315, 316.<sup>5</sup></li> <li>• 6 credit hours in Canadian literature, selected from the following English courses (004): 288, 289, 388.<sup>6</sup></li> <li>• 12 credit hours in other literature after 1900, selected from the following English courses (004): 285, 287, 2AB, 2AC, 391, 392.<sup>5</sup></li> <li>• 9 credit hours in Honours seminars (400 level)<sup>7</sup> in Years 3 and 4. Honours seminars that are double-numbered with a graduate course will be limited to fourth-year Honours students.</li> <li>• 9 credit hours in other English courses.</li> <li>• 24 credit hours in ancillary options.</li> </ul>		
HONOURS DOUBLE <sup>1,3</sup>			
004.120, or 004.126, or both 004.131 and 004.13A	<ul style="list-style-type: none"> <li>• 004.280 (in Year 2).</li> <li>• 18 credit hours of Literature Prior to the Twentieth Century.</li> <li>• 6 credit hours in other English courses.</li> <li>• 6 credit hours in Honours seminars (400 level)<sup>7</sup>. Honours seminars that are double-numbered with a graduate course will be limited to fourth-year Honours students.</li> <li>• 36 credit hours in second honours field.</li> <li>• 6 credit hours in ancillary options.</li> </ul>		
NOTES:			
<sup>1</sup> See "(B) Introductory Courses" below for restrictions on the number of courses numbered at the 100 level that may be taken for credit.			
<sup>2</sup> Students may offer up to 6 credit hours in Film Studies courses, with the exception of 152.129 (or the former 099.129) and 152.130 (or the former 099.130), toward both the 3-year and the 4-year Major in English. Any Film Studies course so applied may not also be offered toward a Minor in Film Studies.			
<sup>3</sup> Film Studies course 152.228 may be used as an English course to satisfy the English course requirements. If it is used as such, it may not also be applied to a minor in Film Studies or as an ancillary option in Honours.			
<sup>4</sup> Credit in 004.200 may be offered toward the 48 hours in general courses required for a Major (Advanced).			
<sup>5</sup> Film and Theatre courses, other than Introductory (100 level), may be used for credit towards an Honours programme (Single).			
<sup>6</sup> Certain courses that vary in content from year to year, such as Honours seminars and Special Topics courses, may also satisfy this requirement, as determined by the Department.			
<sup>7</sup> Registration in any course numbered at the 400 level requires an average of 3.00 or better in previous English courses. For courses at the 400 level, students must attain a grade of "B" or better.			

Department of History

## Courses to be deleted:

011.212W	The Shaping of Modern Ireland	-6
011.254W	North American Indian	-6
011.479	Selected Problems in the North Atlantic Community	-6

## Courses to be introduced:

011.2XXW Aboriginal History of Canada (C, S) +6  
 A historical survey of Aboriginal peoples in Canada from early times to the present. The course will cover pre-contact peoples, responses to the European arrival, military alliances, the fur trade, the Métis, treaties, government policies and Aboriginal responses, and cultural resurgence and political organizing since 1945. Students may not hold credit for both 011.2XX and the former 011.254.

011.3XX Popular Culture, Crime and Punishment in England, 1550-1850 (E, S) +3  
 A history of crime and the institutions for its control and punishment in England from the Tudor period to the turn of the nineteenth century. We will trace the connections between crime and larger processes such as war, the economy and urbanization. Topics will include the changing patterns of crime, the role of gender in the application of law, the reform of the criminal law and the emergence of imprisonment. *Pre-requisite: six credit hours of history or written consent of department head.*

011.3XY History of Women in Canada (C) +6  
 This course explores the history of women in Canada from the pre-contact period to the present. Specific topics analysed in class and in readings will include women's roles in First Nations societies, white-Aboriginal contact, settlement, industrialization, family economy, immigration, work, sexuality, reproduction, feminism and politics. *Pre-requisite: six credit hours of history or written consent of department head.*

011.4XX England in the Long Eighteenth Century (E, S) +6  
 Selected themes in the history of England's long eighteenth century, from 1660-1840. Specific topics will vary from year to year, but will generally include the transformation of political culture, the consequences of war, the question of national identities, the emergence of commercial society and the changes in social structure. *Pre-requisite: written consent of department head.*

011.4XY Gender History in Canada (C) +6  
 Gender history explores the roles, images, and experiences of masculinity and femininity in the past. This course will familiarize students with the changing theoretical and historiographical terrain of gender history. It will draw on the international literature but focus on the history of gender in Canada, examining how historians analyse masculinity, femininity, the family, sexuality, politics, race/ethnicity, moral regulation, class, nation, and colonialism. *Pre-requisite: written consent of department head.*

011.4YY Issues in Modern Asian History 1: Selected Topics (M, B) +3

The content of this course will vary. Emphasis will be on analysis of important issues and recent developments in the history and historiography of modern Asia. Consult the History Department for particulars. *Pre-requisite: written consent of department head.*

011.4YZ      Issues in Modern Asian History 2: Selected Topics (M, B)      +3

The content of this course will vary. Emphasis will be on analysis of important issues and recent developments in the history and historiography of modern Asia. Consult the History Department for particulars. *Pre-requisite: written consent of department head.*

Modification of an entry in the *Calendar* under the Department of History section 8.16.2 Program Information. The second paragraph under "Other" currently reads "Courses 076.236 offered by the Department of Anthropology, and 003.260 and 003.261 offered by the Department of Classics count for credit towards a General Major, Advanced Major, Honours Single or Honours Double in History". The following sentence should be added to the end of this paragraph: "003.260 and 003.261 also count for credit towards a Minor in History".

**NET CHANGE IN CREDIT HOURS:**      +15

### Department of Native Studies

Courses to be introduced:

032.2AA      The Native Peoples of the Subarctic      +3

This course will examine the subsistence organization, social organization and cosmology of both the Cree and Dene. We will further examine the history of the aboriginal-European encounter and the impact of colonialism on contemporary political and land rights struggles. While we will consider the region as a whole, we will specifically focus on the James Bay Cree and Rock Cree of Northern Manitoba, and secondly on the Saysi Dene, north of the Churchill River. This course may include a field trip component. *Pre-requisite: 032.120, or 032.122 and 032.124, or written consent of Department Head.*

032.2AB      Inuit Society and Culture      +3

An examination of the subsistence organization, social organization, cosmology and ceremonies of Inuit from a regional and comparative perspective. While this course will focus on Eastern Arctic Inuit comparison will also be made to Greenlanders, Inuvialuit, Inupiat and Yup'ik. We will conclude the course by examining colonial history and the rise of Nunavut. The course may include a field trip component. *Pre-requisite: 032.120 or 032.122 and 032.124, or written consent of Department Head.*

032.3AA      Aboriginal Organizations      +6

A study of local, regional and national Aboriginal organizations in contemporary North America and their interaction with government and private agencies. A field component may be included depending on instructor. Contact the Department of Native Studies for details. Students may not hold credit for both 032.3AA and the former 032.320 or 032.332. *Pre-requisite: 032.120, or 032.122 and 032.124, or written consent.*

032.4XX      Indigenous Peoples' Material Culture      +3

A critical review of the spiritual, cultural, historical and environmental factors influencing

material culture used by international Indigenous Peoples. Experiential learning seminars and a field component may be included depending on instructor. Contact the Department of Native Studies for details. *Pre-requisite: written consent of department head.*

032.4XY      Advanced Selected Topics in Native Studies      +3

The content of this course will vary from year to year. Contact the Department for a course description. *Pre-requisite: written consent of Department Head.*

Course to be modified:

032.124      The Native Peoples of Canada, Part 2 (3)

A survey of the political, social, and economic situations of the contemporary Indian, Metis and Inuit peoples of Canada from 1945 to the present. This course may include a field trip component. Students may not hold credit for both 032.124 and 032.120.

Addition to the List of Approved Courses in Native Studies:

098.300      Aboriginal Business Context: Influences and Impacts (3)

098.409      Aboriginal Business Leadership (3)

**NET CHANGE IN CREDIT HOURS:**

**+18**

Courses in this department examine the history, art, literature, and the philosophical and religious traditions of Canada's original inhabitants. Other courses explore the legal, political, and health care systems in relation to Aboriginal people. Aboriginal and non-Aboriginal students may specialize in either Native studies or Native languages, Cree and Ojibway.

For entry, continuation and graduation requirements for the General Degree, Advanced Degree and Honours Degree, see Section 4: Basic Faculty Regulations for the Three Programs Leading to a B.A. The following entry contains information which is not contained in Section 4: Basic Faculty Regulations for the Three Programs Leading to a B.A.

**Other**

Students will be permitted to register for a Major in Native Studies and a Minor in Native Languages but may not complete both a Major and Minor in Native Studies.

Before registering for approved cross-listed courses, students should consult the *Calendar* or the departments regarding prerequisites for specific courses.

Students interested in pursuing an Advanced Major in Aboriginal Governance are required to take a minor in Business. The requirements for both are set out below. For course descriptions, including any prerequisites and/or restrictions see the appropriate faculty chapter in this Calendar. The conditions for entry, continuation and graduation requirements may be found in Section 4: Basic Faculty Regulations for the Three Programs Leading to a B.A.

This program stream in Aboriginal Governance with a required minor in Business is generally available only through special arrangements with Band Councils. For information on this program contact the Department of Native Studies.

8.23.X Native Studies Aboriginal Governance Stream, Department Code: 032X			
UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
<b>NATIVE STUDIES ADVANCED MAJOR - ABORIGINAL GOVERNANCE STREAM WITH REQUIRED MINOR IN BUSINESS</b>			
032.120 or 032.122 and 032.124	<ul style="list-style-type: none"> <li>• 032.222, 032.331, 032.332, 032.420, 098.300, 098.409</li> <li>• 3 credit hours in courses offered by Native Studies numbered at the 300 level</li> <li>• 3 credit hours in courses offered by Native Studies numbered at the 400 level</li> <li>• 18 credit hours in courses offered by Native Studies</li> </ul> <p>Additional courses required for purposes of completing the governance stream are</p> <p><u>Faculty of Arts</u></p> <p>Economics - 018.120 and 018.235</p> <p>Political Studies - 019.150 and 019.257</p> <p><u>Faculty of Science</u></p> <p>Computer Science - 074.126</p> <p>Statistics - 005.100</p>		
<b>REQUIRED MINOR IN BUSINESS FOR THOSE STUDENTS IN A DECLARED ABORIGINAL GOVERNANCE STREAM</b>			
009.110, 009.111, 009.200, 009.220, 027.203, 027.244, 027.330, 118.221	6 credit hours from: 009.347, 027.200, 027.260, 027.441, 118.310		
<b>NOTE:</b>			
2 Students may substitute up to six credit hours from the list of approved courses and/or six hours of Native Language courses in lieu of Native Studies courses.			

## List of Approved Courses in Native Studies 190

Approved courses from other departments for partial fulfilment of the Major and Minor in Native Studies are given below.

### Faculty of Arts

#### *Anthropology*

076.204	Native North America: A Sociocultural Survey (B)	3
076.262	New World Prehistory (D)	3
076.263	New World Civilizations (D)	3
076.264	Manitoba Prehistory (D)	3
076.345*	Native North America: A Sociocultural Survey (B)	3
076.346	Native North American Ethnology (B)	3
076.350	Peoples of the Arctic (B)	3
076.358*	North American Indians: A Sociocultural Survey	3
076.359*	North American Indian Ethnology	3

#### *Economics*

018.235	Community Economic Development	3
---------	--------------------------------	---

#### *Geography*

053.369*	Historical Geography of Indian Peoples in the Canadian Fur Trade	6
053.378*	Historical Geography of Canadian Indians (A)	6

#### *History*

011.254	North American Indian (A,C,S)	6
011.369	History of Northern Canada (C)	6

#### *Sociology*

077.237	Ethnic Relations	3
---------	------------------	---

### Faculty of Education

116.303*	Cross-cultural Education	3
129.154	Cross-cultural Education	3

### Asper School of Business

98.3	Aboriginal Business Context: Influences and Impacts	3
98.409	Aboriginal Business Leadership	3

### School of Art

054.209	Art of the North American Aboriginal Peoples	3
054.343	Inuit Art	3
054.358*	Inuit Culture and Art	3
054.373*	Art of the North American Native Peoples	3

### School of Music

033.386	Topics in Music (when the topic is "Music in Traditional Aboriginal Society")	3
---------	---	---

\* Indicates course no longer offered

3. Faculty of EngineeringDepartment of Electrical and Computer Engineering

Courses to be deleted:

024.358	Signal Analysis 3E	-4
024.373	Discrete Time Signals & Systems	-4

Courses to be introduced:

024.475 Contemporary Topics in Electrical Engineering I (3-1.5:0-0) +4

This course will cover contemporary topics in Electrical Engineering via lectures and laboratory sessions. Topics may include, but are not limited to, areas of: telecommunications; wireless communications; high-speed electronics; signal processing; power systems and power electronics. The specific topics and a detailed course outline will be available at the time of registration.

024.476 Contemporary Topics in Electrical Engineering II (3-0:0-0) +3

This lecture based course will cover contemporary topics in Electrical Engineering. Topics may include, but are not limited to, areas of: telecommunications; wireless communications; high-speed electronics; signal processing; power systems and power electronics. The specific topics and a detailed course outline will be available at the time of registration.

024.477 Contemporary Topics in Electrical Engineering III (0-0:3-1.5) +4

This course will cover contemporary topics in Electrical Engineering via lectures and laboratory sessions. Topics may include, but are not limited to, areas of: telecommunications; wireless communications; high-speed electronics; signal processing; power systems and power electronics. The specific topics and a detailed course outline will be available at the time of registration.

024.478 Contemporary Topics in Electrical Engineering IV (0-0:3-0) +3

This lecture based course will cover contemporary topics in Electrical Engineering. Topics may include, but are not limited to, areas of: telecommunications; wireless communications; high-speed electronics; signal processing; power systems and power electronics. The specific topics and a detailed course outline will be available at the time of registration.

024.3XX Signal Processing I (0-0:3-1.5) +4

Topics: introduction to signals and systems; spectral analysis (Fourier Series) of continuous-time periodic signals; spectral analysis of aperiodic signals (Fourier Transform); the impulse response and convolution operator; frequency analysis of linear time-invariant systems; applications to filtering, communication systems, and biological system; A/D conversion; sampling. Laboratory periods will be used to give students hands-on experience in programming many of the techniques covered in the theoretical parts of the course. *Prerequisites: 024.226, 135.310.*

024.4XX Signal Processing II (3-1.5:0-0) +4

Topics: representation of discrete-time signals and systems in the time and frequency domains; the z-transform; application to various discrete-time linear time-invariant systems;

design of digital filters. Laboratory periods will be used to give students hands-on experience in programming many of the techniques covered in the theoretical parts of the course. *Pre-requisite: 024.3XX.*

NET CHANGE IN CREDIT HOURS:

+14

4. Faculty of Science

Ecology Program

**ECOLOGY PROGRAM**  
**Program Change**  
**2002-2003**

The following courses have been deleted from the options list:

022.343	Behavioural Ecology	(3)L
022.448	Animal Behaviour	(3)L
001.417	Advanced Plant Physiology	(3)L
001.337	Pollution Biology	(3)L

and replaced by:

022.3XX	Animal Behaviour	(3)L
022.4XY	Behavioural Ecology and Cognitive Ethology	(3)L
001.2XX	Introductory Toxicology	(3)
001.4XX	Advanced Plant Stress Physiology	(3)L

The following new courses have been added to the options list:

001.3XX	Bryology	(3)L
022.2XX	Introductory Toxicology	(3)
065.2XX	Introductory Toxicology	(3)
128.2XX	Introductory Toxicology	(3)

**Introduction of a Minor:**

---

**Minor**

001.237 (or 022.237 or  
 065.237), 001.354 and 022.348

---

Plus a minimum of 9 credit hours from the following list: 001.211, 001.221, 001.229, 001.301, 001.307, 001.325, 001.342, 001.358, 001.3XX, 001.401, 001.402, 001.405, 001.465, 022.338, 022.3XX, 022.345, 022.350, 022.354, 022.358, 022.361, 022.420, 022.421, 022.422, 022.423, 022.424, 022.425, 022.4XY, 022.484, 022.488.

---

Please note that 071.125, 001.201, 001.202, 002.131, 005.100, 005.200, 022.232, 022.253, 022.260, 022.353 and 022.375 are listed as prerequisites for some courses.

**GENETICS PROGRAM  
Program Changes  
2002-2003**

**Proposed Program**

**4.8.1 Program Information**

The Faculty of Science offers an interdisciplinary program leading to a B.Sc. (Honours) degree in Genetics. Genetics is the science of heredity dealing with the mechanisms of inheritance. From the general rules of inheritance in whole populations to molecular mechanisms of gene regulation, genetics research has generated concepts basic to modern biology. Genetics is divided into three broad areas that are represented in this program: classical genetics, population genetics, and molecular genetics. Courses from Arts, Agricultural and Food Sciences and Medicine are included in this program.

**Genetics Honours**

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 a grade of 'C' in 005.100 and standing in 136.150<sup>2</sup> and one of 136.120, 136.130<sup>1</sup>, 136.170<sup>1</sup>. 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.

**Honours Cooperative Option**

Students interested in alternating academic terms and terms of paid employment as part of their Honours Genetics program may enter the Cooperative Option in their third year in Genetics Honours. The five year program provides students with minimum 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 and continuation in the Cooperative Option are the same as that for regular Honours program. Each academic term in the third and subsequent years must comprise 15 credit hours. Students who achieve less than a 2.50 Grade Point Average while taking a course on an employment term will be allowed to continue in the Honours Cooperative program if they maintain a 2.50 cumulative Grade Point Average including that employment term, and at least a 2.00 sessional Grade Point Average in the employment term. Students should refer to the general faculty regulations for B. Sc. (Honours) Cooperative Options in Section 3.6.

Students will apply for openings in the Cooperative Option in September of their third year in the Genetics Honours program. They will be notified of their provisional acceptance in the program by October. Acceptance into the program is dependent upon the students 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 4-month employment term.

**4.8.2 GENETICS PROGRAM (060G)**

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
<b>HONOURS 120 CREDIT HOURS</b>			
002.130, 002.131, 071.125, 005.100 <sup>1</sup> , 136.150 <sup>1</sup>	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 either 136.120, 136.130 <sup>2</sup> or 136.170 <sup>1</sup> and 6 credit hours of electives or from the list of optional courses		Plus 42 credit hours from list of optional courses, a minimum of 18 of which must be at the 400 level	
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 <sup>1</sup>			
30 Hours	30 Hours	30 Hours	30 Hours
<b>HONOURS COOPERATIVE OPTION<sup>2</sup></b>		<b>120 CREDIT HOURS</b>	

002.130, 002.131, 071.125, 005.100<sup>1</sup>,  
136.150<sup>2</sup>

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<sup>4</sup>  
060.389, 060.399, 060.498 and/or 060.499

Plus either 136.120, 136.130<sup>2</sup> or  
136.170<sup>2</sup> and 6 credit hours of  
electives or from the list of optional  
courses

Plus 42 credit hours from list of optional courses, a  
minimum of 18 of which must be at the 400 level

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<sup>1</sup>

30 Hours

30 Hours

30 Hours

30 Hours

NOTES:

<sup>1</sup>Completion of 005.100 will satisfy the university mathematics requirement.

<sup>2</sup>136.131 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.

<sup>3</sup>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.

<sup>4</sup>Students that begin their first work term in May must take 125.302 in Year 3, while students that begin their first work term in January must take 125.302 in Year 4.

<sup>5</sup>IMPORTANT NOTE: Students in the cooperative programs are advised to ensure that they are able to satisfy the prerequisites for all 300 and 400 level courses they plan to take.

The optional courses are:

*Chemistry:* 002.228, 002.229, 002.436, 002.437, 002.462, 002.463

*Zoology:* 022.215, 022.253, 022.254, 022.306, 022.414, 022.415, 022.4XX

*Microbiology:* 060.301, 060.343, 060.344, 060.345, 060.346, 060.401,  
060.453<sup>\*</sup>, 060.454, 060.457, 060.460, 060.461

*Computer Science:* 074.101, 074.102, 074.126, 074.127

*Physics:* 016.102, 016.103, 016.105, 016.107

*Animal Science:* 035.350, 035.428

*Plant Science:* 039.350, 039.352, 039.433, 039.450

*Human Genetics:* 125.401<sup>\*</sup>

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.

NOTE: \*060.453 is a project course. A research project is chosen in consultation with the Microbiology department and the Genetics program committee, and is supervised by a staff member. Only one of 060.453 and 125.401 may be elected in this program. 060.453 and 125.401 are not available to students in the Cooperative Option.

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

#### 4.8.3 Course Descriptions

**125.302 Introduction to Human Genetics (6)** Topic to be included are the chromosomal level of genetic inheritance, Mendelian genetics, gene mutation and its consequences, the problems of multiple loci, and genetic environmental interaction as these areas apply to human beings; the application of human genetics in medicine.

**125.401 Project Course in Human Genetics (6)** A research project chosen in consultation with and supervised by a faculty member. A written report is required. The course is available primarily to final year Honours students in the Honours Genetics program. Selection of project and supervision to be arranged prior to September 30 and submitted in writing to department head. Deadline for submission of first draft to supervisor by March 1. Deadline for submission of final draft to department head is March 31.

The changes are:

1. The course description for Human Genetics 125.302 has been changed by the Faculty of Medicine.
2. A Cooperative Option has been added. The Note below the list of optional courses has been amended to state that 060.453 and 125.401 are not available to students in the Cooperative Option.
3. Footnotes 4 and 5 have been added for students in the Cooperative Option.
4. The following course has been added to the options list: 022.4XX.
5. Botany 001.434 has been deleted from the options list as it has been put in the 'Not Currently Offered' category.

## MICROBIOLOGY-CHEMISTRY JOINT PROGRAM IN BIOCHEMISTRY

### Program Changes 2002-2003

#### Proposed Program

##### 4.11.4 Honours Biochemistry Option

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 136.150<sup>1</sup> plus one of 136.120, 136.130<sup>1</sup> or 136.170<sup>1</sup> 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 below 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.

##### Honours Biochemistry Cooperative Option

Students interested in alternating academic terms and terms of paid employment as part of their Honours Biochemistry program may enter the Cooperative Option in their third year. The five year program provides students with minimum 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 and continuation in the Cooperative Option are the same as that for regular Honours program. Each academic term in the third and subsequent years must be comprised of 15 credit hours. Students who achieve less than a 2.50 Grade Point Average while taking a course on an employment term will be allowed to continue in the Honours Cooperative program if they maintain a 2.50 cumulative Grade Point Average including that employment term, and at least a 2.00 sessional Grade Point Average in the employment term. Students should refer to the general faculty regulations for B. Sc. (Honours) Cooperative Options in Section 3.6.

Students will apply for openings in the Cooperative Option in September of their third year in the Biochemistry Honours program. They will be notified of their provisional acceptance in the program by October. Acceptance into the program is dependent upon the students 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 4-month employment term.

##### Four Year Major Biochemistry Option

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, 136.150<sup>1</sup> plus one of 136.120, 136.130<sup>1</sup>, 136.170<sup>1</sup>. 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 below).

##### Major Biochemistry Cooperative Option

Students interested in alternating academic terms and terms of paid employment as part of their program may enter the Major Biochemistry Cooperative Option in their third year. The five year program provides students with a minimum 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 and continuation in

the Cooperative Option are the same as that for the regular Major program. Students are encouraged, but not required, to take 15 credit hours in each academic term in the third and subsequent years. Students should refer to the general faculty regulations for B. Sc. (Major) Cooperative Options in Section 3.4.

Students will apply for openings in the Cooperative Option in September of their third year in the Biochemistry Major program. They will be notified of their provisional acceptance in the program by October. Acceptance into the program is dependent upon the students 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 4-month employment term.

*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, 002.470<sup>1</sup>, 002.471<sup>1</sup>.

*Microbiology:* 060.228, 060.301, 060.341, 060.343, 060.344, 060.347, 060.348, 060.401, 060.402<sup>2</sup>, 060.432, 060.447, 060.451, 060.453<sup>3</sup>, 060.454<sup>3</sup>, 060.457, 060.458<sup>2</sup>, 060.460, 060.461.

*Other departments:* 001.246, 001.301, 001.4XX, 005.100, 005.200, 016.220, 016.227, 016.228, 022.228, 022.353, 022.354, 022.415, 022.460, 022.4XX, 074.101, 074.102, 074.126, 074.127, 097.701<sup>1</sup>, 136.201 or 136.382, 136.270, 136.271, 136.280.

<sup>1</sup>Not available in the Honours and Major Cooperative Options

<sup>2</sup>Available only for Major and Major Cooperative Options

<sup>3</sup>Required in the Honours and Honours Cooperative Options

**4.11.5 Microbiology - Chemistry Joint Programs in Biochemistry, Department Code: 060C**

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
<b>JOINT HONOURS 123 CREDIT HOURS</b>			
002.130, 002.131, 071.125, 016.105 and 016.107, or 016.102 and 016.103, 136.150 <sup>1,5</sup>	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 <sup>1</sup> , 136.170 <sup>1</sup> not yet taken <sup>2</sup>	002.238, 002.247, 060.345, 060.346 Plus 18 credit hours from option list above	002.436, 002.437, 002.462, 002.463, 002.470, 060.454 Plus 15 credit hours from option list above
Plus one of: 136.120, 136.130 <sup>1</sup> , 136.170 <sup>1</sup>			

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<sup>4</sup>

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.

