

Senate
Senate Chamber
Room 245 Engineering Building
WEDNESDAY, NOVEMBER 6, 2002
1:30 p.m.

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. Report of the Senate
Committee on Awards Page 20

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 OCTOBER 2, 2002

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 25
2. Report of the Senate
Planning and Priorities Committee
 - a) Report on the 2003/04 to 2005/06 Resource
Allocation Process, the 2003/04 Estimates
Process and Capital Priorities for 2003/04 Page 26

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

- | | | |
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| 1. | <u>Proposal of the Faculty of Science
for a B.Sc. Minor in Ecology</u> | Page 27 |
| a) | <u>Report of the Senate Committee
on Curriculum and Course Changes</u> | Page 40 |
| b) | <u>Report of the Senate Planning
and Priorities Committee</u> | Page 41 |
| 2. | <u>Report of the Senate Committee on
Academic Computing re the "Proposal
for a Digital Copyright Clearance Pilot Project"</u> | Page 42 |
| 3. | <u>Report of the Senate Committee on
Rules and Procedures re proposed Faculty
Council Bylaws for the Faculty of Environment</u> | Page 46 |
| 4. | <u>Report of the Senate Committee on Nominations
re vacancies on Senate Standing Committees</u> | |

This report will be available at the Senate meeting.

X ADDITIONAL BUSINESS

- | | | |
|----|--|----------------|
| 1. | <u>Discussion Paper on Information Technology</u> | Page 53 |
| a) | <u>Report of the Senate Committee
on Academic Computing</u> | Page 91 |
| b) | <u>Report of the Senate Planning
and Priorities Committee</u> | Page 93 |

XI ADJOURNMENT

/jml

September 17, 2002

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

Preamble

1. The terms of reference for the Senate Committee on Curriculum and Course Changes (SCCCC) are found in Section 8.21 of the *Senate Handbook*. SCCCC is "to recommend to Senate on the introduction, modification or abolition of undergraduate programs, curricula or courses".
2. Since last reporting to Senate, the Senate Committee on Curriculum and Course Changes (SCCCC) met on September 17, 2002 to consider curriculum and course changes from various units.

Observations

1. **General**

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

2. **Faculty of Medicine**

The Faculty of Medicine in proposing the introduction of courses **888.199** and **888.299** "**Summer Early Exposure Elective**" for first and second year medicine respectively. These courses are non-credit and offer students who have completed their first or second year an opportunity to experience work in a clinical specialty area of medicine under the supervision of a faculty member.

3. **Faculty of Nursing**

The Faculty of Nursing is proposing new course **049.440** "**Rural Nursing**". This three credit hour course will focus on rural nursing issues and the management of rural health care.

4. Faculty of Pharmacy

In order to broaden the scope of existing offerings and to embrace broader pharmaceutical sciences issues, the Faculty of Pharmacy is proposing the deletion of course **046.458 "Infectious diseases writing for pharmacy"** and the introduction of a three credit hour course **046.463, "Pharmacy Issues writing for publication"**.

In an effort to balance excessive course loads in first year pharmacy and because Organic Chemistry 002.221 fulfills the faculty needs for a foundation for Medicinal Chemistry, the faculty is proposing the deletion of **002.222 Organic Chemistry II** from the Pharmacy curriculum.

The Faculty is also proposing that the maximum allowable time for the completion of the Bachelor of Science (Pharmacy) degree be seven years. There is currently no such requirement in place.

Recommendation

The Senate Committee on Curriculum and Course Changes recommends THAT Senate approve course and curriculum changes in the following units:

Faculty of Medicine
Faculty of Nursing
Faculty of Pharmacy.

Respectfully submitted,

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

1. Faculty of Medicine

Courses to be introduced:

888.199 **Summer Early Exposure Elective First Year Medicine** -0

Summer Early Exposure Elective is an optional non-credit elective which will provide, for interested medical students completing their first year, an opportunity to experience work in a clinical specialty area of medicine under the supervision of a faculty member of the Faculty of Medicine.

888.299 **Summer Early Exposure Elective Second Year Medicine** -0

Summer Early Exposure Elective is an optional non-credit elective which will provide, for interested medical students completing their second year, an opportunity to experience work in a clinical specialty area of medicine under the supervision of a faculty member of the Faculty of Medicine.

NET CHANGE IN CREDIT HOURS:

- 0

2. Faculty of Nursing

Course to be introduced:

049.440 Rural Nursing +3

This course provides an overview of rural nursing. Theoretical foundations of rural nursing are explored. Vulnerable rural populations are identified and examined. There is an emphasis on rural nursing issues and the management of rural health care. Emerging roles for rural nurses are addressed. Pre/co-requisite: 049.217

NET CHANGE IN CREDIT HOURS: +3

3. Faculty of Pharmacy

Courses to be deleted:

046.458 Infectious diseases writing for pharmacy -3

002.222 Organic Chemistry II - From Pharmacy Program only

Course to be introduced:

046.463 Pharmacy Issues writing for publication +3

Critical evaluation of the published pharmacy literature on pharmaceutical science related topic. Students will be required to write a paper suitable for publication to a peer reviewed journal.

Proposed new Course Progression Requirement:

That the maximum allowable time for completion of the Bachelor of Science, Pharmacy degree will be seven years.

NET CHANGE IN CREDIT HOURS -0

/jml

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses
the report to Senate.

Report of the Senate Committee on Awards respecting Awards

Preamble

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

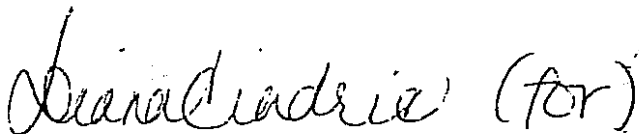
"On behalf of Senate, to approve and inform Senate of all new offers and amended offers of awards that meet the published guidelines presented to Senate on November 3, 1999, and as thereafter amended by Senate. Where, in the opinion of the Committee, acceptance is recommended for new offers and amended 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 September 18, 2002, SCOA reviewed 4 new awards offers and 3 award amendments and reports as follows.

