

AGENDA

I MATTERS TO BE CONSIDERED IN CLOSED SESSION

II MATTERS RECOMMENDED FOR CONCURRENCE WITHOUT DEBATE

1. Report of the Senate Committee on Curriculum and Course Changes Page 17

III MATTERS FORWARDED FOR INFORMATION

1. *In Memoriam* - Dr. Edwin O. Anderson Page 19
2. Report of the Senate Committee on Awards Page 20
3. Correspondence from the Vice-President (Academic) and Provost re: the Appointment of a Dean of Science Page 32
4. Course and Program Change Summary for 2003 Page 33
5. Report on Research Contracts Received Page 35
6. Report of the Senate Committee on Academic Computing re: IST Building Cabling Priorities Page 44

IV REPORT OF THE PRESIDENT

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 FEBRUARY 4, 2004

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 46

2. Report of the Senate
Planning and Priorities Committee

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

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

1. Report of the Faculty Council of Graduate Studies
re: the Master of Environment Program Proposal Page 47
- a) Report of the Senate Planning
and Priorities Committee Page 121

X ADDITIONAL BUSINESS

XI ADJOURNMENT

Please Call Regrets to 474-6167.

/jml

January 23, 2004

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

Preamble

1. The terms of reference for the Senate Committee on Curriculum and Course Changes (SCCCC) are found in Section 8.21 of the *Senate Handbook* (revised 2000). SCCCC is "to recommend to Senate on the introduction, modification or abolition of undergraduate programs, curricula or courses".
2. SCCCC met on January 23, 2004 to consider, among other things, course and curriculum changes from the Faculty of Environment.

Observations

1. General

In keeping with past practice most changes where the net increase for departments totals 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. The Faculty is proposing that courses 128.205 Technical Communication Skills in Environmental Science, 128.421 Environmental Health 1, and 128.422 Environmental Health 2 be deleted. The course material taught in these courses has been updated and re-organized in proposed new courses **128.2XX Technical Communication in the Environmental Sectors**, **128.3XX Introduction to Environment and Health**, and **128.4XX Advanced Issues in Environment and Health**.

Recommendations

The Senate Committee on Curriculum and Course Changes recommends that course changes from the Faculty of Environment be approved by Senate.

Respectfully submitted,

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

/jml

1. Faculty of Environment

Department of Environment and Geography

Courses to be deleted:

128.205	Technical Communication Skills in Environmental Science	-3L
128.421	Environmental Health 1	-3
128.422	Environmental Health 2	-3

Courses to be introduced:

128.2XX Technical Communication in the Environmental Sectors +3L

An introduction to technical communication skills required for environmental practitioners in research, government, and industry. The course covers technical writing and literature search techniques, business writing including reports, memos and e-mails, professional presentation skills, and fundamental internet skills. Practical experience is gained through assignments and laboratory exercises. Not to be held for credit with the former 128.205. *Prerequisite:* Permission of the Director, Environment programs.

128.3XX Introduction to Environment and Health +3

An overview of the linkages between human health and environmental issues. The course discusses the nature of environmental hazards, human exposure and health outcomes. Major environmental and human health issues such as air pollution, hazardous substances, endocrine disruptors and products in the home are covered. Not to be held for credit with the former 128.421. *Prerequisite:* a minimum of 60 credit hours of university credit.

128.4XX Advanced Issues in Environment and Health +3

An evaluation of global and local environmental health issues and the assessment and management tools used to manage these risks. Case studies of environmental issues and their human health effects are covered. Students have the opportunity to work on a substantial interdisciplinary environmental health project. Not to be held for credit with the former 128.422. *Prerequisite:* 128.3xx.

NET CHANGE IN CREDIT HOURS: 0

In Memoriam
Dr. Edwin O. Anderson
1934-2004



It is with great sorrow that we announce the passing of Dr. Ed Anderson, Senior Scholar and Secretary of Senate from 1986-1998, on February 15, 2004.

From his beginnings as a research assistant, graduate student and lecturer, Ed Anderson sought out ways to make teaching, learning and research innovative at the University of Manitoba. With his appointment as Assistant, then Associate Professor in the Continuing Education Division, Ed worked in the development of many of the programs that the CED has been long renowned for. These include the Community Counselling Certificate, the Stony Mountain University Program, and the Correspondence and General Studies Programs, all of which make university education possible for people who would not otherwise have had the same opportunity. Ed Anderson contributed significantly to program development in the Continuing Education Division and throughout the whole University.

Ed Anderson recognized the importance of service in a University and was a leader in showing exemplary service to the University of Manitoba. In addition to his academic and curricular accomplishments, Ed served on numerous faculty, Senate, Board of Governors and university committees, indeed far too many to name. He served as Vice-President, and then President of the University of Manitoba Faculty Association. Ed represented UMFA on Senate, the Board of Governors and the Board of the Canadian Association of University Teachers, including a term as its President from 1985-86. Throughout the University of Manitoba community and beyond, Ed Anderson is known and respected as a committed, active member of the community.

It was Ed Anderson's twelve-year tenure as Secretary of Senate, however, that provided the University and the greater community the opportunity to benefit from his expertise in governance and his ability to provide sage advice and guidance to the many constituent groups of the University. Ed was always ready to listen, advise and provide a sense of institutional memory, all with a sense of warmth, energy and wit that served the University exceptionally well. In fact, Ed was so admired by the students of the University that upon his retirement in 1998, UMSU established the Ed Anderson Award, which is awarded annually to a student who is involved in student governance in an exceptional way.

In the greater community, Ed Anderson's promotion and support of cultural organizations was widely known. He served on the Board of Governors of the Manitoba Museum, including a term as Chairman. For his contributions, the Museum awarded him a Honorary Life Membership in 1984. Until his death, he served as Vice-President for Works of Art of the Board of Governors of the Winnipeg Art Gallery and on the Board of Directors of Prairie Public Television, Inc. On February 10, 2004, the University of Manitoba conferred onto Ed an honorary Doctor of Laws degree.

Ed Anderson was a teacher, a facilitator, an organizer and a leader. More than all of these, he was a friend to the people who he touched throughout a lifetime of contributions to the University of Manitoba. The Office of the University Secretary joins the entire University Community in extending sympathy to Dr. Anderson's wife, Dr. Joan Townsend, and all of Ed's family and friends.

Report of the Senate Committee on Awards respecting Awards - January 28, 2004Preamble

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 January 28, 2004, SCOA reviewed nine new awards offers, 18 award amendments, and one award withdrawal and reports as follows.

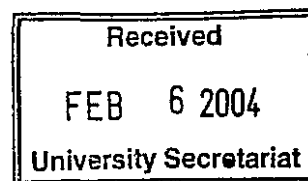
Observation

On behalf of Senate, the Senate Committee on Awards approved and recommends that the Board of Governors approve nine new awards, 18 award amendments and one award withdrawal as set out in Appendix "A" of the Report of the Senate Committee on Awards (dated January 28, 2004). These award decisions comply with the published guidelines of November 3, 1999, and are reported to Senate for information

Respectfully submitted,

Diana Kaspersion (for)

Professor R. Baydack, Chair
Senate Committee on Awards



SENATE COMMITTEE ON AWARDS REPORT TO SENATE - JANUARY 28, 2004

APPENDIX "A"

OFFERS

FACULTY OF ENGINEERING ENDOWMENT FUND BURSARY

The Engineering Endowment Fund Advisory Committee has allocated \$5,000 annually to be offered as bursaries to students in the Faculty of Engineering. Five bursaries, valued at \$1,000 each, will be offered to undergraduate students who:

- (1) are enrolled full-time in any year of study in the Faculty of Engineering;
- (2) have achieved a minimum cumulative grade point average of 2.0 (or equivalent);
- (3) have demonstrated financial need on the University of Manitoba bursary application form.

The selection committee will be the Faculty of Engineering Scholarships, Bursaries, and Awards Committee.

MTS MOBILITY SCHOLARSHIPS

Through the proceeds of a rental fee paid by MTS Mobility to the University of Manitoba for the housing of a cellular tower atop the Engineering building, scholarships will be offered to promising students in the areas of Engineering and Computer Science. Each year (starting in 2004), 12 scholarships of equal value (initially valued at \$1000 each) shall be available. The annual total value of this scholarship program shall be communicated to the Financial Aid and Awards Office from the Office of the Vice-President (Administration), and the total funds shall be split equally between 12 individual scholarships.

Nine scholarships shall be offered to the students who:

- (1) have completed University 1 at the University of Manitoba;
- (2) have achieved a minimum cumulative grade point average of 3.5 on courses completed to date;
- (3) rank among the top students admitted to the Faculty of Engineering at the University of Manitoba (a scholarship shall be directed to a student entering each of the major streams offered in the Faculty of Engineering, and the remaining scholarships shall be offered to the top ranked students entering any of the programs who have not already received the scholarship for their specific program).

Three scholarships shall be offered to the students who:

- (1) have completed University 1 at the University of Manitoba;

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- (2) have achieved a minimum cumulative grade point average of 3.5 on courses completed to date;
- (3) enter as the top three students admitted in the fall term to year 2 of either the major or honours program in Computer Science in the Faculty of Science at the University of Manitoba.

The two selection committees shall be named by the Dean of the Faculty of Engineering and the Head of the Department of Computer Science.

PAUL ADAMS PRIZE IN POLITICS AND MEDIA

The Paul Adams Prize in Politics and Media has been established through a generous contribution made by Mr. Adams, the Faculty of Arts Distinguished Alumnus in 2002. The Faculty of Arts wishes to honour his significant interests in and contributions to journalism and politics.

Paul Adams graduated from the University of Manitoba in 1977 with a B.A. (Hons.) degree in Political Studies and History. He earned Master's degrees in Modern History at Oxford University in 1982, and in Journalism from Columbia University in 1986. After a brief time spent teaching Political Studies and involvement in political life, he went on to carve out a distinguished career in print and broadcast journalism. He has served as National Correspondent and Parliamentary Bureau Chief for CBC News. At the time of his recognition as a Distinguished Alumnus he was Middle East correspondent for the *Globe and Mail*.

A prize valued at the available annual income (minimum \$75) will be offered to an undergraduate student who:

- (1) has completed the second or third year of study in the Department of Political Studies;
- (2) has achieved a minimum cumulative grade point average of 3.5;
- (3) has submitted a research paper on a topic related to the media and politics that the course instructor judges to be of exceptional merit.

Qualified research papers will be submitted by the instructor(s) of the course(s). Instructors may submit more than one paper from any given course.

The selection committee will be the Awards Committee of the Department of Political Studies. The Department reserves the right not to make an award in any given year. The award will terminate when the fund is depleted.

CHARLES BELL AWARD

From an annual contribution provided by Mr. Jim Blanchard, a prize of \$150 will be offered in the Department of History beginning in the spring of 2003.

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The prize will be offered to a student who:

- (1) is enrolled at the University of Manitoba as a part-time or full-time student in any Faculty or School;
- (2) has achieved the highest overall standing in the course History of Canada (currently numbered 11.144) offered by the Department of History.

In case of a tie, the eligible student with the highest cumulative grade point average will be the recipient of the award.

This award may not be held with the Manitoba Diamond Jubilee Scholarship.

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

SHELLEY M. WEISS MEMORIAL SCHOLARSHIPS

In memory of Shelley M. Weiss (1954 – 2002), family, friends and colleagues have established an endowment fund of \$50,000 to provide awards to students who demonstrate excellence in their contribution to the Manitoba Law Journal and other annual scholarly publications at the Faculty of Law. The Manitoba Scholarship and Bursary Initiative has made an equal contribution for a total endowment of \$100,000.

During her tenure at Robson Hall, Shelley M. Weiss was an editor of and made significant contributions to the Manitoba Law Journal. She graduated in 1979 and was called to the Bar in 1980. She practised corporate law in Winnipeg for five years. With her husband, Ron LaRocque, Shelley moved to Toronto and joined the law department of the Bank of Montreal as senior legal counsel, developing expertise in the area of capital markets. Building on her success, Shelley received an executive appointment as Vice President, Capital Markets and was subsequently promoted to Managing Director. Shelley's final position was Managing Director, Investment & Corporate Banking, BMO Nesbitt Burns.

These awards will be offered to second year Law students who:

- (1) have achieved a minimum cumulative grade point average of at least 3.0 on all first year courses completed in the Faculty of Law;
- (2) have been selected, based upon a personal letter of application, to serve on the editorial board of the Manitoba Law Journal;
- (3) have articulated in their application, their personal interests in making scholarly contributions to the Manitoba Law Journal;
- (4) have demonstrated superior writing skills.

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These scholarships are intended to recognize the scholarly achievements of students who contribute to the Manitoba Law Journal. The number and value of individual awards will be determined by the selection committee.

The selection committee will be named by the Dean of the Faculty of Law.

GSA INNOVATION, STEWARDSHIP AND EXCELLENCE AWARDS

The Graduate Students' Association Innovation, Stewardship, and Excellence Awards (GSA ISE Awards) are being established by the Graduate Students' Association as a peer-to-peer recognition of the skills, research, and scholarship of their peers who are currently not recognized by the University of Manitoba Graduate Fellowship or other national awards. The awards have been made possible by the generous contribution of Dr. James Burns, a levy applied to all graduate students approved through a GSA referendum, and a contribution made by the Manitoba Scholarship and Bursary Initiative.

Beginning in 2004, two awards of \$20,000 each will be awarded annually, in competition, to graduate students who have demonstrated innovation, stewardship, and excellence. One award will be offered to a student pursuing a Master's degree and the second award will be offered to a student pursuing a Doctoral degree. In addition, one award of \$5,000 will be offered to a part-time graduate student.

Students will submit their applications to their department. Each graduate department will be eligible to nominate one candidate for the Master's level award, one candidate for the Ph.D. level award and one candidate for the part-time award.

The Master's level award will be offered to a student who:

- (1) is enrolled in the Faculty of Graduate Studies at the University of Manitoba in the Master's (not pre-Master's) program as a full-time student;
- (2) does not hold any major fellowships (including, but not limited to, Social Sciences and Humanities Research Council (SSHRC), Natural Sciences and Engineering Council (NSERC), Canadian Institute for Health Research (CIHR), Manitoba Health Research Council (MHRC), University of Manitoba Graduate Fellowships (UMGF));
- (3) has demonstrated evidence of innovative ideas, stewardship of community, and excellence in their program of study.

The Ph.D. level award will be offered to a student who:

- (1) is enrolled in the Faculty of Graduate Studies at the University of Manitoba in the Ph.D. program as a full-time student;
- (2) does not hold any major fellowships (including, but not limited to, SSHRC, NSERC, CIHR, MHRC, University of Manitoba Graduate Fellowships);

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- (3) has demonstrated evidence of innovative ideas, stewardship of community, and excellence in their program of study.

The award for part-time study will be offered to a student who:

- (1) is enrolled in the Faculty of Graduate Studies at the University of Manitoba in either the Masters or Ph.D. (not pre-Masters) program as a part-time student;
- (2) does not hold any major fellowships (including, but not limited to, SSHRC, NSERC, CIHR, MHRC, University of Manitoba Graduate Fellowships);
- (3) has demonstrated evidence of innovative ideas, stewardship of community, and excellence in their program of study.

Recipients must be registered in the academic session for which the awards are tenable in order to accept the award. The awards will not be renewable for a second year but a recipient at the Master's level may apply and be considered again at the Ph.D. level of study. Normally, the starting date of the award is September. The award may be deferred for one term only (four months).

The Graduate Students' Association will distribute application packages to all graduate departments. Applications will include a one-page letter, which will be used to demonstrate the suitability of applicants' for the award based on the principles of innovation, stewardship, and excellence. The package will also include a one-page essay, one academic letter of reference (preferably from the supervisor), a second letter of reference from a professional or community member, and data relating to work and community experience.

For purposes of these awards, innovation is defined as the development of novel ideas, research, work, or techniques, which include new ways of looking at a problem, issue, or challenge to enhance discovery and contribute to the furtherance of knowledge and understanding. Stewardship is defined as responsibility to society by demonstrating social consciousness and the responsible use of resources whether they are natural resources, time, talent, or community, and further, to improve the quality of life and assist in the economic, social, and cultural development of the province, country, and world. Excellence is demonstrated through engaged, responsible, and superior performance in the approach to all aspects of graduate studies.

The GSA ISE Awards cannot be held with the GSA ISE Bursary.

Members of the GSA Senior Executive and the GSA Awards Committee will not be eligible for the GSA ISE Awards due to their role in the selection committee.

The selection committee will consist of twelve members of the University community. Six members will review the applications from master degree students and six members will review applications from both doctoral degree students and part-time students. The committee will be

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named by the President of the GSA and will include the Vice-Presidents of the GSA and the Dean of the Faculty of Graduate Studies (or designate).

GSA INNOVATION, STEWARDSHIP, AND EXCELLENCE BURSARY

The establishment of bursaries, in addition to the establishment of the GSA Innovation, Stewardship, and Excellence Awards, have been made possible by the generous contribution of Dr. James Burns, a levy applied to all graduate students approved through a GSA referendum, and a contribution made by the Manitoba Scholarship and Bursary Initiative. Beginning in 2004, four bursaries of \$5,000 each will be offered at the graduate level to students demonstrating financial need.

The bursaries will be offered to students who:

- (1) are registered as full-time students in the Faculty of Graduate Studies at the University of Manitoba in either the Masters or the Ph.D. programs;
- (2) are not holders of any major fellowships (including, but not limited to, Social Sciences and Humanities Research Council (SSHRC), Natural Sciences and Engineering Council (NSERC), Canadian Institute for Health Research (CIHR), Manitoba Health Research Council (MHRC), University of Manitoba Graduate Fellowships (UMGF));
- (3) have demonstrated financial need on the standard University of Manitoba bursary application.

Selection among eligible candidates is to be based on financial need. The GSA ISE Bursaries cannot be held with the GSA ISE Awards.

Selection for the GSA ISE Bursaries will be based in the Financial Aid and Awards Office and administered according to standard University of Manitoba practice.

FILLMORE RILEY ENDOWMENT FUND

The partners of Fillmore Riley have made a commitment of \$150,000, with a matching commitment from the Manitoba Scholarship and Bursary Initiative, to establish an endowment fund of \$300,000 that will offer assistance to students following graduation from the Faculty of Law at the University of Manitoba. The objective of the award is to provide students with debt relief on personal bank loans or lines of credit incurred to support their legal studies at Robson Hall. These awards are intended for students graduating from the Faculty of Law who remain in the Province of Manitoba to article or to practice law.

Once the capital of the fund reaches a balance of \$300,000, the number of qualified applicants will determine the number and value of individual awards up to a maximum of \$15,000 annually.

This award will be offered to students who:

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- (1) have successfully completed all requirements for a degree in Law;
- (2) have achieved a minimum cumulative grade point average of at least 2.5 on all courses completed in the Faculty of Law;
- (3) have a personal loan or line of credit from an approved lending institution;
- (4) provide a personal statement of qualification, a personal budget that demonstrates difficulty in making payments, and supplementary documentation.

Students may apply and receive this award in each of the three years post graduation.

The selection committee will be the Faculty of Law's Bursaries Committee and will include a representative of Fillmore Riley.

TAYLOR McCaffrey ENDOWMENT FUND

The partners of Taylor McCaffrey have made a commitment of \$150,000, with a matching commitment from the Manitoba Scholarship and Bursary Initiative, to establish an endowment fund of \$300,000 that will offer assistance to students of the Faculty of Law at the University of Manitoba by providing interest relief awards to students who by application demonstrate proven need. The objective of the awards is to assist students who have been found to be ineligible for federal and provincial student loan programs. They are designed to offset the interest costs on personal loans or lines of credit from recognized lending institutions incurred during their studies for an LL.B. degree at Robson Hall.

Once the capital of the fund reaches a balance of \$300,000, the number of qualified applicants will determine the number and value of individual awards up to a maximum of \$15,000 annually.

This award will be offered to students who:

- (1) are enrolled in the final year of study in the Faculty of Law;
- (2) have achieved a minimum cumulative grade point average of at least 2.5 on all courses completed in the Faculty of Law;
- (3) have applied for a student loan through any province and have been found ineligible due to long-term established assets related to time spent in the work force (e.g. home, car, retirement savings such as RRSP's or GIC's);
- (4) apply and qualify for a personal loan or line of credit from an approved lending institution;
- (5) provide a personal statement of qualification, a personal budget that demonstrates difficulty in making payments, and supplementary documentation.

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The interest relief rate will be fixed at 5%, after which the student is responsible for any increase in the bank-lending rate.

The selection committee will be the Faculty of Law's Bursaries Committee and will include a representative of Taylor McCaffrey.

AMENDMENTS

M. PARRY POWER SCHOLARSHIP

At the request of the M. Parry Power family, this scholarship will be renamed after the club which sponsors the award. The new name will be **HYDRO X SCHOLARSHIP**.

EDWIN (TED) RAINES BURSARY

In honour of Mr. Raines' recent 80th birthday and beginning in the fall of 2004, the value of this bursary will be increased to \$800 (from \$750).

WESTERN CANADA DENTAL SOCIETY GRADUATE STUDENT SCHOLARSHIP

The terms of reference for this graduate scholarship will undergo one amendment. Students pursuing a program of study leading to an M.Dent. degree will be considered eligible for consideration (in addition to the M.Sc. and Ph.D. in Dentistry).

MANITOBA BLUE CROSS STUDENTS ACCIDENT PLAN SCHOLARSHIPS

This award has been presented to a student with high standing in second year of undergraduate Occupational Therapy who goes on the third year of the program. As the Program will now be delivered as a two-year Masters of Occupational Therapy, the award will be amended to go to a student who completes the first year of the Masters program with high standing and who goes on to the second year of the program.

E.J. THOMAS PRIZES

Currently, one of these awards goes to a student who has completed the second year of the Bachelor of Medical Rehabilitation (Occupational Therapy) program. Starting in 2004, this award will go to a student who has completed at least the first year of the Masters of Occupational Therapy program. In addition, a third prize will be added, to be awarded to a student who has completed the second year of the Respiratory Therapy program. The available annual income from the fund will be divided equally among the three prizes. Finally, the selection committee will be the SMR (School of Medical Rehabilitation) Awards Committee with recommendations made by each Department Awards Committee. Previously, the selection committee was named by the Heads of the Departments.

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ALICE M. CHISHOLM BURSARIES

This award in the School of Medical Rehabilitation will undergo several amendments. First, the available annual interest is currently divided into two equal bursaries, whenever possible one in Occupational Therapy and one in Physical Therapy. Beginning with the fall 2004 bursary offers, the available annual interest will be divided into three equal bursaries with the third offered in Respiratory Therapy. Second, a representative of the Awards Committee of the Department of Respiratory Therapy will be added to the selection committee. Last, it will be made clear in the terms of reference that Occupational Therapy is a Master's level program.

JANE DAVIE MEMORIAL BURSARY

This bursary in the Faculty of Nursing was originally funded to offer an annual award for three years. Additional funding has been provided allowing the award to continue for an additional five years beginning with the 2004-2005 session and ending with the 2008-2009 session. One award of \$400 will be offered annually during the five year period after which the award will be withdrawn.

DUNCAN NORRIE MEMORIAL SCHOLARSHIP IN WATER RESOURCES

This graduate award in the Faculty of Engineering will undergo several amendments. First, the award is currently offered to a student in the final year of the undergraduate Civil Engineering program who plans to pursue graduate studies in the field of water resources engineering. Students currently enrolled in the first year of this graduate program will now also be considered. Students entering the graduate program who have completed their undergraduate degree at another institution will now also be considered with preference given to University of Manitoba graduates. The scholarship will not be awarded if a suitable candidate is not available in a given year. Finally, the statement "killed in Nepal" will be changed to "died in a plane crash in Nepal".