30 Hours	30 Hours	30 Hours	33 Hours
<b>JOINT FOUR YEAR MAJOR<sup>2</sup> 120 CREDIT HOURS</b>			
002.130, 002.131, 071.125, 016.105 and 016.107, or 016.102 and 016.103, 136.150 <sup>1,5</sup>	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 <sup>1</sup> , 136.170 <sup>1</sup> not yet taken <sup>2</sup>	002.238, 002.247, 060.345, 060.346	Two of 002.436, 002.437, 002.462, 002.463 <sup>3</sup>
Plus one of: 136.120, 136.130 <sup>1</sup> , 136.170 <sup>1</sup>			

Plus 6 credit hours from the Faculty of Arts, which may include the "W" course

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

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.

JOINT HONOURS COOPERATIVE OPTION <sup>6</sup>		123 CREDIT HOURS	
002.130, 002.131, 071.125, 016.105 and 016.107, or 016.102 and 016.103, 136.150 <sup>1,3</sup>	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 <sup>1</sup> , 136.170 <sup>1</sup> not yet taken <sup>2</sup>	002.238, 002.247, 060.345, 060.346	002.436, 002.437, 002.462, 002.463, 060.454
Plus one of: 136.120, 136.130 <sup>1</sup> , 136.170 <sup>1</sup>		060.398, 060.399, 060.498 and/or 060.499	
Plus 6 credit hours from the Faculty of Arts, which should include the "W" course		Plus 36 credit hours from option list above which must include 24 credit hours from Chemistry and Microbiology with at least 6 hours from each department. The remaining 12 credit hours may be from any of the options listed.	

A "W" course must be taken in University 1 or Year 2<sup>4</sup>

30 Hours	30 Hours	30 Hours	33 Hours
JOINT MAJOR COOPERATIVE OPTION <sup>6,7</sup>		120 CREDIT HOURS	
002.130, 002.131, 071.125, 016.105 and 016.107, or 016.102 and 016.103, 136.150 <sup>1,3</sup>	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 <sup>1</sup> , 136.170 <sup>1</sup> not yet taken <sup>2</sup>	002.238, 002.247, 060.345, 060.346	Two or more of 002.436, 002.437, 002.462, 002.463
Plus one of: 136.120, 136.130 <sup>1</sup> , 136.170 <sup>1</sup>		060.398, 060.399, 060.498 and/or 060.499	
Plus 6 credit hours from the Faculty of Arts, which may include the "W" course		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.	

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

#### NOTES:

<sup>1</sup> 136.131 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.

<sup>2</sup> Other combinations of mathematics courses may be acceptable with the approval of the department heads.

<sup>3</sup> Only two of 002.436, 002.437, 002.462 and 002.463 are required, but all may be taken.

<sup>4</sup> 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.

<sup>5</sup> The courses required in this program satisfy the University mathematics requirement.

<sup>6</sup> IMPORTANT: Students in the cooperative programs are advised to ensure that they are able to satisfy the prerequisites for all 300 and 400 level courses they plan to take.

<sup>7</sup> The four year Major program need not be completed in the manner prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.

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

The changes are:

1. A Cooperative Option has been added to the Honours and Major program. The difference between the regular Honours program and the Honours Cooperative Option is that Chemistry 002.470 is not required in the Cooperative Option and the optional courses have been increased by 3 credit hours.
2. Botany 001.4XX has replaced 001.417 in the list of optional courses and Zoology 022.4XX has been added to the list.
3. The following courses have been added to the list of optional courses:
  - a) 002.470 Advanced Biochemistry Laboratory (3)  
The course is required in the regular Honours option but is optional in the regular Major option.
  - b) 002.471 Research Project in Chemistry or Biochemistry (6)  
Optional in the regular Honours and Major Options.
  - c) 060.402 Immunology (3)  
Available to Major students only. It is non-lab counterpart of 060.401.
  - d) 060.458 Recombinant DNA Technology (3)  
Available to Major students only. It is the non-lab counterpart of 060.457.
  - e) 060.454 Biological Energy Transduction (3)  
The course is required in the Honours Option but is optional in the Major Option.

## DEPARTMENT OF PHYSICS &amp; ASTRONOMY

## Course Changes

2002-2003

## DELETION:

016.280 Astronomy (6)L

## ADDITIONS:

016.2XY Observational Astronomy (6)L

Students will undertake a project on galaxies or nebulae using the University of Manitoba's Astronomical Observatory at Glenlea. Not to be held with the former 016.280 or 013.227. *Prerequisite:* 016.103 (B) or 016.107.

016.3XY Stars (3)

This course is an application of physics to the structure of stars, their formation and evolution; theoretical models and observations; comparisons of main sequence stars like our Sun, binary star systems, post-main sequence evolution, and the final stages of stellar evolution such as the formation of white dwarfs, neutron stars and black holes. *Prerequisite:* 016.107.

016.3XZ Medical Physics and Physiological Measurement (3)

This course will introduce the core subject areas of Medical Physics, in particular the physics of physiology and of radiology. The mechanics of body systems and the theory, medical applications and safety issues relating to the production, use, detection and measurements of electromagnetic radiation (both ionizing and non-ionizing) will be included. It will also cover Medical imaging (Ultrasound, CT and MRI) and will provide the student with an understanding of the physics underlying neurological, audiological, respiratory and vascular function and measurements. *Prerequisites:* 016.260 or 016.220, or consent of the Department.

016.4XY The Phenomenology of Galaxies (3)

This course describes the phenomenology of galaxies as determined by recent observational data. Topics include the characteristics and distribution of stars; radiation from the interstellar medium (hydrogen, molecular gas and dust); the kinematics of the stellar and gaseous components of the Milky Way; the formation and evolution of galaxies and clusters of galaxies. *Prerequisite:* 016.3XY.

016.4XZ Astronomy Project (6)

A research oriented course involving processing, analysis, and interpretations of astrophysical data. Available topics include neutron stars, supernova remnants, astrophysical jet sources, the interstellar medium, and galactic structure. *Prerequisite:* 016.2XY (or the former 016.280 or 013.227) and 016.3XY. *Corequisite:* 016.4XY.

## PLACED IN THE "NOT CURRENTLY OFFERED CATEGORY".

016.240 Gases, Liquids and Solids (3)

## MODIFICATIONS:

- 016.220 Electricity and Magnetism (6) L**  
 Electric field, electric potential, Gauss' law, capacitors, dielectric materials, magnetic fields, Ampere's law, magnetic induction, magnetic materials, displacement current, integral form of Maxwell's equations, Ohm's law, Kirchhoff's laws, DC circuit analysis, equivalent circuits, AC circuit analysis, complex impedance, RLC circuits, magnetic coupling, transformers, diodes and diode circuits. Not to be held with 016.260 or 016.261. *Pre-requisites: One of 016.107 (or the former 016.106 or 016.120), or 016.102 (C+) and 016.103 (C+) (or the former 016.121 (C+)), (or the former 016.118 or 016.127 and the former 016.128); and one of: 136.140 or 136.151, 136.152, 136.153, or 136.169. Co-requisites: 136.120 and one of 136.169, 136.170 or 136.171 or 136.173.*
- 016.220F Électricité et magnétisme (6) L**  
 Champs électriques, potentiel électrique, loi de Gauss, capacitance, matériaux diélectriques, champs magnétiques, loi d'Ampère, induction magnétique, matériaux magnétiques, courant de déplacement, forme intégrale des équations de Maxwell, loi d'Ohm, lois de Kirchhoff, analyse de circuits en courant continu, circuits équivalents, analyse de circuits en courant alternatif, impédance complexe, circuits RLC, couplage magnétique, transformateurs, diodes et circuits avec diodes. L'étudiant(e) ne peut se faire créditer à la fois le 016.121, 016.220 et le 016.260. *Préalables : un de : 107 (ou les anciens 106 ou 120), ou 102 (C+) et 103 (C+) ou les anciens 118,127) et 128; et un de 136.150, 136.151, 136.152, 136.153 ou 136.169 (ou un des anciens 006.125, ou 013.139, ou 013.159). Corequis : 136.120 (ou les anciens 006.144 ou 006.147) et un de 136.169, 136.170 ou 136.171 ou 136.173 (ou un des anciens 006.126, 013.149 ou 013.159).*
- 016.237 Introduction to Theoretical Physics (6)**  
 This course provides an introduction to the mathematics required for both the Honours and Majors program in Physics and Astronomy. Topics include series expansions, partial derivatives, vector calculus, integral theorems, Fourier series, differential equations, special functions and transform methods.
- 016.250 Modern Physics 1 (3)**  
 The first in a sequence of two courses on modern physics. This course introduces the basic principles of quantum theory including cavity radiation and Planck's postulate, wave-particle duality, the Bohr model, and the Schrödinger theory of quantum mechanics. Special emphasis is placed on derivation of the time independent Schrödinger equation and its solutions in one dimension. *Pre-requisites: a grade of "C" in one of 136.169, 136.170, 136.171 or 136.173 and in 016.107 (or the former 016.106 or 016.120) or permission of the department.*
- 016.260 Electromagnetic Field Theory (3)**  
 Electric field, electric potential, Gauss' law, capacitors, dielectric materials, magnetic fields, Ampere's law, magnetic induction, magnetic materials, displacement current, integral form of Maxwell's equations. Not to be held with 016.220 or the former 016.269.
- 016.261 Circuit Theory and Introductory Electronics (3) L**  
 Ohm's law, Kirchhoff's laws, DC circuit analysis, equivalent circuits, AC circuit analysis, complex impedance, RLC circuits, magnetic coupling, transformers, diodes and diode circuits. Not to be held with 016.220 or the former 016.269. *Pre-requisite: 016.260.*
- 016.265 Classical Mechanics 1 (3)**  
 The first in a sequence of three courses on intermediate to advanced level mechanics.

Topics include dynamics of a particle, conservation theorems, rotation, rolling motion, oscillations, gravitation and central force motion, and associated mathematical methods. *Pre-requisite: 016.107 (or the former 016.106). Co-requisites: 016.237 and 136.270 (or the former 013.239) or 136.210 (or the former 006.244) or 136.275 (or the former 013.234).*

- 016.357 Physics of Materials 1 (3)**  
Introduction to the continuum physics of materials. Solids within the elastic limit: stress and strain tensors, elastic constants. Liquids: continuity equation, Bernoulli, Euler and Navier-Stokes equations. *Recommended co-requisite: 016.341.*
- 016.458 Lasers and Modern Optics (6)**  
Coherence, Fourier analysis of optical problems, diffraction, holography, polarization of light, fibre optics, emission and absorption processes, laser physics. *Pre-requisite: 016.370.*
- 016.463 Physics of Materials 2 (3)**  
Physics of materials beyond the elastic limit, emphasizing atomistic features. Structural aspects, crystal defects, plastic deformation, radiation damage, diffusion and dislocations. *Pre-requisite: 016.357.*
- 016.464 Introduction to Quantum Mechanics for Advanced Students 1 (3)**  
An introduction to the fundamentals of quantum mechanics for students of engineering and sciences other than Physics, in the context of modern materials. Postulates of quantum mechanics, harmonic oscillator, angular momentum, one-electron many-electron systems. Not to be held with 016.370 or 016.437 (or the former 016.358). *Pre-requisites: 016.107 (or the former 016.106), 136.130 (or 136.131 or the former 013.146), 136.170 (or 136.171 or 136.173 or the former 006.126 or 013.149).*

<b>Total Hours Added:</b>	<b>+21</b>
<b>Total Hours Deleted:</b>	<b>- 6</b>
<b>Net Change:</b>	<b>+15</b>

**DEPARTMENT OF PHYSICS AND ASTRONOMY**  
**Service Course Changes**  
**2002-2003**

**DELETIONS:**

- 016.360 Mechanics A (3)**
- 016.361 Mechanics B (3)**

(These changes have the support of the Department of Mathematics.)

<b>Total Credit House Deleted</b>	<b>-6</b>
<b>Total Credit Hours Added</b>	<b>0</b>
<b>Net Change</b>	<b>-6</b>

DEPARTMENT OF PHYSICS AND ASTRONOMY  
 Program Changes  
 2002-2003

Proposed Program

4.12 Physics and Astronomy (016)

UNIVERSITY 1 HONOURS	YEAR 2	YEAR 3	YEAR 4
016.105 (B) (or 016.102 <sup>2</sup> (B+)) and 016.107 (B), 136.130 <sup>3</sup> (B), 136.150 <sup>4</sup> (B), 136.170 <sup>1,2</sup> (B)	016.226, 016.237, 016.250, 016.260, 016.261, 016.265, 136.270 <sup>8</sup>	016.341, 016.343, 016.365, 016.369, 016.370  Plus 3 credit hours of electives with one of the following strongly recommended: 016.3XZ, 016.357, 016.366 and courses from Computer Science, Chemistry, Geological Sciences and Mathematics. Students who choose Option B may also want to consider 016.3XY	016.437, 016.451 <sup>4</sup> , 016.452 <sup>4</sup>  Plus 9 credit hours from 016.357, 016.366, 016.425, 016.454, 016.456, 016.458, 016.462, 016. 463
Plus 6 credit hours from the Faculty of Arts, which should include the "W" course			
Choose 1 of :			
Option A (Astronomy): 016.2XY		016.3XY	016.4XY, 016.4XZ
Option B (Physics): 6 credit course to be chosen from 136.271 <sup>8</sup> , 136.230 <sup>8</sup> , 136.280 or courses in Computer Science, Chemistry or Geophysics		136.313	016.467, 136.370

A "W" course must be taken in University 1 or Year 2<sup>4</sup>

30 Hours	30 Hours	30 Hours	30 Hours
JOINT MATHEMATICS-PHYSICS AND ASTRONOMY HONOURS FOUR YEAR MAJOR <sup>1</sup>	120 CREDIT HOURS	SEE SECTION 4.10 MATHEMATICS	
016.105 (C+) (or 016.102 <sup>2</sup> (B)) and 016.107 (C+), 136.150 <sup>1,3</sup> and 136.170 <sup>1,2</sup>	016.226, 016.237, 016.250, 016.260, 136.120, 136.130 <sup>1</sup>	016.261, 016.265, 016.341, 016.370, 136.270  Plus 12 credit hours from the list of 300 and 400 level Honours and Major Physics and Astronomy courses	016.343, 016.365, 016.454, 136.313, 136.370
Plus 6 credit hours from the Faculty of Arts, which may include the "W" course			
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	MINOR
A minimum of 12 credit hours from 016.220, 016.225, 016.226, 016.227, 016.228, 016.235, 016.270, 016.271, 016.2XY, 016.336, 016.380, 016.3XY	A minimum of 12 credit hours from 016.220, 016.225, 016.226, 016.227, 016.228, 016.235, 016.270, 016.271, 016.2XY, 016.336, 016.380, 016.3XY

NOTES

- <sup>1</sup>Students 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.
- <sup>2</sup>016.103 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 for both 016.103 and 016.107.
- <sup>3</sup>136.131 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.
- <sup>4</sup>Other Honours Physics and Astronomy or Honours Mathematics courses may be substituted for one of 016.451 or 016.452 with permission of the department.
- <sup>5</sup>A minimum grade of "C" and an average of "C+" is required on these two Mathematics courses.
- <sup>6</sup>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.
- <sup>7</sup>The courses required in this program will satisfy the University mathematics requirement.
- <sup>8</sup>136.275 may be taken in lieu of 136.270. 136.235 may be taken in lieu of 136.230.
- <sup>9</sup>IMPORTANT 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 (Letters in brackets refer to minimum prerequisite standing required for further study.)

The changes are:

1. Mathematics 136.271 has been deleted as a required course in the second year of the Honours program and the 136.271 prerequisite for 136.313 and 136.370 will be adjusted accordingly.
2. Physics 016.240 has been removed as a required course in Year 2 in the Honours and Major programs as it has been placed in the "Not Currently Offered" category.
3. Footnote 8 ("Engineering 130.118 maybe used in place of 016.261") has been deleted. A new footnote 8 lists acceptable substitutes for Mathematics 136.230 and 136.270.
4. Optics 016.226 has been moved from Year 3 to Year 2 of the Four Year Major program.
5. The Mathematics requirement of 136.275 (or both of 136.270 and 136.271) in Year 3 of the Major program has been changed to 136.270.
6. As there is now an Astronomy path in the Honours program, the phrases "Astronomy courses may be used in place of some of the above courses with permission of the department. Consult the department advisor for details". has been deleted from the Honours program chart.
7. Physics 016.341 has been added as a required course in the Four Year Major program.
8. The phrase "Plus 12 credit hours from 300 and 400 level Honours Physics and Astronomy courses" has been revised to state "the list of 300 and 400 level Honours and Major Physics and Astronomy courses" in the Four Year Major program.
9. Physics 016.437 has been deleted in Footnote 4.
10. 016.280 has been replaced by 016.2XY in the Minor and General programs.
11. 016.3XY has been added to the list of acceptable courses in the Minor and General programs.

**DEPARTMENT OF ZOOLOGY**  
**Program Changes**  
**2002-2003**

204

**Proposed Program**

**4.15 Zoology (022)**

Head: E. Huebner

General Office: Z320 Duff Roblin Building Telephone: (204) 474-9245

UNIVERSITY 1	YEAR 2	YEAR 3	YEAR 4
<b>HONOURS SINGLE</b>			
120 CREDIT HOURS			
071.125, 002.130, 002.131, 005.100 <sup>5</sup>	022.215, 022.228, 022.232, 022.237 (001.237 or 065.237) <sup>2</sup> , 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) <sup>1</sup>	022.353 <sup>4</sup> , 022.354 <sup>4</sup> , 022.375, 001.246	022.400, 022.411
Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 <sup>1</sup> , 136.150 <sup>1</sup> , 016.102 or 016.105			
Plus 6 credit hours from the Faculty of Arts, which should include the "W" course			
Plus 005.200 which must be taken in University 1 or Year 2		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. With Departmental approval, a student may substitute up to 6 credit hours of the 21 credit hours of unspecified Zoology credits from a related area.	
A "W" course must be taken in University 1 or Year 2			
30 Hours	30 Hours	30 Hours	30 Hours
<b>HONOURS DOUBLE</b>			
MINIMUM 120 CREDIT HOURS			
071.125, 002.130, 002.131	Arranged in consultation with departments concerned		
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

<b>HONOURS COOPERATIVE OPTION</b>			
120 CREDIT HOURS			
071.125, 002.130, 002.131, 005.100 <sup>5</sup>	022.215, 022.228, 022.232, 022.237 (001.237 or 065.237) <sup>2</sup> , 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) <sup>1</sup>	022.353 <sup>4</sup> , 022.354 <sup>4</sup> , 022.375, 001.246	022.400, 022.411
Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 <sup>1</sup> , 136.150 <sup>1</sup> , 016.102 or 016.105			
Plus 6 credit hours from the Faculty of Arts, which should include the "W" course		022.398, 022.399, 022.498	
Plus 005.200 which must be taken in University 1 or Year 2		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. With Departmental approval, a student may substitute up to 6 credit hours of the 21 credit hours of unspecified Zoology credits from a related area.	
A "W" course must be taken in University 1 or Year 2			
30 Hours	30 Hours	30 Hours	30 Hours
<b>FOUR YEAR MAJOR*</b>			
120 CREDIT HOURS			
071.125, 002.130, 002.131, 005.100 <sup>5</sup>	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) <sup>1</sup>	022.353 <sup>4</sup> , 022.354 <sup>4</sup>	022.400
Plus 3 credit hours of Mathematics or Physics from 136.120, 136.130 <sup>1</sup> , 136.150 <sup>1</sup> , 016.102 or 016.105			
Plus 6 credit hours from the Faculty of Arts, which may include the "W" course			
Plus 005.200 which must be taken in University 1 or Year 2		Plus an additional 21 credit hours from the remaining 300 or 400 level Zoology courses. With Departmental approval, a student may substitute up to 6 credit hours of the 21 credit hours of unspecified Zoology credits from a related area.	

022.215, 022.228, 022.237 (001.237 or 065.237)<sup>2</sup>, 001.246 which must be taken in Year 2 or 3

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

**MAJOR\* COOPERATIVE OPTION**

120 CREDIT HOURS

071.125, 002.130, 002.131, 005.100<sup>5</sup> 022.232, 022.260, 002.277 and 022.353, 022.354<sup>4</sup>, 022.375 022.400  
 002.278 (060.277 and 060.278)  
 Plus 3 credit hours of Mathematics or or 002.221 and 002.236  
 Physics from 136.120, 136.130<sup>1</sup>, 136.150<sup>1</sup>, (060.236) and 002.237  
 016.102 or 016.105 (060.237)<sup>1</sup> 022.398, 022.399, 022.498

Plus 6 credit hours from the Faculty of Arts,  
 which may include the "W" course

Plus 005.200 which must be taken in University 1 or Year 2

Plus an additional 21 credit hours from the remaining 300 or  
 400 level Zoology courses. With Departmental approval, a  
 student may substitute up to 6 credit hours of the 21 credit  
 hours of unspecified Zoology credits from a related area.

022.215, 022.228, 022.237 (001.237 or 065.237)<sup>1</sup>, 001.246 which  
 must be taken in Year 2 or 3

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

**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

**NOTES**

<sup>1</sup>136.151, 136.152, 136.153 or 136.169 may be taken in place of 136.150; 136.131 may be taken in place 136.130.

<sup>2</sup>022.237 (001.237/065.237) has 005.100 as a corequisite.

<sup>3</sup>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.

<sup>4</sup>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.

<sup>5</sup>Completion of 005.100 will satisfy the University mathematics requirement.

<sup>6</sup>**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.

**Honours**

Students planning a professional career in zoology are strongly advised to  
 enter the Honours program at the beginning of Year 2.

To enter Honours Zoology, students must have a "B" in 071.125 or  
 002.131 and not less than a "C+" in the other course. In addition, a student  
 is required to have no failures, 12.00 grade points on up to their first 30  
 credit hours with the 12.00 grade points taken on no more than 30 credit  
 hours in order to enter Honours Zoology in Year 2. 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 Grade Point Average  
 of 2.50, with no failures, and in addition, must have a 3.00 Grade Point  
 Average on all Zoology courses during that session and a grade of "C+" or  
 better in each Zoology course.

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

**Honours Cooperative Option**

Students interested in alternating academic terms and terms of paid  
 employment as part of their Honours Zoology program may enter the  
 Cooperative Option after completion of their second year in Honours  
 Zoology. This program provides students with 12 months of paid  
 employment by the time they graduate. It enables them to obtain work  
 experience with participating firms, government agencies and University  
 units.

The course and grade requirements for entry to this option are the  
 same as those required for entry to the regular Honours program.  
 Students should refer to the general faculty regulations for B. Sc.  
 (Honours) Cooperative Options in Section 3.6.

Students should note that the course and grade requirements for the  
 Cooperative Option are the same as those for the regular Honours  
 program, with the addition of the Work Term courses. To continue  
 in the Honours Cooperative program, i.e., to proceed from Year 2  
 to Year 3 and from one academic term to the next and to complete  
 the Honours Cooperative program successfully, 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 Zoology courses  
 during that session and a grade of C+ or better in each Zoology  
 course. Students who achieve less than a 2.50 Grade Point  
 Average while taking a course on an employment term will be  
 allowed to continue in the Honours Cooperative program if they  
 maintain a 3.00 cumulative Grade Point Average in all Zoology  
 courses (including that employment term) and at least a 2.00  
 sessional Grade Point Average in the employment term.

Students may apply for openings in the Cooperative Option after  
 completing at least two years (60 credit hours) in the Honours  
 program. Before the first employment term begins, the prerequisite  
 courses listed below must be completed and it is strongly  
 recommended that 75 credit hours of the Honours program be  
 completed. Acceptance and continuation in the program is  
 dependent upon the student's receiving employment placements.  
 Employment term positions available to the students will be  
 approved by the department and may include positions within  
 Zoology or other University departments; employers will select

the students they wish to employ. The first employment term will preferably be taken in January or May of the third year, but may under exceptional circumstances begin in the preceding September 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.

Prerequisite courses to be completed before employment terms begin: 071.125, 002.130, 002.131, 005.100, 3 credit hours of specified Mathematics or Physics, and 022.375\*, plus at least 6 of 022.215, 022.228, 022.232, 022.237, 022.260, 022.353, 001.246, and 002.277/002.236 [\* a PreCoop Workshop may be substituted for 022.375 only to permit an employment term in May of Year 2 or September of Year 3, but 022.375 must still be taken].

The program will include three employment terms, each of 4-months duration, two of which may be consecutive. Students are required to register in and pay fees for each employment term prior to its commencement. Students will be required to submit an employment report upon the completion of each 4-month employment term.

#### Four Year Major

The four year Major provides students with opportunities for intensive study in a particular field of zoology. Interested students should consult the department head for advice. To enter this program, students must have a "C+" in either 071.125 or 002.131 and not less than a "C" in the other course, and have satisfied the faculty requirements for entry to the four year Major program. If 071.125 has been waived (see above) then the entrance requirements 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.

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. Four year Major students may transfer into the Honours program at the end of their second or third year with permission of the department head and providing faculty regulations regarding entry to Honours at that stage are satisfied.

#### Four Year Major Cooperative Option

Students interested in alternating academic terms and terms of paid employment as part of their Major Zoology program may enter the Cooperative Option after completion of their second year in Major Zoology. This program provides students with 12 months of paid employment by the time they graduate. It enables them to obtain work experience with participating firms, government agencies and University units.

The course and grade requirements for entry to 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 Options in Section 3.4.

Students should note that the course and grade requirements for the Cooperative Option are the same as those for the regular Major program, with the addition of 022.375 and the Work Term courses. To continue in and graduate from the Major Cooperative program, a student must have a sessional Grade Point Average of 2.00, and a grade of C or better in each Zoology course required in the program. Students who achieve less than a 2.00 Grade Point Average while taking a course on an employment term will be allowed to continue in the Major Cooperative program if they maintain a 2.50 cumulative Grade Point Average in all Zoology courses (including that employment term).