Observation

On behalf of Senate, the Senate Committee on Awards approved and recommends that the Board of Governors approve 4 new awards and 3 award amendments as set out in Appendix "A" of the Report of the Senate Committee on Awards (dated September 18, 2002). These award decisions comply with the published guidelines of November 3, 1999, and are reported to Senate for information.

Respectfully submitted,



Professor R. Baydack, Chair
Senate Committee on Awards

SENATE COMMITTEE ON AWARDS REPORT TO SENATE - SEPTEMBER 18, 2002

APPENDIX "A"

OFFERS

NANCY BLACK MEMORIAL ENTRANCE SCHOLARSHIP IN HUMAN ECOLOGY

In memory of Nancy Black, her four sons have established an endowment fund of \$10,000 at the University of Manitoba. The Manitoba Scholarship and Bursary Initiative has made a matching contribution to this fund. Nancy Black (nee Boyd) came to the University of Manitoba in the late 1940s from Regina Central Collegiate in Saskatchewan to study Home Economics. She graduated in 1951. She served as Senior Stick of her Faculty's Student Council in her final year of studies. While at the University, she met her future husband, Neil Black, whom she married in 1952. She worked as a home economics teacher in Southern Ontario, raised a family of four boys, and continued to expand her knowledge of the field of home economics by completing courses at the University of Western Ontario in the 1970s. She also later taught English as a Second Language at Fanshawe College in London, Ontario. Nancy passed away in 2001 of multiple myeloma, predeceased two weeks by her husband. This fund commemorates Nancy's memory and serves to recognize exceptional students who will follow in her footsteps.

The available annual income from the fund will support an scholarship (first offered in the fall of 2003), which will be offered to the student who:

- (1) has completed University 1, or equivalent, with a cumulative grade point average of at least 3.50;
- (2) enters the Faculty of Human Ecology;
- (3) shows evidence of extracurricular involvement (examples - community services, volunteering, music, drama, art, athletics, student government).

Preference in selection, all else being equal, shall be given to students from Saskatchewan with residence determined by the high school from which the student graduated.

Each fall, starting in 2003, the Faculty of Human Ecology shall write personal letters to all students admitted in that session to the Faculty with a 3.50 cumulative grade point average or higher. These students will be invited to apply for this award through a submission of letter outlining their extra-curricular involvement. As all those with a 3.50 grade point average will be considered eligible, the recipient will be chosen by the selection committee based solely on the level and depth of extra-curricular involvement, having already met the academic requirements for this award.

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

SENATE COMMITTEE ON AWARDS REPORT TO SENATE - SEPTEMBER 18, 2002

SCOTIABANK UNDERGRADUATE ENTRANCE BURSARIES

Scotiabank has established the Scotiabank Undergraduate Entrance Bursaries Fund through a generous pledge of \$200,000 over a seven-year period beginning with the 2002-2003 academic session. The income from the fund will be used to support the bursary program. The number of bursaries awarded annually will vary, depending upon the qualifications of the applicants and the amount of funds available. The number and value of bursaries to be awarded each year will be left to the discretion of the Selection Committee with the maximum award to an individual student limited to \$2000.

These bursaries will be offered to students who:

- (1) have been admitted to the I.H. Asper School of Business (Faculty of Management) Bachelor of Commerce (Honours) degree program after completing a minimum of 30 credit hours of preliminary course work;
- (2) have achieved a minimum cumulative grade point average of 2.0;
- (3) have registered as full-time students (60% course load) in their first year of studies* in the I.H. Asper School of Business;
- (4) have demonstrated financial need on the standard University of Manitoba bursary application form.

*First year of studies does not refer to the year class code of recipients. Recipients must be entering their first year of studies within the I.H. Asper School of Business with any year class code designation.

The selection committee shall be named by the Dean of the I.H. Asper School of Business.

UNIVERSITY OF MANITOBA ONE-YEAR TUITION FEE AWARD FOR INTERNATIONAL STUDENTS

The University of Manitoba offers first year full-tuition scholarships to support international students entering a Master's or Ph.D. program at The University of Manitoba. These scholarships are offered to students who:

- (1) are international students entering the University of Manitoba for the first time;
- (2) are admitted and registered in a full-time Master's or Ph.D. program;
- (3) have achieved a minimum grade point average of 3.75 or equivalent (based on the Faculty of Graduate Studies scale) in the last two completed years of full-time study (with a minimum of 48 credit hours).

SENATE COMMITTEE ON AWARDS REPORT TO SENATE - SEPTEMBER 18, 2002

Students cannot apply for this award, but are selected and recommended to the Faculty of Graduate Studies by the Faculty delivering the program. The recipient may only hold this award once.

The Faculty of Graduate Studies will inform all faculties of the number of candidates they may recommend for each year. The quota for each faculty will be based on the number of international students registered in their faculty, which will be obtained from the most recent Institutional Analysis Report.

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

SONS OF ITALY GARIBALDI LODGE ITALIAN STUDIES SCHOLARSHIP

The Garibaldi Lodge is the Winnipeg Lodge of the Order of Italy, a North American Fraternal Organization based upon Italian culture, language and commitment to community. The Lodge was founded in 1988.

Garibaldi Lodge has always been a supporter of University education awarding over \$20,000 in scholarships to students of Italian origin entering post-secondary education in the past ten years. Consistent with its goals of promoting Italian culture, the Garibaldi Lodge now wishes to provide scholarship support for students who undertake studies in the Italian language.

The intent of the scholarship is to assist a student studying the Italian language with a declared minor in that subject at the University of Manitoba. This award has been established in the 125th anniversary year of the University of Manitoba.

Beginning in 2003, an annual scholarship of \$600* shall be offered to an undergraduate student who:

- (1) is enrolled as a full-time student in any Faculty or School at the University of Manitoba;
- (2) has completed both first and second year studies of Italian achieving a minimum cumulative grade point average of 3.0;
- (3) is entering the third year of study in the Italian minor program at the University of Manitoba;

The selection committee shall be named by the Head of the Department of French, Spanish and Italian and shall include an instructor from the Italian language program and a representative of the Garibaldi Lodge of the Order of Sons of Italy.