PROFESSIONAL INTERIOR DESIGNERS INSTITUTE OF MANITOBA SENIOR PROJECT PRIZE

This undergraduate award in the Department of Interior Design will undergo several amendments. First, the name of the award will be changed to the PROFESSIONAL INTERIOR DESIGNERS INSTITUTE OF MANITOBA PRACTICUM PRIZE. Second, in accordance with recent program changes, the award will now be offered at the graduate level to the graduating student in Interior Design who completed the most outstanding practicum project and report as judged by the faculty of the Department of Interior Design. Previously the prize was offered to the fourth-year undergraduate student who achieved highest standing in "Interior Design Senior Project".

PROFESSIONAL INTERIOR DESIGNERS INSTITUTE OF MANITOBA MEDAL

The terms of reference for this medal in the Department of Interior Design will undergo two amendments. First, in accordance with recent program changes, the award will now be offered to a graduate student. Second, the courses considered in determining highest standing will be changed to Professionalism and Practice (currently numbered 51.725) and The Business of

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Interior Design (currently numbered 51.726). The courses previously used were 51.301 and 51.401.

HONOURABLE KENNETH J. GALANCHUK Q.C., BURSARY IN LAW

A fourth selection criterion will be added to the terms of reference of this award. The award will only be offered to students who are residents of Manitoba or Creighton, Saskatchewan.

ANNE GRADY MEMORIAL BURSARY

This bursary in the Faculty of Education will undergo two amendments to bring the terms of reference in line with the current program. The bursary will now be offered to a student who is enrolled in the Faculty of Education in either the Early Years or Middle Years program and has completed the first year of study with a minimum grade point average of 3.0. Previously the terms indicated that the bursary would be offered to a student who completed the third year of the program with high standing and proceeded into the fourth year of the program.

MAXWELL STARKMAN SCHOLARSHIP IN ARCHITECTURE

This graduate award in Architecture will undergo several amendments. First, the award will now be offered to a student enrolled in the first or second year of the Master's program in any of the four graduate programs in the Faculty of Architecture. Initially, it was offered to a student enrolled in the pre-practicum year. Second, the intent of the award as a travel scholarship for scholarly research will be indicated. Last, several minor editorial changes will be made throughout the document (e.g., 'investigation' will replace 'research topic').

EDNA AND CARL BJARNASON BURSARY

The value of this graduate bursary in Icelandic Studies will be increased to \$200 (from \$100).

CMA - MANITOBA AWARD IN MANAGERIAL ACCOUNTING

At the request of the donor, the value of this award in the Asper School of Business will be changed to \$500 (from \$1,000).

MANITOBA FEED INDUSTRY ASSOCIATION SCHOLARSHIP

The name of this scholarship in the School of Agriculture will be amended to **ANIMAL NUTRITION ASSOCIATION OF CANADA (MANITOBA DIVISION) SCHOLARSHIP**.

ASSOCIATION FOR MANITOBA ARCHIVES THESIS PRIZE

This graduate prize will undergo several amendments. First, the name of the prize will be changed to **AMA THESIS OF DISTINCTION AWARD**. Second, the prize has been awarded to a Master of Arts student who completes and successfully defends the best thesis. This will be amended to a

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student who completes and successfully defends a thesis and receives a "passed with distinction" designation as granted by the examiners in that calendar year.

EDUCATION ALUMNI SCHOLARSHIP

This award in the Faculty of Education will undergo several changes. First, the scholarship will only be open to part- or full-time students continuing in the program (not entering students). Second, the minimum grade point average will be based only on courses completed in the Faculty of Education. Third, two new selection criteria will be added. The scholarships will be offered to students who actively participate in school and community activities and who demonstrate potential as educational leaders. Finally, a paragraph will be added outlining the application procedure including the submission of a resume and two letters of reference. The scholarships will be awarded in September at the Faculty of Education's Homecoming Event.

WITHDRAWAL

DR. JUDITH M. NEWMAN ENDOWED GRADUATE FELLOWSHIP IN SCIENCE

Funding for this graduate award in the Faculty of Science has not been available for several years. Therefore, it is necessary to formally note the withdrawal of the award.



UNIVERSITY
OF MANITOBA

Mr. J. Leclerc

Office of the President

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

January 28, 2004

TO: Deans of Faculties and Directors of Schools

FROM: Dr. Robert Kerr, Vice-President (Academic) & Provost

SUBJECT: APPOINTMENT: DR. MARK WHITMORE
DEAN, FACULTY OF SCIENCE

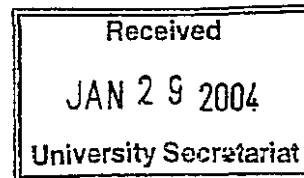
I am very pleased to advise you that at its meeting on January 27, 2004 the Board of Governors approved the appointment of Dr. Mark Whitmore as Dean of the Faculty of Science for a five year term effective July 1, 2004.

Dr. Mark Whitmore, Professor, Department of Physics and Physical Oceanography and Director, Computation and Visualization Centre, has served in various administrative positions including Associate Dean of Research for the Faculty of Science at Memorial University. He completed his PhD at McMaster University in 1978, returning to Memorial University that year as an Assistant Professor and since that time he has maintained continuous funding from NSERC. Dr. Whitmore's research focuses on the theoretical study of soft condensed matter physics and he relies heavily on high performance computers to facilitate his modeling/simulations. He has made significant contributions to the area of high performance computing in the Atlantic Region, serving on the Board of Directors of Genome Atlantic and C3.ca Association Inc. He has also taken a leading role in the development of ACENET (the Atlantic Computational Excellence Network) which is a seven University project with a notional budget in excess of \$30million. It is important to note that in addition to both his research accomplishments and his administrative expertise, Dr. Whitmore has also been recognized for his innovative approaches to teaching. He is committed to presenting students with programs that realistically reflect their needs and abilities, and has received teaching awards which attest to his success in this area.

Dr. Whitmore's experience and expertise will serve the Faculty and the University well as he assumes the Decanal responsibilities for the next five years. I look forward to working with him and I know that sentiment is shared by many in the University.

RK/sc

cc. Presidential Advisory Committee to Appoint Dean,
Faculty of Science
Dr. M. Whitmore





33

208 Administration Building
Winnipeg, Manitoba
Canada R3T 2N2
Fax (204) 275-1160

UNIVERSITY
OF MANITOBA

Office of the President

23 January 2004

To: Emőke J. E. Szathmáry, President

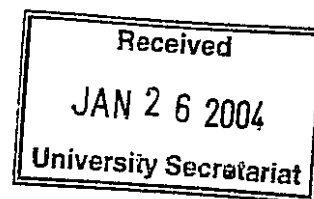
From: Richard A. Lobdell, Vice-Provost (Programs) *RM*

Re: Course and Program Changes Approved by Senate During 2003

Attached please find a table showing the number of course and program changes approved by Senate during the 2003 calendar year.

Encl

cc Robert Kerr, Vice-President (Academic) & Provost
Jeff Leclerc, Acting University Secretary



COURSE CHANGES (Half Course Units)

PROGRAM CHANGES

COURSE CHANGES (Half Course Units)				PROGRAM CHANGES			
CALENDAR YEAR	2003			CALENDAR YEAR	2003		
Faculty	Additions	Deletions	Modifications	Additions	Modifications	Deletions	
Agric. & Food Sc.	11	10	1		1		
Architecture	10	11	2				
Art	9	10					
Arts	94	80	47		11		
Continuing Education				2 - See Note (c)			
Dentistry	2		1				
Education	5		2				
Engineering	17	8	6		3		
Environment							
Grad. Stds. Interdisc.		10					
Human Ecology	2	2	2		5		
Law	2	5					
Management	3		2	2 - See Note (b)			
Medical Rehab.							
Medicine	11	3	2				
Music	21	12	1	1 - See Note (d)			
Nat. Res. Inst.	2						
Nursing	3	3					
Pharmacy	1						
Phys. Ed. & Rec. Stds.	1	23					
Science	8	8	18		5		
Social Work							
"Other"				1 - See Note (a)			
TOTALS	202	185	84	6	25	0	

Notes:

- (a) Certificate in University and College Administration, offered by CHERD
 (b) MSc Management; Modification of CUSB's Bachelor of Business Administration
 (c) New Certificates in: Applied Behaviour Analysis; Applied Management (Records and Information Management)
 (d) Post-Baccalaureate Diploma in Music



UNIVERSITY
OF MANITOBA

OFFICE OF THE
VICE-PRESIDENT (RESEARCH)

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www.umanitoba.ca/vpresearch

January 26, 2004

TO: Mr. Jeff LeClerc, Acting University Secretary
FROM: Joanne C. Keselman, Vice-President (Research)
RE: Report on Research Contracts Received

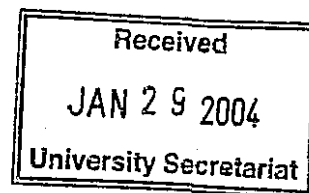
For the information of Senate, attached please find a Report on Research Contracts Received for the period of July 1 to December 31, 2003.

With respect to the report, I would like to note that a legend is provided at the end of the report for abbreviations used for the names of sponsors.

Thank you.

/tt
attach.

c.c. Mr. A. Simms, Executive Director, Commercialization and Research Services



RESEARCH CONTRACTS RECEIVED

JULY 1 - DECEMBER 31, 2003

FACULTY/NAME	SPONSOR	RECEIVED	TITLE
AGRICULTURAL & FOOD SCIENCES			
KIM B. Y. R.	GENOME CDA	25,000	CONSUMER PREFERENCES REGARDING GENETICALLY MODIFIED CANADIAN WHEAT IN EXPORT MARKETS
MANN D. D.	MAN CONSERVATION	16,500	MODELLING THE TASK OF OPERATING AN AGRICULTURAL SPRAYER (SDIF)
LEWIS N. J.	US NAT'L PORK BOARD	66,685	THE EFFECTS OF SPACE ALLOWANCE AND SEASON ON THE WELFARE OF EARLY WEANED PIGLETS UNDER COMMERCIAL AND EXPERIMENTAL TRANSPORT CONDITIONS
HOLLEY R. A.	BEEF INFO CENTRE	7,144	EFFECT OF IRRADIATION UPON COOKED MEAT ENDPOINT COLOUR
HYDAMAKA A. W.	SWEET ALTERNATIVE DESSERT	4,200	RESEARCH AND DEVELOPMENT IN THE FORMULATION OF CAKE RECIPES FOR TARGET GROUPS INCLUDING DIABETES AND DIETARY ISSUES
ENTZ M. H.	MAN AGRICULTURE	10,000	GLENLEA LONG-TERM CROP ROTATION STUDY: PERFORMANCE OF ORGANIC FLAX AND OATS IN THREE DIFFERENT CROPPING SYSTEMS
FRISTENSKY B.	GENOME CDA	33,332	AN INTEGRATED AND DISTRIBUTED BIOINFORMATICS PLATFORM FOR GENOME CANADA
VAN ACKER R.	GOVT OF CDA	20,000	THE EXAMPLE OF SUCCESS: CREATING INSPIRATIONAL EDUCATIONAL CASE STUDIES OF SUCCESSFUL RURAL ENTERPRISES IN MANITOBA (CDN AGRICULTURAL RURAL COMMUNITIES INITIATIVE (CARCI))
BULLOCK P. R.	MAAS/ARDI	36,258	METEOROLOGICAL STANDARDIZATION OF CROP VARIETY TRIALS (MANITOBA SEED GROWERS)
LOBB D. A.	QUEEN'S UNIV	16,667	LANDSCAPE SCALE CROPPING SYSTEM NETWORK
ARTS			
BUTEUX P. E.	DND	100,000	MILITARY & STRATEGIC STUDIES PROGRAM
FERGUSSON J. G.	DND	25,000	AEROSPACE POWER FORUM 2003: BEYOND ONE HUNDRED YEARS OF THEORY AND PRACTICE

RESEARCH CONTRACTS RECEIVED

JULY 1 - DECEMBER 31, 2003

FACULTY/NAME	SPONSOR	RECEIVED	TITLE
MARTIN D. G.	CHILD & FAMILY SERV WPG	85,200	COMMUNITY RESOURCE CLINIC
URSEL E. J.	JUSTICE CDA	64,320	AN EVALUATION OF "INDAWIN OUR PLACE" PROJECT OF NEW DIRECTIONS
SCIENCE			
PIERCEY-NORMORE	PARKS CDA	5,000	BOTANICAL SURVEY OF WAPUSK NATIONAL PARK OF CANADA WITH SPECIAL REFERENCE TO COASTAL REGIONS
GRAHAM P. C.	CAJA ASSOCIATION INC	6,750	SUPPORT FOR HIGH PERFORMANCE COMPUTING RESEARCH AT THE UNIVERSITY OF MANITOBA
YURKOV V.	PARKS CDA	19,000	MICROBIAL STUDIES - THERMAL SPRINGS, BANFF NATIONAL PARK
PAGE J. H.	CDN SPACE AGENCY	74,710	VISCOSITY AND DYNAMICS OF SUSPENSIONS OF NON-BROWNIAN PARTICLES AND BUBBLES IN A MICROGRAVITY ENVIRONMENT
ENVIRONMENT			
BAYDACK R. K.	PARKS CDA	8,100	MOVEMENTS OF WOLVES IN THE RIDING AND DUCK MOUNTAIN REGIONS OF MANITOBA
BERKES F.	DFO	18,000	INTEGRATED MANAGEMENT, COMPLEXITY AND DIVERSITY OF RESOURCE USE
BERKES F.	IDRC	19,900	MANAGING SMALL-SCALE FISHERIES IN THE CARIBBEAN
BERKES F.	IDRC	25,000	BERKES/CRC-CFI, CENTRE FOR COMMUNITY-BASED RESOURCE MANAGEMENT
HENLEY T. J.	DFO	20,000	DEVELOPMENT OF A COMMUNITY CLIMATE CHANGE ACTION PLAN FOR ARVAT NT (COASTAL ZONE MANAGEMENT)
SINCLAIR A. J.	MAN CONSERVATION	8,500	ASSESSING THE APPLICATION OF ALTERNATIVE TRANSPORTATION FUELS (SDIF)
SHERRIFF B. L.	MAN CONSERVATION	2,500	TAILINGS IN NOPMING PARK: A UNIQUE OPPORTUNITY FOR RESEARCH INTO THE REACTIONS WITHIN GOLD MINE TAILINGS IN MANITOBA (SDIF)

RESEARCH CONTRACTS RECEIVED

JULY 1 - DECEMBER 31, 2003

<i>FACULTY/NAME</i>	<i>SPONSOR</i>	<i>RECEIVED</i>	<i>TITLE</i>
SHERRIF B. L.	MAN CONSERVATION	45,000	GEOCHEMICAL EVOLUTION OF RUTAN TAILINGS (SDIF)
HALLMAN B. C.	UNIV OF GUELPH	9,188	THE IMPACT OF LONG TERM CARE PATIENT CLASSIFICATION SYSTEMS ON RURAL WOMEN FRONT-LINE WORKERS IN SELECTED NURSING HOMES IN ONTARIO AND MANITOBA
MCLACHLAN S. M.	PARKS CDA	26,000	ELK MOVEMENT AND THE RELATIONSHIPS WITH AGRICULTURE IN THE RIDING MOUNTAIN BIOSPHERE RESERVE AREA
<i>I H ASPER SCHOOL OF BUSINESS</i>			
PRENTICE B. E.	CITY OF WPG	45,000	COORDINATING THE PHASE 2 PROCESS FOR WINSMART: WORKPLAN
PRENTICE B. E.	EC	19,500	RAILWAYS AND THE ENVIRONMENT WORKSHOP
PRENTICE B. E.	MAN HWYS & GOVT SERVICES	200,000	CONSULTING SERVICES MASTER CONTRACT
PRENTICE B. E.	WED	10,000	2ND ANNUAL AIRSHIPS TO THE ARCTIC SYMPOSIUM
<i>DENTISTRY</i>			
SUZUKI M.	MINNESOTA MINING & MFG	3,081	CLINICAL EVALUATION OF A NEW UNIVERSAL COMPOSITE RESIN (3M ESPE) AS A POSTERIOR RESTORATIVE MATERIAL
SUZUKI M.	3M USA	1,327	CLINICAL EVALUATION OF A NEW UNIVERSAL HYBRID COMPOSITE RESIN (3M) AS A POSTERIOR RESTORATIVE MATERIAL
<i>EDUCATION</i>			
LEVIN B. R.	ORG ECONOMIC CO-OP DEV	4,000	RAPPORTEUR OF THE OECD CONFERENCE. CO-FINANCING LIFELONG LEARNING
MASON R. T.	WED	5,000	SEVENTH INTERNATIONAL HISTORY, PHILOSOPHY AND SCIENCE TEACHING CONFERENCE

RESEARCH CONTRACTS RECEIVED

JULY 1 - DECEMBER 31, 2003

FACULTY/NAME	SPONSOR	RECEIVED	TITLE
ENGINEERING			
CLAYTON A. M.	MAN CONSERVATION	11,250	A SURVEY OF HEAVY TRUCK FUEL CONSUMPTION IN MANITOBA
CLAYTON A. M.	MAN HIGHWAYS & TRANSPORT	84,000	TRAFFIC INFORMATION SYSTEM
CLAYTON A. M.	MAN HWYS & GOVT SERVICES	4,000	TRUCK TRAFFIC INFORMATION SYSTEM
MCCARTNEY D. M.	PROVINCE OF MAN	18,000	INSTITUTIONAL ORGANIC WASTE MANAGEMENT AND COMPOSTING (WRAP)
SHALABY A.	MAN HWYS & GOVT SERVICES	4,500	REVIEW OF AUTOMATED PAVEMENT CONDITION DATA QUALITY AND CONSISTENCY
GOLE A. M.	HYDC RES CTR	1,456	THE USE OF TRANSIENT SIMULATION AS AN OPTIMIZATION OBJECTIVE FUNCTION
NATERER G. F.	GKN WESTLAND HELICOPTERS	130	PREVENTING IN-FLIGHT ICING AND FLOW BLOCKAGE AT A HELICOPTER ENGINE INLET
HUMAN ECOLOGY			
WATTS B. M.	NORTH SOUTH CONSULTANTS	7,280	FISH TASTE STUDIES AT SPLIT LAKE
WATTS B. M.	NORTH SOUTH CONSULTANTS	7,280	FISH TASTE STUDIES AT GILLAM
WEILER H. A.	INTL LIFE SCIENCES INST	5,560	DOES CONSUMPTION OF DIETARY LONG CHAIN POLYUNSATURATED FATTY ACIDS (LC PUFA) EARLY IN LIFE PROGRAM FOR SUBSEQUENT GROWTH AND BONE MASS?

RESEARCH CONTRACTS RECEIVED

JULY 1 - DECEMBER 31, 2003

FACULTY/NAME	SPONSOR	RECEIVED	TITLE
MUTCH W. A. C.	BIOVAR LIFE SUPPORT INC	40,000	BIOLOGICALLY VARIABLE LIFE SUPPORT SYSTEMS: EFFECTS OF BREATH VARIABILITY IN TIDAL VOLUME AND RATE ON INTRAPULMONARY SHUNT AND EFFICIENCY OF GAS EXCHANGE IN A PIG
LEYGUE E.	US ARMY	29,793	MAMMAGLOBIN AND LIPOPHILIN RELATED MOLECULES IN NORMAL AND TUMOR HUMAN BREAST TISSUE: EXPRESSION, HORMONE REGULATION AND FUNCTIONAL ANALYSIS
MURPHY L. C.	US ARMY	32,239	THE ROLE OF ESTROGEN RECEPTOR-BETA IN THE REGULATION OF THE MITOTIC APPARATUS
YE J.	NRC	51,431	BRAIN PROTECTION WITH RETROGRADE CEREBRAL PERFUSION DURING HEART SURGERY REQUIRING HYPOTHERMIC CIRCULATORY ARREST
SEHON A.	AVENTIS BEHRING	108,932	GENE THERAPY A1: UNIVERSAL THERAPY FOR IGE-MEDIATED ALLERGIES & ASTHMA BY INACTIVATION OF MAST CELLS A2: CONVERSION OF HUMAN FACTOR VIII (HFVIII) TO ITS TOLEROGENIC DERIVATIVE
HERSHFIELD E.	HHS-PHS	20,683	TUBERCULOSIS EPIDEMIOLOGIC STUDIES CONSORTIUM TASK ORDER #1
BRUNHAM R. C.	UNIV OF WASHINGTON	143,103	CHLAMYDIA AND GONOCOCCAL INFECTION: IMMUNOBIOLOGY IN THE FEMALE REPRODUCTIVE TRACT
MCCLARTY G. A.	UNIV OF TENNESSEE	75,000	CHLAMYDIA TRACHOMATIS GENITAL FLORA AND STD PATHOGENESIS
MOSES S.	CIDA	943,320	REGIONAL AIDS TRAINING NETWORK DEVELOPMENT PROJECT
MOSES S.	UNIV OF ILLINOIS	127,257	A RANDOMIZED, CONTROLLED TRIAL OF MALE CIRCUMCISION TO REDUCE HIV INCIDENCE IN KISUMU, KENYA
MOSES S.	UNIV OF WASHINGTON	20,000	PREPARATORY AIDS VACCINE EVALUATION STUDIES
BIRK P. E.	WYETH-AVERST RESEARCH	84,243	FIBROGENIC AND FIBROMODULATING EFFECTS OF IMMUNOSUPPRESSANTS IN EXPERIMENTAL CHRONIC ALLOGRAFT NEPHROPATHY
LAW B. J.	GLAXO SMITHKLINE	138,313	A PHASE IIB, OBSERVER-BLIND, RANDOMIZED, MULTICENTER, ACTIVE ACOMPARTATOR STUDY TO EVALUATE THE SAFETY AND IMMUNOGENICITY OF A BOOSTER DOSE OF DTPA-IPV/HIB AT 18 MONTHS OF AGE...AVENTIS PASTEUR'S PENTACEL
LAW B. J.	MED IMMUNE INC	37,400	PILOT STUDY TO DESCRIBE INCIDENCE RATE AND CLINICAL FEATURES OF HUMAN METAPNEUMOVIRUS (hMPV) INFECTION OF THE LOWER RESPIRATORY TRACT IN HOSPITALIZED CHILDREN AT HIGH RISK FOR SEVERE DISEASE
LAW B. J.	MERCK FROSST	2,010	SAFETY, TOLERABILITY AND IMMUNOGENICITY OF FOUR DIFFERENT FORMULATIONS OF LIQUID HEXAVALENT COMBINATION VACCINE
TABACK S. P.	ELI LILLY	7,469	THE GENETICS AND NEUROENDOCRINOLOGY OF SHORT STATURE INTERNATIONAL STUDY

RESEARCH CONTRACTS RECEIVED

JULY 1 - DECEMBER 31, 2003

FACULTY/NAME	SPONSOR	RECEIVED	TITLE
TABACK S. P.	HOFFMANN-LA ROCHE LIMITED	2,079	GENENTECH NATIONAL COOPERATIVE GROWTH STUDY
TABACK S. P.	JOHN ROBARTS RES INST	41,823	TRIAL TO REDUCE IDDM IN TYPE 1 DIABETES IN THE GENETICALLY AT RISK - TRIGR
GLETZ R. D. H.	PFIZER INC (USA)	3,389	RAPID METHOD FOR PRODUCTION OF GENE DELETION CONSTRUCTS
WATSON P. H.	US ARMY	48,928	STROMAL HYPOXIA IN BREAST CANCER PROGRESSION
LAUTT W. W.	DIABEX INC	309,091	DEVELOPMENT OF THERAPY FOR DIABETES
NAGY J. I.	COLORADO STATE UNIV	57,689	CONNEXINS IN NEURONAL AND GLIAL GAP JUNCTIONS IN CNS
MIGNONE J. J.	HEALTH CDA	29,270	MENTAL HEALTH SERVICES REVIEW
ONEIL J. D.	HEALTH CDA	397,862	EVALUATION OF FIRST NATIONS AND INUIT HEALTH SERVICES TRANSFER POLICY
RESTALL G.	MAN HEALTH	10,000	USER PARTICIPATION IN PLANNING AND EVALUATING MENTAL HEALTH SERVICES: BUILDING SYSTEM CAPACITY IN RURAL MANTOBA
SOCIAL WORK			
HIEBERT-MURPHY	FIRST NATION SOC OF CDA	61,018	SUPPORTING ABORIGINAL CHILDREN AND YOUTH WITH LEARNING AND BEHAVIOURAL DISABILITIES IN THE CARE OF ABORIGINAL CHILD WELFARE AGENCIES
PHARMACY			
BURCZYNSKI F.	HOWARD SMITH & ASSO	5,096	HEPATOPROTECTION OF DILTIAZEM
GU X.	ABRIKA PHARMA	32,760	DETERMINATION OF THE RATE AND EXTENT OF ABSORPTION OF EPINEPHRINE FOLLOWING SUBLINGUAL ADMINISTRATION IN AN ANIMAL MODEL
ZELENITSKY S.	BAYER INC	30,000	CIPROFLOXACIN PHARMACODYNAMICS AND CLINICAL OUTCOME: THE OPTIMAL TREATMENT OF SERIOUS BLOOD STREAM INFECTIONS