Students may apply for openings in the Cooperative Option after completing at least two years (60 credit hours) in the Major program. Before the first employment term begins, the prerequisite courses listed below must be completed and it is strongly recommended that 75 credit hours of the Major program be completed. Acceptance and continuation in the program is dependent upon the student's receiving employment placements.

Employment term positions available to the students will be approved by the department and may include positions within Zoology or other University departments; employers will select the students they wish to employ. The first employment term will preferably be taken in January or May of the third year, but may under exceptional circumstances begin in the preceding September 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.

Prerequisite courses to be completed before employment terms begin: 071.125, 002.130, 002.131, 005.100, 3 credit hours of specified Mathematics or Physics, and 02.375\*, plus at least 6 of 022.215, 022.228, 022.232, 022.237, 022.260, 022.353, 001.246, and 002.277/002.236 [\* a PreCoop Workshop may be substituted for 22.375 only to permit an employment term in May of Year 2 or September of Year 3, but 022.375 must still be taken].

The program will include three employment terms, each of 4-month duration, two of which may be consecutive. Students are required to register in and pay fees for each employment term prior to its commencement. Students will be required to submit an employment report upon the completion of each 4-month employment term.

#### Three Year General

Courses taken for a General degree provide an introduction to the major fields of study in zoology. 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 Zoology, students must take a minimum of 12 credit hours of Zoology courses as prescribed in the chart above. Course 022.375 is not available to students in this program.

NOTE: Botany 001.246 and 001.346 may be used to satisfy six credit hours of upper level Zoology.

Students anticipating a transfer to either the four year Major or Honours program at the end of their second or third year should examine requirements for these programs and consult with the department head before registering in their second or third year.

#### Botany-Zoology Joint Programs in Ecology

The Department of Zoology, in conjunction with the Department of Botany, offers a joint Honours program and a joint four year Major program in Ecology. See Section 4.6 Ecology Program for full details.

#### Minor

A Minor provides an appreciation of the diversity and evolution of animals as a supplement to a Major or Honours program, or a program of study in another faculty. The normal requirement for entry into a Zoology Minor is a "C" in 071.125.

The changes are:

1. A Co-operative Option has been added to the Honours and Major program.
2. With departmental approval, a student may now substitute up to 6 credit hours from a related field for 6 credit hours of Zoology courses at the 300 or 400 level in the Major, Honours and Co-op programs.

207

Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

**Report of the Senate Planning and Priorities Committee on Undergraduate Changes with Resource Implications or Course Additions Beyond Nine Credit Hours**

1. The terms of reference of the Senate Planning and Priorities Committee (SPPC) require the Committee to report to Senate on curriculum changes with significant resource implications including additions to departmental curricula of more than nine credit hours (online *Senate Handbook*, Section 8.32).
2. The School of Art proposes extensive revisions to its Graphics Design Program to
  - 1) to broaden as well as specify program content such that students are prepared for the traditional design profession and the emergent opportunities created by the information revolution; and
  - 2) to take more advantage of resources available within the broader University.

The Graphic design program is conceived as a multi-disciplinary undergraduate program offering concentrations in technology, theory, criticism, production and management.

**Observations**

1. The program revisions provide for increased flexibility and collaboration in resource planning.
2. The program revisions respond to changes in societal and marketplace needs.
3. The program revisions will be phased in gradually over a period of several years and follows the pattern recently used by the Faculty of Architecture. The First year of the Graphic Design Program will be a Foundation year currently available in the School of Art. The first courses to be implemented would be those that constitute the second year of the program. Years 3 and 4 will be implemented in sequence.
4. Students ahead of this rolling implementation would be able to take some of the new courses as electives as they are implemented. The need for individual consideration is noted.
5. Courses to be deleted amount 24 credit hours. Courses to be introduced amount to 45 credit hours resulting in net change of 21 credit hours. 13 courses will have their calendar entries revised.
6. The additional credit hours are the result of splitting the 21 credit hours of the 4th year BFA Thesis in Graphic Design into six discrete courses. (The BFA Thesis (054.450) is currently a single 21 credit hour course that currently covers all areas of concentration in the School of Art.) The fourth year graphic design specific courses in the revised programme total only 15 of the 21 credit hours of the BFA Thesis course because it was determined that it would be advantageous to the students to have completed 054.3BB New Media Design and 054.3BC History of Visual Communications 2 before entering their final year.

7. The statement from the Architecture and Fine Arts Library indicates it has the resources to support this program revision.
8. There is no indication of additional resources being required which leads me to suspect that there may be some hidden thermodynamic implications.
9. The resource implications resulting from these changes involve the cost of staffing the specific courses that replace the Graphic Design thesis course. Currently, all Graphic Design courses are taught by sessional faculty with the Graphic Design thesis committees being composed of two Graphic Design sessional faculty and one faculty member from outside the area. This is not optimum, but it is possible to fully implement the complete programme with sessional faculty if expertise is available in Winnipeg. However, the effectiveness of the programme and its reputation in the Graphic Design community would be greatly enhanced if there were full time staffing in the Graphic Design Area.
10. The SPPC finds this reorganization is consistent with the recommendations of the Task Force Report, *Building on Strengths*.

### Recommendation

The SPPC endorses the recommendation from the School of Art regarding revisions to the Graphic Design Program; and

that the School of Art be encouraged to seek financial support to recruit full-time faculty in the Graphic Design area.

Respectfully submitted,

Norman Halden, Chair  
Senate Planning and Priorities Committee

/s

### Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

## Report of the Senate Planning and Priorities Committee on Undergraduate Changes with Resource Implications or Course Additions Beyond Nine Credit Hours

The terms of reference of the Senate Planning and Priorities Committee (SPPC) require the Committee to report to Senate on curriculum changes with significant resource implications including additions to departmental curricula of more than nine credit hours. SPPC reviewed submissions from the Faculties of Arts, Science, Engineering, Human Ecology and School of Art.

### A. FACULTY OF ARTS

The Faculty of Arts has recommended changes to three programs:

#### 1. Department of English

##### Preamble

The Department of English will delete 4 courses (12 credit hours) and introduce 9 courses (27 credit hours) for a net change in course offerings of +15 credit hours.

##### Observations

- i) Reorganization of *Anglais langue seconde - Expression écrite* and *Expression orale* into *Anglais langue seconde I & II* reflects the need to fuse oral and writing skills. As this appears to be a reorganization of existing material no new resources are required.
- ii) Introduction to literary analysis is intended for students who wish to pursue further studies in English. Beyond this, courses are being introduced to expose students to a variety of literatures from around the world. An existing course is being modified to accommodate this change. The Library indicates it has sufficient resources to meet research and study needs of the students. The library does recommend the need to acquire more primary current works of some writers.
- iii) Introduction of honours seminar courses is described as combining or splitting of courses and is intended to provide more variety in terms of course content and more flexibility for students and for staffing.

##### Recommendation

The SPPC endorses the recommendation from the Faculty of Arts to adopt the course proposal changes of the Department of English.

#### 2. Department of History

##### Preamble

The Department of History will delete 3 courses (18 credit hours) and introduce 7 courses (33 credit hours) for a net change in course offerings of +15 credit hours.

##### Observations

- a) Course changes respond to:
  - the term "Aboriginal" being considered socially sensitive;

- research strength of an instructor in popular culture, crime and punishment in England;
  - changing historical scholarship and student interest in the history of women in Canada;
  - a desire to complement other courses in social and cultural history in Medieval, European and Early Canadian History;
  - the need to offer a course on Gender History in Canada exploring the roles, images, and experiences of masculinity and femininity in the past;
  - new expertise in the area of Modern Asian History; and
  - in two instances the department wants to offer special topics on an occasional basis to provide for flexible utilization of existing personnel.
- ii) Statements in support of these courses have been received from the Heads of Sociology and History and the Acting Director of the Asian Studies Centre.
- iii) Library statements indicate that the resources for these courses are adequate or sufficient. However, they also indicate that resources are not optimum. The optimum collection would require a one time expense of ~\$14,000 and ongoing expenditure of ~\$8,000 pa.

### Recommendation

The SPPC endorses the recommendation from the Faculty of Arts to adopt the course proposal changes of the Department of History.

## 3. Department of Native Studies

### Addition of New Courses

#### Preamble

The Department of Native Studies proposes to introduce 18 credit hours of new programming in five new courses and modify one course (3 credit hours) for a net change in +18 credit hours. Two courses from Department 98 have been added to the list of approved courses in Native Studies

#### Observations

- i) The course changes respond to:
- accommodation of expertise of a new faculty member in Subarctic Native People, Inuit Society and Culture;
  - the desire to integrate the theoretical and field components of the study of Aboriginal Organizations;
  - the desire to offer a course on Indigenous Peoples' Material culture; and
  - a need to develop an advanced level topics course without a fieldwork component.
- ii) Library resources are considered adequate with minor acquisitions totalling ~\$300; and
- iii) Support for these changes is noted from the Department of Anthropology.

### Recommendation

The SPPC endorses the recommendation of the Faculty of Arts to adopt the course proposal changes in the Department of Native Studies.

### Introduction of an Advanced B.A. Degree in Native Studies with a Focus on Aboriginal Governance

#### Preamble

In recent years Aboriginal Communities have gained an increasing degree of responsibility for Aboriginal Self Government, yet the general level of educational training to meet this responsibility has remained low. There is a shortage of appropriately trained Aboriginal people in the areas of governance, administration and program and service delivery. This shortage will become more acute as more responsibilities are shifted from the Federal Government to the Aboriginal Communities.

While there is a Master's program in Aboriginal Governance at the University of Victoria and several college-based programs, there are no undergraduate programs in Arts faculties or management schools.

#### Observations

- i) This program proposal builds upon existing resources through an imaginative combination of courses from the Department of Native Studies and the Asper School of Business.
- ii) The program has received strong support from the Sagkeeng First Nation.
- iii) The program will be the only program of this type in Canada.
- iv) The program will not require new resources.

#### Recommendation

The SPPC endorses the recommendation from the Faculty of Arts to create an Advanced B.A. Degree in Native Studies with a Focus on Aboriginal Governance.

## **B. FACULTY OF ENGINEERING**

The Faculty of Engineering proposes to introduce 4 new "Contemporary Topics in Electrical Engineering" in the Department of Electrical and Computer Engineering.

### **1. Department of Electrical and Computer Engineering**

#### Preamble

The purpose of these courses is to provide for flexibility in elective course offerings and to provide an opportunity for new hires to teach in their areas of specialization.

### Observations

- i) It is anticipated that in addition to new hires, visiting professors and adjunct professors will give such courses.
- ii) The four-course structure is to allow for courses to be delivered in two terms and to allow for 3 credit hour and 4 credit hour (including laboratory) forms of delivery.
- iii) Beyond the issue that the courses will be given by new hires, adjunct and visiting professors, no new resources are required.

### Recommendation

SPPC endorses the recommendation from the Faculty of Engineering to introduce 4 new "Contemporary Topics in Electrical Engineering" courses in the Department of Electrical and Computer Engineering.

## **C. FACULTY OF SCIENCE**

The Faculty of Science Proposes to introduce a Minor in Ecology and change three programs (Zoology, Microbiology-Chemistry, and Genetics) essentially to include a co-op option. These Co-operative options are being introduced as a result of student interest and employer requests. With the expansion of the biotechnology industry in Winnipeg and the new Federal virology laboratory, it is anticipated that the students in the biology programs will be able to fill the emergent training niche.

There are no additional resource implications because these programs will be administered by the existing cooperative coordinators in the Microbiology department an/or the Environmental Science Program.

### **1. Introduction of a Minor in Ecology**

#### Preamble

Prospective employers in the areas of Environmental Education, Resources and Consulting and Government agencies concerned with Parks require employees with an ecological background as a supplement to their academic background. Introduction of this minor will allow students from other academic disciplines to identify an additional area of academic focus.

#### Observations

- i) Enrolment is anticipated to reach about 15 students 3 years from the point of introduction.
- ii) Students likely to be interested in declaring such a minor may be those pursuing a major in Geography, Geology, Environmental Science, Biology, Zoology or Botany.
- iii) No additional Resources are required.

### Recommendation

The SPPC endorses the recommendation from the Faculty of Science to introduce a Minor in Ecology.

## 2. Modifications to the Genetics Program

### Observations

- i) The addition of a co-op option to the Program in Genetics program follows existing co-op guidelines.
- ii) Minor notes in the calendar describe those courses that are not available and those that have been added to the Genetics Program.

### Recommendation

SPPC endorses the recommendation from the Faculty of Science to modify the Genetics Program such that it will encompass a co-op option.

## 3. Modifications to the Microbiology-Chemistry Joint Program in Biochemistry

### Observations

- i) The addition of a co-op option to the Program in Biochemistry program follows existing co-op guidelines. The difference between the existing honours and the new honours co-op option is that Chemistry 2.470 is not required on the Co-op option and optional courses have been increased by 3 credit hours.
- ii) The list of optional courses has been altered in terms of Botany and Zoology courses and 18 credit hours of courses from Chemistry and from Department 60 have been added to the list.

### Recommendation

SPPC endorses the recommendation from the Faculty of Science to modify the Microbiology-Chemistry Joint Program such that it will encompass a co-op option.

## 4. Introduction of New Courses in Physics and Astronomy

### Preamble

The SPPC has reviewed a proposal for the addition of 15 credit hours of courses in the Department.

### Observations

- i) The Department of Physics and Astronomy proposes the introduction of courses in the general areas of astronomy and medical physics and modifications to courses in electricity and magnetism, theoretical physics, as well as mechanics and materials science. The department recently hired two faculty members whose areas of expertise encompass Astronomy

- /Astrophysics; the changes to the courses reflect changing expertise and teaching responsibilities amongst the staff.
- ii) The Department of Physics and Astronomy anticipates providing instruction that will include the very small (the subatomic physics scale) to the very large (large biomolecules and galactic structures). They expect current interests in ideas regarding the origins of the Universe are likely to be of very broad appeal.
  - iii) Six credit hours are deleted, 21 credit hours are introduced, for a net change of +15 hours. Course descriptions for 4 courses are modified, 3 credit hours in Gases, Liquids and Solids is transferred to the "Not Currently Offered" (NCO) category and 6 credit hours of mechanics service courses are deleted.
  - iv) The William Haney Fund will be used to purchase new books for the courses in the Astronomy /Astrophysics area. There is no other net demand for physical resources at this time.

### Recommendation

The SPPC endorses the recommendation of the Faculty of Science to adopt the course proposal changes in the Department of Physics and Astronomy.

## 5. Modifications to the Zoology Program

### Observations

- i) The addition of a co-op option to the Zoology program follows existing co-op guidelines.
- ii) Students may, with Departmental approval substitute up to 6 credit hours from a related field for 6 credit hours of Zoology.

### Recommendation

SPPC endorses the recommendation from the Faculty of Science to modify the Zoology Program such that it will encompass a co-op option.

Respectfully submitted,

Norman Halden, Chair  
Senate Planning and Priorities Committee

### Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

## Proposal for an Arts Co-op Program

10/11/01

### Objective:

This is a proposal for the Faculty of Arts to expand the B.A. degree to include a cooperative education option. The co-op option will improve the interaction between the existing B.A. degree and the workplace. A co-op program is designed to achieve two objectives. First, it provides another way for students to structure their studies so as to decrease the need for student funds at one time, permitting more full-time study. Second, it permits B.A. students to integrate academic study and productive work experience. This will increase the range of relevant experiences that students bring to their studies and facilitate the transition from university to the workplace.

The Arts co-op option will be consistent with the guidelines for co-op programs followed by the University of Manitoba, and all Canadian universities with recognized co-op programs.

A co-op program is defined as follows:

*A co-op program is one leading to the appropriate academic credential which incorporates academic study, productive work experience and an integration of the two as mutually-supportive requirements for that credential and in which the length of the work term comprises a minimum of not less than three four-month terms or 30% of the time spent in academic terms in the program.*

The cooperative education option integrates regular employment into the academic program of students. Students are paid by employers at market wage rates and work for 4 month terms. The program is expected to attract students from the 4-year B.A. (Advanced) and 4-year B.A. (Honours) programs. In a typical 4 year B.A., students will complete the first two years at the university and then apply for entry into the co-op program.

The university, employers and students all contribute to co-op education. Employers offer jobs that provide challenging opportunities to use the analytical, writing and organizational skills that students are developing at university. The university works with employers to develop the co-op placement, to maintain contact, and to obtain on-site feedback from both students and employers during the work term. The university screens students to ensure students accepted into the program are able to meet the expectations of employers. Students are expected to perform satisfactorily in their co-op work placement and complete a satisfactory written report on their co-op term before receiving credit.

### Objective of the co-op work experience:

- to apply previously acquired knowledge and skills
- to provide practical experience relevant to Arts students
- to develop a closer liaison with the Manitoba community and potential employers of Arts graduates.
- to achieve this while paying students appropriate income.

**Eligibility:**

- Registered in either the Advanced degree program or the Honours degree program and planning to graduate from the University of Manitoba.
- have completed a minimum of 60 credit hours.
- have a minimum cumulative Grade Point Average of 3.0 Students on academic suspension or probation are not eligible.
- have a satisfactory personal interview with the co-op coordinator, and be able to receive a job placement.

**Employer responsibility:**

- An appropriate work experience for an Arts student as developed in cooperation with the co-op coordinator.
- compensation at agreed upon wage rates.
- an orientation for the co-op student.
- to meet with the co-op coordinator at designated times to discuss the work experience of the co-op student, and
- to evaluate the performance of the co-op student, discuss the evaluation with the student and submit a written evaluation to the co-op coordinator.

**University Responsibility**

- to screen students for their suitability for the co-op work experience
- to work with employers to develop suitable job placements
- to seek and provide feedback from students and employers
- to receive a performance evaluation from the employer at the end of the work placement term
- to receive a satisfactory written report from the co-op student at the end of each the work placement term. The report is received by the cooperative coordinator who will evaluate it. Guidelines for preparing a report will be available from the cooperative coordinator.

The program will consist of alternating study and work periods. The program is not so suitable for the 3-year B.A. (General) since students do not enter the program until the end of the second year, when they have only two semesters of academic study remaining.

A typical co-op program is structured as:

Year in B.A.	Sept.- Déc.	Jan. - April	May - August
1	University study	University study	Break
2	University study	University study	Break
3 Admitted to the co-op option	University study	Work placement	Work placement
4	University study	University study	Work placement
5	University study		

Most student employment available in Manitoba is in the May - August period. In universities with regular academic programs in May - August, students are most likely to take the summer off. We think that a co-op pattern that maximizes the number of May - August placements will make it easier to match student wants and employer requirements. This pattern is followed in Arts co-op programs elsewhere (eg. UBC) and is the pattern common in the UM Faculty of Engineering.

#### Hiring Process:

- Employers submit co-op placements to the Faculty of Arts.
- The co-op positions are posted in the Faculty of Arts.
- Students apply for the co-op positions. The co-op coordinator will assist in this process.
- The co-op coordinator screens the applications and forwards the screened applications to employers.
- The employers conduct a selection process and select appropriate candidates.
- The employers will notify the students and the co-op coordinator regarding the outcome of the selection process.

Co-op placements may be in the local, regional and national labour markets. We expect most placements to be in Manitoba. An indication of what is possible is provided by the University of Victoria. At the University of Victoria, over 1,000 placements are made in the greater Victoria area for all programs, and 150 in Arts. This area has a population of 300,000, less than one-half the size of Winnipeg. Victoria has managed this in an area without a diversified economy, without the large private sector present in Winnipeg, and under pressures from the economic slowdown in Asia.

In other institutions, including Victoria, Waterloo and Simon Fraser, many co-op placements are made outside the local area. Our intention is to emphasize the connections between the university and the Manitoba community, but placements at all job market levels increase permanent job opportunities for students, and placements in the regional and national labour markets increase the reputation of the institution. The universities in Canada with the largest co-op programs all did well in the Maclean's rankings, which places a high weight on the reputation (recognition) of the institution.

The University of Manitoba has a decentralized model which allows for new co-op options to be added as resources permit. At present, there are co-op programs in a number of other faculties. The Faculty of Arts envisages a general Arts co-op option, with a single coordinator and job placements across all disciplines. This program will be voluntary and limited to 100 students per year as determined by the availability of resources.

This proposal includes a request for three new courses, corresponding to the three co-op work terms. This is the mechanism through which the university recognizes the satisfactory completion of the co-op work terms. The courses are non-credit. Their completion enables co-op students to receive a co-op designation upon graduation. Students may utilize the voluntary withdrawal option if they comply with the required dates. Students who experience performance difficulties in their work placements will receive additional guidance from the coordinator.

**Student Evaluation for the Co-op Work Experience:**

- Submit a satisfactory report for each co-op work term.
- Receive a satisfactory performance evaluation from the employer.

**Program Revenue****1a. Tuition Fees**

The revenue source for the co-op option is student fees. Students pay regular tuition and faculty fees for courses taken during academic study periods. The co-op option includes registration in a co-op course during the work period. Satisfactory performance in the course will be treated as a graduation requirement with a co-op designation. Students will pay a fee of \$260.95 for each 4 month work term. As in other faculties (Science and Engineering), the fee is set in relationship to the fee for a 3 ch. course, although the co-op term is not a credit course.

The assumption on additional student fees is based on the expected number of placements. It is anticipated that the program will make 20 placements in year one, 60 in year two and 100 in year three.

Year	Number of Placements	Student Fees
1	20	\$5,219.00
2	60	\$15,657.00
3	100	\$26,095.00

**1b +1c +1d Contribution from the university and other sources**

The Faculty of Arts will provide additional support in several areas. Additional secretarial help over that included in this proposal, space in which to house the administrative offices, computer service for hardware, computer support for software, budgeting support and support in developing proper procedures to ensure a well functioning program.

**Direct Program Costs**

The total number of positions requested is 1.5 FTE, support staff positions. Each 100 placements requires a co-ordinator, an office-assistant and \$13,500 in budget funds to support communication, on-site visits, and general expenses. The co-op coordinator is a trained professional, with superior organizational and promotional skills, required to supervise the activities of 100 students and employers. Often they have an advanced degree in the area in which they are working. This enables them to work more closely with employers in seeking placements, defining the learning objectives for the co-op placement, and discussing how the program might be improved.

2a. Salaries

220

The co-ordinator will perform at the level of an Administrative Assistant, level 7, with an annual salary cost of \$45,190.60. The salary may be slightly more depending on the experience of a candidate. The office assistant is expected to be level 3, employed 20 hours per week. The annual salary of such an OA3 is \$27,645.80, and a one-half time position is \$13,822.90. Staff benefits and pay levy are additional to the base salary.

Category	Position	Salary
Co-op Co-ordinator	Administrative Assistant 7	\$45,555.60
Office Assistant	Office Assistant 3 (20 hrs) F.T. = \$27,391.00 p.a.	\$13,695.50
Staff Benefits (13.84%)		\$8,200.35
Pay Levy (2.15%)		\$1,450.21
<b>Total Direct Salaries</b>		<b>\$68,901.66</b>

2b. Operating expenses

Operating expenses include supplies, promotional material, advertising, communication and co-ordination. The estimate of these costs is based on the experience of the University of Victoria for an Arts co-op option. The co-ordinator is expected to make an on-site visit to interview both the student and the employer at least once during each co-op term placement. Promotional and co-ordination costs are expected to be higher for the Arts co-op option than for existing program at the UM in Computer Science, Engineering and Environmental Science, where the problem is more often a shortage of qualified candidates than acceptable job placements.

Category	Expense
Supplies	\$500
Promotional material	\$4,000
Communication and coordination	\$1,500
Depreciation of capital equipment	\$2,500
Travel	\$5,000
<b>Total</b>	<b>\$13,500</b>

### 2c. Capital

No additional capital expenses are required.

### 3. Contribution or (Cost) before Indirect Costs

After the start-up period, the additional revenue is expected to total \$26,095 and the additional expenses total \$82,401.66 per year. Students will pay approximately 32 percent of the cost of the program. The additional costs net of revenue is \$56,306.66 per year. The costs are higher in the initial two years until the steady-state is reached.

Total Direct Program Revenue in Steady State	\$26,095
Total Direct Program Costs in Steady State	\$82,401.66
(Cost) in Steady State Before Indirect Costs	\$56,306.66

### Indirect Program Costs

#### 4a. Salaries

No additional indirect hiring is required as a result of this program.

#### 4b Operating

No additional operating costs are expected as a result of this program.

#### 4c Capital

Both the Co-op Coordinator and the Office Assistant must be equipped with computers and printers. In addition, some office renovation is expected to enable both students and employers to discuss confidential matters.

Capital Item	Cost
Portable computer, printer and fax.	\$5,000
Desktop computer with fax	\$2,500
Office laser printer	\$1,000
Desks, chairs and misc.	\$1,500
Office Renovations	\$10,000
<b>Total</b>	<b>\$20,000</b>

### Program Funding Request

#### 5. Total Net Program Contribution or (Cost)

The total net program cost declines until the third year when it reaches a steady-state. We expect the continuing costs in future years to be also \$56,306.66 per annum.

#### 6. Funding Request

Our funding request is in two parts. First is a request for baseline funding of \$56,306.66 per annum. The co-op option is a permanent change in our program costs and that is why baseline funding is requested. Second is a request for bridge funding to cover the additional costs during the first two years of the program, until the enrolment reaches a steady state. The amount of bridge funding requested is \$40,876 in the first year and \$10,438 in the second year.

Funding Request	Year 1	Year 2	Year 3 and following years
Baseline funding	\$56,306.66	\$56,306.66	\$56,306.66
Bridge funding	\$40,876.00	\$10,438.00	\$0.00
<b>Total funding by year</b>	<b>\$97,182.66</b>	<b>\$66,744.66</b>	<b>\$56,306.66</b>

### 7. Total Enrollment: headcount

The number of students is expected to increase until it reaches a steady-state of 100 students. We expect it will be three years until the program is fully operational.