* If the interest generated in any year is less than \$600, the Garibaldi Lodge will supplement the interest amount to provide an award of \$600.

In the event that the Italian minor program is withdrawn, the funds contributed by Garibaldi Lodge are to be returned to the Lodge for furtherance of its other scholarship programs.

SENATE COMMITTEE ON AWARDS REPORT TO SENATE - SEPTEMBER 18, 2002**AMENDMENTS****T. GILLIS AWARD FOR EXCELLENCE IN BRASS**

The value of this award in the School of Music shall be increased to \$350 (from \$250).

HARCOURT BRACE HEALTH SCIENCES AWARD

The name of this award shall be amended to Elsevier Science Canada Health Sciences Award.

A.G. ROBINSON MEMORIAL SCHOLARSHIP

Criterion number two of the terms of reference shall be amended. The bracketed information, (cumulative grade point average of at least 3.50), shall be removed and the criterion will simply read "has achieved strong academic standing in the overall program".

October 16, 2002

Report of the Senate Executive Committee

Preamble

The Executive Committee of Senate held its regular monthly meeting on the above date.

Observations

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

Professor Juliette Cooper will be the Speaker for the Executive Committee for the November meeting of Senate.

2. **Comments of the Executive Committee**

Other comments of the Executive Committee accompany the report on which they are made.

Respectfully submitted,

Dr. E.J.E. Szathmáry, Chair
Senate Executive Committee

Terms of Reference: *Senate Handbook* (Revised 1992), Section 9.

/jml

Report of the Senate Planning and Priorities Committee on the 2003/2004 to 2005/2006 Resource Allocation Process, the 2003/2004 Estimates Process and Capital Priorities for 2003/2004.

Observations

1. The estimates are prepared every year in response to COPSE's request that the universities demonstrate their financial requirements for the following fiscal year. For several years, the University has forwarded estimates involving the impact on the institution's operations of different rates of increase/decrease in the grant from the provincial government. The estimate and allocation documents cover revenue projection assumptions (including tuition fees, general operating grant and external sales and services) and expense projection assumptions (including such things as salaries and benefits, general supplies and expenses, utilities and library).
2. The estimates process document includes: 1) a summary of where expenditures are being made in program development based on the previous year's allocation; 2) an estimate of the current year's estimated operating requirements and 3) a summary of University academic plans based on faculty submissions. Deans, Directors and Heads of administrative units are asked for their input to the estimates process in the fall of each year. They are asked to address a comprehensive set of questions including the need to identify key unit issues and impacts of various funding scenarios. Distillation of their input to the process informs the estimates documents and budget allocation process.
3. The input data required of the faculties, schools and administrative units is for a period of three years. The estimates documents include projections of what a budget may look like three years hence. SPPC has nothing to say beyond noting the obvious constraints inflation and fixed costs impose on financial decision-makers in the institution.
4. SPPC gets the opportunity to comment on the parameters used to develop the budget early and late in the fall of each year. In March, SPPC's Finance sub-committee, as part of the Budget Advisory Committee, will comment on the University budget. At this meeting Faculty Executive Summaries are assessed alongside Vice-Presidential allocations
5. SPPC has also been provided with the Capital Priorities for 2003/2004. Renovation and maintenance are ongoing on campus. Roof replacement, disability access and asbestos abatement have been accorded the highest priority amongst a long list of requirements. There are insufficient funds for all the work identified. However, Provincial funds have been allocated to this and it is also likely that other external donations will make a significant contribution in this area.
6. SPPC once again thanks Mr. McAdam for giving us ample time to comment on, and opportunity to participate in, the estimates and allocation process.

Norman M. Halden, Chair
Senate Planning and Priorities Committee

/jml

Terms of Reference: *Senate Handbook*, section 8.32



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

UNIVERSITY
OF MANITOBA | Office of the President

April 24, 2002

To: Ms Beverly Sawicki, University Secretary
From: Richard A. Lobdell, Vice-Provost (Programs)
Re: Program Proposal - Minor in Ecology

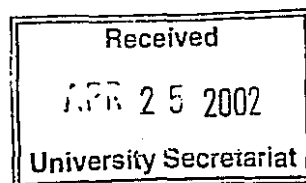
November 15, 2001 the Council on Post-Secondary Education advised that the University was free to proceed to developing the full program proposal for a B.Sc. Minor in Ecology. Attached is the full program proposal as provided by the Faculty of Science Committee on Courses.

Please proceed through the normal process.

/dg

att.

cc: Dr. I. Waters
Dr. G. Robinson
Ms H. Paterson



PROPOSAL FOR A MINOR IN ECOLOGY

SECTION I: Program Description

1. Describe the program, including each area of concentration, as it would appear in a catalogue.

Minor

001.237 (or 022.237 or 065.237), 001.354 and 022.348

Plus a minimum of 9 credit hours from the following list: 001.211, 001.221, 001.229, 001.301, 001.307, 001.325, 001.326, 001.342, 001.358, 001.401, 001.402, 001.405, 001.465, 022.310, 022.338, 022.345, 022.350, 022.354, 022.358, 022.361, 022.420, 022.421, 022.422, 022.423, 022.424, 022.425, 022.428, 022.484, 022.488.

NOTE: 071.125, 001.201, 001.202, 001.211, 001.301 (or 039.350), 002.131, 002.132, 002.221, 002.237 (or 002.278), 005.100, 005.200, 022.232, 022.253, 022.260, 022.310, 022.353 and 022.375 are listed as prerequisites for some courses.

2. Where possible, list the courses (title, number, semester credit hours, and catalogue description) that would constitute the requirements and other components of the proposed program. Indicate which courses are currently offered and which will be new.

The following courses are available to students registered in the Ecology minor program:

(All courses are not offered every year. The course schedule for the current academic session is published in the Registration Guide.)

001.211 Mosses, Ferns and Conifers (3)L An introduction to the mosses and liverworts, ferns and their allies, and conifers, specifically treating their structure, reproduction, identification and ecological significance. Not to be held with the former 001.210. *Pre- or corequisite:* 071.125.