RESEARCH CONTRACTS RECEIVED

JULY 1 - DECEMBER 31, 2003

FACULTY/NAME	SPONSOR	RECEIVED	TITLE
PHYS. EDUC & RECRTN. STUDIES GIESBRECHT G.	GESAC, INC	15,405	EFFECT OF DORSAL HEAD COOLING ON TOTAL BODY HEAT LOSS AND COGNITION
NURSING CHALMERS K. I.	WRHA	38,137	PROPOSAL FOR AN INTERPRETIVE EVALUATION OF THE BABYFIRST PROGRAM
DEGENER L. F.	US ARMY	87,538	PERCEPTION OF RISK AND SURVEILLANCE PRACTICES FOR WOMEN WITH A FAMILY HISTORY OF BREAST CANCER
GRADUATE STUDIES SMYTH D. D.	NRC	73,900	THE CANADIAN JOURNAL OF PHYSIOLOGY AND PHARMACOLOGY - TO RUN THE EDITORIAL OFFICE
FAMILY VIOLENCE CENTRE PROULX J. B.	CITY OF WPG	14,706	AN EVALUATION OF THE FAMILY VIOLENCE INTERVENTION TEAM
ADMINISTRATION-SPECIFIC JAYAS D. S.	WED	200,000	CONTRIBUTION AGREEMENT FOR PROPOSAL DEVELOPMENT COSTS FOR CFI - INNOVATION FUND 2003 COMPETITION
JAYAS D. S.	WED	30,600	CONTRIBUTION AGREEMENT FOR PROPOSAL DEVELOPMENT COSTS FOR CFI-NEW OPPORTUNITIES FUND
KESELMAN J.	WED	370,500	ESTABLISHING A BUSINESS INCUBATOR AT THE UNIVERSITY OF MANITOBA SMARTPARK
TOTAL		4,950,292	

Sponsor Legend

Abbreviation	Complete Name
ARDI	Agriculture Research Development Initiative
CIDA	Canadian International Development Agency
DFO	Department of Fisheries & Oceans
DND	Department of National Defence
EC	Environment Canada
HHS-PHS	US Health and Human Services - Public Health Service
HVDC Res Ctr	High Voltage Direct Current Research Centre
IDRC	International Development Research Centre
MAAS	Manitoba Association of Agricultural Societies Inc.
NRC	National Research Council
SDIF	Sustainable Development Innovation Fund
WED	Western Economic Diversification
WRHA	Winnipeg Regional Health Authority
WRAPP	Waste Reduction and Pollution Prevention

Report of the Senate Committee on Academic Computing regarding IST Building Cabling Priorities

Preamble

1. The Terms of Reference of the Committee on Academic Computing (SCACOM) are found in section 8.9 of the Senate Handbook.
2. The Terms of Reference for the Committee state that SCACOM's objectives include:
 - "1. To provide advice and make recommendations to Senate regarding:*
 - (a) the University's general policies relating to the development and use of computing and networking in instruction and research;*
 - (b) prioritizing support for the development and delivery of computing and network services; and*
 - (c) computer services policies and their effect on faculty and students;*
 - 2. To receive and consider periodic reports from any Advisory Committees established by Computer Services or any other body concerning computing and networking in respect to instructional and research activities at the University and report thereon to Senate with comments and/or recommendations as appropriate."*
3. Further to the report of the Senate Committee on Academic Computing on "A Discussion Paper on Information Technology at the University of Manitoba" submitted to Senate October 3, 2002, SCACOM stated it was "willing to participate in consultations respecting priorities for network building upgrades."

Observations

1. SCACOM met on November 17, 2003 to review the IST, Classroom Services report "Classroom Upgrading Criteria - 2003-2004" and the report, "Building Cabling Ranking".
2. IST has begun a program to upgrade the computer cabling of buildings on both campuses of the University. It is currently estimated that the total capital cost is on the order of \$10 million, which means the program will require many years to complete. Accordingly, IST has devised a method to prioritize buildings for computer cable upgrading.

Nine variables have been identified for this purpose, and each has been assigned a weight for purposes of aggregation. These variables fall into three groups, as follow:

Direct Measures of Computer Use

- Volume of Backbone Traffic (Weight = 9)
- Extent of Computing Labs and Libraries (Weight = 7)
- Number of Teaching Spaces (Weight = 7)
- Number of People in Building (Weight = 3)

IST Evaluation of Building Readiness

- Health of the Building Network (Weight = 9)
- Readiness to Upgrade (Weight = 8)
- Anticipated Network Growth (Weight = 6)

IST and Research Services Evaluations

- High Bandwidth Specialized Needs (Weight = 8)
- Extent of Research Dependent on Network (Weight = 7)

Annually, and if necessary more frequently, IST values these nine variables and computes a weighted score for each University building. Buildings are prioritized on the basis of these weighted scores, and the number of cabling upgrades in any given year then depends on available budget.

3. SCACOM accepts that the University's finances require IST to prioritize building cabling upgrades. The Committee concludes that IST's current system of assigning priorities for building cabling upgrades is rational and satisfactory. The Committee will review this system annually.
4. An updated list of building cabling priorities will be brought to SCACOM in the spring.
5. This report is for the information of Senate only.

Respectfully submitted,

Dr. Richard Lobdell, Chair
Senate Committee on Academic Computing

/lrj

February 18, 2004

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* (revised 2000).
2. The Senate Executive Committee held its regular meeting on February 18, 2004

Observations

1. **Speaker for the Senate Executive Committee**

Professor G.N. Ramu will be the Speaker for the Executive Committee for the March 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. Robert Kerr, Acting Chair
Senate Executive Committee

Terms of Reference: *Senate Handbook* (revised 2000), Section 7.

/jml

Report of the Programs and Planning Committee of the Faculty of Graduate Studies on graduate program proposals.

Preamble

The Programs and Planning Committee (PPC) of the Faculty of Graduate Studies (FGS) has the responsibility of reviewing new graduate programs and makes recommendations to FGS Council. PPC met on September 15, 2003 and made the following recommendation regarding the proposal of a Master of Environment program.

Observations

1. The Master of Environment program would allow students to pursue graduate education in the field without having to leave the province.
2. The external review committee endorsed the proposed program, concluding that ... "the (Environment) program has considerable merit and will afford a great opportunity for faculty and students alike to pursue new and interesting academic matters".
3. The Library Support Statement indicated that the Libraries can support the proposed program, but added that a further strengthening of the monograph collection is recommended. The additional resources would require additional baseline funding.
4. The proposal received support statements from The Faculty of Environment, Student Records, IST, and units delivering courses outside of the program.

Recommendation

The Programs and Planning Committee of the Faculty of Graduate Studies recommends that the Faculty Council of Graduate Studies approve the Master of Environment Program proposal.

Approved by the Faculty Council of Graduate Studies November 13, 2003

A. PROGRAM DESCRIPTION

1. Rationale, Objectives, Features, and Place of Degree

1.1 Rationale

The environment has been of growing concern to governments, non-governmental agencies, industry, and the general public for most of the last century. In response to this trend, the University of Manitoba established a breadth of courses and programs related to natural resources and the environment. These program and course developments were paralleled by tremendous growth in environmental research and service, conducted by faculty members and students in a number of academic units.

The University of Manitoba has identified a number of thrust areas of research and research training including environment. Some of the organized areas of research expertise that have been identified are earth materials; applied geography; sustainable environments/natural resource management; biodiversity/bioremediation; and environmental adaptation. Environmental research is being conducted widely on campus, in the Faculties of Agriculture and Food Sciences, Architecture, Arts, Engineering and Medicine, Physical Education and Recreation Studies, Science and the Natural Resources Institute.

The manner in which this University provides environmental education has been somewhat atypical when compared to many other institutions. At the graduate level, for example, we have only two programs that have the environment as their primary focus (Master of Natural Resources Management (MNRM) and PhD in Environment and Resources). There is, however, a wealth of content related to the environment in courses offered in a variety of programs in which the main program focus is something other than the environment. There is a need and an opportunity to provide a research-based master's degree which is clearly an "environmental" degree and which follows undergraduate academic preparation in either environmental science or environmental studies.

It should be noted that, while the MNRM is a broad-based program, it was never intended to be a degree that typically would be pursued following undergraduate preparation in either environmental science or environmental studies. The myriad of graduate courses relating to the environment – courses that are currently offered in other disciplines for programs that do not have an environmental focus - are entirely appropriate to a graduate program that focuses on study and research in the environment. These courses, along with their *General Calendar* descriptions, are listed in Appendix A.

This proposal is to implement a Master of Environment (MEnv) that will be primarily dependent on existing courses in wide variety of academic units. This will obviate the need to design and introduce new courses and also will prevent duplication and overlap of existing courses and programs. Only one new course is required to launch the program.

The program will focus on basic and applied research that deals with the complex relationships of the environment, including the Earth, its resources, and society at large. Clearly, much of this research will have relevance to policy development as well as to issues relating to the management of the environment and its resources.

1.2 Objectives

Specific objectives of this proposal are to :

1. promote broad-based, interdisciplinary work on environmental issues;
2. improve coordination of environmental course offerings at the graduate level;
3. create opportunities for greater interaction among students and faculty from different disciplinary backgrounds;
4. ensure graduates with undergraduate degrees in Environmental Science and Environmental Studies can continue their studies without leaving Manitoba.
5. ¹

1.3 Novel and Innovative Features

There are three novel and innovative features of this program. First, the program can be fully implemented with the addition of only one three-credit hour (3CH) course. This is possible because there are approximately 80 'environment' courses currently offered in academic units that are entirely appropriate for inclusion in the MEnv degree (See Appendix A). To develop new courses in these areas would be irresponsible, as this would duplicate existing efforts.

Second, the environment program allows students to work in interdisciplinary and multidisciplinary settings, including the flexibility to take courses in a range of departments. This is not true of most graduate programs at the University of Manitoba, but is in keeping with the interdisciplinary nature of the environment. This means that students in the MEnv program will be exposed to other disciplines and, at the same time, will bring their environmental perspective to other disciplines.

While interdisciplinary study is currently possible through the Faculty of Graduate Studies, the creation of a new, structured degree in Environment will:

- ❖ Solidify the reputation of the University of Manitoba as a centre of environmental research by aggregating the existing resources into a cohesive offering;
- ❖ Increase our ability to access a variety of funding opportunities specifically oriented to interdisciplinary work by promoting collaboration among faculty and students from across campus;
- ❖ Promote graduate student enrollment by giving the expertise available on campus visibility through marketing; and
- ❖ Provide consistency in terms of rigor and content, as well as enriching interdisciplinary study through the provision of a core seminar-based course.

Finally, the Faculty of Environment will also support efforts to "green" the University of Manitoba campus. Current initiatives, including recycling programs and the shuttle bus to Bannatyne Campus, can be augmented by such initiatives as water conservation, energy efficiency, waste minimization and green procurement. Some Masters students are

1. Note that objective 5 (promotion of an environmentally responsible campus) from previous proposals has been deleted as it does not relate to the Master of Environment proposal per se, but rather to the Faculty of Environment in general.

1.4 Place of the Proposed Degree in the Faculty of Environment

The Faculty of Environment was established by a motion from the University of Manitoba Senate in December 2001, and formally approved by the University Board of Governors in January 2002.

As a result of the motion, the Faculty of Environment became functional in July 2002 in a transitional fashion, with a fully functioning, new Faculty in place on July 1, 2003. An interim Dean (Wendy Dahlgren) was appointed for the period July 2002-June 2003, and a search process for a Founding Dean was initiated, with Leslie King emerging as the Founding Dean of the Faculty. Faculty of Environment Council was formally established in Fall 2002, with bylaws developed to establish governance procedures. A Faculty Executive Committee was established, and regular meetings were held throughout the winter and spring academic terms of 2002-03. In an effort to enhance participation of faculty, staff, and students interested in the new Faculty, full-day retreats were held in November 2002 and February 2003. These retreats resulted in the formation of two Working Groups, one to develop guiding principles for the new Faculty, and another to recommend an organizational structure.

In April 2003, Faculty of Environment Council met and considered the recommendations from the Working Groups. The following motions were approved at the April 24, 2003 Faculty Council meeting.

Motion 1 - J. Oakes (on behalf of Executive Committee). That the Noble Purpose, Mission, and Vision statements for the Faculty of Environment be approved, as amended.

Carried (Unanimous)

NOBLE PURPOSE

(To be finalized in 2 years)

Our noble purpose is to contribute to understanding the changing Earth, environment, and human condition and to disseminate and apply this knowledge for the benefit of the present and future.

MISSION

(To be reviewed every 3 or 4 years)

Our mission is to create an intellectual community conducive to becoming a premiere teaching and research faculty in the broad areas of Earth, environment, sustainable development, resources and human activities. We will accomplish this by using the unique synergies of our inter-dependent disciplines; by developing academic programs that respond to the needs of students, changing societal conditions, and worldviews; and through opportunities for research and outreach.

VISION

(To be reviewed every 3 or 4 years)

Our vision is to be a faculty of outstanding merit in teaching, research and outreach concerned with complexities of the Earth, environment, sustainable development, resources, and human activities.

Our aim is to be a faculty that:

- is recognized for graduates with the skills, competencies, and knowledge required by the needs of society;
- promotes individual excellence and collaboration in research, teaching, and outreach;
- is recognized for community engagement and leadership;
- promotes ethical principles and diversity, and an understanding of cultural issues; and
- has the resources required to facilitate the pursuit of our mission.

Motion 2 - R. Baydack (on behalf of the Executive Committee). That the organizational structure of the Faculty of Environment, as amended, be recommended to Senate for approval.

Carried (0 opposed, 2 abstentions)

ORGANIZATIONAL STRUCTURE

Following review of the report of the Structures Working Group dated March 13, 2003, consideration of the feedback received on the report, and recognizing that self-determination of each unit's organizational structure is the preferred approach in establishing our new Faculty of Environment, the Faculty Council approved the following motion, which was unanimously passed at Senate on September 3, 2003:

That the organizational structure of the Faculty of Environment consist of:

- A new Department, to be named* as soon as possible in 2003, which will include members from the Department of Geography and from the Environmental Science Program, and from other units of the University of Manitoba who are interested in joining, with a Head reporting to the Dean of the Faculty;
- The current Department of Geological Sciences, with others from other units of the University of Manitoba who are interested in joining, with a Head reporting to the Dean of the Faculty;
- The current Natural Resources Institute, with others from other units of the University of Manitoba who are interested in joining, with the Director reporting to the Dean of the Faculty.

* (Since the Departmental name has not yet been determined, the Vice-President (Academic) and Provost, is recommending that in the interim and without prejudice, the Department shall be referred to as the Department of Environment and Geography. - July 17, 2003)

Meetings among members of the Department of Environment and Geography have taken place over the past few months in order to develop plans for implementing the new unit and addressing requirements for space and other needs. The new Department will be housed in the Isbister Building for the 2003-04 academic, occupying the space of the

former Geography Department, as well as additional space being granted by the Faculty of Arts. Plans for consolidation of the Faculty and new Department into other space occupied in the Wallace and Sinnott Buildings are underway. Additional space for the Faculty of Environment is being considered over the longer term by the University Space Committee, either through provision of additional floors to the Wallace Building and/or creation of a new Environment building.

Academically, the 'place' of the Master of Environment degree in the Faculty of Environment is clear with the development of the Department of Environment and Geography. The Faculty of Environment will be offering a number of Master's degree programs in the three departments that have been defined as described above. The new Department will be the academic 'home' for the interdisciplinary Master of Environment degree, as well as the existing Master of Arts (Geography) degree. In addition, the new Department will be proposing a new Master of Science (Geography) degree program in the next few months. This will effectively provide three options for graduate students:

- 1) interdisciplinary Master of Environment (i.e., this proposal)
- 2) social-science based Master of Arts (Geography) (i.e., existing degree), and
- 3) physical-science based Master of Science (Geography) (i.e., to be proposed).

The faculty complement for the new Department will initially number upwards of 20 FTE. In addition, the Faculty of Environment provided a request through the University's Strategic Initiatives Process for 6 FTE tenure-track appointments to be effective as soon as possible. If those appointments are granted, most are likely to be affiliated in some fashion to the new Department, and therefore able to provide academic support to Master of Environment candidates. In addition, any faculty member from the Faculty of Environment will be able to serve as primary advisor for M Env students. Selection of advisors will be done by students in consultation with members of the Faculty.

The initial support staff complement within the Department will be 4 FTE. The graduate secretary for the former Geography Department, to be assisted as needed by an additional support staff, has been designated as the support staff person responsible for the proposed Master of Environment degree. In addition, the Faculty of Environment has hired three support staff in the Faculty-based Student Services area, consisting of a Coordinator, Student Advisor, and Office Assistant, all of whom will be available to assist in administration of the proposed degree.

2. Context

2.1 Need for the Program

There are three reasons why implementation of a Master of Environment degree at the University of Manitoba is essential. The first is to provide opportunities for our own students to pursue graduate education without having to leave the Province. We now have, annually, about 25 graduates from the Bachelor of Environmental Sciences program. Further, in a few years, we forecast a similar number graduating from the Bachelor of Environmental Studies program. While some of these graduates will elect to pursue graduate work elsewhere, there are many who want to at least begin their graduate education at the University that first fueled their interest in studying environmental issues and concerns. The last formal survey of the Environmental Science Program alumni regarding graduate studies in 1996 indicated that approximately 50% of respondents were completing or had completed graduate studies. Informal inquiry indicates that, over the last 5 years, 20 individuals who pursued graduate studies in the environment at other institutions would have entered a program at the University of Manitoba had one been available. A 2002 survey of current Environmental Science students (92 responses) indicated that 51% are interested or very interested in graduate studies. The majority of these students also indicated either a preference to stay at University of Manitoba for their Masters (53%) or a neutral opinion as to where they study (33%).

The second reason for establishing the new program relates to opportunities for graduate education in the environment in Canada, and particularly in the Prairie Provinces. In general, there are few opportunities for students to pursue environmental graduate work in a broad, interdisciplinary sense, in Canada. In the Prairies, opportunities are almost non-existent. To illustrate the difficulty in identifying graduate programs in Canada, one need only surf the University of Toronto Institute for Environmental Studies website (Appendix B), designed to list all 'environmental' programs in Canada. Confusion is primarily caused by:

- Many 'environmental' programs are embedded in other academic units, such as management, agriculture, and economics.
- Programs, such as the RESR (Resources and Environment Program) at Calgary, are listed as 'environmental programs' but are not structured programs. At both Calgary and UBC, for example, these programs are individually designed interdisciplinary programs.
- The units offering the programs and the graduate program criteria are difficult to identify. An example is the University of Toronto Collaborative programs, where a variety of degree designations with a variety of program requirements are lumped together under the umbrella term "Collaborative Programs".

Across Canada then, only UNBC, York, and Waterloo have graduate degrees that clearly have the environment as their primary focus. None of these has the degree designation "environment" without a qualifier (*i.e., studies, science*), potentially limiting the scope of interdisciplinary study.

The third reason for implementing a Master of Environment degree is related to the need for environmental practitioners in Canada. According to the Canadian Council on Human Resources in the Environment Industry (CCHREI), the environment industry is one of the top five employers in Canada, and the industry is growing "by leaps and bounds" (p4). In 1999, the last year for which complete data is available, there were approximately 4200 vacant environmental positions in Canada. As Manitoba accounts for 7% of environmental positions, it can be estimated that there are about 300 new environmental positions annually. Their work also revealed that, with the exception of one year, demand for environmental practitioners had been steady for over a decade. Further, a survey of the environment industry in 1998 found that 82% of those surveyed utilized environmental consultants because they were unable to fill vacant positions. And finally, of the 221,000 environmental practitioners in Canada, 109,000 have either a university degree or college diploma. While the proposed Master of Environment degree is not directly geared toward the requirements of industry because of its research-intensive nature, the increasing demand for qualified environmental graduates will no doubt bode well for enhanced employment opportunities from this important sector.

Industry Canada (Prairie Environment Industry Profile, 2000, (strategis.ic.gc.ca/SSG/ea01729e.html)) has identified unique features of the local industry that closely match existing expertise at the University. "The Manitoba environment industry has developed in response to local demands, particularly in the areas of agriculture and agri-food processing, health care, transportation, aerospace and agricultural equipment. Many firms fulfill a niche need for specific services, such as manure management for the hog industry, the development of alternative fuel dispensing systems (compressed natural gas/propane) for transportation, particularly bus manufacturing, and the manufacture of waste water systems." Opportunities therefore exist to build partnerships with the private sector and government to augment ongoing initiatives.

2.2 Program Strengths

The primary strength of the program lies in our human resources, in the myriad of faculty at this University and at other Manitoba universities who are internationally renowned 'environmental' researchers and scholars. Indeed, the Faculty of Environment has three Canada Research Chairs among its faculty (see Appendix C).

In addition, Manitoba's geography lends itself to numerous opportunities for research and study of the environment. This Province has a unique combination of topographical features –prairie, flood plain, desert, maritime coast, wetlands, shield, muskeg, and boreal forest- all within four seasons with an annual temperature variation in excess of 80° Celsius. Specifically:

- Much of the southern part of the Province is a flood plain, which affords numerous opportunities for studies relating to hydrology, water quality, and human factors related to evacuation/dislocation and loss of personal property.
- Manitoba has a large agricultural industry, which affords opportunities for studies related to sustainable agriculture and the environment, including the impact of

agricultural chemical use on surface- and ground-water quality, pesticide toxicity to humans and other organisms, soil erosion, and land resource management.

- It is often overlooked that Manitoba is a maritime province, with Hudson Bay offering opportunities for such studies as ecotourism, coastal management and marine biology.
- The Manitoba boreal forest is one of the last remaining almost pristine boreal forests in the world. Research/study opportunities range from habitat protection to sustainable forest management.
- Manitoba has a large Aboriginal population, many of whom are actively involved in environmental projects and to lesser extent in environmental education. Further, the University has a well-established Department of Native Studies interested in collaborating in the Master of Environment program.
- Manitoba has its own northern region, and is also a 'gateway' to the arctic and sub-arctic regions of Nunavut and Northwest Territories. Opportunities for research are wide ranging including climate change studies, land use conflict resolution models, and environmental assessment practices unique to the sensitive arctic environment.
- Several research field stations are within a two-hour drive of the University of Manitoba, including: the Oak Hammock Marsh and Fort Whyte interpretative environmental centres; the Experimental Lakes Area for fishery and freshwater research; the Glenlea and Carman agricultural research stations; Delta Marsh, one of the largest wetlands areas in Canada; and the Star Lake field station in the Precambrian Shield. Further away, the Churchill Field Station affords opportunities for research related to the sub-arctic; and
- Manitoba has a rich mining industry, with numerous active and retired sites, many of the latter requiring environmental remediation. Recent legislation in the Province requires the resource extraction industry to comply with stringent environmental conditions. These conditions provide ample opportunity for research and graduate education.