### 8. Total Full-Time Equivalent (FTE enrollments)

Each student is a full-time student with a regular load of courses. With the resources available, we anticipate some selectivity will be required to ensure students meet the standards expected. The standards will include, full-time status, superior academic performance, and social skills indicated for the work placement.

Our understanding of the COPSE request for the number of FTE's, is a request to estimate the FTE's of the co-op terms. A headcount of six is used, involving six separate co-op terms, as the equivalent of one FTE. However, all 100 students enrolled in the program will be full-time students.

Year	Enrollment	FTE's
1	20	3.33
2	60	10
3	100	16.67

### 9. Total Net Program Contribution or (Cost) per Enrollment

Year	Net Program Cost	Enrollment	Net Program Cost per Enrollment
1	\$97,182.66	20	\$4,859.13
2	\$66,744.66	60	\$1,112.41
3	\$56,306.66	100	\$5,630.67

## 10. Total Net Program Contribution or (Cost) per FTE Enrollment

Year	Net Program Cost	FTE Enrollment	Net Program Cost per FTE Enrollment
2	\$97,182.66	3.33	\$29,183.98
3	\$66,744.66	10	\$6,674.47
4	\$56,306.66	16.67	\$3,377.72

## 11. Letters of Interest and Support

Letters of interest and support were received from:

- Manitoba Lotteries Corporation
- Department of Education and Training
- Department of Government Services
- Department of Finance
- Department of Family Services and Housing
- Department of Corrections
- Department of Health
- PCI Geomatics
- Manitoba: Water Resources Branch
- Turnstone Press
- St. Amant Centre
- Manitoba Museum of Man and Nature
- Mosaic

Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

October 26, 2001

**Report of the Senate Committee on Curriculum and Course Changes on a Proposal for an Arts Co-op Program**

---

---

**Preamble**

1. The terms of reference for the Senate Committee on Curriculum and Course Changes (SCCCC) are found in section 8.21 of the *Senate Handbook*. SCCC is "to recommend to Senate on the introduction, modification or abolition of undergraduate programs, curricula or courses".
2. At its meeting on October 26, 2001, the Committee considered a proposal from the Faculty of Arts to expand the B.A. degree to include a cooperative education option.

**Observations**

1. A cooperative education option integrates regular employment into the academic program of students. Students work for 4-month terms for market wage rates, generally during the May to August period. The program is expected to attract students from the 4-year B.A. (Advanced) and 4-year B.A. (Honours) programs. In a typical 4-year program, students will complete the first two years at the university and then apply for entry into the co-op program.
2. The proposal includes a request for three new courses, corresponding to the three co-op work terms: **099.3XX Arts Cooperative Option 1**, **099.3XY Arts Cooperative Option 2**, and **099.3XZ Arts Cooperative Option 3**. The courses are non-credit, and students will be required to submit a written report covering the work completed in the work term.

**Recommendation**

The Senate Committee on Curriculum and Course Changes recommends that the proposal from the Faculty of Arts for an Arts Cooperative Option, together with the following courses, be approved by Senate.

Respectfully submitted,

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

/sgp

Courses to be introduced:

099.3XX Arts Cooperative Option 1 (0)

Work assignments in business, industry or government for students admitted to the Arts Cooperative Option. Requires submission of a written report covering the work completed during the work term. Graded pass/fail. *Pre-requisite: Written consent of the Arts Cooperative Option Coordinator and the Faculty of Arts.*

099.3XY Arts Cooperative Option 2 (0)

Work assignments in business, industry or government for students admitted to the Arts Cooperative Option. Requires submission of a written report covering the work completed during the work term. Graded pass/fail. *Pre-requisite: Written consent of the Arts Cooperative Option Coordinator and the Faculty of Arts.*

099.3XZ Arts Cooperative Option 3 (0)

Work assignments in business, industry or government for students admitted to the Arts Cooperative Option. Requires submission of a written report covering the work completed during the work term. Graded pass/fail. *Pre-requisite: Written consent of the Arts Cooperative Option Coordinator and the Faculty of Arts.*

**NET CHANGE IN CREDIT HOURS:**

**0**

## Report of the Senate Planning and Priorities Committee on the Introduction of a Faculty of Arts Co-op Program

---

### Preamble

1. The SPPC has the responsibility to report to Senate on curriculum changes with significant resource implications (online *Senate Handbook*, Section 8.32).
2. The Faculty of Arts proposes the introduction of an Arts Co-op Program to improve the interaction between the existing B.A. degree and the workplace. The objectives of the co-op work experience are
  - i) to apply previously acquired knowledge and skills;
  - ii) to provide practical experience relevant to Arts students;
  - iii) to develop a closer liaison between the University of Manitoba and the workplace; and
  - iv) to achieve this while paying students an appropriate income.

### Observations

1. The program is consistent with existing University guidelines.
2. Examples of placements provided include demand in the areas of the Humanities (for students with writing skills) and for students with knowledge of economics and criminology.
3. Eligibility criteria include registration in an Advanced or Honors program, 60 credit hours completed and a cumulative GPA of 3.0 are defined.
4. University and Employer responsibilities are described and include:
  - a) an assessment of the appropriateness of the work experience and compensation;
  - b) orientation, supervision and feedback; and
  - c) screening, evaluating and reporting.
4. The program will consist of alternating study and work periods requiring the introduction of three new courses corresponding to the work terms.
5. A number of letters of support for such a program have come from organizations including the Departments of Education and Training, Finance and Government Services, The Manitoba Museum of Man and Nature and the Manitoba Lotteries Commission.
6. The number of placements is anticipated to be 20 in year 1 rising to 100 in year 3. A course fee of \$260.95 will be levied for each work term resulting in revenues of ~\$26,000 in year 3. The total # of positions requested is 1.5 FTE support staff positions based on each 100 placements requiring a coordinator, an office assistant and \$13,500 in budget funds. This results in costs per 100 placements of ~\$82,500. Additional capital costs for office equipment and supplies are estimated at \$20,000.
7. The proposal requires funding of ~\$97,000 in year one, ~\$67,000 in year two and ~\$56,000 in year three.

8. The Faculty of Arts considers this program a high priority.

Recommendation

The SPPC endorses the recommendation from the Faculty of Arts to create an Arts Co-op Program with the following *proviso*:

That the Vice-President Academic not proceed with the introduction of the program until new funds in the amount needed have been defined within the Faculty and/or University Budgets.

Respectfully submitted,

Norman Halden, Chair  
Senate Planning and Priorities Committee

/s

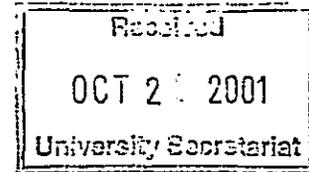


UNIVERSITY  
OF MANITOBA

Office of the President

229

202 Administration Building  
Winnipeg, Manitoba  
Canada R3T 2N2  
Fax (204) 261-1318



October 24, 2001

**TO:** Ms. Beverly Sawicki, University Secretary  
**FROM:** Dr. J.S. Gardner, Vice-President (Academic) and Provost *J.S. Gardner*  
**SUBJECT:** Academic Schedule

---

Attached is the Report of the Ad Hoc Committee of Senate Executive regarding issues relating to the Academic Schedule. Please forward the Report to the Senate Executive for their information and action.

/sc

Attachment

Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

**REPORT OF THE AD HOC COMMITTEE (SENATE EXECUTIVE)  
TO CONSIDER ISSUES RELATING TO THE ACADEMIC SCHEDULE**

**Preamble**

At the request of Senate Executive, an Ad Hoc Committee was formed to consider a number of issues relating to the academic schedule. The Ad Hoc Committee included the following:

- Dr. D. Morphy, Vice-Provost (Student Affairs)
- Dr. J. Jamieson, Dean, Faculty of Science
- Dr. R. O’Kell, Dean, Faculty of Arts
- Dr. J. Cooper, Director, School of Medical Rehabilitation
- Dr. B. Kops, Continuing Education Division
- Dr. B. Cameron, Director, University 1
- Mr. R. Levin, Director, Student Records

The mandate of the Ad Hoc Committee was to consider the following issues:

- I. Should the study week in February be discontinued and the Christmas break be extended by a week, or the spring term be ended a week earlier;
- II. Should a start date of January 2<sup>nd</sup> be reconsidered as January 1<sup>st</sup> is not a good day for traveling; and
- III. Should a trimester system be reconsidered.

**Academic Schedule Consideration**

In considering the issues before it, the Ad Hoc Committee reviewed a number of factors that constrain the structure of the academic schedule. Significant among those factors are the following.

1. Number of teaching days per term: The University operates on a 13-week, 39-teaching hour term. First term is reduced by two days (Tuesday and Wednesday) because of University 1 orientation for a total of 63 days. Second term can range from 63 to 65 days, depending on the start of term and the timing of Good Friday.
2. Statutory holidays: Thanksgiving results in the loss of a Monday in first term, which can have implications for lab scheduling. The problem is exacerbated when Remembrance Day is also observed on Monday.

3. Eight-day shutdown period at Christmas: This staff holiday period must begin no later than December 24<sup>th</sup> and end no earlier than January 1<sup>st</sup>. This has implications for both the exam period, the start of classes, and the first day of work for staff in January.
4. Spring Break: Normally the seventh week of the 2<sup>nd</sup> term.
5. Start of Summer Session: Summer Session begins the Monday following the end of the April examination series.
6. Senate grad approval/convocation: A minimum of two weeks is required between the last exam and presentation of graduation lists to convocation. A minimum of 2 weeks is also needed between the Senate meeting and Convocation.
7. Exam schedule: The exam schedule comprises 12 days in December (including Saturdays) and at least 15 days in April. The larger the enrolment, the more desirable it is to have additional days in order to avoid compressed schedules.

In addition, the Ad Hoc Committee considered an informal survey carried out by the Director of Student Records on the number of days per term in selected universities in Canada; a list of spring break dates at other Canadian universities; the University of Manitoba Academic Schedule 2002 - 2011, and a report by Professor R.A. Johnston, (October, 1998) entitled "The Structure of the University Year: Maximizing Flexibility and Quality".

### I. "Study Week"

The Ad Hoc Committee's discussion on the issue of "Study Week" was far ranging. Consideration was given to observations that includes opinions on the value of "Study Week" as a mental health break for all members of the University community; the value to students who use the time to write term papers, particularly if they are involved in six credit hour courses; and the fact that high school information days is scheduled in this week and would be difficult, if not impossible, to schedule at another time.

The Ad Hoc Committee considered rationale for the fact that "Study Week" is scheduled in second term and not first term. In addition, the Ad Hoc Committee considered the terminology "Study Week" and "Break Week" and agreed that the term presently used in the calendar "Mid-Term Break" was appropriate.

There being no disagreement within the Ad Hoc Committee, the following motion was unanimously passed:

"That the Mid-Term Break" presently scheduled for second term, remain as it stands".

## II January 2<sup>nd</sup> Start Date

The Ad Hoc Committee reviewed a proposed University of Manitoba academic schedule from 2002-2003 through to 2010-2011. The general "rule of thumb" has been that if there are fewer than three days available in the week following shut down, the second term would begin the following week. That is, we would not begin on a Thursday or Friday but would revert to the next Monday.

In reviewing the issues that arise from not starting January 2<sup>nd</sup> in some years, the notion of a 12-week term versus our 13-week term was briefly discussed. Given the academic implications of such a recommendation, it was agreed that the merits of a 13-week term over a 12-week term would not be discussed as that was not within the terms of reference of this Ad Hoc Committee.

The primary issue in some years of making any change, was a compression of the examination period. This problem could in fact be exacerbated with the potential of losing rooms in the future which are presently used for examinations. Notwithstanding, the Ad Hoc Committee concluded that this problem was manageable.

The primary focus of discussion was whether or not this is fair and equitable to have members of this community having to travel on a formal and respected holiday. The Ad Hoc Committee concluded with minimal debate that our practice of starting on January 2<sup>nd</sup> was in fact inappropriate. Accordingly, the following motion was unanimously passed:

"That January 3<sup>rd</sup> be the established date for second term, unless January 3<sup>rd</sup> falls on a Thursday or Friday".

## III. A Trimester System

In considering the matter of a trimester system, the Ad Hoc Committee reviewed the Report by Professor Johnson (1998) entitled "The Structure of the University Year: Maximizing Flexibility and Quality". To quote the Johnson Report, "the weight of evidence is clearly against the introduction of anything approaching a full ("balanced") trimester system."

The Ad Hoc Committee saw no need to reinvent the arguments for or against a trimester system as outlined in the Johnson Report. The Ad Hoc Committee was in effect in agreement with the Report and did not believe that circumstances had changed such that a change to a trimester system should be considered by our University at this time.

Accordingly, the following motion was unanimously passed:

"That there are no substantial reasons to move to a trimester system at this time".

## Summary

The Ad Hoc Committee considered issues related to the Academic Schedule including the inclusion of a "study week" in the second term, the January 2<sup>nd</sup> start date, and the trimester system. The Ad Hoc Committee unanimously passed the following motions:

- I. That the mid-term break, presently scheduled for second term, remain as it stands;
- II. That January 3<sup>rd</sup> be the established date for second term, unless January 3<sup>rd</sup> falls on a Thursday or Friday; and
- III. That there are no substantial reasons to move to a trimester system at this time.

Respectfully submitted by

Dr. David R. Morphy  
Ad Hoc Committee Chair



UNIVERSITY  
OF MANITOBA

Office of the President

234

202 Administration Building  
Winnipeg, Manitoba  
Canada R3T 2N2  
Fax (204) 261-1318

June 26, 2001

To: Ms. B. Sawicki  
University Secretariat

From: Dr. James S. Gardner  
Vice-President (Academic) and Provost

Subject: FEERS Proposal

---

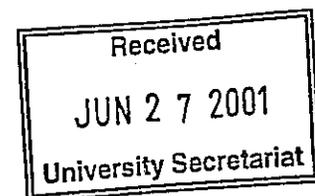
Attached is the most recent proposal for a new "Faculty of Earth, Environment, and Resource Sciences". Imbedded in the proposal is an up-to-date chronology of where and when the proposal in its various incarnations has been reviewed and discussed.

I am writing to ask you to insert the proposal in the Senate/Board approvals process. While I am not certain of the formal route which this should follow, I expect that it will have to go to Senate Executive and, no doubt, Senate Planning and Priorities Committee and perhaps others. Summer is a down time for Senate and the Board. Therefore, I would request that this go to Senate Executive at its September meeting in the first instance.

We have had few proposals of this type. Perhaps University I is the closest analogue. As with University I, this proposal is seeking approval in principle so that the details for implementation can be worked out and those requiring further Senate and Board approval can be prepared and reviewed.

JSG/gp

c.c. Dr. E. J. E. Szathmáry  
Dr. R. Lobdell  
Professor K. Ogden  
Dr. D. Morphy



## A PROPOSAL TO ESTABLISH A

## FACULTY OF EARTH, ENVIRONMENT AND RESOURCE SCIENCES

## INTRODUCTION

This is a proposal to create a Faculty of Earth, Environment and Resource Sciences at The University of Manitoba. The goal is to highlight the University's commitment to, achievement in, and capacity for world-class education, research and service pertinent to understanding and management of the Earth environment. The importance of this emerging-area of knowledge and practice is clearly evident and is reinforced by media reports on a daily basis. It is necessary for The University of Manitoba to be responsive to the environmental imperative in the conduct of its own affairs and to be highly visible in providing opportunities for education, research and service that will enhance understanding and stewardship of the Earth environment.

The objectives are: to provide visibility to education, research, and service activities in the environmental area such that the university is regarded as a center of excellence and achievement; to provide well-articulated degree programs in the area to undergraduate and graduate students; to enhance the opportunities for individual and group research and scholarship which is attentive and sensitive to emerging knowledge and global environmental issues; to respond to the critical research needs of communities and societies at large; and, to use the University's increasingly limited resources more effectively and efficiently in doing this. Achievement of these objectives will benefit students, researchers and the community at-large.

The proposal is to incorporate the Department of Geological Sciences, Department of Geography, and the Natural Resources Institute into a Faculty of Earth, Environment and Resources. The Faculty also would have responsibility for university-wide co-ordination of degree programs and courses which have an environmental focus and are housed in various of the other Faculties and Schools. Initially, the Faculty, would be departmentalized. In the longer term and in due course with appropriate discussion and planning, these administrative arrangements may evolve to new forms and may include incorporation of other programs and units such as the Environmental Sciences program and the Disaster Research Institute.

The proposal is structured as follows: a brief description of the emergence of an internationally recognized domain of knowledge and practice in the "environmental" area; an outline of the general and specific rationales; a summary chronology of the process leading to the proposal to this point; the proposed structure of the Faculty; the issues that have arisen from discussion of this matter; a map of the process to be followed with proposed time lines; and a summary of expected goals and outcomes.

## BACKGROUND

### Emerging Disciplines and Administrative Areas.

The organization and academic administrative structure of universities generally reflects domains of knowledge and their related areas of professional practice and applications. Of course, there is a lag between the emergence of new areas of knowledge and practice and their appearance in the administrative structures of institutions in the public and private sectors. Such has been the case with the "environmental" area, whether it be in the organization and administration of education, research and scholarship, in governmental agencies, or in politics. What, in fact, constitutes the "environmental" area has been vague and ambiguous. Many currently recognized disciplines rightly argue that they address the "environmental" area or at least have an intellectual and/or practical stake in it. Throughout the approximate 200- year history of the modern research university, the pattern of emergence of new disciplinary areas and administrative units has been linear and reductionist, reflecting the growth of knowledge and the necessity for specialization whether in the physical/natural sciences, social sciences, humanities, and creative arts or in their various derivative practices, applications and professions. The process has been relatively orderly and simple, though not without its disputes as offspring assert themselves and new applications and professions search for legitimacy in the established and regulated order. The latter half of the 20<sup>th</sup> Century presented new challenges occasioned by the rapid growth of knowledge and a significant and far-reaching epistemological shift wherein the linear and reductionist process began to turn in on itself, so to speak. This has been felt and seen in many of the established disciplines and professions. Not surprisingly, it has presented a major challenge to the established academic administrative order in universities all over the world. The shift is best described as an increased focus on processes and relationships, issues and problems, and some new objects which are transdisciplinary and invoke the knowledge and expertise of multiple disciplines. Universities have been challenged to establish and provide a huge range of area studies, women's studies, ethnic and cultural studies, and environmental studies programs, among others. And, in doing so, they have changed some of their administrative arrangements.

In many respects, "environment" is like "human health". Everyone has a stake and interest in it and many traditional disciplinary and administrative areas have expertise and a record of achievement in various aspects of it. Accordingly, at The University of Manitoba we have programs and/or areas of expertise in environmental health, environmental education, environmental engineering, environmental design, environmental science, environmental toxicology, environmental law, agro-ecology and so on...The question now arises as to whether the environmental topical area has developed to the point where it warrants a major administrative and structural commitment as has happened with respect to human health.

### An Environmental Subject Area Discipline?

Can one define or even describe the "environmental" area in a way that would satisfactorily answer to the rationality of the traditional order of knowledge as represented in the organization of the university? This is probably impossible given the terms of reference of reductionism. However,

it is worth some consideration. A domain of knowledge or discipline is generally described as having an identified or identifiable corpus of information about subjects/objects and related processes and a set of methods, techniques, and/or instruments by which the information is gathered, analyzed, summarized, communicated and/or applied. Usually it is understood that at least the core of all this is unique to the discipline or practice. If we think of the core of the "environmental" area as being the relationship and/or interaction between humans and their material environment and the resultant conditions, organizations, and patterns, some measure of identification can be achieved. Certainly a formal corpus of information can be identified, beginning, in the western world, with the Malthusian pronouncements of the late-18<sup>th</sup> and early-19<sup>th</sup> Centuries, continuing with the works of Alfred Russell Wallace, the Darwins, and, most especially, George Perkins Marsh, John Ruskin, John Muir, the proponents of German "scientific" forestry in the 19<sup>th</sup> Century, and culminating with the explosion of work in the 20<sup>th</sup> Century which followed from the seminal writings of Aldo Leopold and Rachel Carson, Paul Ehrlich, Barry Commoner, and Rene Dubos. At the close of the 20<sup>th</sup> Century, we find the "environmental" area at the heart of major global concerns such as climate change and its consequences; resource depletion; contamination of air, water and soil; food production; spread of infectious diseases; regional social and political unrest; and so on. Environmental concerns and issues have found their way into politics at all levels and into social movements, including war, protests, and unrest. Coalitions of those concerned with environmental issues and those concerned with peace, social justice and equity have provided the basis for some of the most powerful politico/social actions of the late-20<sup>th</sup> Century and this will only increase in the 21<sup>st</sup> Century.

The importance of environmental issues has been recognized in the organization of universities and education in general for many years. In Canada, Dalhousie, Waterloo, York, Calgary, Simon Fraser, and UBC are among the universities which acted early to establish separate administrative units to address environmental education, research and service. Many other universities have established degrees within the structure of other units to address environmental education. This has most commonly happened within Geography Departments, Geography/Geology combinations, and Biology(Botany/Zoology) programs. Several Engineering Faculties have established separate degree programs in environmental engineering while some Law Schools have established specialties in environment and resource law. Our own university has established programs in environmental design, environmental science and agro-ecology for example. At the graduate level, one finds environmental foci in the Natural Resources Institute, and the Departments of Geography, Geology, Botany, Zoology, Microbiology, Civil Engineering, Plant Science, Soil Science, Chemistry and Community Health Sciences.

Apart from the response of formal institutions of education and research, the environmental focus has been taken up by the United Nations and its agencies, governments and their agencies, non-governmental organizations, and citizens' groups and individuals around the world. The environment, in the clothing of global climate change and contamination of global common property resources such as the oceans and the atmosphere, has come to the top of the public agenda. This is especially so when the environmental issues become wedded to social and economic equity issues and issues of conflict, such as in Somalia, Sudan and India, and result in mass displacement of people and refugees of war and environmental degradation.

What has emerged is a domain of knowledge which is supported by a huge corpus of information, methods, techniques, organizations, etc. and an area of expertise which calls upon this corpus in an applied sense to address significant problems of human livelihood at the local through global levels.

These are compelling contextual reasons for considering a more directed educational response. There are, as well, some more local reasons.

### RATIONALE

Reasons for bringing forward this proposal at this time reflect both positive opportunities and some inadequacies. They may be itemized as follows:

1. In the public domain, environment and resource management issues, are, and will remain, among the very top priority issues locally, regionally, nationally, and internationally. These are matters of everyday life and the University should provide leadership in their resolution and management through its mandate for education and research.
2. Earth, environment and resource management issues and problems may be addressed effectively through innovative education, training, and research programs which call upon the developed corpus of knowledge and technique and through input and interaction from established areas in health, economics, sociology, and the physical, natural, and applied sciences.
3. There is a large, growing, and increasingly unmet demand and need for highly visible and well-articulated education and training programs in environment and resource management at the post-secondary level. Manitoba's universities have lagged the rest of the country in this regard.
4. The educators, researchers, and scholars who work in this area at The University of Manitoba have a fine record of achievement individually and in aggregate. This excellence needs to be highlighted, built upon, and acknowledged in a much more visible way. The University has the capacity to provide more visible leadership.
5. There is evident frustration on the part of students at the University in not having clearly defined and visible access to well-articulated programs and courses which will provide them education and recognized credentials in the area, efficiently and effectively. This was evident during the hearings of the Task Force and is particularly evident in the advising of University 1 students.
6. Some of the component units of the proposed Faculty are in a state of erosion and/or are not used effectively in the current arrangements. We have both unnecessary course and program duplication and insufficient subject coverage. Not only have we lost faculty members, we are

threatened with more serious losses unless something of a substantial nature is done to enhance the context for education and research in the environmental area.

7. The current arrangement of widely distributed and uncoordinated programming does not position the University well locally, regionally, nationally, and internationally.
8. Comments by external and accreditation reviewers of programs in relevant or cognate areas have reflected negatively on the University's lack of focus and cross-disciplinary interaction in the environment and resource management area.
9. There has been a long history of discussion and deliberation about the approach to the environmental area at the University.

### THE PROCESS

This proposal has a history as summarized below.