001.221 Biology of Fungi and Lichens (3)L An introduction to the fungi, both free living and lichenized, with emphasis on the major taxonomic groupings, their organization and structure, their life histories, identification and general economic significance. Not to be held with the former 001.321. *Prerequisite:* 071.101 (or the former 071.123) with a minimum grade of 'B', or 071.125.

001.229 Biology of Algae (3)L Lectures and laboratories dealing with the cellular features of major groups of algae and their phylogenetic and adaptive significance. The basics of algal taxonomy are also covered. Not to be held with the former 001.323 or 001.341. *Prerequisite:* 071.125.

001.237 Principles of Ecology (3)L Principles of ecology at the individual, population, community, and ecosystems levels. This course is also given in the Zoology department as 022.237 and in the Faculty of Agricultural and Food Sciences as 065.237. It is the normal prerequisite to other courses in ecology. Not to be held with 001.228 (022.229). *Prerequisite:* 071.125. *Pre- or corequisite:* 005.100.

001.237F Principes d'écologie (3)L Principes d'écologie au niveau de l'individu, la population, la communauté et l'écosystème. Ce cours est également offert dans le Département de zoologie sous le numéro 022.237 et dans la Faculté de sciences de l'agriculture et de nutrition sous le numéro 065.237. L'étudiant ou l'étudiante ne peut se faire créditer à la fois le 001.237, 065.237 et le 022.237 ou 022.229 (001.228). *Préalable:* 071.125. *Pré-ou corequis:* 005.100. Donné au Collège universitaire de Saint-Boniface.

001.301 Plant Ecological Physiology (3)L An integrated study of the major physiological processes in higher plants, and how these processes influence growth and development of plants in natural ecosystems. Stress responses of plants to water, light and nutrients will be emphasized. Not to be held

with 039.350 or the former 001.317 or 001.467. *Prerequisite:* 001.202 (or the former 001.230) and 002.131.

001.307 Vascular Flora of Manitoba (3)L A survey of the vascular plants of Manitoba emphasizing identification, nomenclature and classification, and including brief accounts of the distribution and post-glacial history of the main floristic associations within the province. Students must submit a collection of at least 20 different vascular plants identified to species. A guide to the collection should be obtained from the Botany department office in the Spring/Summer prior to commencing the course. Not to be held with the former 001.207 or 001.231. *Prerequisite:* 071.101 (or the former 071.123) with a minimum grade of 'B', or 071.125.

001.322 Fungal Physiology (3)L A study of structure, function, and reproduction in the major groups of fungi. Genetic and physiological principles underlying growth, sporulation and reproduction, and variability are emphasized. Offered in 2002–2003 and in alternate years thereafter. Not to be held with the former 001.345. *Prerequisites:* 001.221 (or the former 001.321) and 002.131 (or the former 002.128) or consent of department head.

001.325 Fungal Ecology (3)L A description of fungal lifestyles, distribution and distributional dynamics in natural environments. Saprotrophic, biotrophic, and necrotrophic substratum exploitation and the role of fungi in nutrient cycling in various environments are discussed along with the fungal, plant and animal interactions. Topics in applied fungal ecology include: fungi and ecologically disturbed sites, poisonous and hallucinogenic fungi, food and fungi, and medical mycology. *Prerequisite:* 001.221 (or the former 001.210 or 001.321) or consent of the department head.

001.326 Bryology (3)L The biology, ecology, and evolution of bryophytes. Laboratory will consist of an examination of the diversity of bryophytes using morphological and molecular characters. *Prerequisite:* 001.211.

001.342 Field Ecology (3)L Problems, techniques and assumptions involved in measuring parameters of biological populations and environmental variables. A field trip will be held prior to the start of classes. Students must register in the department office by August 3. This course is also given in Zoology as 022.345. *Prerequisites:* 001.237 (022.237 or 065.237), and 005.200. *Corequisite:* 001.354 or 022.348.

001.354 Community Ecology (3)L Lectures and laboratories emphasizing the structure and function of terrestrial biotic communities with emphasis upon selected Manitoba situations. *Prerequisite:* 001.237 (022.237 or 065.237) or consent of department head.

001.358 Wetland Ecology (3)L Lectures and field exercises examine the biotic (algae, macrophytes, invertebrates, and vertebrates) and abiotic (hydrology, nutrient cycling) properties of Delta Marsh, a prairie lakeshore wetland. Other wetland types, including peatlands, will also be considered in lectures and field trips. The course is offered in Summer Session at the university Field Station (Delta Marsh). This course is also given in the Zoology department as 022.358. *Prerequisite:* 001.237 (022.237 or 065.237) or consent of instructor.

001.401 Aquatic Botany (3)L This course examines the relationship between algae, fungi and macrophytes, and the physical, chemical and biological properties of the aquatic environment. Specific adaptations to life in water, and patterns of distribution and succession in rivers, lakes and wetlands will be covered. *Prerequisite:* 001.237 (022.237 or 065.237) or consent of instructor.

001.402 Forest Botany (3)L Lectures, laboratories and assignments dealing with the structure, diversity and dynamics of plant communities in forested ecosystems. Particular emphasis will be placed on the Boreal forest region. *Prerequisites:* 001.201 (or the former 001.230) and 001.237 (022.237 or 065.237), or consent of department head.

001.405 Lichen Symbioses (3)L The biology, diversity, systematics and evaluation of lichens including the molecular biology and coevolution of the algal and fungal symbionts. Offered in 2001-2002 and in alternate years thereafter. *Prerequisite:* 001.221 or consent of instructor.

001.465 Analysis of Biological Communities (3)L Methods and approaches to the analysis of biological communities are reviewed. Emphasis is placed on planning the steps of a biological investigation. *Prerequisites:* 001.237 (022.237 or 065.237), 005.200.

022.237 Principles of Ecology (3)L Principles of ecology at the individual, population, community and ecosystems levels. This course is also given in Botany as 001.237 and in the Faculty of Agricultural and Food Sciences as 065.237. It is the normal prerequisite to other courses in ecology. Not to be held with 001.237 or 022.229 (001.228). *Pre- or corequisite:* 005.100.