2.3 Use of Existing Resources

The MEnv will rely almost entirely on existing human and course resources. In effect, the MEnv will provide a visible and formal structure that will enable students to enter an interdisciplinary graduate program in Environment. It will package existing courses into a coherent program of study for each student.

No additional University space requirements are anticipated for this program other than that required by the Faculty of Environment as a whole. Estimating any additional or incremental costs to the University for using existing classroom or computer laboratory teaching space is difficult if not impossible to determine. Nonetheless, a true accounting of the cost of using existing space would likely indicate that incremental costs are negligible.

2.4 Cooperation with other Manitoba Universities

A number of faculty members at Brandon University, St. Boniface College, and the University of Winnipeg have expressed interest in holding adjunct appointments in the Faculty of Environment and supervising students and/or serving on advisory committees. Discussions with these individuals will be advanced once the proposed M Env degree receives necessary approvals.

2.5 Enhancement of National/International Reputation

Manitoba, and the University of Manitoba in particular, already have well-established national and international reputations in teaching, research, and service related to environmental issues and concerns. This is amply demonstrated in the curriculum vitae of the faculty members who will be delivering the program (Appendix C). These reputations will be enhanced through the recruitment of students from around the world, students who will choose to study at this University because of the quality of the program, the international reputations of the faculty members, and the breadth of research opportunities afforded by our geography and climate. Winnipeg is also home to a number of nationally and internationally recognized research organizations: the Freshwater Institute, a branch of the Department of Fisheries and Oceans; the Secretariat for the Canadian Council of Ministers of the Environment; and the International Institute for Sustainable Development. These organizations have already expressed their support for the development of the Masters program, and individuals have agreed to participate either directly through the supervision of graduate students, or as guest lecturers and resource providers.

3. Specific Details

3.1.A Admission Requirements

Admission to the program is normally from a four-year or equivalent degree in environmental sciences or environmental studies (or their equivalent). The academic background of students from other related disciplines will be assessed on an individual basis; they may be required to complete up to 24CH of undergraduate course work prior to entering the program. The Faculty of Graduate Studies regulations regarding admission will apply, that is, students must have achieved a 3.0 GPA in the last 60CH of undergraduate course work. At the time of admission, students must have been accepted by a faculty advisor.

A list of Awards and Scholarships that students will be able to compete for is provided in Appendix D. Additionally, scholarships will be administered by the Faculty of Environment from an Endowment Fund that is being established and from the Aboriginal Issues Press.

3.1.B Individual Plan of Study

A central task of the Master's program will be an Individual Plan of Study to be prepared and developed by each student in consultation with their proposed faculty advisor. The objectives of the Plan of Study are: (a) to define a research direction; and (b) to organize the student's course work in the framework for integration and synthesis of interdisciplinary knowledge. The Study Plan should define an area of concentration, identify learning objectives, and set out a strategy for achieving those objectives. As the student's ideas, interests, and learning evolve, the Study Plan can be revised by mutual agreement of the student and advisor.

Faculty advising is an integral part of the proposed Master of Environment approach to interdisciplinary teaching and learning. When students apply to enter the program, a proposed advisor must be identified, whose role will include facilitating the development of the Individual Plan of Study. Once individual interests and needs have been defined, the student, in consultation with their advisor, will select additional committee members to match those interests and needs as closely as possible. Throughout the student's time in the program, the advisor will act as program consultant for the student's area of study. The Individual Plan of Study will be completed upon entry to the program, and will be assessed by the student and advisor at the commencement of each academic term. All courses to be completed as well as the area for thesis research shall be specified no later than the start of the second term after admission to the program. The thesis research proposal shall be completed and approved no later than the commencement of the second year of the student's program.

3.1.C Course Requirements

The minimum requirement for degree completion is 12CH of approved course work, 9CH of which must be at the 700 level or above, and a thesis. The course 128.7AB (Appendix E) is compulsory and must be completed during the first year in the program.

128.7AB: Interdisciplinary Perspectives on Issues in the Environment (3) - *An intensive examination of research relating to various issues in the environment, this course will challenge students to consider crosscutting themes found in the literature and from their own learning experiences, and apply them to environmental problems.*

This course will consist of having various instructors from the Faculty describe their research approaches to environmental problems. As the course progresses, Master's students will provide details of their proposed research methodologies and receive feedback from their colleagues and instructors. This learning environment will be stimulating in that although students will learn in detail about their individual areas of interest, they will become familiar with several others. We expect one core instructor from the Department of Environment and Geography to be designated each year as the lead instructor for the course. Faculty advisors will be involved in course delivery when their students are enrolled in the course, and those advisors will facilitate the seminars involving their students. Advisors will assist their students in summarizing learning outcomes from seminars presented, and will assist the course coordinator in course evaluation, based on written reports and oral presentations. To allow students sufficient

time to adequately develop their research programs, it will be offered over two terms, in a 3-hour block, every second week, but remain a 3-credit hour course. This structure will allow students additional time to prepare and complete assignments and presentations but not cause undue attention to be directed from other components of their Individual Plan of Study requirements.

The remaining 9CH of courses will be determined by the student's advisor in consultation with the student and approved by the chair of the graduate studies committee.

3.1.D Procedures for Evaluation of Students

The compulsory course, 128.7AB will be evaluated based on a combination of written reports and literature reviews and an oral presentation. All other courses will be evaluated according to the specifications outlined by the course instructor.

3.1.E Thesis Procedures and Regulations

Detailed thesis procedures and regulations are in Appendix F. In general, the thesis procedures and regulations follow those of the Faculty of Graduate Studies.

3.1.F Transfer Courses

Up to 6 CH of course work may be transferred into the program for each student, upon approval by their Graduate Program Committee.

3.1.G Other Procedures and Regulations Specific to the Program

Other procedures and regulations specific to the program may be found in the Supplementary Regulations (Appendix F).

3.2.A Rationale for Name of Degree "Master of Environment (MEnv)"

There are several reasons why the single word "environment" was chosen.

1. The word "environment" is all encompassing, that is, it includes the action and interaction of all aspects of the Earth – water, air, land and energy – and life; in effect all of the elements of nature. At the same time, the single word "environment" is non-exclusive, that is, it is understood through a combination of the natural, applied, and social sciences as well as the humanities.
2. Use of the word "studies", as an add-on, was avoided for two reasons. First, it is not necessary, in the same way it is unnecessary for degrees in Pharmacy and Engineering. Second, the perception, for some, is that "studies" denotes a focus primarily on the humanities and social sciences.

3. Use of the word "sciences" was avoided because it would give the perception that the degree would not contain studies relating to the humanities, in other words, the degree would be limited to the biological and physical sciences.

We believe that the designation MEnv will be the way of the future; it has been adopted recently by the University of Melbourne for their new (2002) program, which has a similar breadth and structure.

3.2.B Degree Designation at Other Institutions

Degree names across Canada can be categorized, with minor variations, into three groups, as follows:

- Resources and Environment (or Resources and Environmental Studies). Examples are UBC, UNBC, Calgary, and Dalhousie.
- Environmental Studies. Examples are Waterloo and York.
- Environment. Examples are McGill and Toronto.

Table 1 provides the degree names for all Canadian Masters programs in either Environmental Studies or Environmental Science. One can see that there is little consistency in degree designation. It is also notable that York is the only other institution offering the Masters program from a Faculty, and that their degree name reflects the Faculty name.

Table 1. Degree Designations at other Canadian Universities

Institution	Unit	Degree
British Columbia	Institute for Resources, Environment and Sustainability	MA or MSc
Calgary	Interdisciplinary Program administered by the Faculty of Graduate Studies	MA, MSc
Dalhousie	School for Resource and Environmental Studies	MES, MREM
Memorial	Faculty of Graduate Studies through the Environmental Science Board of Study	MEnvSci, MSc
Northern British Columbia	Faculty of Natural Resources and Environmental Studies; Faculty of Research and Graduate Studies	MA, MNRES, MSc
Ryerson Polytechnic	Faculty of Graduate Studies	MA(science)

Toronto	Collaborative Programs administered by the Institute for Environmental Studies	MA, MSc
Waterloo	Department of Environment and Resource Studies	MES
Western	Home departments of faculty members	MSc
Wilfred Laurier	Faculty of Graduate Studies and Research	MES
York	Faculty of Environmental Studies	MES

The one common element to all of the units/degrees is the word "environment", and it is primarily for this reason that this word was selected to identify the degree at the University of Manitoba.

3.2.C Process for Determination of the Name of the Degree

Three primary sources of information were used. The first was a web compendium of environmental programs by the University of Toronto, Institute for Environmental Studies (utoronto.ca/env/res_proj/Gradcan.htm, Appendix B). This site contains a survey project designed to list all of the degrees and programs in Canada that have any reference to the environment. The second source was a search of programs at Canadian universities, again using the World Wide Web. And finally, the Graduate Curriculum Committee, which was charged with the responsibility of designing the program and determining the name of the degree, were unanimous in naming the degree "Master of Environment". This determination was made following informal survey of faculty members and students who will be involved in the program.

3.2.D Accreditation

Accreditation for the MEnv is not required at this time, although the Canadian Council for Human Resources in the Environment Industry (CCHREI), and its certification arm, the Canadian Environment Certification Accreditation Board (CECAB) are developing guidelines for content in environmental programs that will eventually include certificate, undergraduate, and graduate programs. The University of Manitoba has representation on CCHREI to ensure that we are in receipt of up to date developments.

4. Projections and Implementation

4.1 Sample Programs

The timeline for completion of the M.Env. is normally two years of full-time study.

128.7AB Interdisciplinary Perspectives (3)
 56.721 Systems view of the environment (3)
 23.716 Geotechnical aspects of environmental impact assessments (3)
 07.723 Geophysics of the earth's crust and mantle (3)
 Thesis: Mine tailings in Northern Manitoba.

128.7AB Interdisciplinary Perspectives (3)
 56.728 Regional Development in Northern Manitoba (3)
 93.722 Health and Health Services of Native and Northern Peoples (3)
 93.746 Environmental and Occupational Health (3)
 Thesis: An epidemiological study of Type II diabetes in the Northern Cree

128.7AB Interdisciplinary Perspectives (3)
 53.701 Topics in Geography (Ecosystem Management)
 56.730 Biodiversity
 22.741 Biological Resources Management
 Thesis: Factors affecting biodiversity conservation in Manitoba Wildlife Management Areas.

128.7AB Interdisciplinary Perspectives (3)
 07.744 Principles of Paleoclimatic Reconstruction (3)
 22.738 Advanced Limnology (3)
 53.727 Physical and Synoptic Climatology (3)
 Thesis: Study of climate pattern in a sub-arctic region.

4.2 Estimate of Enrolment

Over 50 faculty members are members of the Faculty of Environment, and many (see Appendix C) have indicated that they would participate in this new program and that they are prepared to provide study space, equipment, and financial support for students, primarily through their research grants and contracts. Given this, it is possible that as many as 30 students could be admitted annually. Based on our surveys of our own undergraduate "environmental" programs, we estimate an annual enrolment of 8 to 10 students to the M Env for the first few years. Once there are graduates of the Environmental Studies program, recently approved by Senate, we expect that annual enrolment in the M Env will double.

4.3 Opportunities for Distance Education

Initially there will be no distance education courses, however, students involved in field research in remote locations, such as the sub-arctic, will use the Internet for communication with their advisor and colleagues. We expect that, in the future, special topics courses will be designed and made available via the Internet. This will allow for the participation of those in remote locations and also for those already employed in the environment industry.

4.4 Schedule for Implementation

The program will be implemented as early as possible in 2004.

B. HUMAN RESOURCES

1. Faculty

A list of faculty members in the Faculty of Environment who have indicated a willingness to supervise students and/or serve on advisory committees, and their CVs, are found in Appendix C. Many of these faculty members now teach graduate courses and are willing to assist with the core course in the M Env program.

With the exception of the course co-coordinator for the new core course, any impact on teaching loads should be minimal. In the event of significant impact, negotiations will be held with the individual's home department on a case-by-case basis. Also, we anticipate that one additional academic full-time equivalent (FTE) will be required to provide academic leadership and administration for the program.

2. Support Staff

Support staff will be involved in program marketing, admissions, documentation and record keeping. With the establishment of the new Department of Environment and Geography within the Faculty of Environment, existing departmental and new faculty support staff will be used to ensure efficient administration of the proposed degree.

3. Other

A number of members of government and non-government organizations have offered to participate with respect to research and graduate studies, including the supervision of students and serving on thesis committees. These individuals, who all qualify for or currently hold adjunct professor status, are listed in the table below. We anticipate involving full-time faculty members of the Faculty of Environment as co-advisors in situations where adjunct professors have limited or no experience in directing graduate students.

Churchill Northern Studies Centre	LeeAnn Fishback
Delta Waterfowl	Jonathon Scarth
Ducks Unlimited	Dale Wrubleski
Freshwater Institute	Drew Bodaly, Helen Fast, Steven Ferguson, and Gary Stern
International Institute for Sustainable Development	Heather Creech
Manitoba Hydro	Ed Oneybuchi
Parks Canada	Micheline Manseau
Wildlife Landscapes	Pat Caldwell

C. PHYSICAL RESOURCES

1. Space

The Faculty of Environment has established a Space Committee that is currently investigating space use and requirements throughout the new Faculty. A report to the Dean is expected in the near future.

With respect to the proposed degree, several principles are being applied. Each student will require a desk or carrel and access to computer connections; a number of students will require some laboratory space. Supervisors will be required to identify suitable space, usually from their home department, before accepting a graduate student.

Space for the Faculty of Environment Dean's Office has been allocated in 204 Isbister, and houses the Dean, Associate Dean, and eight office support staff members.

2. Equipment

There is only one additional course being offered. This seminar-based course will use existing equipment, such as an overhead or slide projector, from the Information Services Technology pool.

Students will use research equipment, which is available through their supervisor or through negotiation with existing Departments.

Faculty council members have indicated that, as appropriate to a student's area of research the following facilities may be made available, although normal user fees would apply:

- Field stations
- Laboratories at the Freshwater Institute and the field facility at the Experimental Lakes Area in Ontario,

- Centre for Earth Observation Science resources including 3 laboratories and partnerships abroad for use of icebreakers, climate instruments, etc
- Geological Sciences Laboratories including X-Ray Laboratories, Geochemistry Laboratory, Microbeam and Image Analysis Laboratory, Sedimentological Laboratories, Geophysical Laboratories, Invertebrate Paleontology Laboratory
- Landscape Dynamics and Field Laboratories and monitoring equipment

In addition, a number of professors indicated that use of departmental facilities such as computers would be possible for their own students.

3. Computer Resources

Students will use computer resources that are available through their supervisor. Students will also have equal access to computer facilities as all other graduate students at the University.

4. Library

With the exception on one new seminar course, the offerings in this program already exist and are currently supported at the University of Manitoba libraries.

D. FINANCIAL RESOURCES

1. Delivery Costs

At present we are unable to forecast incremental program costs. Faculty of Environment academic appointments are now derived through the Faculty's budget, as members from departments and programs transferred into the new Faculty as of July 1, 2003. Three of the units that transferred into the Faculty currently have Masters and PhD programs. With the creation of a new Department of Environment and Geography, it is anticipated that much of the administration of the proposed M Env program can be accommodated with existing support staff resources.

One additional full-time equivalent (academic) has been estimated as being required to accommodate the additional course teaching and provide supervision to students. In addition, this academic could be responsible for curricular development, including the development of Web delivered courses. This request will be made through the Faculty's submission to the annual Strategic Initiatives Process. For the near term, facilities and equipment for graduate students will be the responsibility of the various faculty members who have indicated that they will supervise students.

Projected Program Costs: Salary	1.0 FTE Assistant Professor	\$63,000
	Operating	
	Capital	
	Total cost	\$63,000

<input type="checkbox"/> Projected Program Revenue:	Tuition	10 students @ \$4177
	Other	
	Total revenue	\$41,770

2. Student Support

Student support may occur in the form of awards or scholarships (as described in 3.1.A and Appendix D). In addition, students will compete for TA positions in any of the Faculty's Programs, or in their supervisor's home department.

E. SUPPORTING DOCUMENTS

Letters of support from various departments/faculties/units and outside groups/agencies/organizations have been included.

Appendix A

Existing Graduate Course Offerings that may be used by – Masters of Environment Students

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Note: this list is compiled to demonstrate the variety and extent of courses with either direct environmental content or content that may be applied to environmental issues. It is not to be considered an "exclusive" list; supervisors may recommend courses not contained on this list. Students are required to fulfill normal pre-requisites and need permission of the instructor if so indicated in the calendar.

001.713 Advanced Plant Ecology 6 credit hours
Faculty of Science, Botany

Seminars, investigations, and readings in advanced topics such as paleoecology, energetics, and community ecology.

001.724 Wetland Ecology 6 credit hours
Faculty of Science, Botany

A study of marsh, bog, and fen communities, with emphasis on their history, soil-plant relationships, and species distribution. Field work at the University Field Station (Delta Marsh) and nearby bog and fen sites will be an integral part of the course.

001.737 Special Topics in Algal Ecology 6 credit hours
Faculty of Science, Botany

Directed study and project(s) in selected aspects of the ecology of freshwater phytoplankton, periphyton and metaphyton.

001.744 Methods and Approaches to the Analysis of Biological Data Part I 3 credit hours
Faculty of Science, Botany

Methods for handling biological data arising from field surveys; planning and undertaking biological studies. Theory of experimental design, vegetation sampling, multivariate analysis, techniques of remote sensing, spatial analysis and modeling. Offered in 2002-2003 and alternate years thereafter.

002.745 Topics in Organic Chemistry 3 credit hours
Faculty of Science, Chemistry

A discussion of current and general topics related to novel and interesting areas of organic chemistry appearing in the current literature.

002.752 Topics In Physical Chemistry 3 credit hours
Faculty of Science, Chemistry

The topics will vary, depending on student needs and interests; they may include, but will not be limited to the following: electrochemistry, surface chemistry, electrochemical kinetics, or other specialized topics not available in regular course offerings.

002.760 Topics in Inorganic Chemistry 3 credit hours
Faculty of Science, Chemistry View Timetable

Topics of current research interest in the area of inorganic chemistry including, but not limited to synthesis, structures, catalysis and reaction mechanisms.

007.723 Geophysics of the Earth's Crust and Mantle 3 credit hours
Faculty of Environment, Geological Sciences

Processes in crust-mantle evolution and geophysical methods used to study this region of the earth. Alternate years with 007.724. Prerequisite: 007.432 and 007.433.

007.731 Quaternary Geology 3 credit hours
Faculty of Environment, Geological Sciences

Seminars and lectures on sedimentary aspects of the Quaternary Epoch with emphasis on glaciation. The glacial and interglacial stratigraphic record on the continents and in the ocean basins. Three-day field trip in mid-September. Prerequisites: 007.349 and 007.390.

07.735 Remote Sensing in the Earth and Planetary Sciences
07.736 3 credit hours
Faculty of Environment, Geological Sciences

Selected topics in remote sensing with emphasis on geophysical and geologic problems. Offered every year. Prerequisite: B.Sc. (Honours Geology, Geophysics, or Geological Engineering) or consent of instructor for graduates of other disciplines.

007.744 Principles of Paleoclimatic Reconstruction 3 credit hours
Faculty of Environment, Geological Sciences

An interdisciplinary course which examines the sedimentological, biological, and human response to climatic change; the history of Quaternary climate and its stratigraphic expression. Prerequisite: permission of instructor.

007.754 Isotope Geology and Geochronology 3 credit hours
Faculty of Environment, Geological Sciences

The principles and methods of isotopic age determination and the measurement of geological rate processes using certain radioactive nuclides and the variations of the isotopic compositions of their daughter products. The evolution of the earth's mantle, continental and oceanic crust. The application of light, stable isotope fractionation to understanding geological processes.

007.765 Fracturing of Rocks 3 credit hours
Faculty of Environment, Geological Sciences

Experiments on, theory and properties of, fractures ranging in scale from micro-rocks to large scale fault zones; mechanisms of fracturing; interpretation of stress conditions leading to fracturing.

007.772 Geophysical Imaging and Data Processing 3 credit hours
Faculty of Environment, Geological Sciences

Advanced frequency filter design; deconvolution methods for seismogram; velocity and wavefield stacking; various digital methods for potential field data; principles of tomography and geophysical imaging techniques. Prerequisite: 007.374 or equivalent, and 007.726 or consent of instructor.

Critical, in-depth group study of problems and new concepts in the geological sciences; discussion of current research by staff and visiting scientists; students will pursue individual research interests and will work with staff on specific topics.

007.782 **Environmental Geophysics**
Faculty of Environment, Geological Sciences

3 credit hours

Examination of the application of geophysics to environmental targets. Topics will vary according to student interest and may include aspects of new-surface geophysics, engineering geophysics, geophysics of global climate change and geophysical risk assessment.

018.743 **Advanced Theory of Resource Economics**
Faculty of Arts, Economics

3 credit hours

Economic theory of the development and management of natural resources. Application of capital theory, investment theory, the theory of externalities and decision-making theory to resource utilization and management. A strong background in microeconomics is required. Also offered as 061.743 by the Department of Agricultural Economics.

022.731 **Selected Topics of Animal Behaviour**
Faculty of Science, Zoology

6 credit hours

Assigned projects, seminars, and discussions designed to familiarize advanced students with topics of current interest in animal behaviour. Prerequisite: 022.448 or consent of instructor.

022.738 **Advanced Limnology**
Faculty of Science, Zoology

6 credit hours

The biological productivity of lakes. A seminar and tutorial course given with the help and cooperation of scientists in the Freshwater Institute and the Department of Botany. Prerequisite: 022.350 or equivalent (or former 022.470).

022.740 **Biological Resource Management**
Faculty of Science, Zoology

3 credit hours

A survey of the principles of ecology in relation to renewable resources, with emphasis on ecosystem concept ecological homeostasis, and energy flow. Open to students of the Natural Resources Institute or by consent of instructor. Students registered in 022.740 may be required to pay a portion of costs associated with field trips. For details contact the department of Zoology.

022.741 **Biological Resource Management**
Faculty of Science, Zoology

3 credit hours

Examination of natural resource management practices, in discussions with resource managers. Open to students in the Natural Resources Institute or by consent of instructor. Prerequisite: 022.740. Students registered in 022.741 may be required to pay a portion of costs associated with field trips. For details contact the department of Zoology.

023.720 Topics in Environmental Engineering
Faculty of Engineering, Civil Engineering

3 credit hours

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Includes topics such as energy and the environment, solid waste management, and environmental problems in transport. Topics are studied through case histories of contemporary issues.

23.765 Selected Topics in Water-Resources Development
Faculty of Engineering, Civil Engineering

3 credit hours

Lectures and seminars on selected advanced topics in water-resources engineering.

031.712 Special Topics in Landscape Architecture
Faculty of Architecture, Landscape Architecture

3 credit hours

An assignment and conference course. A detailed study of some special topics in landscape architecture, including environmental sustainability, urban landscape technology, and housing form.

031.720 Landscape Architecture Studio 5
Faculty of Architecture, Landscape Architecture

6 credit hours

The examination of theories and their contemporary applications to regional scale landscapes with emphasis on environmental problem domains associated with land planning and design.

034.714 Advanced Irrigation and Drainage
Faculty of Agricultural and Food Sciences, Biosystems Engineering

3 credit hours

Selected advanced problems and new developments in irrigation and drainage. Interrelationships between irrigation and drainage and the environment. Prerequisite: consent of instructor.

036.722 Selected Topics In Native Studies
Faculty of Graduate Studies, Interdepartmental Courses (Graduate Studies)

3 credit hours

A critical examination of issues in selected areas of Native Studies designed to meet the special needs of graduate students interested in exploring interdisciplinary perspectives in Native Studies. Prerequisite: consent of instructor.

038.723 Advanced Pollination Biology
Faculty of Agricultural and Food Sciences, Entomology

3 credit hours

Tutorials, assignments and discussion periods of current topics relating to the physiology and life history of insect pollinators and their ecological interactions with entomophilous plants. Subjects studied may be selected to fit the interests of individual students. Prerequisite: Consent of instructor.