1. Late-1980s/early-1990s: an inventory of faculty and staff with expertise in areas pertaining to "sustainable development" was completed at the request of the University President partly in anticipation of, and response to, the establishment of the International Institute for Sustainable Development in Winnipeg and the emerging but vague "green plan" of the Federal Government.
2. Early 1990s: the Environmental Science undergraduate program was developed, proposed, and established in the Faculty of Science. Enrolment grew rapidly. Senate declared "sustainable development" a University research priority. The University proposed and approved a degree in Environmental Engineering but its implementation did not occur due to a lack of resources forthcoming from the Universities Grants Commission. The Faculty of Engineering nonetheless developed an environmental focus within Civil and Geological Engineering. The Vice President(Academic) and Provost began discussions and meetings with individuals and groups within the University with a view to developing a more focused, visible, and effective approach to environmental sustainability and resource management in its academic programming and its own management practices. Progress in the latter area outpaced that of the former area through the support and activities of the Office of the Vice President(Administration), Physical Plant, Environmental Health and Safety, UMREG, UMSU and individual students, and faculty and staff.
3. Mid-1990s and beyond: in 1994, the Vice President(Academic) and Provost appointed a steering committee to establish programs in "environmental studies". In 1996, this committee recommended that the NRI be expanded to become a "centre for environmental studies" with a mandate either to offer directly or to coordinate offerings of all courses in this area. Furthermore, the Centre would be responsible for all existing and future certificate, undergraduate degree, and graduate degree programs in environmental studies and resource

management. The recommendations were not followed up at the time due to apparent lack of wide support in the most directly affected units. The Faculty of Agricultural and Food Sciences revised the undergraduate curriculum and established an agro-ecology stream. During 1996/97 the University Task Force on Strategic Planning heard a number of briefs and reports from faculty, staff and students which expressed dissatisfaction with the current programming arrangements, focus and visibility in the environmental area. In its report of February 1998, "Building on Strengths", the Task Force made a number of recommendations concerning environmental studies and resource management. Among these were those concerning the need to reduce course and program duplication in the area, the development of a Ph.D. in environment and resource management to be housed in the NRI, and the development of appropriate certificate programs in environmental management. The Ph.D. program has been approved and implemented and is currently registering its first cohort of students. In addition, the Task Force issued an omnibus recommendation and exhortation to consider unit amalgamations using the criteria of functionality, faculty complement, student numbers, and infrastructure and it recommended a review of the Environmental Sciences program. During 1998-99, the Environmental Science program was reviewed. The review highlighted the program's many strengths, including the dedication of academic and support staff and the enthusiasm of students. In addition, three shortcomings were noted: (i) duplication of courses and overlap of course content; (ii) omission of certain non-science courses or fields important and relevant to environmental studies; and, (iii) the poor quality of some courses. As a consequence, a number of modifications have been initiated. In February 1999, Deans and Directors Council reviewed yet another proposal to coordinate course offerings in environmental studies and resource management. Similar to what had been proposed in 1996, this was seen to be the responsibility of a new administrative unit (an expanded NRI) which would facilitate undergraduate and graduate programs through the coordination and rationalization of existing disciplinary courses. This was generally supported by DDC and a small working group was formed to study the proposal and recommend specific action. Little concrete progress was made.

4. Turn of the Millennium(2000-2001): the Vice President(Academic) and Provost reviewed progress or lack thereof and continued to receive negative commentary from people within and outside the University including students about the lack of visibility, focus, and affirmation of the importance of education and research in the environmental area. Following discussion within the Office of the President and with individuals within and external to the University, a draft proposal was prepared and discussed further with members of the Office of the President. Following some modification and an expression of support, the draft proposal was circulated to the Deans and Director of the most directly affected units and the process of feedback commenced. Some of the feedback has been in the form of motions of support in principle, some in the form of alternative models, some negative to the whole idea, and, of course, some in the form of many questions of a detailed type. The draft proposal also has been reviewed and discussed at two Deans and Directors Council meetings. In addition, the proposal has been discussed widely in the University within some departments and certainly among colleagues. The Faculty Councils of Arts and Science discussed the proposal in late-2000 and early-2001 and recommended an alternative structure akin to a "School of

the Environment” as a preferable course of action at this time. Early in 2001, the Vice-President(Academic) and Provost requested a small “Working Group” composed of representatives of the most directly-affected units to examine the proposal using a prescribed set of criteria and principles. Though the results of these deliberations did not achieve consensus on detail, there was general agreement that the University required some more visible administrative structure and unit to address environmental education and research. A number of useful suggestions resulted and they has been taken into consideration in this version of the proposal.

Notwithstanding the time and effort expended on these undertakings, it is both frustrating and embarrassing to note how little progress has been made in the academic area. This University has not responded to the needs and the opportunities in the environmental area in a way that would be commensurate with its resources and expertise and in a fashion that is consistent with the direction of higher education in Canada and abroad. The University must improve its visibility in the professional and broader communities. It must deal with the problems of program incoherence, especially at the undergraduate level, and present itself in a way that does not confuse students or potential students and disappoint its graduates. These problems of visibility, coordination, and coverage are not due to bad- mindedness or lack of commitment. They arise, in large measure, because courses and programs are offered by separate academic units, which naturally pursue their primary disciplinary interests and do so within a budget system that actively discourages broad-ranging, inter-unit program co-operation. This is a very difficult milieu for any new and emerging discipline but especially for one that is transdisciplinary.

## THE PROPOSAL

This experience has demonstrated that abstract appeals to the power of synergy are unlikely to result in innovative undergraduate and graduate academic programs and new constellations of research and scholarship. A new administrative unit, incorporating some existing academic units which share interests in environmental studies and resources management, and which will be clearly visible within and outside the University, is called for. The Department of Geological Sciences, Department of Geography, and Natural Resources Institute have indicated strong interest in being core founding units within the proposed Faculty. An earlier proposal had called for the inclusion of the Environmental Science undergraduate program as well. However, it is clear that it may be advisable to allow for further discussion of the future of that program. Obviously, other units have a legitimate interest and stake in the area and that fact produces some interesting boundary issues and challenges which will be discussed later. For purposes of discussion, we are calling the new unit the Faculty of Earth, Environment, and Resource Sciences. It would have the following characteristics.

1. It would be a medium-sized, full-service Faculty within the University. As seen in the attached tables, the three units have a sizeable number of academic and support staff members(Attachment I). They offer a range of undergraduate and graduate programs, annually produce a respectable number of graduates, teach a reasonable number of UGCHS, have a number of students pursuing undergraduate majors/honors and

postgraduate degrees, and have a strong record of productivity in research, scholarship and service. The goal is to build on and improve all of this!

2. The Faculty will not result in the loss of any jobs and, ideally, should include all academic and support staff members of the existing units. **No staff member should be obligated to join the Faculty if, on the basis of academic or related reasons, he or she does not wish to do so.** While the nature of particular duties may change with the move and over time, no staff member will be subject to a negative reclassification, and all will be assured of a comparable position. And, it may well be that the development of the Faculty will see the emergence of new areas of responsibility which will represent opportunities for professional growth. Of course, all of this will be handled in compliance with the collective agreements with relevant employee groups. Academic staff members whose appointments are in units other than the three directly affected units may wish to move to the new Faculty or to have more formal relationships with the new Faculty. These instances will be dealt with according to the UM/UMFA Collective Agreement whereby members can make requests for transfer, and under the administrative authority assigned to Department Heads, Deans, and the Vice-President(Academic) and Provost.
3. Initially, all existing academic programs of the units will be offered by the Faculty. Over time, these programs will be revised, amalgamated, abandoned and/or replaced on the basis of the academic merits. **It is fully expected that attractive new undergraduate and graduate degree programs, as well as certificate and diploma programs, will emerge from this process.** This will be subject to the requirements of Senate, the Board of Governors and the Council on Post-Secondary Education, as appropriate.
4. Initially, it will be necessary to appoint an Acting or Interim Dean from within the University and an Implementation Advisory Committee to represent the interests of affected and related units and the University in the transition process. At an appropriate time there will be an open search for the Dean of the Faculty.
5. Given the University's constraints on financial resources, **the initial establishment of the Faculty must not call upon any more of the University's continuing(ie. baseline) resources than are currently directed to the existing units or that have been approved for the purposes of filling vacant positions in the existing units.**

### ISSUES

In discussing the initial draft proposal a number of issues arose. They include the institutional/historical context; the name of the Faculty; the other units and relationships with the new Faculty; the costs; provision of space and other infrastructure; and the implementation schedule. Each is discussed in turn.

1. The institutional/historical context: it has been pointed out that the University has not seen the creation of a new Faculty in many years and, given the continuing resource constraints, perhaps we should be looking at fewer administrative units. The proposed Faculty would result in no net increase or decrease in academic administrative units at the faculty/school level. It would simply replace the Natural Resources Institute in this constellation. The changing face of reality and the necessity for our academic programming and administrative arrangements to reflect this provides academic justification. Surely knowledge and practice have evolved and advanced in ways that would suggest administrative restructuring that reflects such change is warranted; perhaps in many areas.

Observations that such a proposal was not contemplated in the recommendations of the Task Force Report, "Building on Strengths", have been made. The omnibus recommendation regarding appropriate amalgamations and restructuring contemplates such a proposal, and perhaps others.

Certainly the Task Force heard a great deal about inadequacies in addressing environmental issues and heard constructive proposals from units and individuals which approximate this proposal. In partial response to this, "Building on Strengths" did recommend a number of changes and actions relating to the Natural Resources Institute and the Environmental Sciences program, as noted earlier.

2. Name of the Faculty: two issues have been raised regarding the name of the Faculty. The first has to do with the connotative effects of the acronym FEERS! The second has to do with the use of the term "Sciences". The term is being used in its broadest sense, as it is in "Faculty of Agricultural and Food Sciences" and "Health Sciences", to incorporate interests in the natural sciences, social sciences and applied sciences. A more focused concern of this genre arises in the Department of Geography where there are specialists and specialties in both the natural sciences and the social sciences and some interests which verge on the humanities. Again, the broad meaning of the term is being applied. Concerns have been expressed as to how the interests in the social sciences would be served in a Faculty whose majority interests are in the natural sciences. In order to address this, one looks to experience elsewhere, including within our own institution. Recent experience with the combination of Geology and Geography Departments at the University of Alberta and McMaster University within the context of Science Faculties gives us some assurance of a positive outcome. A scan of universities and colleges across North America will reveal many combinations of natural science and social science disciplines in common administrative units. One of the longest standing and surely one of the strongest is the College of Earth and Mineral Sciences at Penn State University, a unit which incorporates the Departments of Energy, Environmental and Mineral Economics; Energy and Geo-Environmental Engineering; Geography; Geosciences; Materials Science and Engineering; and Meteorology, as well as the EMS Environment Institute and the Energy Institute and which includes physical science, social science and applied science interests.

3. Other Units: Clearly there are many academic administrative units in the University which have expertise and a record in various aspects of the environment and resource management area. This, obviously, is not unique or new to the University and the proposed Faculty to serve the broader interests of the University cannot be exclusionary in this respect. There is considerable overlap of disciplinary interests between academic administrative units. Applications of the disciplinary areas of economics, sociology, chemistry, microbiology, botany, zoology, genetics, physiology, psychology, geology, geography, and so on, are not limited to Departments bearing those names. The implementation of the proposed Faculty must ensure that appropriate linkages and relationships are mapped and articulated as the basis for identifying and sharing access to courses and faculty expertise and to avoid duplication and make best use of existing resources. Very clear linkages potentially exist between the proposed Faculty and the Faculties of Arts, Science, Architecture, Agricultural and Food Sciences, Engineering, Physical Education and Recreation Studies, Human Ecology, Law and Medicine. Topical areas which cross administrative and disciplinary boundaries include, but are not limited to, environmental toxicology, wildlife ecology, ecosystem modeling, epidemiology of infectious diseases, nutrition and food production and security, aboriginal land claims, community development, landscape design and reclamation, environmental impact assessment, environmental law, environmental and resource economics, environmental aesthetics, sustainable cropping, animal waste management, waste management generally; water resource management and environmental engineering, environmental impacts of tourism; and ecotourism. There would be many opportunities for linkages, as there are now. The proposed Faculty would bring greater profile and focus to this task than presently exists. Academic staff members in other units would be encouraged to develop working relationships and formal associations with the proposed Faculty through adjunct appointments, cross-appointments, and joint-appointments, the processes and precedents for which exist within the University.
4. Costs: many concerns have been raised about the costs of creating a new Faculty. This is a very legitimate concern given the financial circumstances of the University. As noted earlier, the constraints placed on the process are significant. The initial establishment of the Faculty must not call upon any more of the University's continuing or "baseline" resources than are currently being directed to the existing formative units, including current commitments to continuing faculty and staff positions which recently have been, or are in the process of being, filled. An Acting or Interim Dean will be appointed from within the University during the implementation and transition phase, a process which may require some one-time only or "budget" funds. The Faculties from which the units of the new Faculty are derived will, of course, lose baseline resources but so too will they lose the expenses associated with those resources. However, there may be instances where the affected Faculties do lose some important services and compensatory arrangements, including new staff and faculty appointments, may be necessary. This is certainly open to consideration.
5. Space: Despite the advances in electronic communication and networking, we remain highly dependent on appropriate and linked physical space to carry out academic work in a cooperative, collegial and synergistic fashion. At the moment, no single building or space

exists to house all the elements of the proposed Faculty without significant disruption of other operations. Indeed, this will be a significant implementation challenge that must be addressed over time. The University Capital Campaign and its outcomes will produce some opportunities for reorganization and redevelopment of space and physical infrastructure. The CFI program, which is likely to continue for the foreseeable future, will likewise produce opportunities to address research infrastructure needs which must be capitalized upon and there is no doubt that the Faculty will have significant research strength which will enhance opportunities of this type. The visible presence of an environmental focus at the University also will create opportunities to partner with external agencies not possible at present. This is all in the future, hopefully, near future. The fact remains that in the early stages of the implementation of the proposed Faculty, the units will by and large have to remain where they are at the moment apart from some minor shifting and sharing of research, student and administrative space.

### IMPLEMENTATION PROCESS AND SCHEDULE

Considerable discussion of earlier drafts of this proposal has occurred. It was discussed in all the directly affected units, including the Faculties of Arts and Science and the NRL. It was discussed at meetings of the Deans and Directors Council during which expressions of support and concern were aired. Motions expressing support in principle have been received in the Office of the Vice-President(Academic) and Provost from the Departments of Geological Sciences and Geography, the Natural Resources Institute, and from the Environmental Science Program Advisory Committee. A number of individual faculty members have sent written expressions of support in principle for the proposal. Further discussions took place in the Faculty Councils of Arts and Science which concluded with expressions of support for a School of the Environment housed within the two Faculties. The wide circulation of the original proposal has occasioned comment from external parties, all of which has been positive.

A "Working Group" was established in late-January 2001 to review the proposal and the alternate proposal for a School of the Environment to be shared by the Faculties of Arts and Science. The review was guided by a set of principles/criteria against which the proposals were to be judged. These included: visible, inclusive, functional, collaborative, cost effective, supportive and consistent(Attachment II). The "Working Group" submitted its report in April and in doing so there was not agreement within the group on all aspects of the report.

The report recommended that:

- Some form of new, independent Faculty concerned with issues of the "environmental" subject area should be established, provided that funding is available to ensure the new Faculty (i) is located in an identifiable, dedicated space, and (ii) is capable of meeting its ongoing operations.
- The name of this new Faculty should reflect its broad-based mandate to become the "hub" for undergraduate and graduate studies in the environmental subject area. One possibility generally supported by members of the "Working Group" is "Faculty of the Environment".

But other names are possible and should be considered.

Two members of the "Working Group" who did not support these recommendations proposed an alternative course of action, as follows:

- Immediate implementation of a proposal to Senate to introduce 1) a "School of the Environment" composed initially of the Environmental Science Program faculty and staff and administered through the Faculty of Science with the inclusion of an environmental studies program once developed, and 2) formation of a "Faculty of Earth and Resources" composed of the Departments of Geological Sciences and Geography, plus the NRI if they wish.
- Establishment of a committee to recommend on an equitable cross-appointment mechanism to the new School of the Environment from other academic units, particularly the Faculties of Arts, Agricultural and Food Sciences and Engineering.
- Establishment of a time-line for review of the newly established School of the Environment and advise(perhaps in three to five years) on the feasibility and advisability of establishment of an independent Faculty of the Environment.

Since receipt of this report, the proposal has been discussed at the PVP(President's Office) and has been modified to its current version. This version of the proposal will be tabled at Deans' and Directors' Council for information on June 21, 2001. It also will be sent to the University Secretariate with the request that it be forwarded to the appropriate Senate Committees for discussion with a view to sending it to Senate for approval in principle and recommendation to the Board of Governors which has plenary authority for the establishment of Faculties, Schools and Departments. At any point in this train of deliberations, the proposal may be subject to further modification and elaboration.

Following Board approval, it is envisaged that a "virtual" Faculty will be established with an Acting or Interim Dean who will oversee the implementation process with an Implementation Advisory Committee. The Committee will be chaired by the Acting Dean and will have the following membership: Director NRI, Head of Geography, Head of Geological Sciences, Dean of Arts or delegate, Dean of Science or delegate, and five other persons appointed by the President to represent the broader interests of cognate disciplines and the University. Included among these will be a student and a support staff member. Each action arising from the implementation process which requires Senate and/or Board approval will be so directed. This is the process which was followed with other such major proposals, eg. Plan 2000, University 1, and Building on Strengths. The implementation process will require attention to revision of academic programs and courses, development of procedures for governance and administration, staffing issues, arrangements for appropriate space, and budget development.

## CONCLUSION: GOALS AND EXPECTED OUTCOMES

The Faculty of Earth, Environment, and Resource Sciences is being proposed with specific goals and outcomes in mind. The goals and objectives were articulated in the Preamble. This is a very serious attempt to position the University in this millenium as a significant force through its mandate for education, research and scholarship and service in addressing very serious challenges of environmental stewardship and sustainability at the local through global scales. The goals and expected outcomes are as follows:

1. Undergraduate and graduate degree programs which address environmental issues with greater depth, breadth, and visibility.
2. Greater ease in advising students who are seeking education and training in this area
3. Less duplication and overlap of existing course content, especially at the introductory level, and better topical and depth coverage at the advanced levels.
4. Degree, diploma and certificate programs that will pass the emerging accreditation standards in the environmental areas.
5. Increased graduations from major and honors degree programs( a target of a doubling in five years may be appropriate), and doctoral programs( a target of a tripling in five years).
6. The establishment of certificate and/or diploma programs in the environmental area in collaboration with Continuing Education Division and perhaps Red River College.
7. More attractive graduate programs and research opportunities for graduate students.
8. A research environment which is supportive and synergistic leading to increased productivity in research and scholarship as measured by publications, applications, patents, successful competitive grant applications, contracts, attraction of graduate students, awards and other recognitions, etc.
9. Improved ability to attract and retain faculty and staff.
10. The development of joint CFI and other initiatives to address research infrastructure improvements.
11. Improved functional linkages with outside agencies and organizations such as IISD; with other units of the University, namely the Faculties of Agricultural and Food Sciences(eg. Agricultural Economics and Agribusiness, Plant Science, Soil Science), Architecture(Landscape Architecture, City Planning), Engineering(Civil Engineering), Human Ecology(Foods and Nutrition),Law, Medicine(Community Health Sciences), Physical Education and Recreation Studies, and with the Faculties of Arts and Science.

The goals and expected outcomes provide the proposed Faculty with a set of targets against which it will be accountable. It is proposed in addition that the Faculty of Earth, Environment, and Resource Sciences be subject to a formal review five years after it becomes operational under a Dean, using the goals and outcomes as general standards against which it can be evaluated.

	Academic Staff	Special Academic	Support Staff
Geography	12.0	0.95	5.07
Geological Sciences	13.0	0.66	8.78
NRI	5.9	—	2.00
<b>TOTAL</b>	<b>30.9</b>	<b>1.61</b>	<b>15.85</b>

## Degrees Awarded During Calendar Year 1999

	3-Year Degree	Non-Hon. 4-Year Degree	4-Year Hons. Degree	Total U.G. Degrees	Masters	Ph.D.
Geography	25	6	1	32	2	—
Geological	—	5	12	17	6	1
NRI	—	—	—	—	16	—
<b>TOTAL</b>	<b>25</b>	<b>11</b>	<b>13</b>	<b>49</b>	<b>24</b>	<b>1</b>

## Undergraduate Student Credit Hours (UGSCHS)

As of November 1<sup>st</sup>

	1997-98	1998-99	1999-00	2000-01
Geography	8,736	7,530	8,067	8,418
Geological	5,353	5,505	5,698	5,382
<b>TOTAL</b>	<b>14,089</b>	<b>13,035</b>	<b>13,765</b>	<b>13,800</b>

## Students Registered in Degree Programs as of November 1, 1999

	3-Year Degree	Non-Hon. 4-Year Degree	Hons. Degree	Total U.G. Degrees	Masters	Ph.D.
Geography	86	8	3	97	25	13
Geological	—	16	32	48	12	8
NRI	—	—	—	—	56	—
<b>TOTAL</b>	<b>86</b>	<b>24</b>	<b>35</b>	<b>145</b>	<b>93</b>	<b>21</b>

Research and Special Funding,  
2000-2001  
(As of December 2000)

	Research Funds	Special Funds	TOTAL
Geography	\$413,634	\$135,510	\$549,145
Geological	\$676,149	\$11,512	\$687,660
NRI	\$630,095	\$60,030	\$690,125
<b>TOTAL</b>	<b>\$1,719,878</b>	<b>\$207,052</b>	<b>\$1,926,930</b>

PRINCIPLES(CRITERIA) TO GUIDE DEVELOPMENT OF A NEW  
ADMINISTRATIVE UNIT IN THE AREA OF EARTH, ENVIRONMENT AND  
RESOURCE SCIENCES/STUDIES.

- VISIBLE:** being easily identified as a University priority area by the public, students and prospective students, government, funding agencies, and members of the University itself.
- INCLUSIVE:** contains systemic, administrative, and governance mechanisms to ensure inclusion and participation of expertise resident in other but related administrative units.
- FUNCTIONAL:** has educational, research and service programs which work, as indicated by outcomes measured by against performance standards.
- COLLABORATIVE:** has mechanisms to ensure that education, research and service programs are developed and operated collaboratively within and outside the unit.
- COST EFFECTIVE** makes effective and efficient use of University resources (eg. gets rid of and guards against existing course duplication)
- SUPPORTIVE** through its policies, procedures and practices provides a supportive educational and research environment for its students, staff, and affiliated associates in the cognate disciplines and units
- CONSISTENT** has policies, procedures and practices which are consistent with University goals/objectives, mission, Senate and Board policies, collective agreements, accreditation standards, etc.

Comments of the Senate Executive Committee:

The following motion was approved by the Senate Executive Committee:

THAT Senate Executive send to Senate without comment the FEERS proposal, the School proposal, and the report of the Senate Planning and Priorities Committee.

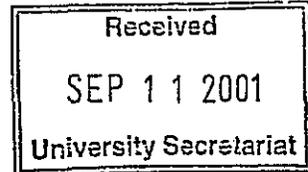


UNIVERSITY  
OF MANITOBA

252  
Faculty of Arts

Dean of Arts  
310 Fletcher Argue Building  
University of Manitoba  
Winnipeg, Manitoba  
Canada R3T 5V5  
Telephone (204) 474-9271  
Facsimile (204) 474-7590  
Email: Robert\_OKell@UManitoba.CA

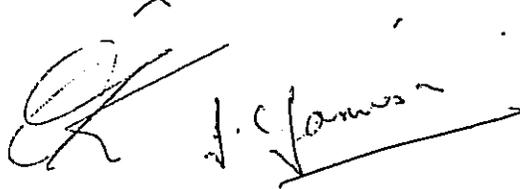
Date: 11 September 2001



**To:** Bev Sawicki, University Secretary

**From:** Robert O’Kell, Dean, Faculty of Arts  
James Jamieson, Dean, Faculty of Science

**Subject:** Agenda Item for Senate Executive Meeting 19 Sept., 2001 - School of Environmental Studies



---

It is our understanding that the Vice President’s proposal to establish a new Faculty of Earth, Environment, and Resources Sciences (FEERS) will be on the agenda of the Senate Executive Committee meeting of 19 September, 2001.

As you are aware, an alternative to that proposal has been the subject of much discussion in the Faculties of Arts and Science, an alternative which has also attracted the interest of the Deans of Engineering and Agriculture. We think that the Senate Executive Committee should have the opportunity for a full and fair discussion of both available alternatives on the 19th.

We are, therefore, enclosing a copy of the joint Science/Arts proposal to establish a School of the Environment, a proposal which has been approved by the Faculty of Arts Council, and received approval in principle by the Faculty of Science Council.

Also included is an Appendix outlining a proposal from the Faculty of Arts regarding the establishment of a B.A. (Adv.) in Environmental Studies. This draft proposal for a B.A. (Adv.) has already been sent to other Faculties for comments and will soon be forwarded to COPSE by Vice Provost R. Lobdell. It will also be proceeding for consideration by the Senate 4Cs committee in due course, pending final determination of pre-requisites for some of the Science courses.

We therefore request that the Executive Committee agenda for the meeting of the 19<sup>th</sup> include these items for discussion.

O’K/JJ/ld

# A proposal to establish an interdisciplinary School of the Environment

Presented to  
The Deans and Directors Council of the University of Manitoba

by

**Dr. James Jamieson**  
Dean, Faculty of Science

**Dr. Robert O’Kell**  
Dean, Faculty of Arts

12 January 2001

---

## Contents

Introduction .....	1
Preamble.....	1
Objectives and Philosophy of Environmental Teaching and Research .....	2
Background .....	5
Statement of Proposal.....	11
Research .....	14
Teaching .....	16
Administration.....	19
Conclusion.....	20

## Tables

Members of the ESP Advisory Committee .....	3
Multidisciplinarity, cross-disciplinarity, interdisciplinarity .....	9
Core curriculum of the Environmental Science Program.....	16
Draft curriculum of an Environmental Studies Program.....	17

## A proposal to establish an interdisciplinary School of the Environment

### Introduction

#### *Preamble*

Numerous initiatives over the past decade or so have sought to reconcile environmental teaching and research at the University of Manitoba under one coordinating umbrella. Regrettably, for reasons that are not entirely clear, none has been successful and the various participants are increasingly frustrated by the lack of progress in the re-tilling of old, familiar ground. It is becoming clear that such coordination is needed urgently. Students have fewer opportunities for education in the strategically important area of environmental problems arising from human activities, there is no coordination or planning in courses with resultant duplications and omissions, and faculty members lose opportunities for collaborative research. This proposal, developed by faculty members associated with the Environmental Science Program (ESP), attempts to bring together various environmentally-oriented programs and faculty in a new administrative unit, called the School of the Environment, in a way that is mindful of the events of the preceding decade and inclusive of the expertise existing throughout this University, and which promotes the development of interdisciplinarity in its application. It is our sincere belief that this proposal is superior to others that have been proposed before, can be implemented quickly and efficiently, and meets the objectives of a proposal made recently by Vice-President Gardner.