022.237F Principes d'écologie (3)L Principes d'écologie au niveau de l'individu, la population, la communauté et l'écosystème. Ce cours est également offert dans le Département de botanique sous le numéro 001.237 et dans la Faculté de sciences de l'agriculture et de nutrition sous le numéro 065.237. L'étudiant ou l'étudiante ne peut se faire créditer à la fois le 022.237, 001.237 et le 065.237 ou 022.229 (001.228). *Préalable:* 071.125. *Pré-ou corequis:* 005.100. Donné au Collège universitaire de Saint-Boniface.

022.310 Animal Behaviour (3)L An introduction to the study of animal behaviour including key concepts from the parent disciplines of ethology and comparative psychology, the genetic and physiological bases of behaviours, and evolutionary aspects introducing optimality and game theoretical models characteristic of modern behavioural ecology. Laboratory work involves the design and execution of a behavioural project at the Assiniboine Park Zoo. Not to be held with the former 022.343. *Prerequisites:* 022.237 (001.237 or 065.237) and 022.232 or consent of instructor.

022.338 Boreal Ecology (3) A survey of ecological factors in the formation, evolution, and survival of northern biota including northern peoples. There will be optional weekend field trips. Not to be held with the former 022.479. *Prerequisite:* 022.237 (001.237 or 065.237) or 022.229 (001.228) or consent of instructor.

022.345 Field Ecology (3)L Problems, techniques, and assumptions involved in measuring parameters of biological populations and environmental variables. A field trip will be held prior to start of classes. Students must register in the departmental office by August 3. This course is also given in Botany as 001.342. *Prerequisites:* 022.237 (001.237 or 065.237), 005.200. *Corequisite:* 022.348 or 001.354.

022.346 Introductory Parasitology (3)L General course covering major parasitic phyla: namely, Protozoa, Platyhelminthes, Aschelminthes, Acanthocephala, and Arthropoda. Emphasis will be on principles of parasitology. *Pre- or corequisite:* 022.260 or consent of instructor.

022.348 Population Ecology (3)L Characteristics of populations, effects of resources, other individuals of same species, competitors, predators on distribution and abundance, and regulation of numbers of organisms in a population. *Prerequisites:* 022.237 (001.237 or 065.237), 005.200 or consent of instructor.

022.350 Limnology (3)L Lectures and laboratories providing an introduction to the physics, chemistry and biology of lakes. *Prerequisite:* 022.237 (or 001.237 or 065.237).

022.354 Comparative Environmental Physiology (3)L An examination of the environmental challenges confronting animals in aquatic and terrestrial habitats, and the various ways these problems are solved at the cellular and organ system levels. Not to be held with the former 022.352. *Prerequisite:* 071.125 with a minimum grade of "C," or 071.100 and 071.101 with a minimum average grade of "C+" (or the former 071.123 with a minimum grade of "C+").

022.358 Wetland Ecology (3)L Lectures and field exercises examine the biotic (algae, macrophytes, invertebrates, and vertebrates) and abiotic (hydrology, nutrient cycling) properties in Delta Marsh, a prairie lakeshore wetland. Other wetland types, including peatlands, will also be considered in lectures and field trips. The course is offered in Summer Session at the University Field Station (Delta Marsh). This course is also given in the Botany department as 001.358. *Prerequisite:* 022.237 (001.237 or 065.237) or consent of instructor.

022.361 Advanced Experimental Invertebrate Zoology (3)L Topics of current interest to be presented in lecture series given by staff. Students may undertake approved projects and may present reports and seminars. Offered in 2000-2001 and in alternate years thereafter. *Prerequisite:* 022.260.

022.420 Ecological Methods (3)L Methods of collection and analysis of biological and environmental data for estimation of abundance, life history parameters and spatial pattern in single species populations; population dynamics and life history strategies. Not to be held with the former 022.477. *Prerequisites:* 022.348 and 005.200 or consent of instructor.

022.421 Models for Behavioural Ecology (3) Applications of optimization theory and game theory to the understanding of inter- and intraspecific interactions of animals. Models involving foraging, territoriality, animal spatial distributions, and mixed behavioural strategies will be considered. Not to be held with the former 022.487. *Prerequisites:* 022.343, 022.348, and 005.200 or consent of instructor.

022.422 Biodiversity of Vertebrates: Systematics and Biogeography of Fishes (3)L A study of the evolutionary history, interrelationships and distribution patterns of the fish-like vertebrates. Laboratories will cover the identification of the major groups of fish-like vertebrates. Not to be held with the former 022.418 or 022.467. *Prerequisite:* 022.232 or 022.250 or consent of instructor.

022.423 Biodiversity of Vertebrates: Biology of Amphibians and Reptiles (3)L Lectures consider the evolution, biology and adaptations of amphibians and reptiles. Laboratories and student presentations will deal with classification, structure, identification, and methods of field and laboratory study of these animals. Offered in 2002-2003 and in alternate years thereafter. Not to be held with the former 022.476. *Prerequisite:* 022.232 or 022.250 or consent of instructor.

022.424 Biodiversity of Vertebrates: Biology of Birds (3)L Biology of birds including: morphology, systematics, evolution, life histories and breeding biology, ecology, migration, and distribution of birds. Offered in 2002-2003 and in alternate years thereafter. Not to be held with the former 022.468. *Prerequisite:* 022.232 or 022.250. *Corequisite:* 022.343 or consent of instructor.

022.425 Biodiversity of Vertebrates: Biology of Mammals (3)L Structure, classification, evolution, life histories and distribution of mammals and their relation to human cultures. Techniques of studying mammals. Identification of the mammals of Manitoba. Offered in 2001-2002 and in alternate years thereafter. Not to be held with the former 022.457. *Prerequisites:* 022.232 or 022.250, and 022.237 (001.237 or 065.237) or consent of instructor.