038.724 Advances In Physiological Ecology of Insects
Faculty of Agricultural and Food Sciences, Entomology

3 credit hours

The effect of environmental factors such as temperature, moisture, light and other organisms on the physiology and ecology of insects. Prerequisite: 038.205 or consent of instructor. Not to be held for credit with 038.452. Offered in 2003-2004 and alternate years thereafter.

Weed biology and ecology in the context of weed management, covering theory, current information, investigative approaches and experimental techniques. Topics explored include: weed population biology, modelling, weed community ecology, herbicide efficacy and herbicide resistant weeds. Prerequisite: 039.354 or equivalent or consent of instructor.

040.711 Soil Physics I - General 3 credit hours
Faculty of Agricultural and Food Sciences, Soil Science

First and second laws of thermodynamics, Darcy's law, saturated and unsaturated flow, simulation modeling of moisture movement, soil aeration, water availability to seeds, strength properties of unsaturated soils. Offered in 2000-2001 and alternate years.

040.713 Soil Chemistry 3 credit hours
Faculty of Agricultural and Food Sciences, Soil Science

Chemical equilibria and soil solution chemistry; surface chemistry and solid-solution reactions; mineral structure, colloid chemistry and analytical techniques; fate of nutrients and pollutants; reactions of fertilizers. Offered in 2000-2001 and alternate years.

040.724 Topics in Landscape Processes II 3 credit hours
Faculty of Agricultural and Food Sciences, Soil Science

A continuation of 040.723. Prerequisite: Consent of instructor.

040.725 Topics in Soil Science 3 credit hours
Faculty of Agricultural and Food Sciences, Soil Science

Several courses in soil science are sectioned into modules. Modules of one credit hour on special topics are also available. Students may select three modules from the various courses or from special topics for 40.725.

040.726 Pesticide Residues in Food, Water and Soil 3 credit hours
Faculty of Agricultural and Food Sciences, Soil Science

Discussion and application of research protocols for examining pesticide fate in the environment and for quantifying pesticide residues in food, water and soil. Prerequisite: consent of instructor.

053.701 Selected Topics in Geography 3 credit hours
Faculty of Environment, Geography

Advanced study of a selected topic from any one of the department's fields of specialization.

053.703 Regional Analysis 3 credit hours
Faculty of Environment, Geography

A seminar course reviewing theories of regional development which have planning applications. Further, it assesses government policy aimed at regional intervention and notes procedures of evaluation.

053.704 Seminar in Population Geography 3 credit hours
Faculty of Environment, Geography

Examination of the spatial and temporal character of demographic controls. Special emphasis will be placed upon the problems faced by developing areas in their attempts to deal with population growth.

053.706 Urban Land Use 3 credit hours
Faculty of Environment, Geography

An analytical study of the location patterns of various city land uses, in terms of their geographic, economic, social, and political determinants. Includes field research in Winnipeg.

053.708 Quantitative Methods 3 credit hours
Arts, Faculty of Geography Not offered in 2002-2003

A discussion of analysis and model construction in the study of urban and rural systems; analysis of socioeconomic and demographic data, construction of measures, and testing of models.

053.718 Methodology of Agricultural Geography 3 credit hours
Faculty of Environment, Geography

The course first provides an understanding of social and economic concepts in agricultural geography, and then examines methods of data collection, sampling techniques, and analysis with relevance to specific research topics.

053.720 Environment, Resources, and Population 3 credit hours
Faculty of Environment, Geography

This course discusses the contemporary imbalance between population and resources. The consequences of resource exploitation upon the natural environment are also examined.

053.724 Industrial Location and Analysis 3 credit hours
Faculty of Environment, Geography

The course will critically examine theories that help to explain the location of industrial activity. Consideration will be given to normative, behavioural, and predictive methodologies.

053.725 Geomorphology 3 credit hours
Faculty of Environment, Geography

A study of field, laboratory, and other analytical techniques in selected aspects of geomorphology.

053.726 Selected Regional Issues in Geography 3 credit hours
Faculty of Environment, Geography

Advanced study of specific issues and problems in selected world regions.

053.728 Geographic Approaches to Land Resource Conflict Resolution 3 credit hours
Faculty of Environment, Geography

A survey of the ecologic, environmental and regional approaches to the resolution of land resource conflicts and the planned enhancement of land-related utilities.

A survey of origins, methods and applications of energy analysis, a new technique of system energetics designed to provide information for a more efficient use of scarce natural resources.

053.735 **Techniques in Cognitive-Behavioral Geography** 3 credit hours
Faculty of Environment, Geography

An examination of the methods used to elicit and analyze the human's cognitive-behavioural responses to geographic phenomena.

053.727 **Physical and Synoptic Climatology** 6 credit hours
Faculty of Environment, Geography

A survey of advances in climatology providing a foundation for climatic research. An examination is made of principles and problems in physical and synoptic climatology. Two hour lectures and three hour laboratory per week both terms.

053.731 **Geographic Theory and Methodology** 3 credit hours
Faculty of Environment, Geography

A discussion of the meaning of explanation in human geography, the status of geography as a science and the construction of theory

056.707 **Readings in Natural Resources Management 1** 3 credit hours
Faculty of Environment, Resource Management (Natural Resources Institute)

Student planned research in an area of interest. Course syllabus designed by student and approved by NRI faculty.

056.708 **Readings in Natural Resources Management 2** 3 credit hours
Faculty of Environment, Resource Management (Natural Resources Institute)

Student planned research in an area of interest. Course syllabus designed by student and approved by NRI faculty.

056.711 **Field Seminar** 3 credit hours
Faculty of Environment, Resource Management (Natural Resources Institute)

Exploration of selected issues in resource and environmental studies in field settings, arranged for groups of students. This course is subject to a field trip fee.

056.719 **Natural Resources Administration and Law** 3 credit hours
Faculty of Environment, Resource Management (Natural Resources Institute)

This course, after an introduction to Law in general, canvasses various areas of the law relating to natural resources.

056.720 **The Role of Information Management in Sustainable Resource Use** 3 credit hours
Faculty of Environment, Resource Management (Natural Resources Institute)

This course reviews some of the key concepts of spatial analysis including geographic information systems, remote sensing, image processing, and cartography. The second part of the course is based on the application of these concepts to a resource management issue using a

case study approach. Students will gain familiarity with the following software: Idrisi for GIS; Adobe Photoshop for image processing; and Adobe Illustrator for cartography. Classes will have three components, discussion/presentation; lecture; and lab.

056.722 Social Aspects of Resource and Environmental Management
3 credit hours

Faculty of Environment, Resource Management (Natural Resources Institute)

Context of resource management and development; history of resource management; definitions of resources and management; sharing power and responsibility for governance; the role of governments, user-groups, and the market; property rights and resource regimes; common property resources and institutions; traditional ecological knowledge; multi-stakeholder analysis; social analysis and the role of social values; top-down vs. bottom-up management; co-management.

056.723 Ecological Principles of Resource and Environmental Management **3 credit hours**

Faculty of Environment, Resource Management (Natural Resources Institute)

The ecological context of resources; historical evolution of the resource concept from utilitarian to ecosystem thinking; the ecosystem concept and its applications to resource management and planning; adaptive management by use of feedback learning and by managing dynamic processes of ecosystems; biophysical classifications of the environment; landscape ecology and habitat management; biodiversity - the conservation of living systems at the level of genes, species, and ecosystems; values of life support systems and ecological economics.

056.724 Resource and Environmental Management Processes
3 credit hours

Faculty of Environment, Resource Management (Natural Resources Institute)

Policy formulation and implementation; policy analysis processes; decision making in complex environments; environmental assessment process-theory and practice; environmental assessment policy development; components of legislated assessment process

056.725 Resource and Environmental Management Tools **3 credit hours**
Faculty of Environment, Resource Management (Natural Resources Institute)

Management tools; systems analysis tools-simulation, optimization, multi-objective analysis; economic tools-valuation and environmental accounting, incentives, supply-demand analysis; social approaches-public participation, conflict management, mediation, negotiation; legal, regulatory and policy tools.

056.728 Regional Development in Northern Manitoba **3 credit hours**
Faculty of Environment, Resource Management (Natural Resources Institute)

A comprehensive examination of natural resources, socio-economic conditions, and institutional structures forms the basis for an evaluation of long-term sustainability and developmental strategies for Manitoba's North.

056.729 Environmental Assessment **3 credit hours**
Faculty of Environment, Resource Management (Natural Resources Institute)

Course is a fundamental tool of decision making regarding natural resources and the environment and will provide students with an understanding of how environmental assessment is designed, administered and operates in the field.

An examination of the study and management of biodiversity - the variety of life and its processes at the genetic, species, and ecosystem levels of biological organization and at the local, regional, national, and global scale. Emphasis to be placed on understanding why the conservation of biological diversity is important and how it can be attained.

060.701 Graduate Seminar in Microbiology 1 3 credit hours
Faculty of Science, Microbiology

Seminars covering areas of interest to the faculty and students in the graduate Microbiology programme, and current developments in the broad field of microbiology (including microbial physiology, environmental microbiology, virology, pathogenicity, genetics, molecular biology, biochemistry, biotechnology, and cell culture). Open to all qualified students by permission of the Microbiology department head.

060.716 Special Problems in Microbiology 3 credit hours
Faculty of Science, Microbiology

An assignment and conference course to be taken only through consultation with the head of the department. The topics will vary, depending upon student needs and interests, and will include specialized topics not available in regular course offerings.

060.719 Microbial Ecology (3) credit hours
Faculty of Science, Microbiology

Topics and current developments in the field of microbial ecology will be covered with emphasis on aquatic ecosystems. A combined lecture, discussion, and seminar format will be used. Inquire at the department for availability.

061.743 Advanced Theory of Resource Economics 3 credit hours
Faculty of Agricultural and Food Sciences, Agribusiness & Agricultural Economics

Economic theory of the development and management of natural resources. Application of capital theory, investment theory, the theory of externalities and decision-making theories to resource utilization and management. A strong background in microeconomics is required. Also offered as 018.743 by the Department of Economics.

073.703 Planning Theory 1 3 credit hours
Faculty of Architecture, City Planning

The principal ideas and ideals influencing planning thought and practice, ranging from rational comprehensive planning to theories of societal guidance, ethics and the human-environment interface.

073.707 Housing and Urban Revitalization 3 credit hours
Faculty of Architecture, City Planning

Housing and urban revitalization in the Canadian context. Housing demand and supply, structure of the housing market, Canadian housing policy, affordability and other selected housing issues; processes and strategies related to urban decline and revitalization.

073.727 Seminar in Regional Planning 3 credit hours
Faculty of Architecture, City Planning

An exploration of eco-regional planning drawing on concepts of citi-states (or city-regions) and bioregionalism; including contemporary theme research, and a region-specific analysis to inform an understanding of regional planning's past, present and future.

073.730 Urban Society 3 credit hours
Faculty of Architecture, City Planning

An interdisciplinary seminar on social policy and social planning in the contemporary urban setting. National, provincial and local contexts shaping the provision of welfare and well-being. Demonstration of selected social planning techniques. Application to current issues.

073.745 Concepts in Sustainable Planning and Design 3 credit hours
Faculty of Architecture, City Planning

Examination of the concepts and theories involved in the development of sustainability as a force in socio-economic and environmental decision-making. Explores the implications of sustainability for contemporary design and planning thought and practice.

073.746 Urban Ecology and Environmental Management 3 credit hours
Faculty of Architecture, City Planning

Theoretical frameworks and theories in urban ecology and environmental management as they apply to municipal institutional frameworks and the role of environmental planning in urban and regional government.

076.780 Seminar in Ethnohistory 3 credit hours
Faculty of Arts, Anthropology

A critical examination of methods and theories appropriate for ethnohistorical analysis of socio-cultural phenomena, with selected case studies. Students may not hold credit for both 076.780 and the former 076.731.

077.739 Survey Research Methods 3 credit hours
Faculty of Arts, Sociology

Through the vehicle of the Winnipeg Area Study, students learn all aspects of survey research. Topics covered include: sampling, question and questionnaire construction, index construction and scaling methods, techniques for establishing validity and reliability, order effects, conducting interviews, coding, data analysis, and budgeting. Course includes interviewing experience.

077.740 Advanced Quantitative Research Methods (3) credit hours
Faculty of Arts, Sociology

This course emphasizes the understanding and application of advanced quantitative data analysis techniques to sociological research problems. Issues in regression decomposition, path analysis, log-linear analysis, discriminant function analysis, principal components and factor analysis, as well as non-parametric statistical tests are covered as they relate to sociological research concerns. Statistical packages are used to illustrate sociological examples. Prerequisite: 077.448 or written consent of the department head.

This course provides an overview of the methods of qualitative research. Discussion focuses on the philosophical foundations of qualitative methods, the variety of techniques available within interpretive and conflict paradigms, issues of sampling, analysis, validity, and report writing.

077.749 Globalization 3 credit hours
Faculty of Arts, Sociology

A sociological examination of the globalization of trade, production and finance, including the creation of multilateral trading blocs (e.g., APEC, EU, NAFTA) and international organizations (e.g., WTO, IMF, the World Bank) and their impact upon social inequality, the welfare state and the environment in developed and developing nations.

093.722 Health and Health Services of Native and Northern People 3 credit hours
Faculty of Medicine, Community Health Sciences

This course provides a detailed review of the health status and the determinants of health of Canada's native people. Prerequisite: 093.752 and 093.753 or permission of instructor.

093.746 Environmental and Occupational Health 3 credit hours
Faculty of Medicine, Community Health Sciences

The aim of the course is to acquaint the student with the role of the environment (general and specifically working) as the determinant of health. The content of the course will be presented in the form of lectures, seminars, and field visits. Prerequisite: permission of instructor

123.709 Special Topics in Recreation and Leisure Studies 3 credit hours
Faculty of Physical Education and Recreation Studies, Recreation Studies (General)

Contemporary research and theory in selected areas of recreation and leisure studies, the topics addressed in this course will vary depending on faculty expertise and student need. Prerequisite: instructor's permission.

88:552 Sustainability In Rural Development 3 credit hours
Brandon University, Rural Development

The concept of sustainability has gained prominence in the last two decades, and is now deeply embedded in the discourse and practice of rural development. This comprehensive concept has local and global dimensions and implications. It is a dynamic concept that is hotly contested and at the same time brings stakeholders together. This course examines the origins, streams and prospects for sustainable development in the rural context, utilizing both local/regional and international case studies of its conceptualization and practice. Prerequisite: Nil

88:553 Rural Development in Global Perspective 3 credits
Brandon University, Rural Development

This course explores the relationship between rural communities and the global pattern of development. It emphasizes economic institutions, trade and investment patterns and how these are supportive of, or damaging to, rural development. The opportunities and vulnerabilities of Canadian communities and organizations to international action and competition are examined. The impact of globalization, and the reaction and strategies of rural communities in developed and developing countries are also studies. Political, social and cultural influences that come from

interdependence and increased communication and mobility are examined to the extent that they impinge on rural development. Prerequisite: Nil

88:563 Rural Tourism
Brandon University, Rural Development

3 credit hours

This course examines rural tourism by focusing on three aspects of rural tourism (ecotourism, agritourism, and cultural tourism). In doing so, the course incorporates examples of tourism strategies and activities from across Canada. Adopting a seminar format, students have the opportunity to contribute to improving our understanding of how rural tourism is being practised in Canada and in developing a "Made in Manitoba" rural tourism plan. Prerequisite: Nil

88:564 Rural Resource Development
Brandon University, Rural Development

3 credit hours

Rural communities in Canada have traditionally been reliant on biophysical resources for economic bases. As resource supply and demand changes, the future of resource-based communities comes into question. Examples in Canada abound, including the collapse of fisheries, mine closures, agricultural restructuring, and forest depletion. This course begins by reviewing historical and contemporary economic theories relevant to resource communities (e.g. Staples and Export-based theories). Using regional inventories, the current state of resources across Canada is explored (e.g. cod fishery, mine closures, farm structure). The course then examines the public policy implications of these issues (e.g. local economic development programs), as well as the regulatory framework for resource development in Canada (e.g. Environmental Impact Assessment processes). A seminar format is adopted. Prerequisite: Nil

Environmental Research & Teaching at Selected Universities

Graduate Programs at Canadian Universities

Legend		To see the criteria for the selection of programs, see the criteria on the back of the report.
Degree offered	Examples of the programs offered (see Appendix A)	
Collaborative Program/ Joint Degree offered		
Certificate or Diploma offered	See Appendix A for details of the programs.	

Faculty, Department, College, School, or Field of Study	Diplomas Canada / Rest of the World				Certificates Canada / Rest of the World				Research Canada / Rest of the World				Joint Degree Canada / Rest of the World				Collaborative Program Canada / Rest of the World			
	Alberta	British Columbia	Calgary	Edmonton	Halifax	London	Manitoba	Markham	Moncton	Montreal	Ottawa	Quebec	Saskatchewan	Simon Fraser	Toronto	Victoria	Winnipeg	York		
Agriculture / Agriculture Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Applied Sciences / Applied Sciences Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Arts / Arts Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Business / Business Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Chemistry / Chemistry Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Computer Science / Computer Science Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Earth Sciences / Earth Sciences Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Engineering / Engineering Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Environmental Sciences / Environmental Sciences Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Health Sciences / Health Sciences Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Humanities / Humanities Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Life Sciences / Life Sciences Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Mathematics / Mathematics Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Medicine / Medicine Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Natural Sciences / Natural Sciences Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Physical Sciences / Physical Sciences Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Psychology / Psychology Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Statistics / Statistics Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Teaching / Teaching Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Unlabeled / Unlabeled Faculty, Dept., College, School, Institute, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		

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This information was generated by the Environmental Information Office at EIS and was last checked on 31 Jan. 2002.

It is part of the larger Environmental Research and Teaching at the University of Toronto
 website: <http://www.erc.utoronto.ca>.

For more information: info@hugoboss.com or www.hugoboss.com

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Master of Environment Students Can Compete For the Following Scholarships and Awards:

Northern Scientific Training Program
ACUNS – Arctic Environmental Studies
American Water Works Association A. Wolman Fellowship award
American Water Works Association Academic Achievement Award
American Water Works Association Lars Scholarship
AOAC Scholarship in Grain Research – Mid Canada Section
Arctic Institute Scholarship – Jim Bourque Scholarship
ASF Olin Fellowships
AUCC - Canada-Latin America and the Caribbean Research Exchange Grants
Delta Marsh Scholarship
E7 Sustainable Energy Development Scholarship Programme
Environment Canada Applied Environmental Economics and Policy Research
Scholarship Program
Goulden, Richard C Memorial Award
Grant, Kenneth E. – Soil & Water Conservation Society
International Lead Zinc Research Organization
Manitoba Sustainable Development Scholarship
6th Prairie Conservation and Endangered Species Conference Fellowship
Soil and Water Conservation Society-K.E. Grant Res. Scholarship
World Wildlife Fund Canada-Macnaughton Conservation Scholarship



PROPOSAL FOR COURSE INTRODUCTIONS

DEPARTMENT Environment	PREPARED BY Beth Jennings	DATE (mm/dd/yyyy) 10/29/2002
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COURSE TO BE INTRODUCED

COURSE NUMBER **COURSE TITLE** **CREDIT HOURS**

028.7AB	Interdisciplinary Perspectives on Issues in the Environment	3
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ABBREVIATED COURSE TITLE (Maximum 15 characters) PerspectivesEnv	SPECIFY PRE-REQUISITES (IF ANY)
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PROPOSED NEW CALENDAR DESCRIPTION – must not exceed 4 lines, 75 characters per line

An intensive examination of research relating to various issues in the environment. This course will challenge students to consider crosscutting themes found in the literature and from their own experiences, and apply them to environmental problems.

STATE REASONS FOR THE INTRODUCTION OF THE NEW COURSE

This will act as the core course for the new Masters of Environment program.
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Course Description:

28.7AB: Interdisciplinary Perspectives on Issues in the Environment (3) - An intensive examination of research relating to various issues in the environment, this course will challenge students to consider crosscutting themes found in the literature, and from their own learning experiences, and apply them to environmental problems.

Concept: A 3 credit hour course required for all students registered in the Master of Environment program in the Faculty of Environment. Since students will be drawn into the program from both B.Env.Sc. and B.Env.St. backgrounds, and will be taking existing courses from a variety of departments around campus, the purpose of the course will be to identify and discuss some of the crosscutting themes, concepts and theories that disciplinary and interdisciplinary perspectives bring to bear upon issues in the environment. The course will synthesize students' learning experiences from both undergraduate and graduate courses and relate these to issues in the environment. Students will (normally) take the course in their second term of study.

Approach: This is a seminar based course in which students will be required to present approaches to environmental problems from their particular disciplinary perspective. This could include the approaches they are planning for their own Master's research. Ideally the course would have a core instructor but other Aguest@ instructors would be encouraged to take up to 2 week blocks to discuss and consider the research undertaken, and research approaches used, on a particular environment issue or problem. The course will culminate with short presentations from each student, in which they will be required to indicate how the discussions in the course could potentially impact the direction of their Masters research. Members of the Faculty of Environment will be encouraged to attend these sessions, to question the students and to assist them in bringing innovation to the approaches used on the Masters work.

Assessment: The course would be graded on a letter grade basis. Assignments in the course will be built around the final presentation assignment.

The first assignment requires students to explore the interdisciplinary aspects of their research interest/topic or other environmental problem. The next assignment will be based more directly on a survey of current literature and an analysis of how identified approaches could be applied to their own thesis work. The final assessment will be based on student presentations, as noted above, that communicate the culmination of the thinking of the first two assignments. The course instructor(s) may decide that a poster presentation is also required.

Bibliography: The bibliography for the Perspectives course is expected to change with each offering, and will be developed by the instructor. Appropriate selections will be made from such journals as Agriculture, Ecosystems, and the Environment; Ecologist; Journal of Applied Ecology; Landscape and Urban Planning; Environmental Ethics; Biological Conservation; Ambio; Society and Natural Resources; Impact Assessment Review; Journal Of Environment Management; Alternatives; Environments; International Journal of Sustainable Development; Canadian Geographer; and Arctic.

Reasons for introduction of the new course:

This course will be the only required core course in the new Master of Environment program.

PROBABLE NO. OF STUDENTS ENROLLING IN THE COURSE:

83

COURSE OFFERING CYCLE: YEARLY ☒ EVERY TWO YEARS ☐

IS THERE ANY DUPLICATION OR OVERLAP WITH EXISTING COURSES?

YES ☐ NO ☒

If yes, a statement justifying the overlap must be appended.

IS THERE ANY ADDITIONAL COST IN TERMS OF STAFF AND/OR FACILITIES?

YES ☐ NO ☒

If yes, a statement from the Budget Dean must be appended.

LIBRARY RESOURCES:

- A statement from the subject librarian must be appended regarding adequate support, additional copies of holdings, forthcoming publications, replacement costs, etc.
- The library will need one month's notice to prepare its statement.
- The proposing unit and the subject librarian should discuss and agree upon the bibliography to be used in assessing the strength of the library's collection in the field.

TOPICAL OUTLINE

Please append a course outline including a bibliography (selected texts, periodicals, etc.)

Where necessary, please attach further information on separate pages

SIGNED APPROVAL

HEAD OF DEPARTMENT

CHAIR, FACULTY GRADUATE COMMITTEE

BUDGET DEAN

PROPOSED MASTER OF ENVIRONMENT PROGRAM
in the
Faculty of Environment, University of Manitoba

**EXTERNAL EVALUATORS'
REPORT**

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May 2004

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EVALUATION OF THE MASTER OF ENVIRONMENT AT THE UNIVERSITY OF MANITOBA

Executive Summary

Our overall conclusion is that the university's requirements and expectations of this degree are demanding, but entirely valid. They are demanding because of the innovative nature of the proposed degree and its significant potential that has to be recognized and acted upon, including the opportunity for a larger scale outcome than that proposed.