*Objectives and Philosophy of Environmental Teaching and Research*

This proposal takes a broader view of environmental teaching and research than is currently encompassed in the ESP. We contend that these activities should be based on the following three principles:

1. *They should embrace alternative world views founded in ethnic and cultural diversity and sensitivity.* Past attitudes with respect to the environment have been based largely on a chauvinistic, anthropocentric view that the Earth system is comprised of exploitable resources and that “worth” is definable in financial terms. By this view, the Earth is property that can, at human whim, be degraded or destroyed. The more comprehensive ecocentric view is that the Earth’s resources are used by all living things and that ecological services provided by the Earth system, such as breathable clean air (“natural capital”), has no easily assigned monetary value but is, nevertheless, immensely valuable.
2. *They should emphasize a goal of achieving sustainability in all social and economic processes.* Sustainable development should not be viewed as sustained economic growth but the preservation of conditions favorable for future generations to meet their basic needs for a healthy natural environment, functional social institutions, and economic systems that provide a means for people to obtain the resources they require. Beyond sustainable development is the goal of ecological sustainability and restoration of a degraded Earth.
3. *They should emphasize the inherent inter-connectedness of all aspects of the Earth system.* “Systems thinking” has acquired numerous contexts, many arising from a strictly mechanical view of interacting components whose interactions cannot be predicted with mathematical certainty. Applied to the functional connections between the atmosphere, hydrosphere, lithosphere, and biosphere, however, a “systems” orientation leads to the concept of environmental unity that underlies interdisciplinary solutions to environmental problems.

Universities have traditionally been organized into disciplines defined by “a specific body of teachable knowledge with its own background of education, training, procedures, methods and content areas” (OECD 1972). Organization of the once fused but now separate Faculties of Arts and Science, as the core Faculties at the University of Manitoba, reflect this system. In most cases, academic programs are attached administratively to a single Department. In a few instances, such as the Ecology Programs and the Genetics Program, for example, programs are administered by two or more Departments having relevant expertise. However, these latter cases arguably arise as an administrative expedient, with the program nevertheless reflecting a distinct disciplinary orientation. Attempts to integrate multiple points of view into a more cooperative framework generally run counter to the conventional administrative hierarchy. Interdisciplinarity involves the development of a team conducive to the integration of “organizing concepts, methodology, procedures, epistemology, terminology, data, and organization of research and education in a fairly large field” (Leckie 1975). Although used widely, “interdisciplinarity” is commonly confused with such related, but distinct, terms as “cross-disciplinary” and “multidisciplinary” (OECD 1972).

Table 2. Levels of co-operation and coordination in environmental teaching and research; modified from Jantsch in OECD (1972).

Stage	Description	Type	Configuration
Multi-disciplinary	A variety of disciplines, offered simultaneously but without making explicit relationships between them	one-level, multi-goal; no cooperation	
Cross-disciplinary	The axioms of one discipline are imposed on other disciplines at the same hierarchical level, grouped in such a way as to enhance the relationship between them	one-level, one goal; rigid control from one disciplinary goal	
Inter-disciplinary	Common axioms for a group of related disciplines are defined at the next higher hierarchical level or sub-level, thereby introducing a sense of purpose	two-level, multi-goal; coordination from higher level	

It is not the case that interdisciplinarity is achieved simply by putting specialists in several respective disciplines together (multidisciplinarity) unless some conscious, coordinated effort is made to facilitate formal and informal communication, ultimately leading to cooperation and development of linkages between their respective approaches and world views. The objectives of interdisciplinarity are to answer complex questions, address broad issues, explore disciplinary and professional relations, solve problems that are beyond the scope of any one discipline, and achieve unity of knowledge (Klein 1990). Interdisciplinarity is clearly desirable in the context of environmental teaching and research due to the multi-faceted nature of environmental issues and the intractability of scientific approaches alone to meaningful solutions. Indeed, interdisciplinarity is sought more generally in many educational contexts. For example, the Council of Ministers of Education, Canada (1997) prefaced a vision for the development of K to 12 science education around a unifying framework that “emphasizes that this is best done through the study and analysis of the interrelationships among science, technology, society, and the environment.”

The best solution for four challenges emerging from the ESP internal review in 1999 (page 10) is the creation of a separate administrative “home,” in which its broad, interdisciplinary emphasis would be preserved, along with a new undergraduate program in environmental studies and a new graduate program. This was articulated in Recommendation #8 of the same review, the only one of several that has yet to be implemented:

"8. That a new interdisciplinary Department of Environmental Science be established within the Faculty of Science with the ability to establish close relationships with other faculties (for example, by offering a BA in Environmental Studies in the Faculty of Arts). In addition, the new department would be encouraged to increase and foster joint and/or cross appointments of faculty members in other units (see Recommendation #61 from "Building on Strengths"). This option provides a number of distinct advantages – present and newly hired faculty (both tenure track and sessional) would be members of a department and be able to teach, conduct research, and supervise graduate students. A departmental structure would allow joint/cross appointments to (and from) the department from outside the Faculty of Science (e.g., Arts, Engineering, NRI, Agricultural and Food Sciences) and Adjunct Professor status for active researchers outside the University of Manitoba."

Transfer of the ESP to a separate new Faculty, along with selected discipline-based Departments, is not an effective mechanism to strengthen the ESP or to raise the public profile of environmental teaching and research at the University of Manitoba. It is the considered view of the academic faculty of the ESP that, if placed in a Faculty dominated (in terms of academic faculty complement) by two Departments with low enrollment in Major and Honors programs, and an Institute with no undergraduate experience, the ESP would disintegrate. This would occur because the program would be severed from its ecological roots in the biological Departments in the Faculty of Science, and placed into a more strictly discipline-based environment where the needs of its academic faculty and students would not be met. The likely consequence would be that academic faculty would elect not to migrate to such a Faculty and students would, by and large, migrate to the existing Ecology programs.

The premises for implementation of Recommendation #8 above, based on the cumulative experience of academic faculty in the ESP, are as follows:

1. Development of environmental teaching and research at the University of Manitoba should involve an administrative unit that will foster the development of interdisciplinarity, not simply multidisciplinarity.
2. Environmental expertise resides throughout the two core Faculties of the University, as well as in many other areas around the campus. All should have a mechanism for active participation in this new unit.
3. Consideration of social, cultural, and economic aspects of environmental issues warrants the creation of a new undergraduate program in Environmental Studies as a component of this new unit.
4. As an interdisciplinary unit, the Natural Resources Institute (NRI) has much to offer and its faculty would strengthen both undergraduate and graduate components of this new unit.
5. Post-graduate opportunities in environmental science and environmental studies must be developed for students who fall outside the resource management mandate of the NRI.

These premises have guided the present proposal, which begins on page 11. Background information follows on the next page.

## Background

To review some of the key environmental initiatives of the past seven years, Vice-President Gardner struck an Environmental Studies Task Force in 1994 with the responsibility to raise the profile of sustainable development in the teaching and research activities at the University. Its objective was to rationalize diverse offerings under one administrative umbrella. Members of the committee included representatives of the Faculties of Agriculture, Engineering, and Science, and the Natural Resources Institute (NRI). Meanwhile, in 1995, the University Senate identified sustainable development as a research priority area. When the task force reported in 1996, it recommended the restructuring of the NRI which, to that time, had a narrowly defined postgraduate mandate for resource management education, into a Center for Environmental Studies, with both undergraduate- and graduate-level programs. Meanwhile, the Faculty of Agricultural and Food Sciences established a new undergraduate program in Agroecology to address the underlying ecological aspects of sustainability in the agri-food industry. With support from a Program Development Fund grant in 1996, the task force, now renamed the Environmental Studies Center Task Force, distributed a statement of intent to various administrative levels throughout the University, and sought input on the necessity for, and viability and mandate of this Center. This was followed by stakeholder consultations, the final product of which was a report entitled "A proposal for the establishment of a Center for Environmental Studies at the University of Manitoba" in late 1996. The key elements of the proposal were as follows:

1. *That the Center (of Environmental Studies) be formed by the reconfiguration of the Natural Resource Institute, such that its mandate is substantially expanded.*
2. *That the Center be responsible for the delivery of a "core" of environmental courses for undergraduates in existing and possibly new programs.*
3. *That the Center be the vehicle through which the Interdisciplinary Program (IDP) of the Faculty of Graduate Studies is delivered in the offering of Masters and Doctorate programs in multidisciplinary environmental thematic areas. That the Center be responsible for the delivery of a "core" of environmental courses for graduate programs.*
4. *That the Center be a means of facilitating multidisciplinary environmental research.*
5. *That the Center be responsible, in conjunction with the Continuing Education Division, for the design and delivery of a certificate for environmental practitioners, with the expectation that some or all of its content may also be available for credit within undergraduate (and possibly graduate) programs.*
6. *That the operation of the Center be funded centrally, but with supplementary funding being available through external membership and any income that may be generated through curriculum development and delivery of the above certificate program."*

No immediate action was taken on this report, which preceded the Presidential Task Force that issued its final report, "Building on Strengths," in February 1998. Among its recommendations, some of which appeared to be conflicting, were the following that impinged on environmental teaching and research:

- 57b) *Develop proposals, by December 31, 1998, for Bachelor of Science programs in geography and psychology, respectively, and a Bachelor of Arts, interdisciplinary program in "global political economy."*

## School of the Environment – Background

- 58a) *Rename the Department of Geological Sciences the Department of Earth and Environmental Sciences; permit the Department to develop in the direction of earth systems science.*
- 58e) *Continue to coordinate the Environmental Science Program from the office of the Dean of Science.*
- 58f) *Initiate a review, by December 31, 1998, with the approval of the Provost, of the interdisciplinary program in Environmental Science.*
- 59b) *(The Natural Resources Institute should) serve as a general information and coordination center for environmental studies and research in the University.*

The Dean of Arts, who was to initiate recommendation 57, encouraged the development of BSc programs in physical geography by the Department of Geography. In 1999, an extremely incomplete departmental proposal was submitted for approval by the Faculty of Science, with streams in areas of departmental strength, namely geomatics, land science, and climatology. This proposal raised a number of questions which have not been addressed such that the progress of this proposal was put "on hold" throughout the 2000-01 course and program change process.

The Dean of Science, who was given responsibility for implementation of recommendation 58, tabled 58a subject to other developments in the Faculty, especially the initiation of the ESP review, which began in late 1998 and concluded an internal phase in mid-1999; completion of its external phase is pending a report from an intransigent external referee. At around the same time, in February 1999, a report by W. Dahlgren and members of the NRI Council entitled "A proposal to coordinate offerings in environment and resources at the University of Manitoba" was submitted to a sub-group of the Deans and Directors Council. It recommended the following:

- 1. the establishment of a student advisory service which will provide assistance and support to potential, incoming, undergraduate, and graduate students*
- 2. increased coordination of undergraduate course offerings*
- 3. the establishment of an undergraduate Environment and Resources program to address the current absence of a program at the University of Manitoba which enables students to combine an interest in the environment with studies in the social sciences and humanities*
- 4. the identification of technical certificate programs and the creation of a Certificate in Environment and Resources*
- 5. the introduction of new Masters and PhD programs which enable students to take broadly focused, interdisciplinary studies at the graduate level*
- 6. the establishment of a Diploma in Environment and Resources program which will enable all graduate students to gain a broad knowledge of environmental issues and concerns while pursuing a discipline-based Masters or PhD degree."*
- 7. As the vehicle to implement the above proposals, the NRI would be renamed to the Faculty of Environment and Resources (FER).*

The following four areas were identified as needing clarification or revision: 1) alternative models for the administration of offerings in environment and resources; 2) what constitutes "critical mass" and, if the NRI does not meet this criterion, how this could be achieved given the possible resource implications; 3) the concern that whatever administrative structure is finally adopted, it must be inclusive in nature; there must be opportunity for "stakeholders" to provide

## School of the Environment – Background

input into the programs and into the administration of the programs; and 4) the name of the administrative structure.

This proposal was subsequently revised, most notably to adopt the name “Environment and Resources Unit” and a revised draft was released in April 1999. The Dahlgren NRI report purported to implement the recommendations of the earlier task force, and it was commendable in its thorough consideration of opportunities for new programs. Difficulties of the proposal were, however, that it proposed the creation of a full-service Faculty based almost entirely around the NRI staff and resources, with no explicit links to existing programs such as the ESP that would remain autonomous. The new Faculty would coordinate programs entirely or partially outside of its jurisdiction and budgetary control; would be staffed to a varying extents on a volunteer basis; would create an undergraduate program composed primarily of courses that do not lie under its jurisdiction; would have little dedicated experience in undergraduate program delivery; would involve a group with a long and successful track record in natural resource management in programs with much broader environmental applications; and would entail duplication of student advisory services and cooperative education options that exist, fully developed, elsewhere in the Faculties of Arts and Science.

In early 2000, faculty members of the ESP and the Department of Geography met informally to discuss a proposal for merger of the two units, including the proposed BSc streams in physical geography, into an entity that would ultimately reside in the Faculties of Arts and Science. Subject to clarification of details, such as the name of the merged unit, the idea was received favorably. A sub-committee was struck to consider the possible undergraduate curricula of such a unit, a report was prepared for consideration at the Geography Faculty Council, but no action has been taken to date.

Most recently, in October 2000, a proposal was distributed by Vice-President Gardner for creation of a new Faculty of Earth, Environment and Resource Sciences (FEERS). It proposed the merger of the Departments of Geography in the Faculty of Arts, the Department of Geological Sciences and the ESP in the Faculty of Science, and the NRI. The structure of the Faculty would follow traditional departmental lines, necessitating conversion of the ESP to a formal Department.

We commend Vice-President Gardner for bringing the coordination of environmental teaching and research back onto the administrative agenda, and urge that a solution be implemented in as short a timeline as is possible. We concur with the underlying premise and the eleven stated goals of the FEERS proposal, with two primary exceptions. Our main reservation is that it is not sufficiently inclusive to permit the establishment of a truly interdisciplinary academic milieu. It creates a merely multidisciplinary entity that implicitly favors the disciplines of geography and geological science while excluding the biological disciplines that have both pioneered development of the ESP and remain intrinsic to its core curriculum. Surely, no one can dispute the biological (human) origin of all environmental problems and the profound ways in which the physical Earth has been modified by its proliferation of life. Our second concern is that a Faculty model, in which reside discrete Departments, is not the preferred choice from the standpoint of student programming or the fostering of faculty collaborations. FEERS isolates students and faculty from the two core Faculties that participate strongly in the delivery of environmental education, and will continue to do so, and it resorts to major departmental realignments that, in

our view, serve no purpose but to alienate potential stakeholders. It binds two interdisciplinary units with two disciplinary ones with no clear rationale for doing so. A new Faculty that entrenches scientific perspectives in its name to the exclusion of social and other ones would not, in our view, solve any problems that cannot be solved equally well, or better, by a more inclusive entity. After all, there are numerous environmental structures and programs existing at the University of Manitoba, involving diverse areas of expertise. Included among these are perspectives in economics, geography, philosophy, sociology, and native studies in the Faculty of Arts, the Ecology and Geology programs in the Faculty of Science, the Agroecology Program in the Faculty of Agricultural and Food Sciences (and its various departmental participants), the Environmental Engineering option in Civil Engineering, the Northern Research Network (NRnet), the Earth Materials Group and other research networks, and the many field-oriented teaching and research facilities at Delta Marsh, Star Lake, Wallace Lake, Carman, Glenlea, and elsewhere.

It is instructive to use the ESP to illustrate the evolution of environmental education at the University of Manitoba because, being one of the oldest such programs in Canada, it has evolved and flourished via broadly participatory inter-Faculty development into a unit that can serve as a model for the proposed School of the Environment. The beginnings of the program were modest. In 1992, the ESP was organized around a “discipline plus” four-year major program, in which disciplinary science was required through compulsory completion of introductory courses in biology, chemistry, physics, geology, statistics, mathematics, and computer science, with additional elective “depth packages” in the biological, physical, or mathematical sciences. The program was composed for the most part of courses that were designed for other purposes and, since there were no faculty assigned to the program, courses were taught by instructors with no particular affinity to the ESP. The Program had neither staff nor space other than a nominal commitment of a Program Director administered directly through the office of the Dean of Science. It was apparent that the discipline-oriented depth packages were poorly defined, and a Cooperative Education Option was needed. The latter was added in 1993-94, and support staff were added at the same time with the aid of a decreasing grant from Human Resources Canada. Through co-operation of the then Faculty of Agriculture and the Faculty of Arts, the depth packages underwent consideration revision, becoming more defined and diverse. The process of seeking the collaboration of Faculties and Departments throughout the University continued throughout the intervening years, with the intention of offering students an increasingly diverse number of disciplinary areas and attractive electives. Today, some 26 departments in six Faculties contribute to the Program to greater or lesser extents. In 1995, a 0.5 FTE academic appointment to the ESP was made (G. Goldsborough), followed by 1 FTE in 1998 (S. McLachlan) and 1 FTE in 2000 (F. Wang). This was rounded out to 3 FTE with a 0.5 FTE teaching and administrative allocations (G. Robinson). By 1995, the Program had a Director, administrative assistance, office assistance, space, academic staff, an active cooperative education option, and an advisory council (Environmental Science Program Advisory Committee) composed of representatives of disciplinary depth areas, the program core, and the student body. The program also began to offer its own courses, and form linkages with outside agencies, most notably the Center for Indigenous Environmental Resources (CIER), a Winnipeg-based national First Nations environmental organization. By 1997, it was becoming clear that although the ESP might be able to facilitate unique depth packages (e.g., environmental health), it would for the most part have to depend on traditional introductory science courses and previously existing advanced courses for the disciplinary part of its model. It was also becoming clear that as its teaching complement

increased, it should assume ownership of its core curriculum. To this end, the program obtained its own “departmental” number (128), and a suite of introductory and advanced courses was developed starting in 1997 continuing to the present. A further expansion of the program at this time occurred in the social sciences and humanities options available to students. In 1999, the depth packages were evaluated again and deemed to be too heavily reliant on the discipline-based model. Development of a new, smaller set of “focus areas” was undertaken for implementation in 2001. At the same time, a Minor Program was developed from a subset of the core ESP curriculum for students from other Faculties wishing an environmental option to compliment their Major program. In summary, the ESP has grown from humble roots in the Faculty of Science, progressively increasing its complement of staff and teaching its own core courses, presently to about 2,050 UGSCs annually (683 per FTE). It has produced 253 graduates and, with 91 students presently registered, it is the third largest undergraduate program, behind Computer Science and Microbiology, in the Faculty. Perhaps its most important attribute is that the program actively encourages broad stakeholder input, including that from outside the Faculty of Science. This diversity has, we believe, fostered the interdisciplinarity that now distinguishes the program. As an example, the present composition of its advisory council is as follows:

<i>Committee Member</i>	<i>Representative Area</i>
N. Hunter	ESP Director, Chemistry
D. Barber	Geography
T. Booth	Botany
N. Davison	Physics
G. Goldsborough	Core ESP, Botany
B. Hann	Zoology, Water Resources, Applied Ecology
P. Mackay	Agriculture, Environmental Toxicology
S. McLachlan	Core ESP
G. Racz	Agriculture, Soil Science
G. Robinson	Core ESP
B. Sherriff	Environmental Geology
R. Sparling	Microbiology
D. Trim	Mathematical Modeling
F. Wang	Core ESP

Throughout its existence, the ESP, unlike all other programs offered by the Faculty of Science, has not been attached to any Department. This has proven to be one of its greatest strengths yet, at the same time, its biggest drawback. Despite its obvious successes in undergraduate education, major challenges identified in its recent (1999) internal review remain to be addressed, four of which are described below.

1. The ESP curriculum, despite having a substantial component of material from Faculties other than Science, remains firmly grounded in scientific approaches to environmental problems. However, it is a reality that solutions to such issues as over-consumption and exhaustion of water, air, soil, mineral, and energy resources; environmental degradation arising from resource use; and human overpopulation require active participation of non-science disciplines such as political studies, economics, sociology, philosophy, and many others. A much broader perspective, engendered by a complementary program in environmental studies, is needed.
2. The ESP has no clear “home” in a traditional University system that is designed largely around the concept of disciplinary Departments and Faculties. This can impose many severe and patently unfair barriers to the fair evaluation of interdisciplinary students and faculty. For example, the Natural Sciences and Engineering Research Council (NSERC) is a major venue for undergraduate- and graduate-level scholarships in the Faculty of Science. Student applicants for NSERC scholarships must be ranked by a Department Head before being vetted at a higher level, and no official provision currently exists for this ranking to be done by the ESP Program Director. The result is that students must apply to be ranked by a Department to which they may have little or no affinity. Comparing their broad (but obviously less focused) backgrounds with those of strictly discipline-based students puts them at a distinct disadvantage. The same occurs for Faculty members whose research interests may lie beyond the boundaries defined by the mandates of the Departments to which they have been assigned for purposes of tenure and promotion consideration, and graduate-level teaching. A more formal administrative unit with responsibility for the ESP is needed.
3. As a purely undergraduate program, the ESP generates a “pool” of environmentally trained students for whom there are few complementary, post-graduate education options available in the province of Manitoba. They have two recourses, neither of which is satisfactory for all students. One is to apply for admission to a graduate program in a discipline-based Department or the NRI. Some Departments at the University are open to this option but others are not. The mandate of the NRI, culminating in the degree of Master of Natural Resource Management (MNRM), is more strictly oriented towards management than is desirable in a fully holistic environmental program. The overall result is that availability of graduate opportunities for students with interests in environmental issues is haphazard. The other option is to move to another University offering interdisciplinary environmental education at the graduate level. Clearly, this does not accommodate any but full-time students who have the financial means and lack family responsibilities. A broader range of graduate-level educational opportunities is needed.
4. The resource infrastructure for the ESP, its students and faculty, has never been addressed adequately and in a coordinated way, by the Faculty of Science. The result is that, at present, the program is distributed between four buildings with few meaningful ways to foster the sort of day-to-day interactions between staff, faculty, and students that occur in most other academic programs. A mechanism to unify teaching and research space, and encourage interpersonal interaction and collegiality, is needed.

## Statement of Proposal

It is proposed that a new School of the Environment be created as the new administrative umbrella for the ESP and the NRI, as well as a new undergraduate program in Environmental Studies and a new graduate program in Environmental Systems. The School would exist formally in both the Faculty of Arts and the Faculty of Science, and it would be functionally equivalent to a Department. Using the ESP as a model, the School would adopt a widely consultative approach to development of its teaching curricula and research activities, and thereby foster extensive linkages with other Faculties such as Agricultural and Food Sciences, Engineering, Law, Management, Medicine, and others. It would be a highly visible vehicle for environmental education at the University, drawing on a large body of environmental expertise inside and outside the University, and supporting at least two undergraduate and two postgraduate programs. An interdisciplinary School of the Environment is consistent with the direction of change in high school education across Canada, which is moving towards increased integration (Council of Ministers of Education, Canada 1997). It would also provide a mechanism for the coordination of collaborative environmental research programs.

It has traditionally been the case that Schools at the University of Manitoba exist as units reporting directly to the Senate. However, Senate policy 407 provides for a second type of Schools, as follows:

*“Schools of Faculties”, incorporated within a faculty and concerned with a subject area apart from the normal activities of the faculty to which they are attached, but sufficiently related to them to justify the close relationship, and to make inappropriate an independent academic status. These “Schools of Faculties” would not have independent School Councils and would report to the Council and administration of the faculties to which they were attached.*

The School of the Environment, as conceived here, is consistent with this definition. Its defining characteristic, which warrants the designation as a School rather than a Department, is its interdisciplinary emphasis as opposed to the disciplinary focus implied by the departmental designation. It is also the case that the School designation connotes the distinctiveness of the new unit, thereby enhancing its public identity.

There are at least four compelling reasons to base the School of the Environment in the Faculties of Arts and Science instead of creating a new Faculty.

1. The vast majority of courses in its undergraduate programs (see the description of its curricula below) will be drawn from these Faculties. This would be the case for any other model of undergraduate environmental education which, in the case of an alternative unit residing outside these Faculties, would create the odd precedent of a Faculty having no jurisdiction over the majority of courses in its programs. An unfortunate reality is that Faculties can raise barriers to students who wish to take courses from diverse sources and academic faculty who have teaching interests and expertise pertinent to more than a single Faculty. This has been demonstrated amply in cases, for example, of closely allied disciplines in different Faculties such as the Department of Botany in the Faculty of Science and the Department of Plant Science in the Faculty of Agricultural and Food Sciences. Moreover, removal of formal bureaucratic impediments does not guarantee access. In cases where demand for limited resources is high, Faculties will understandably give priority to their own students and faculty

## School of the Environment – Proposal

members. Therefore, linking the School of the Environment to the two core Faculties of the University reduces the likelihood that students and faculty will face such limits.

2. The Faculties of Arts and Science, as the two core faculties at the University of Manitoba, have greater academic breadth than any other faculty. By being affiliated with both of these faculties, a unit dedicated to environmental teaching and research has the broadest possible internal base of expertise, including scientific, social, and economic perspectives, on which to develop interdisciplinary teaching and research programs.
3. It is inevitably the case that delivery of environmental education requires operating overhead, in the form of space, equipment, administration, and clerical and technical support staff. Using the existing resources of two large and well established Faculties minimizes the need for additional overhead which simply deducts from resources available for other administrative units at the University.
4. The Faculties of Arts and Science have formed, by virtue of their delivery of services to many other academic programs at the University, close linkages between each other and many other Faculties. The extensive degree of cross-linkage that already exists would only be expected to grow if a multipartite unit such as the School of the Environment was embedded within these two Faculties. The widely consultative model that has grown the ESP, involving the Faculties of Agricultural and Food Sciences, Arts, Law, Medicine, Science and others, is a clear illustration that the School of the Environment, while affiliated formally with the Faculties of Arts and Science, will continue to engender a broad willingness to collaborate that should exist in any model of environmental teaching and research.