022.428 Behavioural Ecology and Cognitive Ethology (3)L Examines proximate and ultimate questions relating to mating and parental behaviour, communication, social parasitism and animal intellect to provide insight into the intimate relationship between behavioural evolution and the environment. Laboratory and field exercises complement major topics considered in lectures. Not to be held with the former 022.448. *Prerequisite:* 022.310 (or the former 022.343) or consent of instructor.

022.484 Environmental Toxicology (3)L A survey of the principles governing the dynamics of chemicals in the environment, with emphasis on the biological systems, using case histories of known pollution problems. *Prerequisites:* 002.237 (060.237) (or the former 002.235 (060.235)) or 002.278 (or the former 002.240) or 060.278 (or the former 060.240); 022.237 (001.237 or 065.237); 022.253 or 022.353, and 022.354 (or the former 022.245, 022.337 or 022.352) or consent of instructor.

022.488 Analysis of Ecological Problems (3)L Teams of students will analyze emerging regional ecological problems and present results or solutions in a written report and oral presentation. This course is also offered by Botany as 001.488. Not to be taken concurrently with 022.411 or 001.460.

Prerequisites: 022.345 or 001.342, 022.348, 022.375, 001.354 and eligibility for graduation in the current academic year.

3. Outline the educational objectives of the program.

The Ecology minor will allow students in other disciplines to pursue an area of related academic interest.

4. Describe the expected learning outcomes in terms of skills, knowledge, attitudes or other attributes which students will accrue as a result of their involvement in the proposed program.

It is expected that students will acquire a better understanding of the linkages between ecology and their chosen major. Ecology is concerned with the interactions between organisms and their environment, and thus has inherent linkages to many fields. Examples of subject areas that are most closely related include Biology, Botany, Zoology, Environmental Science, and Geography. Hands-on skills (both laboratory and field-based) that are applicable to solving ecological problems will be enhanced.

5. If applicable, describe any selective admissions policy or specific criteria for students selecting this as a major field of study.

There are no selective admissions policies. Students in major programs in Biology, Zoology, Botany and Environmental Science who wish to pursue a minor in Ecology cannot use the same courses for credit towards both a major and a minor. Because many of the required courses for the minor are also required for majors in these programs, many options have been included to allow students to acquire the total of 18 credit hours needed for the minor.

6. Describe the extent to which this program is central to the institutional mission and planning priorities of the campus.

The Ecology minor is compatible with the institutional mission and planning priorities of the campus insofar as it emphasizes linkages between academic disciplines.

7. If a similar program exists or is in the process of being developed elsewhere in the province, describe the similarities or differences in the credential to be awarded, the area(s) of specialization, and the specific academic content of the program or course of study.

There is currently a minor offered by the Environmental Science program. However, the differing focus of Ecology compared with Environmental Science means this will not constitute overlap.

SECTION II: Market Need and Market Demand for the Program

1. Where possible, state the specific local or provincial needs for graduates of the proposed program for the next 3 to 5 years. This should include projections of both ongoing and future demand in regions throughout Manitoba; as well as evidence and supporting data of market need for the program.

It is expected that the majority of the students who pursue a minor in Ecology will have majors in related programs. Currently, the demand for students with a background in environmentally related areas is currently strong. Having a designation of a minor on the student's transcript will enhance their employment prospects, but clearly the area of their major program will be more influential.

2. What are the probable employment destinations of program graduates?

Assuming that the student with an Ecology minor has a major in a related area, employment destinations include environmental education; parks and other government departments at the municipal, provincial and federal levels; private conservation agencies and other non-profit organizations; environmental consulting firms; research assistants; graduate programs in related disciplines.

3. Where appropriate, did industry, business and/or any other pertinent groups play a role in the development of this program and/or commit resources to its future?

No.

4. How does the program correspond with the province's economic, social and cultural priorities?

The province has recognized the vital importance of understanding and protecting our natural ecosystems.

5. What potential does this program offer in terms of job creation and research and development?

As a minor, this program will not be directly involved in job creation.

SECTION III: Student Demand for the Program

1. What students is the program intended to serve?

It is expected that students currently enrolled in major programs in related areas (Biology, Botany, Zoology, Environmental Science and Geography) are most likely to pursue a minor in Ecology. However, the minor would be available to any student in the Faculties of Science or Arts.

2. What is the evidence that provincial students are not being adequately served within existing program offerings in Manitoba?

Many students with an secondary interest in Ecology currently have no means of designating this on their transcript. The availability of a minor would redress this problem.

3. Provide evidence of student interest and demand for the program.

As Coordinator of the Ecology program, I have spoken to many students in University I and second year Science. They may opt to major in Ecology, but those who opt to major in other programs have expressed an interest in declaring a minor in Ecology.

4. What are the projected enrolments for the program?

This is difficult to assess, particularly in light of the imminent departure of Environmental Science from the Faculty of Science. Conservatively, I expect 10-15 students by the 3rd year.

5. Which programs currently offered by the institution are projected to lose enrolment to this program?

I anticipate that no losses will be incurred by other programs. The minor will merely accommodate those students already taking Ecology courses as part of their approved options.

6. What are the proposed growth limits and minimum enrolments?

There are no growth limits or minimum enrolments necessary.

7. Project the number of graduates for the first 3 to 5 years of the program and where appropriate, the anticipated number of program majors (full-time and part-time) for each of the first five years of the program.

This question does not apply to a minor.

8. What steps have been taken to ensure participation and success in the program by under-represented groups, such as women, the disabled, minorities and aboriginal students?

No steps have been taken to target these groups specifically. In most Ecology courses, females usually comprise more than 50% of the students enrolled.

9. Will the program be available to part-time learners?

Yes.

SECTION IV: Faculty Requirements

1. Provide a list of current faculty by rank and areas of expertise who will teach in the program.

Department of Botany

Professors

Booth, J.T., B.A. (Eastern Baptist College), M.S. (Ohio), Ph.D. (UBC)

Research Interests: The biology of fungi in aquatic and terrestrial ecosystems; responses of fungi to environmental factors, and fungal symbiosis in forest ecosystems.