Also outstanding is the scale of internal support for the M.Env degree. As many as 180 faculty members from across campus have expressed their interest in being part of the program, through their links with the Faculty of Environment (FE). Such a level of support for this kind of degree proposal is quite unusual. It reflects, in our opinion, the vision of those individuals involved in promoting this interdisciplinary Faculty and the general design and openness of the Faculty mandate as outlined in the formative motions from Senate.

The level of support from across campus can be expected to rise as the M.Env and the Faculty establish a solid reputation for rigour and a capacity to generate interest among students and faculty. The kind of integration needed to apply these resources will require strong commitment from all participating units, and also well-organized administration at the Faculty level.

Establishing the Faculty in a form that keeps its options open means relying on the Faculty Council (with a membership of all people with academic appoints in the FE) to establish the bylaws necessary to promote long-term goals. It is recognized that the Faculty as a whole must decide its own future, particularly as a result of the variety of attitudes to the Faculty from the members of established units being incorporated in the FE as opposed to the cross-appointed faculty who will join the Faculty from a wide range of departments and other Faculties.

In the end, commitment to the principles of the new Faculty and its programs are the essential requirement for this kind of academic innovation. In this respect there is another duality of opinion among those involved in Faculty building. Some faculty members are of the view that the M.Env program should remain small and act as a graduate outlet for the FE's undergraduate Environmental Science and Environmental Studies programs. Other members see the M.Env in a much broader and independent context, attracting students from all disciplines and from a much wider national and international arena. We suggest that, alternatively, the program should target as broad a student population as possible and that the proposals for program admission requirements and course offerings should be revisited with a view to making the program capable of absorbing entrants at this scale.

The implications of viewing "Environment" as an integrated field, when its many parts are widely distributed throughout the university are significant. Embracing interdisciplinarity, coordinating existing offerings, emphasizing greater interaction among its practitioners, and

crossing the boundaries between Environmental Science (natural science based) and Environmental Studies (predominantly social science based) depends on the sustaining of an inherent capacity for cross-university collaboration, the sharing of resources, and changing the status of the well-established units which make up the Faculty.

Specifically, it is our experience that when courses, which are elements of disciplinary programs, are being used by individual students as building blocks for their own interdisciplinary purposes in distinctive and separate programs, it is necessary to carefully monitor and assess the process. This means the need to apply significant faculty advising resources, which are greater than those envisaged at present.

It is asserted that the M.Env program will "package existing courses into a coherent program of study for each student." It is nowhere made clear how this will happen. We propose the establishing of an individual Plan of Study requirement for each student, where the student constructs a Plan, written in association with an advisor, defining the particular objectives and interdisciplinary structure of their programs, and establishing the purposes for which particular course elements are being used. The Plan also becomes the basis for the definition of the thesis research proposal used to complete the program. Without such an individual statement there is a serious danger that students will carry out an *ad hoc* selection of courses, which may not cover their substantive needs or build a successful base for their research topics.

The creation of a strong and effective integrating course setting which brings M.Env students and faculty advisors/supervisors together to discuss common issues and concerns associated with the participation is an essential element of such an individually defined interdisciplinary graduate study. This can take the form of a seminar or workshop which discusses collective needs to establish conceptual, theoretical, epistemological, methodological, and problem framing aspects of this kind of graduate research. The reviewers have serious questions regarding the extent to which the proposed compulsory course (28.7AA) will fulfil these needs.

We express considerable concern associated with the impression which is given that only limited staff support resources will be available to the Faculty. It is stated that "we do not anticipate the need for additional support staff, at least in the short term". This ties in with the proposal's general assumption that the M.Env program will be a low cost program which makes relatively few additional demands on university resources. It is our experience that such integrated and individualised programs are expensive in staff support time, as well as in faculty advising time. But without such supportive academic administration there is a serious risk that the rigour that must be associated with handling the wide choices provided in interdisciplinary programs will be neglected, and that the standards of the program will not be achieved.

Similarly it is asserted that "no additional University space requirements are anticipated for this program." Again, this underestimates the need for creating a program (and Faculty) space in which the core faculty, support staff, advisors, and the student body can gather. Without such a focus, the highly dispersed nature of the program will lead to a minimum of contact among the

participants and a loss of the collaborative and integrative philosophy which is central to the program.

We sense a general support in the university for the proposed program outcomes. The critical issue is the extent to which decisions taken now reflect the significant long-term potential of the M.Env program and the Faculty of Environment. The role of University leadership is particularly important at this time, particularly in relation to the basic choice between gradualism in Faculty development based on continuing negotiation between the constituent parts of the Faculty, as opposed to firm decisions taken now to reinforce the implications of the Senate's action and establish an integrated Faculty from the beginning. We especially emphasize the importance of the selection of the founding Dean in this respect.

From this analysis, while fundamentally supporting the M.Env proposal, we suggest a series of areas for change. These relate to the scale of the Faculty (we tend to believe that the current plans are for a too small operation in relation to faculty, students, and administrative support). We reinforce the need for the Plan of Study as an organizing element of individual programs which introduces the recognition that each program incorporates a distinctive element of interdisciplinary synthesis. We firmly assert the need for a strong academic course setting to bring students and faculty advisors together, noting that the current proposal does not meet the need. Finally we express the importance of strong and committed leadership focusing on the establishing of an adaptive process which creates an emerging Faculty, rather than one which moves too quickly to create a structure which precedes the experience that will help define its final form.

David Morley
Richard Revel
28 May 2003

**EXTERNAL EVALUATORS' REPORT
OF THE
MASTER OF ENVIRONMENT PROGRAM
in the
Faculty of Environment, University of Manitoba**

INTRODUCTION

The University of Manitoba has developed a proposal for a new graduate program and degree entitled Master of Environment (M.Env) that will be based in the new Faculty of Environment (FE). The Faculty of Environment will officially begin operations in July 2003.

In March of 2003 Dr. Anthony Secco, Professor of Chemistry and Acting Dean of the Faculty of Graduate Studies at the University of Manitoba, asked the authors of this report (David Morley, Dean, Faculty of Environmental Studies, York University and Richard Revel, Professor of Environmental Science, Faculty of Environmental Design, University of Calgary) to conduct an external review of the proposed new Master of Environment degree.

In his request to us, Dr. Seco specifically requested that "The review should address the academic merit of the proposed program and various related organizational and resource issues."

The Scope of our Assessment

It became clear to us very early on that our evaluation of the proposed Master of Environment degree could not be assessed academically in isolation of a consideration of the new Faculty of Environment that would house and offer the degree. This assessment, then, will address matters related to the composition and organization of the new Faculty of Environment and how it is likely to influence the academic and administrative viability of the proposed Master of Environment degree.

Basis of the Evaluation

The basis of our evaluation lies in our review of the proposal to offer a Master of Environment degree (and appendices) and a number of relevant ancillary documents. In addition to a review of written material, we conducted a two-day site visit on April 7th and 8th, 2003. During our site visit we met with over 30 individuals representing a very broad cross section of the faculty and students in the programs that will form or be associated with the new Faculty of Environment. The large majority of these meetings were conducted in private between the evaluators and the faculty member or student. All interviewees were assured that their comments would be treated

without attribution and were invited to be as candid in making their remarks as they felt comfortable.

The interviews were semi-structured with the authors having specific questions that they sought comment on, at the same time the interviewees were invited to go beyond our questions and bring any matters to our attention which they felt relevant. Our questions were consistent with the scope of the assessment and were directed at determining the:

- need for the program,
- academic merits of the program proposal
- level and nature of academic support and enthusiasm for the program;
- physical, library, monetary and academic resources available for the program
- sources of students for the program
- likely demand for program graduates

In addition to questions related directly to the proposed Masters program we sought comment on the following matters related to the new Faculty of Environment (the administrative structure of which is still to be determined):

- how the various administrative and academic organizational options for the Faculty of Environment might influence the new proposed degree
- how the proposed degree will relate to other graduate degrees to be offered by the Faculty of Environment
- suitability and commitment of academic expertise within the Faculty and among members of other Faculties who would be involved in graduate teaching and supervision in the proposed new degree.
- ability of the Faculty of Environment and the proposed Master of Environment degree to afford opportunities for academic growth and advancement of individual faculty members while also affording a rich environment for the advancement of knowledge.

THE PROPOSALS

The Faculty of Environment

Based upon the recommendations of the Senate Planning and Priorities Committee, the Senate passed the following motion on December 5, 2001:

THAT the 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...it will be referred to by the working title: Faculty of Environment (FE)...*
- b) *This Faculty will initially 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 an interest in teaching and/or research...to join the Faculty either in full or 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 inclusion of others.*
- d) *The FE, in keeping with the mandate of interdisciplinary study, will establish linkages as broadly as possible with other Faculties, including, but not limited to, Arts, Science, Agriculture 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 the 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...*
- f) *An interim Dean should be appointed and a full external search for a Dean with a vision for the future of the FE should be initiated.*

On 22 January 2002 the Board of Governors of the University of Manitoba passed the following motion creating the Faculty of Environment:

THAT the Board of Governors approve the establishment of a new Faculty of the Environment (as set out in the first recommendation of the Senate Planning and Priorities Committee report dated November 13, 2001 and approved by the Senate on December 5, 2001).

Proposed Master of Environment Degree Program

In a letter of intent dated 19 November 2002 to the Council on Post-Secondary Education, the Vice-Provost (Programs) of the University of Manitoba summarized the intent of the proposed Master of Environment degree as follows:

This interdisciplinary graduate program will permit students to pursue studies that focus on basic and applied research that deals with the complex relationships among the environment, the Earth, natural resources, and society at large. All students will be required to complete a new interdisciplinary graduate-level seminar course. In addition, students will choose, in consultation with an academic advisor, graduate course work and research projects in areas of their particular interests. We anticipate this program will attract about ten students per year, and expect graduates will find a variety of employment opportunities in Manitoba and indeed throughout Canada.

As described in the Statement of Intent, this new program is central to the academic mission of our new Faculty of Environment. We hope to build on existing partnerships, and to forge new links, with other Manitoba post-secondary institutions, government agencies and the private sector. For the most part, this new graduate program would make use of existing resources within the new Faculty and the University at large.

The letter goes on to indicate that the proposal will seek additional financial support for one full-time academic position.

REVIEW OF THE MASTER OF ENVIRONMENT DEGREE PROGRAM

We have taken as the basis for our evaluation of the proposed M.Env program a number of statements summarizing its objectives, form, and design, which we have been provided with. Our responses follow closely the university's own expectations of the degree, set in the context of the growing relevance of environment as a field of higher education study and of our own long term experience in this area. At the outset we want to express our conclusion that the university's requirements and expectations of this degree are demanding, but entirely valid.

Master of Environment Program Proposal (version dated: 2/13/2003)

The rationale for the M.Env program (1.1) emphasizes the widespread development of courses and programs relating to "natural resources and environment" throughout the University of Manitoba. The distinction is made between courses and programs with "a wealth of content related to the environment", but within programs that focus on something other than the environment, and the limited number of programs which have "environment as their primary focus." In this context, the M.Env proposal is seen as:

an opportunity to provide a research-based master's degree which is clearly an 'environmental' degree and which follows undergraduate academic preparation in either environmental science or environmental studies.

The proposal identifies the M.Env degree program as one that:

will be primarily dependent on existing courses in a wide variety of academic units ... [which] ... obviate the need to design and introduce new courses and also will prevent duplication and overlap of existing courses and programs

The proposal states that:

the program will focus on basic and applied research that deals with the complex relationships of the environment, including the Earth, its resources, and society at large ... much of this research will have relevance to policy development as well as issues relating to the management of the environment and its resources.

It is also important to note the stated **objectives of the M.Env degree (1.2)**, since they clearly reinforce the scale of the achievements that are expected. The stated intention is to:

- 1) promote broad **interdisciplinary** work on environmental issues
- 2) improve the **coordination** of environmental graduate course offerings
- 3) create opportunities for **interaction** among students and faculty from different disciplines
- 4) provide the basis for **graduate study** in Environmental Science and Environmental Studies in Manitoba.

There is also reference to "the creation of an environmentally responsible campus" which was not covered in the materials provided or in our discussions and which we will not be commenting on in this report.

Need for the Program

The M.Env program proposal makes three primary arguments in support of initiating the M.Env degree program: 1) to provide opportunities for University of Manitoba students to pursue graduate education in the area of Environment without having to leave the province; 2) to provide opportunities for graduate environmental education in Canada and particularly the Prairie Provinces; and 3) to address the increasing demand for environmental practitioners in Canada. The proposal goes on to emphasise the significance of the increasing demand for the graduates in industry, but it also establishes that the proposed Master of Environment degree is not directly geared toward the requirements of industry because of its research-intensive nature.

Based on our findings we accept the arguments presented by the authors of M.Env proposal, however, we are of the opinion that there are a number of equally and perhaps even more compelling reasons pointing to need. We go further in recognizing the innovative nature of the proposed degree and its potential as a larger scale operation than that proposed.

Level and Nature of Academic Support for the Program

Our findings concerning the level and nature of support for the program are derived predominantly from our interviews with senior officials of the university, faculty, and students.

There appears to be a great deal of academic support for the program, certainly enough to make it a viable and dynamic graduate program. Most individuals we met with were very enthusiastic and supportive and appeared to have a full commitment to the program. Faculty members, both within and without the FE, felt that there was an opportunity both in the M.Env degree program and the FE to build rewarding academic links that would be intellectually and personally enriching. We have been told that as many as 180 faculty members across campus have personally expressed their interest in linking with the program through links with the FE. Such a level of support is quite unprecedented and reflects, in our opinion, the vision of those individuals involved in promoting an interdisciplinary Faculty and the general design and openness of the Faculty mandate, as outlined in its formative motions from Senate.

We are of the view that there is considerable opportunity for the level of support across campus to rise to even higher levels as the M.Env and the Faculty establish a solid reputation for rigor and innovation.. Our view is derived from the Senate mandate to the Faculty which encourages the FE to invite other Faculty members from across campus to seek part or full time cross or joint appointments in the FE.

This conclusion is reinforced by the following data which are derived from **Appendix C** of the program proposal:

- A total of 109 faculty are listed
- They are drawn from 31 separate units: 21% from Geography (23); 17% from Geological Sciences (18); 14% from the Natural Resources Institute (15). The remaining 53 (49%) of faculty members listed in Appendix C come from other units.
- There are indications of particular commitments by faculty in:
 - supervising students 32 (29%)
 - sitting on thesis committees 42 (39%)
 - teaching courses 22 (20%)
- the breakdown according to home base is:

	supervise	committees	teach courses
Geography	4/23 (17%)	7/23 (30%)	2/23 (9%)
Geol Sciences	7/18 (37%)	8/18 (42%)	7/18 (37%)
NRI	5/15 (33%)	5/15 (33%)	4/15 (27%)
Others	16/53 (30%)	22/53 (42%)	9/53 (17%)

We recognize that these are not complete or final figures, but they do support claims that there is a significant university-wide faculty engagement in the Faculty.

With regard to **physical resources**, we recognize the existing availability of equipment, computers, and the well-documented resources of the University of Manitoba libraries. However, we want to point out that the kind of integration and application of these resources that is necessary to support the program (and the Faculty as a whole) will require strong commitment from all participating units, and also a well-organized and effective Faculty administration.

During our interviews with senior administrators it became clear that the University has made a high level of commitment to both the M.Env and the FE, both academically as well as from a resource perspective. There appears to be a preparedness to take the steps necessary to establish the Faculty in a form that keeps its options open and also to rely on the Faculty Council (with a membership of all people with academic appointments in the FE) to establish the bylaws necessary to promote long-term goals. It is recognized that the Faculty as a whole must decide its own future. This commitment to the principles of the new Faculty and its programs are the essential requirement of this kind of academic innovation, and we want to acknowledge its presence at the University of Manitoba.

Sources of Students for the Program

The M.Env proposal makes it clear that the source of students for the program will be both local, notably from the undergraduate Environmental Science and Environmental Studies Programs,

but also ultimately from a far wider context. It also makes it clear that students wishing to enter the program from other than an environmental science or environmental studies background will be assessed on an individual basis and may be required to complete up to 24CH of undergraduate course work prior to entering the program.

During our interviews it became clear that there are contrasting positions on the source of students. Some faculty members are of the view that the M.Env program will be driven by the undergraduate Environmental Science program, while other members see the M.Env in a much broader and independent context, attracting students from all disciplines and from a much wider national and international arena.

We are of the view that the question of where the students will come from (academically and geographically) is a fundamental driver of the scale, nature and structure of the program, its courses, faculty participation, intellectual richness, and interdisciplinary success. In the light of our expectations of the drawing power of the M.Env program, the very limited numbers of students to be enrolled (initially 10 per year) that are envisaged seem to be a serious underestimate of the program's actual capacity. If this is true, then either the Faculty will have to turn down large numbers of applicants or it will have to adjust its scale of operation, which would have very significant implications for resource requirements.

If the M.Env is primarily designed for undergraduate Environmental Science and Environmental Studies graduates then it can be structured in its currently planned form with a minimal number of courses related to interdisciplinary skills, cooperation and research methods. (Although, we are of the opinion that while such a local undergraduate base certainly helps in adjusting to interdisciplinary graduate work, it does not remove the need for significant reinforcement.) If the program is designed for a broader student source (including students from disciplinary departments) then the program must offer the necessary and extended means for these students to become interdisciplinary in their thinking. This could be achieved through a number of pedagogical means, however it is clear that, to become an effective interdisciplinary setting, it is necessary to place a greater emphasis on dialectic, rather than just rhetorical statement.

We are of the view that the program should target as broad a student population as possible, and that the program admission requirements and course offerings as proposed be revisited with a view to making the program attractive locally, nationally and internationally to students from all disciplines with an interest in matters related to the environment. It is our experience that the richness of interdisciplinary programs is significantly derived from the variety of experiences, perspectives and interests involved. Diversity adds intellectual colour to interdisciplinary programs; uniformity of backgrounds is more likely to generate intellectual uniformity, the antithesis of what we understand to be the intent of the proposed program. Once again this conclusion reinforces our queries about the proposed scale of the M.Env program. As a further concluding comment, based upon our individual experiences, a diversity of student backgrounds brings an intellectual and professional strength to a graduate program, and student mentoring and experiential resources are integral to the intellectual and professional experience of all.

Demand for Program Graduates

It is our view that the demand for the program is directly related to the targeted student population as discussed above. Based upon our experiences we are convinced that students will come to a graduate program that offers a rich intellectual environment, is diverse, and attempts to build bridges, not walls, among conventional academic disciplines. We have had no shortage of applications to our own graduate interdisciplinary programs and we know of no other similar interdisciplinary programs that have had a shortage of applicants.

Judging demand in the workplace is a bit more tricky because students are hired not just on the basis of their degree but for a host of reasons other than academic. Clearly there is a growing demand for interdisciplinary graduates with environmental management skills and knowledge and we see that demand increasing over time. However, such growth is dependent on many factors, including the political and policy orientation to environmental issues.

We are of the view that the demand for the program and the quality of its graduates will be directly related to the structure, rigour, openness and richness of the program.

Reviewers Response to M.Env Proposal

Consideration of the nature of this program and its objectives have led us to define several critical areas of focus in our evaluation of the M.Env degree proposal:

- We fully recognize the wider implications of viewing "Environment" as an integrated field, when its many parts are widely distributed throughout the university. Embracing interdisciplinarity, coordinating existing offerings, emphasizing greater interaction among its practitioners, and crossing the boundaries between Environmental Science (natural science based) and Environmental Studies (predominantly social science based), ultimately assumes an inherent capacity for **cross-university, open-minded agreement on collaboration**, the sharing of resources, changes in status of well-established units, and, in the long run, the initiation of fundamental changes in existing Faculty structures.
- We also recognize that the bringing together of a wide array of existing courses to play differing roles within individual students master's programs implies the **application of significant faculty advising resources**. Specifically, it is our experience that when courses, which are elements of disciplinary programs, are being used by individual students as building blocks for their own interdisciplinary purposes in distinctive personal programs, it is necessary to carefully monitor and evaluate the process on a continuing basis. This is not something that will normally be carried out by the course directors, who are oriented to an assumed norm among their own program-based students. (It should be noted that 84 such courses to be used by M.Env students are listed in Appendix A of the Program Proposal, and this is not a complete list.) We believe this implies the **need for**

core faculty with FT commitment to the Faculty. Certainly, the reference to one additional FTE appointment being made seems to be a serious underestimate of the faculty resources that will be needed, even in the early stages of low enrolments.

The proposal states, under the heading *Use of Existing Resources* (2.3), that the M.Env program will "package existing courses into a coherent program of study for each student." It is nowhere made clear how this will actually happen. We believe that a further requirement of this kind of broadly distributed student program coordination is the establishing of a **Plan of Study requirement for each student**. The individual Plan of Study, which is written by the student in association with an advisor, defines the particular objectives and interdisciplinary structure of a program and establishes the purposes for which particular course elements are being used. It also become the basis for the definition of the thesis research proposal used to complete the program. Without such an individual statement there is a serious danger that students will make *ad hoc* selection of courses, which may or may not cover their substantive needs or build a successful base for their research topics.

Another essential feature of such a program is the creation of a **strong and effective academic setting to bring together students and faculty advisors/supervisors together**. The purpose should be to discuss common issues and concerns associated with the participation in such an individually defined, interdisciplinary graduate study. This can take the form of a seminar or workshop which discusses collective needs to establish conceptual, theoretical, epistemological, methodological, and problem framing aspects of this kind of graduate research. We have serious questions regarding the extent to which the proposed compulsory course - 28.7AA: *Interdisciplinary Perspectives on Issues in the Environment* will fulfil these needs.

We are also concerned with the impression given that only limited staff support resources which will be available to the Faculty. Under *Human Resources* in section B of the program proposal it is stated that "we do not anticipate the need for additional support staff, at least in the short term". This ties in with the proposal's general assumption that the M.Env program will be a low cost program making relatively few additional demands on university resources. Again, it is our experience that **such integrated and individualised programs are expensive in staff support time** as well as in faculty advising time. The individual documentation that needs to be collected on each student, which will be adapted by students at least once during their program, is administratively demanding. Without such supportive academic administration there is a serious risk that the academic rigour that must be associated with the making of wise choices, among the many offered in an interdisciplinary program, will be neglected and that the standards of the program will suffer.

- Finally, another statement under 2.3 indicates that "no additional University space requirements are anticipated for this program." Again, we suggest that this underestimates the **need for creating a program (and Faculty) space** in which the core faculty, support staff, advisors, and the student body can gather. Without such a focus, the highly dispersed nature of the program will lead to a minimum of contact among the participants and a loss of the collaborative and integrative philosophy which is central to the program. We recognize that this does not necessarily imply new space and we understand that space occupied by units which are being integrated into the new Faculty could be used for such vital community-building purposes. We strongly urge that such space reorganization take place with this objective in mind as rapidly as possible. Such a vital symbolic base should be in place at the opening of the Faculty.

We completely concur with a number of other statements in the program proposal. We believe that the case for the **need for the program** is clearly made, both in academic terms and with regard to employment opportunities for graduates. Examination of the curricula vitae provided to us leads us to accept the claims of the **program's strengths** in the field of Environment with regard to research capacity, and overall experience of the large number of faculty who are willing to work within the Faculty of Environment.

M.Env Issues Raised During Meetings with Members of the Faculty

The following issues were raised by people associated with the Faculty and are outlined here as reinforcement of our commentary on the M.Env proposal.