Administration and coordination of the School would be done by a Director with established credentials in environmental research and education, as suggested in the FEERS proposal, supported by an Associate Director, and an advisory council. The position of Director should be recruited externally but, in the interest of expediency, it is desirable to appoint an Acting Director internally, presumably from the Faculties of Arts and Science or the NRI. The Acting Director would have the responsibility to appoint an Associate Director.

Academic faculty in the School of the Environment would be drawn, in the first instance, from the ESP and the NRI. It is anticipated that all members of those units will choose to transfer their academic appointments to the School but, as was proposed in the FEERS proposal, this should not be mandatory, with a mechanism for transferring appointments elsewhere. Likewise, faculty members from other University units who wish to participate actively in undergraduate and post-graduate teaching and research in the School should have a mechanism to do so by transferring part or all of their academic appointments to it. We recognize that flexible academic appointments are not presently the norm in the Faculties of Arts and Science but they are more common elsewhere in the University. Greater flexibility could, in fact, benefit faculty members in other areas who desire formal linkage with other academic units to which they have an affinity. Units who would lose academic faculty by this process may be understandably reluctant to participate so there would probably have to be a mechanism for adjudication of transfer requests to ensure the integrity of programs elsewhere was not compromised unnecessarily.

## School of the Environment – Proposal

In addition to the regular, full-time academic complement, we anticipate there could be many more people inside and outside the University wishing part-time affiliation with the School of the Environment. For example, it seems reasonable for the Disaster Research Institute to have some involvement with the School of the Environment, and student bodies such as the University of Manitoba Recycling and Environmental Group (UMREG) may wish an association. Manitoba has numerous governmental and non-governmental agencies with research capabilities, such as departments of the federal government (e.g., Fisheries and Oceans, Environment), the provincial government (Manitoba Conservation), and independent organizations (e.g., Center for Indigenous Environmental Resources, Ducks Unlimited Canada, Frontier Center for Public Policy, International Institute for Sustainable Development). Those researchers wishing to be affiliated for the purposes of post-graduate research and teaching could be given an adjunct appointment (if external to the University) or a null-salary appointment (if internal).

As a basis for discussion, we estimate that around 70 persons could wish appointments with the School of the Environment. We stress that this is a very approximate number based on superficial assumptions. For example, assuming the transfer of 3.5 FTE from the ESP, and 5 FTE from the NRI, plus 6 FTE transferred from each of the Faculties of Arts and Science, which is not unreasonable given the depth of environmental expertise existing in various departments already, we estimate a full-time academic complement of 20 persons. Once in place, the Director would be encouraged to recruit additional staff by strategically placed probationary appointments funded from the Strategic Initiatives Fund, as indicated by the FEERS proposal. In addition, it is expected that existing Faculty staffing plans would add further faculty complement to the School. The ESP retains up to 6 sessional lecturers annually who would presumably continue in this capacity with the School, along with counterparts in the NRI and elsewhere. Adjunct and null-salary appointments are difficult to estimate, although it is likely that researchers from some of the above named agencies and others would request appointments. A number in each category equal to the full-time complement is not unreasonable, although this would presumably be debated and policies with respect to admission criteria would be defined, in time, by an advisory council.

## Research

We assume that the research activities and priorities would, at least initially, be defined by strengths existing in the parent Faculties and the NRI. The Faculty of Arts has a number of areas of environmental research that could interact, formally or informally, with the School of the Environment. The following list is not exclusive and is offered merely to highlight the increased breadth that would accrue to the School by their association:

1. *Applied geography*, as a sub-discipline of the Department of Geography, involves the application of physical and human geographic knowledge to the improvement of human living conditions. Current research of applied geographers involves use of geomatic methods such as remote sensing, computer modeling, and computer cartography. The Center for Earth Observation Science (CEOS) is a high-profile research facility of this group.
2. *Environmental archaeology* focuses on resource use, environmental issues, and heritage conservation, and serves as a means to develop theories and explanations of human adaptations, in comparative perspective. An outcome has been training and research programs in diverse regions of the Earth, including Manitoba, British Columbia, the Caribbean, the Crimea, eastern Europe, France, South Africa, and the Yukon.
3. *International and developmental economics* involves theoretical, empirical, and applied research that deals with aspects of both international and developmental economics. Specific examples include solid waste management and poverty alleviation policies in India, food security in sub-Saharan Africa, African agricultural economics, and sustainable development in First Nations communities and tropical forests.

The Faculty of Science has environmentally-oriented research strengths in the following areas:

1. *Environmental biology* involves the interactions of plants, animals, and microbes with the living and non-living components of the Earth. The Faculty has strong research activities in the three biological departments (Botany, Microbiology, Zoology) in the specific areas of aquatic biology (e.g., fisheries, aquatic animals and plants, water quality); forest ecology and management; biodiversity, conservation, and restoration; and biotechnology. There are links to the Department of Chemistry, and the Faculty of Medicine.
2. *Earth sciences* relate to the properties and analysis of the physical components of the Earth. A formal Earth Materials Group in the Department of Geological Sciences has an international reputation in mineralogy and geochemistry, and is supported by extensive instrumentation. There are several faculty members with expertise in environmental geology, including paleoenvironmental reconstruction. The Department has close ties to the Departments of Chemistry and Physics, the former of which is developing expertise in environmental chemistry.
3. *Mathematical modeling* is an important area of established research activity within the Departments of Mathematics and Statistics, which numerous applications in physical and biological sciences, medicine, and engineering. Environmental applications have included the epidemiology of global diseases such as AIDS.

Research activities in the NRI reflect the diverse backgrounds of its academic faculty. Particular strengths include natural resources policy, living resources, environmental assessment, sustainable development, northern resources and native peoples, resource planning and administration. Specific research projects deal with wildlife management, conservation of habitats and biological diversity, agro-wildlife policy evaluation, sustainable development of Northern Manitoba and comparative studies with the Russian North, environmentally and culturally appropriate economic development based on natural resources, community-based natural resource management, co-management of fish and wildlife, and common property resources, waste management, particularly waste reduction, local government and environmental decision-making.

## Teaching

In recognition of the diversity of world views and backgrounds with respect to the environment that exists inside and outside the University, it is reasonable to define two undergraduate programs in the School of the Environment, one to address issues from a scientific perspective and another to address them from a socio-economic perspective. The existing ESP has a nine-year record of success at the former and we propose that it should transfer as is (along with its cooperative education option) to the School of the Environment, although we anticipate that its mandate and direction will change as a sister program in Environmental Studies, which currently does not exist but for which a draft template has been proposed by the Faculty of Arts, is implemented. (This new undergraduate program would require COPSE and Senate approval so it will take one to two years before it becomes available.) A program advisory council with representatives from many units around the campus, such as exists for the ESP, would define these changes. Ideally, the two programs should share some common elements in their respective core curricula, such as introductory courses. The first-year course in environmental science, for example, could be made more generic to serve the needs of both student cohorts, team-taught by specialists from each of the components parts of the School. Likewise, an increasingly comprehensive suite of courses developed by ESP core faculty over the past three years, such as Alternative Environmental Views (128.300), Environmental Responsibilities (128.315) and Conservation Strategies (128.410), would be available for use in the Environmental Studies Program. This would create linkages throughout the two, four-year programs, reinforced by the participation of academic faculty from all originating units of the School in the delivery of both programs. We would encourage expansion of the cooperative education option to include both undergraduate programs. Curricula of the two programs, as they now exist, are described below.

Basic Statistical Analysis 1 (5.100)	3 ch
Basic Statistical Analysis 2 (5.200)	3 ch
Biogeochemistry (60.223)	3 ch
Biology B (71.125)	6 ch
Conservation Strategies (128.410)	3 ch
Dynamic Earth (7.134)	3 ch
Environmental Assessment (128.325)	3 ch
Environmental Conservation Issues (128.310)	3 ch
Environmental Economics (18.239)	3 ch
Environmental Problem Solving-(128.217)	3 ch
Environmental Responsibilities (128.315)	3 ch
Environmental Science 1: Concepts (128.100)	3 ch
Environmental Science 2: Issues (128.200)	3 ch
Ethics and the Environment (15.275)	3 ch
General Physics 1 (16.102)	3 ch

General Physics 2 (16.103)	3 ch
Introduction to Calculus (136.150)	3 ch
Principles of Ecology (1.237 / 22.237 / 65.237)	3 ch
Technical Communications in Environmental Science (128.205)	3 ch
University I Chemistry: Introduction to Physical Chemistry (2.131)	3 ch
University I Chemistry: Structural Modeling (2.130)	3 ch
Humanities requirement	6 ch
Focus area in one of the following: Atmosphere and Air Quality, Hydrosphere and Water Quality, Land Systems, Stewardship, Biodiversity and Conservation, Pollution Studies, Environmental Health	27 ch

In 1999-2000, the ESP introduced a Minor Program (18 ch) that consists of a subset of the above curriculum. As of September 2001, Minor Programs will be available to Science students on an optional basis. Development of Major and Minor Programs in Environmental Studies is being done by an *ad hoc* steering committee of the Faculty of Arts. As of 29 November 2000, its structure was as follows:

Table 4. Draft curriculum of an Environmental Studies program developed by an <i>ad hoc</i> steering committee of the Faculty of Arts.		
University I	Environmental Science I: Concepts (128.100) <i>or</i> Introduction to Physical Geography (53.129)	3 ch
	Introduction to Human Geography (53.128)	3 ch
	Introductory Ecology (1.228 / 22.229)	3 ch
	Biology: Foundations of Life (71.100) <i>or</i> Biology: Biological Diversity and Interaction (71.101)	3 ch
	Introduction to Canadian Economic Issues and Policies (18.121) <i>or</i> Introduction to Global and Environmental Economic Issues and Policies (18.122)	3 ch
	Humanities electives that fulfill the "W" requirement	6 ch
	Social Sciences electives, other than Economics or Geography	6 ch
	Mathematics elective that fulfills the "M" requirement; Basic Statistical Analysis (5.100) is recommended	3 ch
Major	Weather and Climate (53.254)	3 ch
	The Theory of Nature (YYY.xxx)	3 ch
	Environment, Economy and Aboriginal People (32.422) <i>or</i> Sacred Lands and Sacred Spaces of Indigenous Peoples (34.426)	3 ch
	Ethics and the Environment (15.275)	3 ch
	6 ch from: Introduction to Research Methods (77.229; 6 ch), Introduction to Scientific Geographic Research (53.253; 3 ch), Traditional Knowledge and Native Studies Research (32.423; 3 ch), Introduction to Psychological Research (17.225; 3 ch), Introduction to Research Methods in Psychology (17.226; 3 ch)	6 ch

Introduction to Environmental Economics (18.239)	3 ch
Courses from Departments of Anthropology, Economics, Geography, Native Studies, Political Studies, Psychology, or Sociology	21 ch
Optional courses from those acceptable for credit in the Faculty of Arts, 18 of which must be in a declared Minor field. These may include approved courses in other Faculties.	48 ch

It is worth noting that, in general concept, this program is complementary to the ESP in its use of similar core courses. To the degree it is deemed advisable by the steering committee, several 128-numbered courses could be considered for inclusion in the core, thereby strengthening the linkages between these two sister programs. There are differences between the programs, most notably the greater flexibility in selection of optional courses. It has been the experience of the ESP that pre-determined packages of courses, "focus areas," help to guide students to material that matches their interests, and gives them greater depth in specific subject areas. Some obvious possibilities for focus areas in Environmental Studies could be environmental economics, environmental ethics, environmental policy, sustainable development, and others. The proposed BSc streams in geomatics, land systems, and climatology would be logical additions as focus areas to the ESP.

At the postgraduate level, we propose there should be two programs, entry to which could be from either undergraduate program or from a recognized undergraduate program at another University. The NRI has a 32-year record of accomplishment in teaching and research in natural resource issues and management, and we think it is logical that the NRI's mandate and Masters and PhD degree programs should continue as an integral part of the School of the Environment. There are numerous precedents for research institutes associated with one or more Departments or Faculties (e.g., Disaster Research Institute, Institute of Industrial Mathematical Sciences, Institute for the Humanities). The defining element of the NRI would be its focus on resource issues, especially with respect to management. At the same time, we endorse the need articulated in the 1999 Dahlgren NRI report, for other, broader options for students whose interests lie outside this traditional NRI mandate. For want of a better term, we use the phrase "Environmental Systems" to describe a new companion postgraduate program to students with more holistic interests. This program would offer degrees at the Masters (MA and MSc) and PhD levels. There are two ways this could be accomplished. One to assume responsibility of the Interdisciplinary Graduate Programs relating to environment from the Faculty of Graduate Studies. The other is to request COPSE and Senate approval for new programs.

In summary, the School of the Environment would offer a wide selection of degrees at the undergraduate and graduate level, including BSc (Major), BSc (Honours), BA (Major), BA (Honours), MNRM, MSc, MA, and PhD. Options that would also be available at the undergraduate level would be a cooperative education component, as well as Minor Programs in Environmental Science and Environmental Studies.

## Administration

Day-to-day operation of the School of the Environment would be the responsibility of a Director, who would be initially recruited from within the Faculties of Arts and Science, and the NRI, and ultimately replaced by a Director selected following a national search. Strategic planning, curriculum development, and staff expansion by the Director would follow input of an advisory council, structured after the one used by the ESP, but expanded in recognition of the broader mandate of the School. The reporting line for the Director would be to the Dean of Science who would consult with the Dean of Arts and Deans of other faculties as appropriate. There appears to be no precedent for an administrative unit at the University of Manitoba that is associated with two Faculties, nor is there any prohibition against it. The Presidential Task Force of 1998 sought to increase interaction between these "core" Faculties. Evidence that this is occurring can be seen in our close participation in the development of University I, the harmonization of regulations to minimize barriers to student mobility, and in the creation of BSc degrees in psychology and the proposed creation of BSc programs in physical geography. In February 1999, a cross-Faculty Committee on Co-operation was established to discuss issues of mutual importance. To date, the Committee's terms of reference and operating protocols have been finalized and there have been two meetings. We suggest that this Committee on Co-operation would be a useful forum to arbitrate any area of disagreement that might arise during operation of the School of the Environment.

The NRI would remain as a discrete unit within the School, reporting to the Director of the School. The NRI has a widely acknowledged reputation in the area of resource management, and its faculty members would gain increased involvement in graduate level education outside its traditional mandate, as well as involvement with undergraduate education. The Department of Geography would remain in the Faculty of Arts and the Department of Geological Sciences would remain in the Faculty of Science, thereby maintaining the integrity of their respective disciplines. Their faculty members would, however, have several mechanisms by which they could be involved with environmental teaching and research in the School of the Environment, ranging from null-salary or part-time appointments and membership on postgraduate and program advisory councils to transfer of their academic appointment to it. Faculty members from around the campus with active environmental teaching and research interests would have these same opportunities for affiliation with the School.

The budget for the School would be set by the Deans of Science following discussion with its Director and consultation with the Dean of Arts. The current budget for the ESP would represent the base amount transferred from the Faculty of Science and this would be supplemented by an appropriate addition from the Faculty of Arts to account for costs in mounting the Environmental Studies program. Course income would track to the originating Program. The resources of the NRI would also transfer to the School. Student Advisors in the offices of the Deans of Arts and Science would continue to provide advise to students about their academic programs, supplemented by academic staff. What remains to be addressed are the space needs of the School. Ideally, this should entail reallocation and renovation of discrete, contiguous space where students and faculty members could be located together. This would have to take into account the diversity of space and equipment needs of specific research programs.

## Conclusion

A semi-autonomous School of the Environment, drawing on the strengths of its two parent Faculties, is a cost-effective, inclusive, interdisciplinary, student-focused, and high profile vehicle for environmental teaching and research at the University of Manitoba. It is innovative and forward-thinking, inclusive of perspectives and approaches beyond those defined by traditional inductive science. It draws the two core Faculties of the University closer together and allows for the broad multi-disciplines of those Faculties to interact to the benefit of undergraduate and graduate studies, while removing barriers (real or perceived) that inhibit interdisciplinary, cross-disciplinary and multidisciplinary research, and it is entirely open to the collaboration of other Faculties whose programs already interact with those of the Faculties of Arts and Science. Environmental studies must be broad, for there is barely any part of our society and other societies that is not feeling the impact of environmental limitations. To a degree, the traditional Department and Faculty structures inhibit the development of this necessary breadth so why should a solution inherit this legacy and adhere to an unnecessarily restrictive model?

*The School of the Environment will be cost-effective.* It will, to the fullest extent possible, use existing Faculty staff and infrastructure resources. It will not incur the costs of a new Faculty administrative complement, including Dean, Associate Deans, Administrative and Office Assistants, Student Advisors, IT Managers, office space and equipment, and operating budgets. For example, the need for student advising in a suite of programs as broad as these is critical; advisers in the Faculties of Arts and Science, coupled with the experience of ESP and NRI support and academic staff in this area, will minimize this cost. The alternative could entail a substantially increased faculty member workload for academic advising, and would put the onus on students to identify the most appropriate person among many to whom they could turn for information on a diverse set of continually changing options. We recognize that there will be some associated costs to implement this proposal, such as provision of space and other infrastructure, additional operating expenses for a larger unit, and new probationary appointments. However, to the extent that the School of the Environment builds on existing administrative units with experienced staff, we feel these costs will be as low as possible and, in some cases, can be phased in gradually.

*The School of the Environment will foster inclusivity and interdisciplinarity.* The School is founded from two existing interdisciplinary units, with explicit linkages to two large, diverse Faculties. There are ample ways for interested persons from discipline-based Departments and other Faculties to become involved with program development and delivery, and collaborative research. Collectively, this inclusive model increases the likelihood that all components of the Earth system and all scientific, social, and economic perspectives on the environment will be given due consideration. Barriers will be minimized by the lack of subdivisions such as tend to isolate Departments from one another, even within Faculties.

*The School of the Environment will be student-focused.* It builds on demonstrable successes in undergraduate and graduate programs of the ESP and the NRI, and it avoids the implied exclusivity and barriers of the Faculty designation. Its interdisciplinarity gives students the broadest selection of pertinent courses, drawn from its parent Faculties and elsewhere. It offers a wide selection of degree options to meet diverse student needs, including co-operative education. The School makes connections between the ESP and physical geography, facilitating a merger in

fact if not in name. It provides, for the first time, holistic environmental education at the graduate level so students are not obligated to redefine themselves in strictly disciplinary terms or leave the province. We anticipate there will be benefits for students of other programs at the University, in that the courses offered by the School of the Environment will be available for credit to students in those programs. There could, for example, be a Minor program in Environmental Science or Environmental Studies available for students in Major programs wishing greater environmental exposure.

*The School of the Environment will generate a high public profile for environmental research.* The identity and public awareness of an academic unit is a function of the quality of its educational programs and research, and its contributing faculty members. The unique nomenclature of the School of the Environment connotes its interdisciplinary distinctiveness as compared to the traditional, discipline-based Departments. Drawing, in part, on the existing recognition and reputation of the ESP and NRI, and having the support of two Deans of large Faculties, extensive infrastructure and large faculty complements with diverse expertise, we believe that the School of the Environment will be as widely recognized as any faculty-based alternative. We have seen no compelling evidence that a Faculty designation *a priori* raises the profile of an academic unit. Therefore, we submit that the School of the Environment should be supported widely as the best way to address a need and an opportunity at the University of Manitoba.

#### References

- Council of Ministers of Education, Canada 1997. Common Framework of Science Learning Outcomes, K to 12. Pan-Canadian Protocol for Collaboration on School Curriculum. ([www.cmec.ca](http://www.cmec.ca)).
- Klein, J. T. 1990. Interdisciplinarity: History, Theory, and Practice. Wayne State University Press, Detroit. 331pp.
- Leckie, G. W. 1975. Interdisciplinary research in the University setting. Center for Settlement Studies, University of Manitoba. Series 5: Occasional Paper No. 9, 156 pp.
- Organization for Economic Cooperation and Development (OECD) 1972. Interdisciplinarity, Problems of Teaching and Research in Universities. Center for Educational Research and Innovation (CERI).

275

Appendix

FACULTY OF ARTS

Draft Proposal for a B.A. (Adv.) in Environmental Studies

10 September 2001

## 8.XX Environmental Studies Program

Program Coordinator:

Program Office:

Telephone:

### 8.XX.1 Program Information

Various departments in the Faculty of Arts and the Faculty of Science collaborate to offer an Advanced Major and a Minor that recognize the diversity of world views and backgrounds with respect to the environment and to examine such views from a scientific perspective and from a socio-economic perspective.

### 8.XX.2 Environmental Studies Program, Program Code: IYZ

University 1

Year 2 Year 3 Year 4

ADVANCED MAJOR<sup>1</sup> TOTAL: 63 CREDIT HOURS

- Environmental Science: 128.100 and 128.200
- Geography: 053.128 and 053.129
- Biology: 071.125

In the selection of courses students must ensure they meet the following University requirement in their University 1 year:

- 6 credit hours of Humanities courses that satisfy the 'W' writing requirement

In the selection of courses students must ensure they meet the following University requirement by the end of their second year:

- 3 credit hours<sup>2</sup> that satisfy the "M" mathematics requirement
- 6 credit hours of Social Science courses excluding Economics and Geography

MINOR<sup>3</sup> TOTAL: 18 CREDIT HOURS

6 credit hours chosen from

- Environmental Science: 128.100 and 128.200  
and  
Geography: 053.128 and 053.129

#### NOTES:

<sup>1</sup> A maximum of 15 credit hours in courses numbered at the 100 level may be used toward the 63 credit hours Major.

<sup>2</sup> Students who do not intend to take either Sociology 077.229 or Psychology 017.225 and 017.226 should take a Mathematics course that satisfies the university's "M" requirement. Statistics 005.100 is recommended.

<sup>3</sup> A maximum of 6 credit hours numbered at the 100 level may be used toward the 18 credit hour minor.

276 For entry, continuation and graduation requirements for the Advanced Degree, see section 4: Basic Faculty Regulations for the Three Programs Leading to a B.A.

#### Other

Courses used towards the Major or Minor in Environmental Studies may not be used towards a Major or Minor in the other areas (all departments identified below).

- Ecology Course: Botany: 001.228 or Zoology: 022.229 or 001/022/065.237 (joint Botany, Zoology, Plant Science)
- Economics: 018.239 (waive 100 level Economics requirement for students in Environmental Studies program as with current Environmental Science students?)
- Geography: 053.254
- Native Studies: 032.422 or 032.426
- Philosophy: 015.275
- Religion: 020.2XX
- 6 credit hours (research methodology) from:
  - Sociology: 077.229
  - Geography: 053.253
  - Native Studies: 032.423
  - Psychology: 017.225 and 017.226
- 21 credit hours from List A
- students should develop an area of focus with advice from the Program Coordinator

- 12 credit hours from either the list of required courses or List A with at least 6 credit hours from each of two different departments

List of Required Courses (beyond the introductory level) 277  
See the departmental Calendar section for full course descriptions.

**Economics**

018.239 Introduction to Environmental Economics (3)

**Geography**

053.253 Introduction to Scientific Geographic Research (3)

053.254 Weather and Climate (3)

**Native Studies**

032.422 Environment, Economy and Aboriginal Peoples (3)

032.423 Traditional Knowledge and Native Studies Research (3)

032.426 Sacred Lands and Sacred Spaces of Indigenous Peoples (3)

**Philosophy**

015.275 Ethics and the Environment (3)

**Psychology**

017.225 Introduction to Psychological Research (3)

017.226 Introduction to Research Methods in Psychology (3)

**Religion**

020.2XX The Theory of Nature (3)

**Sociology**

077.229 Introduction to Research Methods (6)

**List A**

Note that most upper level courses have a prerequisite.

**Anthropology**

076.243 Ecology, Technology and Society (3)

076.250 Culture, Environment and Technology (3)

076.375 Anthropological Perspectives on Globalization and the World-System (3)

076.396 Cultural Resource Management (3)

076.398 Botanical Analysis in Archaeology (3)

076.399 Faunal Analysis in Archaeology (3)

**Economics**

018.240 Introduction to Energy Economics (3)

018.371 Sustainable Development: Issues and Policy (3)

018.447 Natural Resource Economics (6)

**Environmental Science**

All courses at the 200, 300 or 400 level

**Geography**

All courses at the 200 or 300 level

**History**

011.137W An Introduction to Modern World History: 1500-1800 (3)

011.138W An Introduction to Modern World History: 1800-Present (3)

011.139W History of Colonial Canada: 1500-1885 (3)

011.140W History of the Canadian Nation since 1867 (3)

011.144W History of Canada (6)

011.150W An Introduction to Modern World History:

011.238W The Twentieth-Century World (6)

011.254W North American Indian (6)

011.272W The World since 1945 (6)

011.373W A History of Western Canada (6)

011.432W Studies in World History since 1945 (6)

**Native Studies**

032.333 Aboriginal People, Science and the Environment (3)

032.334 Circumpolar Cultures and Lifestyles (3)

032.422 Environment, Economy and Aboriginal Peoples (3)

032.424 Arctic Lifestyles (3)

032.426 Sacred Lands and Sacred Spaces of Indigenous Peoples (3)

**Political Studies**

019.150W Introduction to Politics (6)

019.156W Introduction to Canadian Government (6)

019.206 Urban and Local Politics (6)

019.256 Issues of Canadian Politics (6)

**Psychology**

017.360 Environmental Psychology (3)

**Sociology**

077.369 Sociology of the Developing Societies (3)

077.384 Community and Social Reconstruction (3)

**Suggested units for development of an area of focus**

278

**Faculty of Arts**

- Asian Studies
- Canadian Studies
- English
- French, Spanish and Italian
- German and Slavic Studies
- History
- Labour and Workplace Studies
- Religion

**Faculty of Science**

- Botany
- Chemistry
- Computer Science
- Ecology
- Environmental Science
- Genetics
- Geological Sciences
- Mathematics
- Microbiology
- Statistics
- Zoology

**Other Faculties (See Section 9 for specific courses)**

- Agriculture
- Engineering
- Human Ecology

**Faculty of Science****Section 4: Programs and Courses Offered by the Faculty of Science****4.7 Environmental Science Program**

Program Coordinator: Norman Hunter

General Office: 231 Machray Hall

Telephone (204) 474-9897

**4.7.1 Academic Staff****4.7.2 Program Information**

The Faculty of Science offers an interdisciplinary program leading to a B.Sc. Major degree in Environmental Science. Environmental Science is the application of scientific knowledge from many disciplines to issues relating to human population, sustainable resource development, pollution and conservation, and endangerment and preservation of species. It includes concepts from all of the major natural sciences as well as other disciplines. One of the strengths of this program is an emphasis on field instruction and experience. A coop option is available to students who want to combine education with employment experience.