Kenkel, N.C., B.Sc.(Hons.), M.Sc. (UBC), Ph.D. (Western)

Research Interests: Applied and theoretical terrestrial plant population and community ecology; forest ecology; studies of marsh, grassland and inland saline ecosystems; mathematical and statistical ecology; ecological modelling; landscape ecology and vegetation mapping.

Punter, D., M.A., Ph.D. (Cambridge)

Research Interests: Plant pathology with emphasis on ecological and epidemiological aspects of disease relationships; diseases of wild rice, dwarf mistletoes of conifers, soil-borne pathogens.

Robinson, G.G.C., B.Sc.(Hons.) (St. Andrew's) Ph.D. (UBC)

Research Interests: Eco-physiology of planktonic and benthic algae in freshwater ecosystems; inorganic carbon assimilation by algae and the control thereof; the assessment of algal productivity and its contribution to that of wetlands generally.

Associate Professors

Ford, B.A., B.Sc.(Hons.) (Trent), Ph.D.(Toronto)

Research Interests: Vascular plant systematics, particularly of the large and complex genus *Carex* (Cyperaceae); a multidisciplinary approach, combining evidence from micro- and acromorphology, isozyme genetic divergence, ecological studies, and phytogeography, is used to gain an understanding of systematic relationships.

Goldsborough, L.G., B.Sc., Ph.D. (Manitoba)

Research Interests: Ecosystem structure and function in freshwater wetlands; ecology of benthic and planktonic algae in wetlands and lakes; lake paleolimnology via analysis of diatom microfossils and plant pigments; ecophysiology and ecotoxicology of benthic and planktonic algae and aquatic macrophytes.

Assistant Professors

Markham, J.H., B.Sc.(Hons.) (Guelph), B.Ed. (Dalhousie), Ph.D. (UBC)

Research Interests: Interactions of plants with the biotic environment. Evolution of mutualisms; ecology and evolution of symbiosis between actinorhizal plants and *Frankia*.

Piercey-Normore, M., B.Sc. (Gen.), B.Sc. (Hons.), M.Sc., Ph.D. (Memorial)

Research Interests: The genetic basis and evolution of interactions between plants and mutualistic, commensalistic, or parasitic fungi; phylogenetic treatments of lichen algae and fungi, using nucleotide sequence data; lichen coevolution, including symbiont selectivity, and algal switching; gene flow within and among populations of the symbionts.

Renault, S., B.Sc., M.Sc., Ph.D. (Poitiers)

Research Interests: Stress physiology of plant species in forest ecosystems; effects of salts, pollution and other environmental stresses on woody plants, mechanisms of stress resistance; plant adaptation to land disturbance (mining, forestry).

Senior Instructor

Waters, I., B.A., B.S.A., M.Sc., Ph.D. (Manitoba)

Research Interests: Stress physiology in relation to forest and wetland ecology.

Department of Zoology

Professors

Abrahams, M.V., B.Sc. (Western), M.Sc. (Queen's), Ph.D. (Simon Fraser)

Research Interests: Predator-prey interactions, multispecies interactions, the impact of environmental variation on predator-prey interactions, application of behavioural ecology to applied problems, individual-based population models.

Hann, B.J., B.Sc.(Hons.), M.Sc. (Waterloo), Ph.D. (Indiana)

Research Interests: Study of wetland foodweb structure and dynamics, invertebrate grazer-algal interactions; ecology and palaeoecology of Cladocera communities in the littoral zone of lakes; systematics and evolution of Cladocera.

Huebner, E., B.Sc.(Hons.) (Alberta), Ph.D., (Massachusetts)

Research Interests: Oogenesis and Early Development, using an integration of electrophysiological, microscopical (EM, fluorescence, DIC and video LM) and biochemical/molecular methodologies.

MacArthur, R.A., B.Sc.(Hons.), M.Sc. (Alberta), Ph.D., (Manitoba)

Research Interests: Thermal biology, diving physiology and bioenergetics of northern semiaquatic mammals, principally muskrat and beaver.

Riewe, R.R., B.S., M.S. (Wayne State), Ph.D. (Manitoba)

Research Interests: Ecology and management of carnivores, ungulates, and small mammals; Circumpolar Aboriginal peoples – their domestic economies, hunting and trapping, land use, land claims, and the impacts of northern development upon their life styles; environmental impact assessment.

Sealy, S.G., B.Sc. (Alberta), M.Sc. (UBC), M.Sc., Ph.D. (Michigan)

Research Interests: Behavioural and evolutionary interactions between the parasitic cowbirds and their passerine hosts.

Associate Professors

Graham, L.C., B.Sc.(Hons.), M.Sc. (Alberta), Ph.D. (Tulane)

Research Interests: Host-parasite relationships involving metazoan parasites of invertebrates. Life history strategies of free-living triclad flatworms. Zoogeography and community ecology of the Unionidae.

Assistant Professors

Campbell, K.L., B.Sc. (Hons), Ph.D. (Manitoba)

Research Interests: The evolutionary, molecular and environmental physiology of mammals, particularly in relation to the adoption of aquatic and subterranean life-history traits.

Gillis, D.M., B.Sc., (Dalhousie), M.Sc. (McGill), Ph.D. (Simon Fraser)

Research Interests: Fleet dynamics, fisheries management, fish population dynamics, the interaction between behavior and population processes.

Hare, J.F., B.Sc. (Toronto), M.Sc., Ph.D. (Alberta)

Research Interests: The evolution and maintenance of sociality using ground-dwelling squirrels and slave-making ants.

Lovejoy, N.R., B.Sc., M.Sc. (Toronto), Ph.D. (Cornell)

Research Interests: Organismal biology using historical/phylogenetic approaches and the systematics and biogeography of tropical fishes.

2. Will the program involve the hiring of new faculty of staff? If yes, indicate which additional faculty are to be hired and describe their qualifications.

No hiring of new staff is expected.

3. Will the program involve the hiring of new faculty of staff? If yes, indicate which additional faculty are to be hired and describe their qualifications.

No.

SECTION V: Cooperative Arrangements

1. Describe the cooperative arrangements with other institutions and organizations that may be used to offer this program.