- The M.Env degree, and particularly the unifying idea of the single required seminar course, will have the effect of bringing together people from across the whole array of units participating in the Faculty. The degree will define the Faculty a "place of exchange".
- The M.Env degree provides an opportunity for researchers to work with graduate students outside the disciplinary constraints of other Faculties. It does this by responding to the demands of delivering a master's level training to students from a variety of departments whose interdisciplinary "environmental" orientation makes it difficult for them to gain admission to disciplinary programs.
- The M.Env program provides a flexible framework by using "environment" as the context for interaction and by allowing students to develop individual one-off programs tailored to their own needs. It particularly provides a setting for students by bringing together a number of areas (e.g. policy/economics/ applied science) and connecting with different units (eg. the Freshwater Institute, Soil Sciences, and Native Studies).
- This is a graduate program which can accommodate students from a wide variety of undergraduate backgrounds who come together from across campus on the basis of their

commitment to the interdisciplinary environmental perspective of their work. In particular, it provides an valuable outlet for people with science-based interdisciplinary interests.

Comparisons between M.Env and MNRM

A number of our contacts made specific comparisons between the M.Env and the NRMI degrees in a manner which suggests that these two FE degrees could be seen as competing alternatives. Linked with the sense that considerable doubts remain among members of NRMI regarding their transfer to the FE, these comparisons are worth recording and commenting on.

The key differences between the programs that were identified relate to the heavy course requirements in NRMI which tend to make the program self-contained and in a form that "actually limits the range of contacts made by its students". In contrast, the M.Env program is seen as being significantly different from the MNRM and the other master's programs that will be offered by the FES - MSc and MA (Geog). Its focus on environmental issues provides a common base for **all** people with environmental interests and has the effect of blurring boundaries and encouraging exchange among environmentally oriented disciplines.

In many ways, these comments demonstrate the significant differences between the programs and the value of the M.Env program to a particular class of students - science students with interdisciplinary leanings. In this respect many believed that there would be room for both programs: MNRM, with its social science base and close relations with management and policy studies, and the M.Env with a natural science base and connections with scientific and issue analysis.

The following summary of comments made by students emphasises these distinctive M.Env characteristics:

Disciplinary programs with pure science orientations and applying traditional research techniques tend to view interdisciplinarity as leading to excessive "generalism" ... e.g. botany students interested in work at the landscape level, land use issues, working with farmers, applying local knowledge, involving nature studies, or policy approaches. For such students, the Faculty of Environment and its M.Env program will allow them to interconnect the knowledge areas that make up their projects. Such connections are "seamless" and students are able to pursue whatever direction their work takes them.

These comments were backed by those from faculty members in science departments:

Bringing together people within the FE can lead to the establishment of new research interdisciplinary themes (parks/protected areas, soil/hydrology) out of which new research groups could be established which would provide opportunities for new faculty to link up with people already doing research in a

field. All of this could focus on policy, management, planning ... the human/science interface.

Problems Associated with M.Env

The following summarise points made by people we met constitute an overview of the range of opinions being expressed:

- The M.Env program will be made up of so many separate individuals that it could be in danger of being a "virtual degree," not located anywhere and with no contiguous space for students. Who will they be they connected with? How can we integrate the disciplinary courses that students take?
- The M.Env program provides an opportunity for faculty to work with graduate students in an interdisciplinary area, but does it hold back a faculty members in their disciplinary careers? [Of course, the counterbalancing point was also made that interdisciplinary involvement, in fact, provides significant benefits to an academic career. Perhaps the point here is that issue has to be watched, and full credit has to be given to work carried out by cross-appointed faculty in the FE during disciplinary tenure and promotions activities.]
- Unless there is a clear demonstration of rigour and standing for the degree it will fail to attract NSERC/SSHRC-quality candidates. [This is the classic query of the disciplinary based researcher and again it has in it the seeds of an important issue - interdisciplinary work is often a difficult fit into the criteria set by disciplinary based awards committees. Again, notice has to be taken of this tendency and support given, especially to young researchers, at the faculty and university level.]
- There are problems with the introductory course; it is too short and provides an insufficient base for establishing competence in interdisciplinary methodology. It seems to be assumed that methodology will be learned through the thesis research and the selective engagement with other more specific courses, particularly those with a problem- and client-based format.

Summary of Suggestions for Changes in the M.Env Program

The following is a list of specific changes which we recommend being considered before the beginning of the operation of the M.Env program. Many of these suggestions derive from our own extended experience in working in programs which share many general characteristics with the new University of Manitoba proposal.

- The establishment of a program which depends for its overall integrity on the integration of individuals and resources currently based in separate units located throughout the

campus, demands particularly strong commitment from all of the participating units and above all **well-organized and substantial administration**. Programs which do not follow the normal pattern of unitary departments actually demand greater administrative support. The individual documentation collected for each student requires well-organized procedures and knowledgeable staff support. The current proposals seem to underestimate this requirement and we suggest careful reconsideration of this issue. Ultimately this point links with the others relating to the scale of operation of the Faculty, which is referred to several times in this discussion.

- The M.Env is based on the creation of distinctive individual student programs involving the "packaging of existing courses into coherent programs of study." The implication of this characteristic is that such interdisciplinary programs need to be monitored in relation to individual student requirements, otherwise the program is solely in the hands of individual faculty members and students, and the consistency of standards cannot be assured. This is the basis for the proposal that the use of **individual "Plans of Study"** be adopted. Without such formal statements of intent it is very difficult to keep track of student programs or to evaluate progress in them. We believe that such a program is not simply achieved by aggregating course units and writing a thesis. In each instance, an interdisciplinary synthesis is being attempted by the student and their advisor. This requires both monitoring and supportive academic administration, if the rigour necessary for the success of such a research oriented program is to be consistently achieved
- We suggest that a further essential feature of the Program must be "the creation of a **strong and effective academic setting to bring together students and faculty advisors/supervisors together.**" We do not see clear evidence that this will be provided. The proposed compulsory course (28.7AA: *Interdisciplinary Perspectives on Issues in the Environment*) does not appear to have these qualities. It runs for only one term - the second term of the first year of the program - and while it emphasises "the examination of research relating to various issues in the environment" it seems to us very unlikely that this can be achieved in such a short time and potentially among a group of students from many different backgrounds and with quite different research experiences. We recommend that this course become a full-year course, beginning in the first term, and that it be recognized that it needs to be used as a means of connecting students with each other and with their potential advisors.
- We propose that a **clearer position needs to be taken regarding the size of the M.Env program.** We have indicated that much of the language used in the documents we have seen provides a rather contradictory impression regarding this issue. On one hand there is the small (initially 10 students a year) drawn largely from the EnvSci and EnvStud programs within the FE. While the broader objectives set for the program suggest it will be drawing students widely from the region. As we have said, we accept this latter objective as being achievable in terms of the program's registration potential, we also tend to feel that unless this larger scale form of the M.Env program is adopted, its

chances of playing the critical catalyst role with the University, which helps the integrated Faculty emerge, are greatly reduced. Of course, the increased scale of operation will demand both faculty and staff resources well beyond those envisaged on the present proposals. The question seems to be: Does the University want to generate support for a Faculty of such a scale?

- We want to reinforce our earlier point regarding the provision of **adequate space in which the new Faculty can grow**. A Faculty which is dispersed widely across the campus has a far lower chance of reaching the integrated status which is aimed for. Faculties focusing on the Environment are, by definition, gathering grounds for people from many backgrounds who can readily discover reasons why they should collaborate in teaching and research, if they have to opportunity of exchanging with each other. The provision of a common space that has to be visited often by the members of the Faculty and which provides a common setting in which the paths of students and faculty cross, is a critical need. The Faculty of Environment needs to become a community, if its longer term collaborative and integrative style is to be achieved. To do that it needs to create a place and a space identified with it.

REVIEW OF THE FACULTY OF ENVIRONMENT

The M.Env program is the primary focus of this evaluation, but its relationship with, and its role in, the Faculty of Environment is directly relevant to the program's success and to any assessment of its future capacity for development. In this situation, where the nature of the Faculty is still a matter of question, virtually all our contacts made reference to the FE and connected the nature of the Faculty with their views of the M.Env program. The following discussion reviews the points made and our assessment of the options open to the University with regard to the FE and their implications for the M.Env program.

Reflections on Current State of Development of the Faculty of Environment

Debate over the development of the Faculty has resulted in three distinctly different models being presented:

1. The Faculty of Environment as a Collectivity of Existing Degree Programs and Units

While the units which will make up the Faculty share broad "environmental" associations, they also have distinctive histories and their members (especially those who have worked in them for long periods) have well established practices and expectations, which would not necessarily change once the move to the new Faculty takes place. The preferred structure of the Faculty for such members of the University is likely, therefore, to be one in which their units exist as autonomous departments or institutes within a conventionally defined Faculty framework.

2. The Faculty of Environment as an Integrated/Holistic Entity

This form of Faculty design distinguishes it completely from other Faculties. It is marked by the involvement of the members of many departments through their cross-appointment into the Faculty of Environment and the enrolment of some of their graduate students into the Master of Environment program (and presumably at some later stage into a Ph.D in Environment program). Added to this group are members of the constituent units who are eager to participate in an integrated Faculty (members of the Dept of Geography and the Environmental Sciences program, particularly, seem to take this position). In this form the Faculty of Environment takes on the conceptual and pedagogical style of such integrated units as the Faculty of Environmental Studies at York and the Faculty of Environmental Design at Calgary, the home bases of the two reviewers.

The new Faculty would act as the common base for both Faculty-based members and faculty drawn from throughout the university. If they are prepared to commit themselves to the building of "new synergies" out of these associations, then this dimension of the Faculty of Environment would have a significant influence on its form and future. It would uncover newly discovered strengths (in contrast to the established strengths that are present in the existing units that make up the Faculty.) Such tendencies could lead more directly towards the integrated "whole Faculty" version of the Faculty's future.

3. The Faculty of Environment as a Unit-Based Body

In an effort to create a compromise between these two contrasting forms for the new Faculty, the *Report of the Structures Working Group, An Interim Organizational Structure for the Faculty of Environment, University of Manitoba* (March 13, 2003) establishes an alternative compromise model, a **Unit-Based Approach** which was supported by 42% of the 55 members of the new Faculty who voted at the Feb/03 retreat which created the option. The "units" reflect the founding departments, institutes and program units, but the operating design emphasizes coordination of academic programs and research. The objective to establish this Faculty structure by July 2003 suggests that an overall acceptance of the unit-based model is expected to emerge from operating experience rather than from prior negotiation and strong consensus.

The Working Group Report indicates that the **strength of the proposed model** is based on:

- The flexibility built into the unit-based form of the Faculty, which derives from its "collaborative and interdisciplinary approach to understanding the changing Earth and human condition." (p 5)
- An epistemology which focuses on "applied issues and problems in the areas of Earth, environment, sustainable development, resources, and human activities" and needs to be capable of sustaining a "dynamic, flexible discourse for post-secondary education in environmental areas." (p 6) which cannot be supported by "historical Faculty structures"

- An "integration" of disciplinary and interdisciplinary approaches encompassing both new "horizontal" relationships across disciplines and preserving disciplinary "vertical" connections. The actual nature of this "integration" is not entirely clear, but the objective demonstrates an attempt to incorporate both the existing disciplinary departments and institutes and new inclusive interdisciplinary linkages that cross Faculty (and unit) boundaries and involve many "biological scientists, social scientists, and humanists" (9).
- The recognition that the "complex, interconnected, interdependent issues and real-world problems" (7) which the Faculty will address demands the kind of structure proposed.

Problems Associated with the Unit-Based Approach to the Faculty of Environment

There are a number of problems inherent in this approach to the Faculty of Environment which were discussed openly by virtually every contact the reviewers had. In order to come to conclusions on the future of the M.Env degree and the Faculty setting it will be part of, it is necessary for us to reflect on these issues.

The central problem with the unit-based notion is that it will inevitably result in a clear distinction between the surviving NRI, GGS, and Geography departments and the ES&P and the cross/joint- and adjunct appointees who come together in the Faculty from throughout the university. Since very soon this latter group will be in a position to out-vote the members of the established units in the Faculty Council, the field is set for much dispute and destabilization. However support for the integrity of each of the existing units continues to be expressed by its members, as these comments from an NRI faculty member demonstrates:

I am supportive of the current operation ... its interdisciplinarity, synergy, and high potential for faculty collaboration. I am against a forced merger where boundaries disappear ... we need to experience the new situation before decisions are made. What will the financial situation be? What about the role of the Dean? Will the level of staff support decline? Will there be an increased faculty course load in the Faculty of Environment? We need to build trust to face these issues together.

Underlying the concerns regarding the new Faculty is the failure to explicitly recognize the fundamental distinction between, on one hand, disciplinary-based academics who are engaged in specific studies of particular elements of the environment and, on the other hand, interdisciplinary academics who are engaged in thinking environmentally in ways that cross disciplinary boundaries and require a space for their activities which is outside normal disciplinary units. What distinguishes such groups is not the nature of their basic training in the study of environment, they all come from common disciplinary bases - biologists, soil scientists, climatologists, geologists, urban geographers, but the way they address the environments they study. By no means all of them conceive of "environment" as being studied through a

collaborative and interdisciplinary lens and, even if they do, it does not mean that they believe it necessary to create a new kind of structure to allow that to happen.

In this respect, creating an interdisciplinary and inclusive Faculty "by building on the strengths of the founding discipline-based expertise while adopting a flexible, dynamic, and adaptive organizational structure" (p 2) is bound to be a very difficult process. In particular, it leads to apparent (perhaps "real") threats to the existing units which people have grown up with, which have nurtured their professional advance, in which they have established their status in the institution, and through which they see their futures protected. This can result in strong and continuing reactions against the new style of organizational structure. Breaking down such antagonism is not easy because, as the Structures Working Group report suggests, these responses are deeply rooted in epistemological differences that guide the way in which questions are asked, methodologies are selected, knowledge is generated, and particularly the way in which boundaries are crossed and through which research and teaching becomes "integrated".

When a Faculty of Environment is created from scratch by the drawing together of people from many settings who have in common a transdisciplinary "thinking, learning and acting environmentally" epistemology, these conflicts are less likely to occur. The programs which emerge, the collaborations on which they are based, and the research themes generated help establish an inclusive Faculty operation from within.

If this underlying problem facing the University of Manitoba's Faculty of Environment is acknowledged, then immediate and general overall support for the "idea" of the Faculty will not be expected or assumed. Particularly, it will be recognized that more time will have to be given to the process of working towards a mutually supported Faculty model during the early years of its operation. In this respect, the Master of Environment program with its dependence on collaboration from throughout the University can become a very important aspect of such a gradual Faculty-building strategy.

Critical in the gradual approach to achieving the inclusive and transdisciplinary Faculty that is envisioned, will be the role of the **first Dean of the Faculty of Environment** and the initial administrative appointments made in the Faculty (Associate Deans and Unit Directors). The Dean will, on one hand, have to gain the trust of those committed to protecting the existing academic units and, at the same time, be seen as a supporter of the ultimate integrated model. Without being able to bridge this philosophical and political gulf, the Dean will instantly be regarded as a supporter of one side or another, with the result that s/he will be drawn into the discourse as a protagonist with a particular position. In this situation, the Dean will not be able to provide the leadership necessary to draw the differing groups together within the critical decanal first term; the vital period in which such a resolution must be achieved.

This does suggest a danger in making a decanal appointment from within existing units, particularly if such a candidate is seen as being against the integrated form of the Faculty. What is at issue here is the significance of "leadership" in interdisciplinary units. There is a need on the

part of the Dean to quickly gain support from the Faculty as a whole. Without such strong leadership on behalf of whole-Faculty interests there is real danger that it will become divided, even before it has begun operating.

Ultimate success for the Faculty of Environment will depend on the extent of commitment to its principles by, and the balancing effect of, faculty members from different departments who want to use the Faculty. But will they be able to lever themselves free of their disciplinary units? Can they afford the implications of this commitment - the loss of endowment funds based in the Faculties of Arts and Science, the impact on the tenure prospects of faculty based in more traditional disciplinary departments, the workload implications associated with supervising Faculty of Environment students. There is a danger that the Faculty will tend to be used by cross-appointed and adjunct faculty for specific short-term student-related needs. It will primarily be the full-time members of the Faculty who form its core, and this means people who are also committed to their departmental units.

Strategies for Dealing with the Dichotomies Associated with the Faculty of Environment

It seems clear to us that it will be through the definition of successful **compromises** that these problems will be addressed. A number of our contacts raised these possibilities and we tend to think that this is the only viable route to be taken, despite the intensive support for both distinct alternatives. This means allowing departments/institute to remain intact, but forming a separate body, an *"Institute of Interdisciplinary Study"* as one person named it, for those who wish to share engagement in the interdisciplinary ideals of "thinking, acting and learning environmentally" - particularly those from Geography and Environmental Science and from departments outside the Faculty.

This means letting units (and even individuals) select their own involvement in the Faculty, allow them to use structures they believe can work. In this way collaboration emerges over time. The argument is that people cannot be forced to collaborate; in the words of one person:

The existing situation cannot be swept away ... the Faculty has to find its own track ... work out its own associations ... collaboration must be allowed to emerge ... the preliminary emphasis should be on funding, appointing the Dean, creating an administration.

But then, say some, there will be no pressure for the shift to an integrated operation. On one hand there are those who say that "leaders of the units can be trusted to evolve towards collaboration," the basic idea that in the end collaboration is ultimately supported by everyone. Others say that if the Faculty begins with "departments" then there is the risk that it will never move on.

For a number of people, the final determinant of this process will depend on the senior university administration's commitment to change in this area. In this respect, the circumstances

surrounding the creation of the Faculty of Environment raises wider questions about the future structure of universities, particularly the dominance of large, departmentally structured Faculty units in which autonomy resides at a dispersed level within the different departments, and at another level in the centralised hands of the Deans and senior administrators. The Faculty-model created by the Faculty of Environment emphasises the integrating and interconnected nature of its members and provides programs which allow the crossing of boundaries. It is an interdisciplinary model for an interdisciplinary field - Environment. Perhaps this has wider implications for other cross-linking societal themes such as Health, Education, Law, Aboriginal Studies, and Women's Studies.

Finally, it is necessary to recognize that the University of Manitoba has created for itself a remarkably dynamic situation regarding the role of "environment" as a connector of areas of interest and expertise across the University around this urgent and vital issue. The potential of this situation is considerable. The future form of the collaborations around the Faculty of Environment can include the close involvement of other programs. By introducing an explicit link with environmental issues such programs can be put in a position of extending their drawing power and expanding their potential. What makes this case more unusual is the fact that it is students and younger faculty that are leading the way. The Faculty stands on a threshold and its development can change the future of Faculties in the university and beyond.

CONCLUSION AND OVERALL RECOMMENDATIONS

Our findings concerning the level and nature of support for the Faculty of Environment and the M.Env program are derived predominantly from our interviews with senior officials of the university and with faculty and students. We note, however, that other interested persons were invited to request a meeting with us. The nature of individuals is to come forward to express ones support for academic initiatives and not to come forward if one holds a negative or contrary position. Individuals in the latter category tend to stay back and remain indifferent or resigned in the more benign cases or actively undermine the program in the more blatant cases. We were not given evidence of wider support for the program in the form of letters or statements, so are not able to comment in detail on the attitudes to the Faculty or the Program, beyond those people who chose to meet us.

We are, nevertheless, of the opinion that there is a great deal of academic support for both the FE and the M.Env program. Certainly, enough to make it a viable and dynamic graduate program. All the individuals we met with were supportive and appeared to have a full commitment. Faculty members both within and outside the FE felt that there was an opportunity both in the M.Env degree program and the FE for building rewarding academic links that would be intellectually and personally rewarding, and that the Faculty would make a rewarding academic home. Appendix C of the Program Proposal lists 109 faculty members across campus who have recorded their interest in linking with the program through links with the FE. A total of 180

faculty was referred to during discussion. Such a level of support is powerful and possibly unprecedented and reflects, in our opinion, the vision of those individuals involved in promoting an interdisciplinary Faculty and the general design and openness of the Faculty mandate as outlined in its formative motions from Senate.

We are of the view that there is considerable opportunity for the level of support across campus to rise to substantially higher levels as the M.Env and the Faculty establish a solid reputation for rigour and interest. Our view, which is derived from the Senate mandate to the Faculty, encourages the FE to invite other faculty members from across campus to seek part- or full-time, cross- or joint-appointments in the FE.

We want to focus for a moment on the possible detractors to both the M.Env and the FE. Again, we wish to emphasize that we met with very few such detractors, but many of those who did meet with us indicated that there are quite a significant number of individuals who are less than enthusiastic about the ME and M.Env proposals. In fact, it was clearly expressed to us that there were a number who were downright hostile toward them and would do what they could to undermine the proposals. We have no sense how deep this hostility is or whether it is potentially as serious as it is claimed to be.

It is not surprising that changes of this kind generate uncertainty. Change is fundamentally an unsettling event and the greater the change to the status quo, the greater the uncertainty. The FE will be formed by the amalgamation of four academic units of long standing. Rich traditions have evolved, courses have been developed, degrees have become accepted and recognized, relationships established, routines ingrained and become comfortable, or at least acceptable, academic lives patterned that have resulted in academic success for individuals. These individual academic successes have lead to established and recognized reputations of the four units. Members of these units are being asked to disturb the status quo and recombine into a new entity with a broader mandate and little history – at least on the surface. Change always takes time and individuals embrace it at different rates and with different levels of enthusiasm and resistance. These individual differences must be accepted and respected.

On the matter of structure we offer comments based on our own experience. Both of us have spent our academic careers in non-departmentalized Faculties although we graduated from conventional departments (Revel from Botany; Morley from Geography). Although our Faculties are non-departmentalized we have continued to define our expertise based on our original academic home, but have enjoyed extending the reach of our disciplinary knowledge into new areas. It is has been our experience that this extension greatly enriched us, and in turn brought enrichment to the students we teach. While our Faculties are flat and interdisciplinary by structure and nature, they have pushed and pulled in both directions over the years. We consider these swings healthy as they force ongoing evaluation and adaptation of changing environments.

A discussion on interdisciplinarity would not be complete without comment of the relationship of conventional departments and disciplines to the success of interdisciplinary endeavours.

Interdisciplinary pursuits are not for everybody but they offer a distinctive alternative paradigm in the pursuit and production of knowledge. In fact, disciplinary specialization generates much of the fundamental building material that allows interdisciplinary synthesis to take place.

Disciplines do not go untouched by interdisciplinary approaches either. Synthesis and specialization are two sides of the same coin. We both have colleagues in our flat interdisciplinary structures who remained primarily disciplinary specialists. They have been able to thrive intellectually and have established reputations primarily in their home discipline while bringing enrichment to the interdisciplinary context. The future of the University of Manitoba's interdisciplinary innovation through its Faculty of Environment will similarly take its own track and form its own patterns. We strongly emphasise the importance of consistent support on the part of the institution in the long-term potential of this interdisciplinary concept. Maintaining the principles of such a venture and allowing it space to evolve are the simplest and most direct advice we can give.

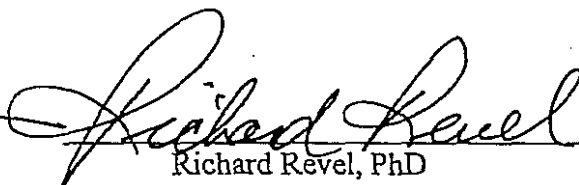
Finally, with regard to the name, **Faculty of Environment**. We were asked to comment on this form - should it be permanent? While at first we thought it was an incomplete name, but after discussion and reflection we now feel that it fits the current stage of development of this field. The distinction between Environmental Studies (ie. social science, humanities, professions) and Environmental Science (disciplinary natural science programs) artificially separates essential elements of the whole. "Environment" alone implies both, and leaves open the understanding of a more complete integration.

We have concluded on the basis of our evaluation that, once our concerns have been addressed to that satisfaction of the academic authorities of the university, the University of Manitoba has the necessary academic resources to support this program and that this proposed Master of Environment program has considerable merit and will afford a great opportunity for faculty and students alike to pursue new and interesting academic and professional matters. Further, we are also of the view that the program will fill a social and professional need and that graduates of that program will provide benefits to the people of Manitoba and beyond.

We recommend to the Dean of Graduate Studies that, this proposed Master of Environment program be carried forward through the necessary approving bodies and approved in a timely manner.