**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, 136.150<sup>3</sup>, 007.134 (or 007.123), 016.102, 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.

All courses are not offered every year. The course schedule for the current academic session is published in the Registration Guide.

**NOTE:**

Students registering in certain courses may be required to pay a portion of the costs associated with field trips. For details, contact the program office.

**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, 128.325, 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.

**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: 128.100, 128.200, 128.205, 128.217, 002.130, 002.131, 005.100, 005.200, 007.134 (or 007.123), 001.237 (022.237 or 065.237), 060.223, 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.

Students will be required to submit work reports upon the completion of each employment term. In order to stay in the Cooperative program, a student must obtain a grade of "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.

The Cooperative Option is structured in the manner indicated below, although scheduling is flexible to permit timetabling of required and depth package courses. Students may complete four work terms but must complete a minimum of three. The following course

Second work term 128.399

Third work term 128.498

Fourth work term 128.499

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

**Electives**

Students should consider the following courses as electives: 128.300, 128.301, 128.302, 128.400, 128.401, 128.402, 128.421, 128.422, 128.450, 016.235, 045.329, 076.250, 053.129, 053.252, 053.352, 053.361 and 053.373.

**Three Year General**

As prescribed with all other faculty regulations in Three Year General Degree, 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 Environmental Science, students must select a minimum of 12 credit hours from: 128.217, 128.300, 128.310, 128.315, 128.325, 128.400, 128.410, 128.421 and 128.422.

**Minor**

Students must complete 128.100, 128.200, plus a minimum of 12 credit hours from: 128.300, 128.310, 128.325, 128.400, 128.410, 128.421 and 128.422. Note that 001.237 (022.237 or 065.237) is a prerequisite to 128.310 and 128.325, and that 071.125 (C) and 005.100 are prerequisites to 001.237 (022.237 or 065.237).

**4.7.2 Environmental Science Program, Program Code: 128**

<b>University 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
---------------------	---------------	---------------	---------------

**Four Year Major<sup>7</sup>**

120 credit hours

<u>128.100, 002.130,</u> <u>002.131, 007.134<sup>1</sup>,</u> <u>016.102, 016.103<sup>2</sup>,</u> <u>071.125, 136.150<sup>3,5</sup></u>	<u>128.200, 128.205, 128.217,</u> <u>001.237 (022.237 or 065.237),</u> <u>005.100<sup>5</sup>, 005.200, 015.275,</u> <u>018.239, 060.223</u>	<u>128.310, 128.315, 128.410</u> <u>128.325</u>
---	---	--

Plus 6 credit hours from the Faculty of Arts, which may include the "W" course

A "W" course must be taken in University 1 or Year 2<sup>5</sup>

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

**Cooperative Option Major<sup>7</sup>**

120 credit hours

<u>128.100, 002.130,</u> <u>002.131, 007.134<sup>1</sup>,</u> <u>016.102, 016.103<sup>2</sup>,</u> <u>071.125, 136.150<sup>3,5</sup></u>	<u>128.200, 128.205, 128.217,</u> <u>001.237 (022.237 or 065.237),</u> <u>005.100<sup>5</sup>, 005.200, 015.275,</u> <u>018.239, 060.223</u>	<u>128.398, 128.399, 128.410, 128.498,</u> <u>128.310, 128.315, 128.499</u> <u>128.325</u>
---	---	--

Plus 6 credit hours from the Faculty of Arts, which may include the "W" course

A "W" course must be taken in University 1 and Year 2<sup>5</sup>

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, 128.310<sup>6</sup>, 128.315, 128.325<sup>6</sup>, 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<sup>6</sup>, 128.325<sup>6</sup>, 128.400, 128.410, 128.421, 128.422. Please note that 001.237/022.237/065.237 and 005.100 are prerequisites for some courses

<sup>1</sup>007.123, may be used in place of 007.134. Students who may 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.

<sup>2</sup> 016.105 and 016.107 may be used in lieu of 016.102 and 016.103.

<sup>3</sup>136.120, 136.130, 136.131, 136.151, 136.152, or 136.153 may be taken in place of 136.150.

<sup>4</sup>Other courses may be taken as approved by the program director.

<sup>5</sup>Completion of three credit hours from 136.150<sup>3</sup>, or 005.100 in University 1 or Year 2 will satisfy the university mathematics requirement.

<sup>6</sup>128.310 and 128.325 have one of 001.237, 022.237 or 065.237 as a prerequisite.

<sup>7</sup> IMPORTANT: The four year Major program need not be completed in the manner prescribed in the chart above. The chart indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.

Comments of the Senate Executive Committee:

The following motion was approved by the Senate Executive Committee:

THAT Senate Executive send to Senate without comment the FEERS proposal, the School proposal, and the report of the Senate Planning and Priorities Committee.



Report of the Senate Planning and Priorities Committee on Proposals  
for a Faculty of Earth, Environment and Resource Sciences, and an  
Interdisciplinary School of the Environment

---

Preamble

1. The Senate Planning and Priorities Committee received a request, dated September 20, 2001, from the Executive Committee to consider the merits, strengths and weaknesses of the above two proposals, and provide a report for Senate's consideration. Additional items suggested for SPPC's consideration were:
  - a) SPPC may wish to meet with proponents of both proposals in order to gain information from a wide cross-section of the University community;
  - b) SPPC may want to request additional background information from the proponents;
  - c) Senate Executive thought it would be helpful if SPPC were to provide a compendium, without prejudice, of the issues in which the two approaches differ (enclosed, as Appendix A);
  - d) The two proposals cannot be considered as "stand-alone" proposals at Senate; and
  - e) in the interest of resolving this in a timely manner, the Executive Committee requests that SPPC provide a response as soon as is possible.

Vice-Chair J.P. Svenne took the chair during the discussion of this issue, since the Chair, N.M. Halden, as Head of the Department of Geological Sciences, has a direct interest in the outcome of these deliberations. Following a preliminary discussion at the regular meeting of SPPC on October 2, 2001, the committee held special meetings on October 16, 30 and November 5 and 13, 2001. At the second of these, October 30 (postponed from October 23 because of the UMFA strike), the committee heard from the proponents of the two proposals:

J.S. Gardner, Vice-President (Academic) and Provost; and  
Deans of Arts and Science, R. O'Kell and J.C. Jamieson

as well as from the heads of units directly affected by these proposals:

C. E. Haque, Director of the Natural Resources Institute  
D.G. Barber, Acting Head, Department of Geography  
N.M. Halden, Head, Department of Geological Sciences and  
N.R. Hunter, Co-ordinator of the Environmental Science Program.

2. Under its terms of reference (Section 8.3.2.b in the online *Senate Handbook*) the Senate Planning and Priorities Committee may make recommendations to the Senate regarding (but not limited to) the following:
  - a) the general allocation of University resources with respect to their desirability and efficiency; and
  - b) on proposed academic programs and physical plant development.

## Observations

1. Discussions about the role of teaching and research in the broad area of the environment have been on-going at The University of Manitoba for about 10 years. Both proposals give some of this history.

Summarizing this history, the earliest activity was an inventory of faculty and staff with expertise in areas related to "sustainable development", in the late 1980's to early 90's, and the later declaration by Senate, upon recommendation of the University Research Committee of Senate, of sustainable development as a research priority for the University.

In the early 1990's, the Environmental Science Program (EScP) was established by the Faculty of Science, and later came to include a co-operative education option. The Faculty of Engineering developed an Environmental Engineering program, which received approval by Senate, but was not implemented due to lack of resources. Also in the University's resource management practices, a focus on sustainable development came to be accepted.

In 1994, the Vice-President (Academic) and Provost appointed a committee to study and oversee programs related to "environmental studies". This committee recommended, in 1996, that the NRI be expanded and become a "centre of environmental studies."

In *Building on Strengths*, the final report of the President's Task Force Strategic Planning in February 1998, a number of recommendations are made relating to environmental studies and resource management. Also included in the report is an omnibus recommendation, 48, to consider amalgamations, based on functionality, faculty complement, student numbers, and infrastructure support. Leading from a recommendation of the Task Force (58f), the EScP was reviewed in 1998-99 and, while its strengths were identified, certain weaknesses were also noted. Of two external reviews of the program, only one report has been received.

Around the turn of the Millennium (2000-2001), the Vice-President (Academic) and Provost reviewed the progress, or lack thereof, in the environmental area. Leading from what this review revealed, the first version of the FEERS proposal was prepared. Versions of this report have been discussed on more than one occasion in Deans' and Directors' Council, and in the Faculty Councils of the Faculties of Arts and Science.

In response to the FEERS proposal, Arts and Science developed a counter-proposal of an Interdisciplinary School of the Environment, originally planned to be jointly administered from the two Faculties, but now under the Dean of Science, who consults with the Dean of Arts. The latest versions of these latter two proposals were received by SPPC for study and recommendation to Senate.

2. Early in this history, it was recognized that some new structure needs to be put in place in order to co-ordinate all such activity across the University, minimize overlap in courses and programs and competition for the same students, and, most importantly, give studies in the environment at the UM the visibility needed to compete with

programs at other universities, many of which are far ahead of us, and to develop better working relationships with government agencies and the private sector.

3. The FEERS and ISE proposals are the latest versions of various proposals to meet these aims, as discussed in various committees and Faculties. Therefore, it is time to act, to give this area of study the needed visibility and ability to move forward.
4. Both proposals have their advantages and disadvantages and their backers and detractors. In view of charge d) from the Senate Executive that neither of these proposals be considered as "stand-alone", it emerged during discussions in SPPC that recommendations to combine the best features of both would serve the University best.

In the context of The University of Manitoba policies and traditions, a Faculty has advantage over a School, for the reasons that:

- a) it is a Budget Unit (as are free-standing Schools, but not Schools of a Faculty) and, therefore, has control over determining its fiscal priorities;
- b) it has academic control over programs offered by the Faculty, and courses taught within the Faculty;
- c) it is widely felt that a Faculty has greater visibility outside the University to prospective students, governments, the private sector and the general public; and
- d) it offers a clearer direction for a student interested in pursuing studies in the environmental area.

Since the environmental area is gaining popularity and there is a likelihood of increasing enrolment in the near future into this area, providing a more clear and focused avenue for students should be a priority for the University. A Faculty overseeing all related environment courses, with strong linkages to supplementary courses in other faculties, in addition to dedicated advising staff, stronger inter-faculty linkages, and greater resources for the students positions the Faculty to be a more favourable route for students than a school housed in two different Faculties. Ideally, a Faculty having an integrated core program with several specialization options provide the most ease for students with respect to pursuing their chosen career options.

Therefore, we are proposing a Faculty (see recommendation No. 1), which may incorporate within it a School and/or other academic and research units.

5. Extensive discussion in SPPC also centred over the question of whether the successful Environmental Science Program (EScP), currently housed in the Faculty of Science, should be included in the new Faculty. It was included in earlier versions of the FEERS proposal but, in the current version, it is suggested that it might not be included initially, with the question of its inclusion to be reviewed after about three years. The ISE proposal includes the EScP; in fact, it is modelled on that program. In the spirit of "blending" the two proposals (Observation No. 4), it was suggested that the EScP be included from the start. Discussion of this issue was extensive in SPPC. The arguments in favour of inclusion were:

- a) That a Faculty with the word "environment" in its title could not exclude the single

- largest and most successful undergraduate education program on the environment;
- b) that inclusion of the EScP from the start would ensure that the new Faculty has a broadly interdisciplinary focus;
  - c) that, due to the strong life-science content of the EScP, its inclusion would ensure a life-science participation in the new Faculty; and
  - d) that inclusion of the EScP would be helpful to the new Faculty as a base on which to build new graduate programs (M.A., M.Sc., Ph.D.) on issues in the environment.

Arguments against inclusion of the EScP were that it is a successful program to which the Faculty of Science has committed significant resources, that "if it ain't broke, don't fix it" and the expectation that, with this inclusion, the recommendations from the SPPC might not obtain support from Arts and Science in Senate. This was the only issue that came to a formal vote in SPPC. The motion to include EScP carried with a large majority. Therefore we are recommending inclusion of EScP as a Department or a School (Recommendation No. 1 b).

6. Discussions of the two proposals at the October 30 meeting, and in various fora preceding their consideration by SPPC, have widely supported the idea that any unit with the broad mandate of dealing with teaching, research and service in the areas of the environment and resources must be a broadly inclusive unit. The proponents of the two proposals have been representing their own favourite as "inclusive", the other as "exclusive". Does naming specific pre-existing units as components of the new structure automatically mean excluding all others? Does including traditional "discipline" units work against inter-disciplinarity, or cross-disciplinarity, or exclude other disciplines? Is Environmental Science a "discipline"? We heard from both heads of Geography and Geological Sciences that their departments are, already, broadly interdisciplinary. Do such discussions of "discipline" *versus* "interdisciplinary" still have any meaning in this context? Clearly the big problems of the environment and resource management will need the input from segments of many disciplines. Therefore, the FE must be as inclusive as possible of all with interests in these areas.
7. Objections to the "FEERS" nomenclature have been made because the 'S' in the title is for Science, and that seems to exclude the humanities, social sciences, professions. The FEERS proposal uses the word "science" in its broadest meaning, coming from the Latin word, *scientia*, meaning knowledge. Should knowledge not be at the base of all studies in teaching, research and service in the areas of the environment and resources? However, if this remains a sensitive issue, perhaps the word "science" could be left out of the title, as in the suggestion from the Director of the NRI that the new Faculty be "FREE": Faculty of Resources, Earth and the Environment. Therefore, in this report, we use as a working title FE: Faculty of the Environment.
8. The Faculty of Arts has proposed a new interdisciplinary program of Environmental Studies (EStP). Such a program, when/if approved by Senate, the Board of Governors and COPSE could serve the interests of those whose approaches to environmental questions are not primarily science-based. Such a program may well fit within the mandate of the FE. Therefore, we encourage the Faculty of Arts to work with the FE to help make this as broadly inclusive a Faculty as possible.

9. As well as the broadest possible inclusion of faculty members with interests in teaching, research and service in the areas of the environment and resources it is anticipated that, at some future date, other entire units, centres or institutes may wish to join the "charter members" of FE. One example of such units might be the Disaster Research Institute. Therefore, FE should also be as broadly inclusive as possible of relevant units, as well as of faculty members and students.
10. Some attention was also paid to the issues of financial resources and space. Any new unit, whether a Faculty or a School, will require administrative resources: a Dean or Director, Associate Dean(s) or Director(s), administrative assistants, office staff, and student advisors. While a School may need marginally fewer such resources, especially if it makes use of existing personnel in Arts and Science, there does not seem to be strong evidence for a Faculty requiring significantly greater resources. On the other hand, it was felt that a Faculty, as a budget unit, might have better prospects to attract additional resources, especially from outside the University. In the long term, either a Faculty or a School would be seeking additional resources, especially for retention and renewal of faculty members.

The problem of space is an acute one for either the School or Faculty proposals. The members of any such new unit are at present scattered in widely separated areas of the campus. In the short term, the administration of the new unit would have to be localized in a particular place on campus. In the longer term, it would be greatly desirable for the smooth functioning of the new unit to consolidate in one or two physical locations. It has been pointed out that the Wallace building is designed to accommodate an additional floor and a half. Should it be possible to secure external funds, for example from a CFI grant, such an expansion would make a consolidation in space possible. Therefore, we support the FE proposal as the best route to solution of resource and space requirements for the new unit.

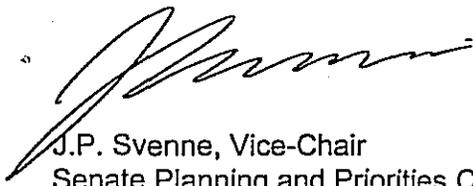
### Recommendations

1. THAT Senate approve in principle and recommend to the Board of Governors the formation of a new Faculty to be responsible for teaching, research and service in the broad areas of the earth, the environment, sustainable development and resources as follows:
  - a) The name of the Faculty is at present unspecified, and may, in fact, be decided by the Faculty Council of the new Faculty, after approval by Senate. For the purposes of this report, without prejudice to either proposal, it will be referred to by the working title: Faculty of the Environment (FE), using the one word in common in the titles of the two proposals.
  - b) This Faculty initially will include the present units of the Natural Resources Institute (NRI), retaining its name, the Departments of Geography and of Geological Sciences, and the Environmental Science Program (EScP) as a Department or a School. Faculty members of the above units are encouraged to join the new Faculty. However, no faculty member would be required to change his or her Faculty of appointment.
  - c) The FE should be as broadly interdisciplinary and inclusive as possible. This can

be achieved by inviting other faculty members in other departments of Arts and Science and of other Faculties, who have interest in teaching and/or research in the areas of earth, environment, sustainable development and resources, to join the Faculty either in full or in part (cross-appointment, joint appointment, or adjunct status). Particular attention should be paid to the inclusion of biological scientists, social scientists, health scientists and humanists, but not to the exclusion of others.

- d) The FE, in keeping with its mandate of interdisciplinary study, will establish linkages as broadly as possible with other Faculties, including, but not limited to, Arts, Science, Agricultural and Food Sciences, Architecture, Engineering, Law, Medicine, and others as appropriate.
  - e) All courses, programs, degrees and diplomas currently offered by the units named in 1. b) will continue to be offered by these components of FE. As the Faculty develops, it is encouraged to propose changes, deletions, additions of courses, programs, degrees and diplomas for approval by the usual process through Faculty Council, the Senate Committee on Curriculum and Course Changes, Senate, the Board of Governors and COPSE, when appropriate.
  - f) An Interim Dean should be appointed from existing staff of the University as soon as approval for the FE is obtained, and a full external search for a Dean with a vision for the future of the FE should be initiated within one year after the founding of the Faculty.
2. THAT Senate recommend to the Board of Governors that resources be made available, in the short term, to establish the Faculty, with a Dean, any Associate Dean(s), administration and student advisors. The Estimates for 2002/2003 sent to COPSE in September provides for funding to establish such a unit. In the longer term, additional transfer of funding to the new Faculty would be needed to allow it to develop and be able to hire new faculty.
  3. THAT Senate recommend to the University administration that space, able to consolidate the FE into one or two spaces on campus, be provided in the University Campus Plan, and future fundraising endeavours. An application to the CFI for such requirements might be appropriate at some time after the FE has been established.

Respectfully submitted,



J.P. Svenne, Vice-Chair  
Senate Planning and Priorities Committee

/s

## Compendium of Issues in FEERS and ISE Proposals

	FEERS	ISE
<b>Goals</b>	The stated goals of the two proposals would appear to be mostly the same.	
<b>Structure</b>	A full-service faculty, of medium size.	A School of a Faculty, reporting to "the Dean of Science who would consult with the Dean of Arts and Deans of other Faculties as appropriate."
	Departmentally organized	Not departments, but program based.
	Initially, the Departments of Geological Sciences and Geography, and the Natural Resources Institute. Later, the Environmental Science program might join, as a department. Perhaps other units, as appropriate may be added.	Environmental Science Program, programs of the NRI, the proposed program in Environmental Studies in the Faculty of Arts.
<b>Faculty</b>	Initially all faculty members of the Departments of Geological Sciences and Geography, and the NRI, but no faculty member would be obligated to join the new Faculty. Should the ESP move into the Faculty, the faculty members appointed to the ESP might also join it as faculty members. Any faculty member of any other department in Arts, Science, other Faculties (Agricultural and Food Sciences, Engineering, Architecture, Medicine, Law, <i>etc.</i> ) with an interest in the environment and/or resources might choose to join the Faculty either as full-time members, part-time cross-appointments, joint appointments, or adjunct status.	All faculty of Arts, Science and other Faculties, who teach in the programs offered by the School, or have research interests in the area of the environment, would be considered as members of the School. Any faculty member of any other Department in Arts, Science, other Faculties (Agricultural and Food Sciences, Engineering, Architecture, Medicine, Law, <i>etc.</i> ) with an interest in the environment and/or resources might choose to join the School either as full-time member, part-time cross-appointment, joint appointment, or adjunct status.
<b>Budget</b>	As a Faculty, FEERS would be a full budget unit of the University. [NOTE: the University would lose one budget unit (NRI) and gain one (FEERS), for no net change in the number of budget units.]	The budget of the School would be allocated from the Faculties of Arts and Science in the normal process that these Faculties use to allocate budget to Departments.

	FEERS	ISE
<b>Degree Programs</b>	B.Sc.(3y, major, honours), B.A. (3y, adv., honours), M.Sc., M.A. M.N.R.M., Ph.D.	B.Sc.(Env. Sci.), B.A.(Env. Stud.), M.Sc., M.A. M.N.R.M., Ph.D.
<b>Inclusivity</b>	<p>Includes Geological Sciences, Geography, the Natural Resources Institute, possible future inclusion of Environmental Science Program. Any other units or individuals, with interests in the environment/resources areas, who elect to join. No individual faculty member would be required to join.</p> <p>Claimed, by the proponents of the ISE, to exclude the biological sciences. However, the FEERS proposal clearly indicates that such links would be maintained and, in fact, encouraged.</p>	<p>Includes Environmental Science Program, proposed Environmental Studies Program and Natural Resources Institute. Presumably, since the unit is housed in the Faculties of Arts and Science, all Departments of these faculties could be considered to be included, or excluded, from this unit.</p> <p>Faculties other than Arts and Science and NRI are excluded, as are the departments within them.</p>
<b>Relation to Other Units</b>	<p>Ensure that appropriate linkages and relationships are mapped and articulated as the basis for identifying and sharing access to courses and faculty expertise and to avoid duplication and make use of existing resources. Very clear linkages potentially exist between the proposed Faculty and the Faculties of Arts, Science, Architecture, Agricultural &amp; Food Sciences, Engineering, Physical Education and Recreation Studies, Human Ecology, Law and Medicine.</p>	<p>Foster extensive linkages with other Faculties such as Agricultural and Food Sciences, Engineering, Law, Management, Medicine and others.</p>

Comments of the Senate Executive Committee:

The following motion was approved by the Senate Executive Committee:

THAT Senate Executive send to Senate without comment the FEERS proposal, the School proposal, and the report of the Senate Planning and Priorities Committee.

**MEMORANDUM**

**DATE:** November 20, 2001  
**TO:** Bev Sawicki, Secretary of Senate  
**FROM:** Jerry Gray, Dean, I. H. Asper School of Business  
**SUBJECT:** Request to Establish a Chair in Business Leadership

Attached is a request from the I.H. Asper School of Business to establish a Chair in Business Leadership.

Please let me know if I can be of any assistance in facilitating this proposal through the required approval processes.

JLG:ms  
Enc: 1

Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

## Proposal to Establish a Chair in Business Leadership

in

### The I.H. Asper School of Business

As required in Policy 428 (2.1), this is a proposal to establish a Chair in the I. H. Asper School of Business.

Type of Appointment: Chair

Name of Chair: The Chair in Business Leadership

Purpose of Chair: The purpose of the proposed Chair is to assist the I.H. Asper School of Business in attracting and retaining Deans with outstanding academic and leadership skills by providing a mechanism that will assist future Deans in aggressively pursuing the strategic goals of the School.

Relationship to Goals of The Unit:

The I. H. Asper School of Business has established a national reputation as one of Canada's leading business schools. The School's primary goal is to continue to develop its teaching, research, and programming competencies so that it maintains and increases its national standing. The Chair will assist future Deans in realizing these goals.

Funding:

The Chair will be funded through a combination of endowment funds and annual gifts, as per section 1.1.3 of Policy 428. Specifically, a \$1M endowment has already been established through a series of gifts from the Institute of Chartered Accountants of Manitoba. The Institute has pledged an additional \$2M over the next ten years. It is estimated that annual contributions to the Endowment Fund by the Institute will be approximately \$200,000.

Qualifications:

The Chair in Business Leadership shall be held by the Dean of the I.H. Asper School of Business who has been appointed Dean in accordance with the University policy pertaining to the search and selection of Deans.

Term of Appointment:

The individual will hold the Chair for the term of his or her appointment as Dean of the I. H. Asper School of Business.



UNIVERSITY  
OF MANITOBA

294  
Office of the University Secretary

312 Administration Building  
Winnipeg, Manitoba  
Canada R3T 2N2  
Telephone (204) 474-9593  
Fax (204) 474-7511

DATE: November 22, 2001  
TO: Ms B Sawicki, University Secretary  
FROM: Dr J S Gardner, Vice-President (Academic) and Provost *JS*  
SUBJECT: **Proposal to Establish a Chair in Business Leadership**

---

Section 2.1.3 of Policy 428 on *Chairs and Professorships* states that "all such proposals shall have the approval of the relevant Dean or Director, where applicable, and the Vice-President (Academic) and Provost".

Accordingly, I am writing to you to confirm that the proposal to establish a Chair in Business Leadership has my approval.

/sgp