David Morley, PhD
York University



Richard Revel, PhD
University of Calgary

RESPONSE TO EXTERNAL EVALUATORS' REPORT

PROPOSED MASTER OF ENVIRONMENT DEGREE

June 13, 2003

1.0 Introduction

This report provides a response from the Faculty of Environment, University of Manitoba, to the External Evaluators' Report on the Proposed Master of Environment program dated May 2003, authored by David Morley and Richard Revel. Our response considers the various comments, concerns, and recommendations provided, and addresses them in a variety of different ways. Firstly, our response provides an up-to-date context of the governance, mission, vision, and organizational structure of the new Faculty, most of which had not yet been determined during the time of the proposal development and external review. Secondly, our response considers the specific recommendations from the reviewers directed at enhancing the proposed Master of Environment degree program, and addresses each of these specifically, along with general commentary of their context in relation to the Faculty organization and governance. Finally, our response requests that the Faculty of Graduate Studies consider enhancing approval procedures so as not to unduly delay consideration of this proposed degree program.

2.0 Additional Development of the Faculty of Environment During the 2002-03 Regular Academic Session

As described in the evaluators' report, the Faculty of Environment was established by a motion from the University of Manitoba Senate in December 2001, and formally approved by the University Board of Governors in January 2002.

As a result of the motion, the Faculty of Environment became functional in July 2002 in a transitional fashion, with a fully functioning, new Faculty to be operational by July 2003. An interim Dean (Wendy Dahlgren) was appointed for the period July 2002-June 2003, and a search process for a Founding Dean was initiated. Faculty of Environment Council was formally established in Fall 2002, with bylaws developed to establish governance procedures. A Faculty Executive Committee was established, and regular meetings were held throughout the winter and spring academic terms. In an effort to enhance participation of faculty, staff, and students interested in the new Faculty, full-day retreats were held in November 2002 and February 2003. These retreats resulted in the formation of two Working Groups, one to develop guiding principles for the new Faculty, and another to recommend an organizational structure. It should be noted that during the site visit of the external reviewers, considerable discussion surrounding these Working Groups was being generated, and the reviewers were likely provided with a wide range of opinion and perspective respecting these areas.

In April 2003 (after the site visit of the reviewers), Faculty of Environment Council met and considered the recommendations from the Working Groups. The following motions were approved at the April 24, 2003 Faculty Council meeting.

Motion 1 - J. Oakes (on behalf of Executive Committee). That the Noble Purpose, Mission, and Vision statements for the Faculty of Environment be approved, as amended.

Carried (Unanimous)

NOBLE PURPOSE

(To be finalized in 2 years)

Our noble purpose is to contribute to understanding the changing Earth, environment, and human condition and to disseminate and apply this knowledge for the benefit of the present and future.

MISSION

(To be reviewed every 3 or 4 years)

Our mission is to create an intellectual community conducive to becoming a premiere teaching and research faculty in the broad areas of Earth, environment, sustainable development, resources and human activities. We will accomplish this by using the unique synergies of our inter-dependent disciplines; by developing academic programs that respond to the needs of students, changing societal conditions, and worldviews; and through opportunities for research and outreach.

VISION

(To be reviewed every 3 or 4 years)

Our vision is to be a faculty of outstanding merit in teaching, research and outreach concerned with complexities of the Earth, environment, sustainable development, resources, and human activities.

Our aim is to be a faculty that:

- is recognized for graduates with the skills, competencies, and knowledge required by the needs of society;
- promotes individual excellence and collaboration in research, teaching, and outreach;
- is recognized for community engagement and leadership;
- promotes ethical principles and diversity, and an understanding of cultural issues; and
- has the resources required to facilitate the pursuit of our mission.

Motion 2 - R. Baydack (on behalf of the Executive Committee). That the organizational structure of the Faculty of Environment, as amended, be recommended to Senate for approval.

Carried (0 opposed, 2 abstentions)

ORGANIZATIONAL STRUCTURE

Following review of the report of the Structures Working Group dated March 13, 2003, consideration of the feedback received on the report, and recognizing that self-determination of each unit's organizational structure is the preferred approach in establishing our new Faculty of Environment, the Faculty Council approved the following motion:

That it be recommended to Senate that the organizational structure of the Faculty of Environment consist of:

- A new Department, to be named as soon as possible in 2003, which will include members from the Department of Geography and from the Environmental Science Program, and from other units of the University of Manitoba who are interested in joining, with a Head reporting to the Dean of the Faculty;
- The current Department of Geological Sciences, with others from other units of the University of Manitoba who are interested in joining, with a Head reporting to the Dean of the Faculty;
- The current Natural Resources Institute, with others from other units of the University of Manitoba who are interested in joining, with the Director reporting to the Dean of the Faculty.

Meetings among members of the new Department have taken place since the April Council meeting in order to develop plans for implementing the merger and addressing requirements for space and other needs. The new Department will be housed in the Isbister Building for the 2003-04 academic, occupying the space of the former Geography Department as well as additional space being granted by the Faculty of Arts. Plans for consolidation of the new Department into space in the Wallace Building are underway, so that the majority of the space needs for the new Faculty will be met through the Wallace and Sinnott Buildings by July 2004. Additional space for the Faculty of Environment is being considered over the longer term by the University Space Committee, either through provision of additional floors to the Wallace Building and/or creation of a new Environment building.

Academically, the 'place' of the Master of Environment degree has now been made clearer than in the original proposal. The Faculty of Environment will be offering a number of Master's degree programs in the three departments that have been defined as described above. The new Department will be the academic 'home' for the interdisciplinary Master of Environment degree, as well as the existing Master of Arts (Geography) degree. In addition, the new Department will be proposing a new Master of Science (Geography) degree program in the next few months. This will effectively provide three options for graduate students:

- 1) interdisciplinary Master of Environment
- 2) social-science based Master of Arts (Geography)
- 3) physical-science based Master of Science (Geography).

The faculty complement for the new Department will initially number upwards of 20 FTE, with arrangements to be made commencing July 2003 for joint and cross-

appointments with faculty members from other areas of the University. In addition, the Faculty of Environment provided a request through the University's Strategic Initiatives Process for 6 FTE tenure-track appointments to be effective as soon as possible. If those appointments are granted, most are likely to be affiliated in some fashion to the new Department, and therefore able to provide academic support to Master of Environment candidates.

The initial support staff complement within the new Department will number 6 FTE. The graduate secretary for the former Geography Department, to be assisted as needed by an additional office assistant from the former Environmental Science Program, has been designated as the support staff person responsible for the proposed Master of Environment degree. In addition, a Cooperative Education Coordinator is available from the former Environmental Science Program to provide assistance as required to Master of Environment candidates.

In summary, a great deal more information on the Faculty of Environment and its operation is now available. This information as described above will be used in commenting on the various issues raised by the reviewers in assessing the proposed Master of Environment program.

3.0 Specific Issues Identified from the Executive Summary of Evaluators' Report

This section will comment on the various specific concerns, comments, and recommendations provided by the External Evaluators, most of which are summarized in the Executive Summary section of their report. Where required, suggested changes or additions to the text of the original proposal will be provided in italics. In other cases, issues will be addressed by referencing newly established Faculty policies and procedures described in the previous section. In many cases, however, a response is not provided since the evaluator's appear to be addressing their commentary to other levels of the University. Identification of specific comments from the Evaluators' Report that are addressed will be linked to the report's page numbers.

1. p. 1, 5th para, final sentence – The evaluators suggest that the proposed degree target a broader student population, and that program admission requirements and course offerings be revisited.

These items will be addressed in more detail throughout the remainder of the response, but in general, the proposed degree is meant to begin in a relatively small-scale fashion. We anticipate that it will grow as the reviewers suggest, and that our capability to deliver it, will similarly expand over time. Initial enrollment of about 10 MEnv students per year remains our target.

Program admission requirements specify Environmental Science or Studies undergraduate degrees, or equivalent. We believe that the 'equivalency' statement provides enough space to consider applicants with other qualifications. However, after recent consultations with environmental practitioners, we believe

an additional admission statement needs to be introduced as a second sentence in the Admission Requirements section of the proposal as follows:

Persons who do not hold an undergraduate degree, but have attained considerable, practical experience in the environment field as demonstrated by a sustained employment record showing increasing responsibility, and have demonstrated outstanding performance in their career, may also be considered for admission. Admissions in this category will normally be restricted to no more than one per year.

In terms of additional course offerings, we believe that sufficient courses exist in the environment area across various departments of the University. In fact, the new Faculty will be investigating possible redundancies in this regard. Therefore, we see no reason to consider additional courses at this time, however, if new areas of focus emerge, we are prepared to reconsider this recommendation in future.

2. p. 2, 1st full para, final sentence – Additional tenure-track, faculty resources (up to 6) have been requested through the University's SIP process. As well, joint and cross-appointments are under consideration.

3. p. 2, 2nd para – We concur with the suggestion for an Individual Plan of Study requirement, and suggest that an additional section be added to the original proposal after section 3.1.1 Admission Requirements as follows:

3.1.A.A Individual Plan of Study

A central task of the Master's program will be an Individual Plan of Study to be prepared and developed by each student in consultation with their proposed faculty advisor. The objectives of the Plan of Study are: (a) to define a research direction; and (b) to organize the student's course work in the framework for integration and synthesis of interdisciplinary knowledge. The Study Plan should define an area of concentration, identify learning objectives, and set out a strategy for achieving those objectives. As the student's ideas, interests, and learning evolve, the Study Plan can be revised to reflect a program synthesis.

Faculty advising is an integral part of the proposed Master of Environment approach to interdisciplinary teaching and learning. When students apply to enter the program, a proposed advisor must be identified, whose role is to facilitate the development of the Individual Plan of Study. Once individual interests and needs have been defined, the student in consultation with their advisor, will select additional committee members to match those interest and needs as closely as possible. Throughout the student's time in the program, the advisor will act as program consultant for the student's area of study.

4. p. 2, 3rd para – The need to review the content and delivery of proposed course 28.7AA was identified. Although we recognize that the details of the course are perhaps somewhat incomplete, we believe that the approach to be taken (i.e., having Master's students provide details of their proposed research methodologies) is valid. This learning environment will be stimulating in that

although students will learn in detail about their individual areas of interest, they will become familiar with several others. We expect one Core Instructor from the new Department described above, to be designated each year as the lead instructor for the course. Some other additions that we will include as this course is developed further will be to include a clear statement that faculty advisors will be involved in course delivery when their students are enrolled in the course, that advisors will facilitate the seminars involving their students, and that advisors will assist them in summarizing learning outcomes from seminars presented. We also propose that this course not be evaluated by a letter grade, but rather by a Pass/Fail designation. This designation will more clearly indicate the overall outcome for each student. Finally, the course is likely too condensed into one academic term. We propose that it be offered over two terms, in a 3-hour block, every second week, but remain a 3-credit hour course. This structure will allow students additional time to prepare and complete assignments and presentations but cause undue attention to be directed from other components of their Individual Plan of Study requirements.

5. p. 2, para 4 – Availability of additional support staff resources (6 in total) has resulted from the creation of the new Department in the Faculty, as described in 2.0 above.
6. p. 2, para 5 – Requests for additional space for the Faculty of Environment are being advanced through the appropriate University procedures, as described in 2.0 above.
7. p. 3, 1st para – This discussion relates to issues beyond the proposal, and is being considered by various authorities of the University, notably the Office of the Vice-President (Academic) and Provost.

4.0 Additional Issues Identified by External Reviewers

1. pp. 9-12 – Various issues were identified in this part of the External Evaluators' Report, and these have largely been addressed in 2.0 above.
2. pp. 12-15 – The details of the evaluators' review of the proposal and site visit are summarized in this section. The main issues and recommendations that emerge are provided in their Executive Summary, and these have been addressed in 3.0 above.
3. p. 16, Problems bullet 1 – Creation of the new Department which will serve as an academic home for the proposed degree is described in 3.0 above.
4. p. 16, Problems bullet 2 – The Faculty of Environment is in the process of developing tenure and promotion procedures that will recognize the importance of interdisciplinary components and involvement in advancement of faculty careers for regular, joint, and cross-appointments.

5. p. 16, Problem bullet 3 – Currently several faculty members in the new Department hold major grants from National Granting Councils and are conducting interdisciplinary research. We note the concern, but do not see this as a potential problem for the proposed degree program as much as for the Faculty.
6. p. 16, Problem bullet 4 – See response 4 in 3.0 above.
7. pp. 16-18 – See responses in 3.0 above.
8. pp. 18-25 – Interesting and useful comments for the Faculty, but beyond the scope of the proposal. Note, however, many of the issues raised are discussed in 2.0 above.

5.0 Summary of Response to External Evaluator's Report

The Faculty of Environment has found the comments and recommendations from the external reviewers to be very useful and of interest to not only the proposal under consideration, but also to the Faculty as a whole. Many of the comments were somewhat dated since the proposal development and site visit preceded a number of important advancements made by the new Faculty as described in 2.0. In particular, the development of a new Department that will serve as an academic home for the proposed degree, along with providing additional faculty, staff, and space resources is significant indeed. Specific suggestions relating to admissions, the need for an Individual Plan of Study, the Introductory course, faculty advising, support staff resources, space, and needs of the Faculty generally have all been addressed in 3.0 and 4.0 above. In summary, the proposed Master of Environment degree program will be enhanced by the input provided, and we look forward to its approval in the months ahead.

6.0 Timing for Approval Process for Master of Environment Degree

The email dated June 5, 2003 from the Faculty of Graduate Studies that accompanied the External Evaluators' Report provided a timeline for approval of the proposed Master of Environment degree. This timeline suggested that with the various steps that are required, final approval of the degree would not occur before June 2004, assuming everything moves forward without a hitch. This is an extremely lengthy projection, and certainly seems inappropriate in light of the few specific comments directed toward the proposal from the External Evaluators. Currently, a number of students are working with proposed advisors and delaying making their formal application to the University of Manitoba, while others have been admitted into similar University of Manitoba programs with the intention of transferring without financial or academic penalty once the Master of Environment program is approved. This procedure clearly seems to be disadvantaging students who would like to move forward with their academic plans.

We therefore recommend that the Faculty of Graduate Studies and the Vice-President (Academic) give consideration to moving forward with a special procedure for approving

the Master of Environment degree. A 'parallel' process might be useful in this regard, whereby upon approval by the Faculty of Graduate Studies Executive, the proposal could be sent not only to members of Faculty of Graduate Studies Council, but also to the required Senate Committees for parallel consideration. Clearly approval by Council is required, but the timing of its next meeting (November 2003) essentially delays the availability of the degree until September 2004. It appears as if the FGS Executive could bring forward a 'recommendation to continue subject to FGS Council approval', that the Senate process could effectively begin this summer. This could mean that the final proposal would be considered at the December 2003 Senate meeting, and with special approval, students could be admitted for January 2004.

This outcome would clearly be a major benefit for students, faculty members, the Faculty of Environment, the Faculty of Graduate Studies, and the entire University of Manitoba community.

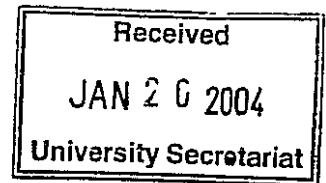


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January 16, 2004

TO: Juris Svenne, Chair, Senate Planning and Priorities Committee
FROM: Leslie King, Dean, Faculty of Environment *Leslie*
SUBJECT: Addendum to the Master of Environment Proposal

I am writing to advise you of some revisions and corrections to the above-noted document that have been addressed since the proposal was first developed some 18 months ago. These alterations are not academic in nature, but rather speak to administrative and organizational components that were not in place as the Faculty of Environment was under development. In particular, please note the following:

1. Section C.1 - Space Requirements: Space for the Faculty of Environment is in the process of being concentrated in 2 or 3 buildings on campus, as the Dean is developing a Space Strategy with input from a Faculty of Environment Space Committee and the Office of the Vice-President (Administration). The Dean's Office and Faculty General Office are now housed in newly developed space in 204 Isbister, with other departmental and institute general offices remaining intact. The Faculty of Environment Space Committee is also establishing space requirements to meet Faculty needs. Graduate student space has been built into these calculations as a necessary requirement, so that faculty members will no longer be responsible for identifying suitable space before accepting a graduate student.

2. Section D.1 - Delivery Costs: Since development of the initial proposal, the Department of Environment and Geography has received 2.0 FTE tenure-track positions through the University's Strategic Initiatives Process. These positions are in the areas of Environmental Science and Quantitative GIS Analysis, respectively. Both of these positions are expected to become involved in the delivery of the Master of Environment program, including teaching and advising of graduate students. Administration of the program will be done through the Graduate Programs Office of the Department of Environment and Geography, which has recently been provided with a 0.33 FTE academic administrator to assist with the new Master of Environment program.

3. Section A.1.2 - Objectives: Objective 5 of the proposal has been deleted, since it is not a component of the Master of Environment program per se. A revised replacement page noting the deletion is included for distribution to Senate.

4. Libraries Support: The Libraries completed a thorough review of holdings in January 2003, and judged that their collection was sufficient to support the Master of

Environment program at a minimum level. We have completed our own review in recent weeks, and feel that the Libraries report is correct in its assessment. We have since met with the Libraries staff, and were pleased to learn that the collection has improved significantly in the last year and a half. They also informed us that they are actively raising funds to improve the environmental holdings. Also, we were pleased to note the increase in full-text e journals in the field. Finally, we have established our own Faculty of Environment Endowment Fund, and have earmarked Library Support as a gift category. We are confident, therefore, that the Libraries will be able to support the Master of Environment program adequately.

I hope that this answers the Committee's questions, but please do not hesitate to contact me if you require anything more.

January 26, 2004

Report of the Senate Planning and Priorities Committee on the Proposal to introduce a Master of Environment program in the Faculty of Environment.

Preamble

1. The terms of reference of the Senate Planning and Priorities Committee (SPPC) are found in the *Senate Handbook*, Section 8.32, wherein SPPC is charged with making recommendations to Senate regarding proposed academic programs.
2. The Programs and Planning Committee (PPC) of the Faculty of Graduate Studies (FGS) has the responsibility of reviewing new graduate programs and makes recommendations to FGS Council.
3. The FGS proposes the creation of a new graduate degree program called the Master of Environment (MEnv) Program, in the Faculty of Environment, as recommended by the PPC.

Observations

1. The environment has been a topic of growing concern to governments, non-governmental agencies, industry, and the general public for most of the past century. At the University of Manitoba, teaching and research on the environment are being carried out in many faculties (e.g., Agriculture and Food Sciences, Architecture, Arts, Engineering and Medicine, Physical Education and Recreation Studies, Science, and the Natural Resources Institute); however, few graduate-level programs have the environment as their primary focus.
2. The Faculty of Environment was established by a motion from the University of Manitoba Senate in December 2001, became operational in 2002, and successfully appointed a Founding Dean in 2003. Embedded in Senate's recommendation to create the Faculty of Environment was the requirement that the new faculty coordinate program development in the general areas of Earth, environment, sustainable development and resources. The proposed degree will provide an interdisciplinary option in the new faculty and thereby complement the existing social-science based Master of Arts (Geography) and a proposed physical-science based Master of Science (Geography).
3. The University of Manitoba currently offers two other graduate degrees that have the environment as their primary focus: the Master of Natural Resource Management (MNRM) and Ph.D. in Environment and Resources. A distinguishing feature of the proposed degree is that it will assume and directly follow from undergraduate training in Environmental Science or Environmental Studies. The proposed degree will encourage integrative and interdisciplinary study of the environment, without imposing further delimitations (e.g., environmental management or policy).
4. The specific objectives of the proposed degree are to promote interdisciplinary work and student-faculty interaction on environmental subjects, improve coordination of environmental course offerings at the graduate level, and provide graduates of the Environmental Science and Environmental Studies undergraduate degree programs with

a means of continuing their studies in Manitoba. The program is designed to build upon the strength of existing human and physical resources at the University of Manitoba. As well, the Province of Manitoba is an exciting location for environmental research, with many distinctive features in its social, economic, and topographical composition.

5. The proposed program will consist of 12 credit hours (CH) of approved course work and a thesis. Up to 6 CH may be transferred into the program, and at least 9 CH must be at the 700 level or higher. Up to 24 CH of undergraduate course work may be required prior to entering the program, depending on students' academic background. To satisfy these requirements, students can choose from more than 75 existing graduate courses at the University of Manitoba (plus 4 applicable 500-level courses from Brandon University). Acceptance by a faculty advisor is required for admission and necessary for the co-development of a highly individualized plan of study for each student. Other aspects of admission and evaluation will be governed by FGS procedures and regulations.
6. One new graduate-level course will be introduced: 128.7AB Interdisciplinary Perspectives on Issues in the Environment (3 CH). This course will be compulsory in the first year of the program and will provide students with a common core of instruction in an otherwise individually tailored plan. Various instructors from the Faculty of Environment will describe their research approaches to environmental problems. Students will use this course to develop their own research interests and approaches. An instructor from the Department of Environment and Geography will be designated each year as the lead instructor of the course; however, the workload is expected to be distributed over multiple instructors and two terms (meeting biweekly). Space and equipment costs of this course are within the scope of existing resources.
7. Approximately 10 students per year are expected to enroll in the MEnv program initially. When graduates emerge from the Bachelor of Environmental Studies program recently approved by Senate, enrolment is expected to double. The Faculty of Environment estimates its capacity at 30 students per year, based on preliminary indications of faculty members' interest in participating and willingness to provide students with necessary support (see Observations 5 and 9). Demand for the program is likely to be propelled by three factors: (a) Across Canada, opportunities for interdisciplinary environmental study at the graduate level are limited; (b) programs of this nature are typically unstructured or embedded in other academic units (or in no particular unit), and are not clearly focused on the environment; and (c) the environmental industry is one of the top five employers in Canada and is growing rapidly. In Manitoba, such growth is related to the need for better systems of waste water management, manure management, and fuel dispensing, for example; in sectors such as agriculture, food processing, health care, and transportation.
8. The required faculty resources for the proposed program are already in place. In addition, two new faculty positions that have recently been approved in the Department of Environment and Geography through the University's Strategic Initiatives Process will contribute to teaching and advising graduate students in the program. Several members of government and non-governmental organizations with qualifications for adjunct professor status have offered to participate in student supervision and serving on thesis committees. Administration of the program (i.e., program marketing, admissions, record keeping) will be done through the Graduate Programs Office of the Department of Environment and Geography, which has recently been provided with a .33 FTE academic administrator to assist with this program.

9. The process of allocating space to the Faculty of Environment is ongoing. The Dean is currently developing a space strategy with input from a Faculty of Environment Space Committee and the Office of the Vice-President (Administration). With respect to the MEnv program, it is anticipated that all students will require a desk or carrel and computer access, and some will require laboratory space. Graduate student space has been built into the Space Committee's calculations as a necessary requirement. Students will gain access to research equipment through their advisors or by negotiation with departments. Field stations, laboratories, and equipment are available on a user-fee basis through the Freshwater Institute, Experimental Lakes Area facility in Ontario, Centre for Earth Observation Science, Geological Sciences Laboratories, and Landscape Dynamics and Field Laboratories.
10. In January 2003, the Libraries reviewed their collection and concluded that it could support the proposed program at a minimal level. Proponents of the program and Libraries staff are working together to improve environmental holdings (e.g., through an endowment fund established by the Faculty), and there has been an increase in full-text e-journals in the field. The Faculty is satisfied with the level of library support that is currently available.
11. As with any new graduate program, the MEnv program will place additional strain on limited resources for graduate student awards and scholarships at the University of Manitoba. However, a variety of scholarships and awards are targeted for environmental research, from sources such as the Northern Scientific Training Program, American Water Works Association, Environment Canada, and World Wildlife Fund Canada.

Recommendations:

The SPPC recommends that:

Senate approve and recommend to the Board of Governors that it approve the introduction of a Master of Environment program in the Faculty of Environment.

Respectfully submitted,

Juris P. Svenne, Chair
Senate Planning and Priorities Committee

/jml