No special cooperative arrangements are necessary. Like the Ecology major program, the minor would depend on the joint participation of the Departments of Botany and Zoology.

2. Will the credits of the proposed program be fully transferable (in terms of both the credit as well as the grade) to other institutions in Manitoba?

I presume that the majority of courses taken for the minor are already approved for credit by the University of Winnipeg and the University of Brandon, although I presume transferability is granted on a per course basis.

3. Does the program have an internship or practicum component? What attempts have been made to ensure that this program has both theoretical and applied modules?

No internship or practicum components are involved. However, a number of the courses include field and laboratory studies.

4. What provisions will be made in the program to enable students to receive credit for relevant learning previously achieved outside of the Manitoba post-secondary education system?

Receipt of credit for courses taken at other universities will be handled by the individual departments on a per course basis, as is currently the case.

SECTION VI: Learning Technologies

1. What use will be made in the program of modern learning technologies?

Individual courses use a variety of modern learning technologies. The Ecology program has a space available in the Buller building that is for the specific use of Ecology students. Several computers with internet access are provided in this room.

SECTION VII: Resource Requirements

1. Describe the adequacy of existing library resources to support the proposed program. Indicate how the institution will overcome any deficiencies.

Existing resources are adequate.

2. Are existing computer facilities adequate to support the new program?

Yes. However, individual courses involved in the program, such as 1.465 and 22.348, would benefit from additional dedicated computer facilities.

3. How will the proposed program impact on the use of existing infrastructure and equipment?

It should have no significant impact. Upgrading of the laboratory facilities at the Delta Marsh Field Station would benefit a number of the field-related courses in the program.

4. Describe any additional facilities, facility modifications, and equipment that may be required for the proposed program.

None are required at the present time.

SECTION V111: Financial Considerations

1. What are the total financial resources required to offer this program? Include estimated initial and ongoing funding requirements.

No additional financial resources are required.

2. Of the financial resource4s required to offer this program, how much will come from a reallocation of existing funds and how much from new funds?

Not applicable.

3. Discuss the internal reallocations of financial resources which will occur to support this program.

Not applicable.

4. What percentage of program costs will be accrued through tuition fees?

Not applicable.

5. Discuss the impact of the program's estimated enrolment on the institution's overall tuition revenues.

No impact is anticipated because students declaring a minor in Ecology will already be in current programs in the Faculty.

6. How will the proposed program be funded if enrolment projections are not met?

Not applicable.

SECTION IX: Program Consultations and Evaluation

1. What consultations have occurred with professional associations, employers, graduates of similar programs, and other educational institutions regarding this program?

I have consulted with members of the Departments of Botany and Zoology; students currently in the Ecology major program; prospective students at events such as Evening of Excellence and Information Days; graduate students from our own and other universities.

2. Please provide evidence of academic quality by submitting reports from two similar institutions as well as from the relevant professional association(s), if appropriate.

Not applicable.

3. Describe the procedures for institutional evaluation of the program during and subsequent to implementation.

As the minor involves a sub-set of existing courses within an existing Ecology major program, any institutional evaluation would be conducted by the two departments currently involved.

September 17, 2002

**Report of the Senate Committee on Curriculum on a Proposal from the Faculty of Science
for a Minor in Ecology**

Preamble

1. The terms of reference for the Senate Committee on Curriculum and Course Changes (SCCCC) are found in Section 8.21 of the *Senate Handbook*. SCCCC is "to recommend to Senate on the introduction, modification or abolition of undergraduate programs, curricula or courses".
2. Since last reporting to Senate, the Senate Committee on Curriculum and Course Changes (SCCCC) met on September 17, 2002 to consider a proposal from the Faculty of Science for a Minor in Ecology.

Observations

1. This program was developed by the Ecology Program in the Faculty of Science in consultation with the Departments of Botany and Zoology.
2. The proposed minor will allow students in other disciplines to pursue an area of related academic interest. It will comprise 18 credit hours of courses from the proposed list of approved existing courses, with 001.237 (or 022.237 or 065.237), 001.354 and 022.349 as required courses.
3. The proponents of the program anticipate an enrolment of 10 to 15 students in year three of the program.
4. As all of the courses in the proposed minor are already offered, existing library resources are sufficient for the minor.
5. The Statement of Intent was approved by the Council on Post-Secondary Education on November 15, 2001.

Recommendation

The Senate Committee on Curriculum and Course Changes recommends that the proposal of the Faculty of Science for a Minor in Ecology be approved by Senate.

Respectfully submitted,

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

/jml

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses
the report to Senate.

**Report of the Senate Planning and Priorities Committee on the Faculty of Science
Proposal to create a Minor in Ecology**

Preamble:

1. The terms of reference of the Senate Planning and Priorities Committee (SPPC) are found in the *Senate Handbook* (Rev. 1993), pp 10.21/22 wherein SPPC is charged with making recommendations to Senate regarding proposed academic programs.
2. The Ecology minor is intended to allow students in other disciplines to pursue an area of related academic interest by exploring the linkages between organisms and their environment. It is anticipated that hands-on skills will be enhanced in both laboratory and field-base courses.

Observations:

1. The credit hour requirement is 18 hrs from a prescribed list of courses. The program draws upon existing courses. Organized as it is, it will not require additional resources.
2. Students declaring a Minor in Ecology will have a major in a related Program. The minor would be available to any students in the Faculties of Arts and Science. Enrolments are anticipated to be on the order of 10-15 students by the third year of the program.
3. There are employment opportunities for graduates in various municipal, provincial and federal agencies as well as private and non-profit conservation agencies.

Recommendation:

THAT Senate approve and forward to the Board of Governors the recommendation from the Faculty of Science to introduce a Minor in Ecology.

Respectfully submitted,

Norman Halden, Chair
Senate Planning and Priorities Committee

/jml

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses
the report to Senate.

Report of the Senate Committee on Academic Computing on the document "Proposal for a Digital Copyright Clearance Pilot Project"

Preamble

1. Terms of Reference of the Committee on Academic Computing are found in section 8.9 of the Senate Handbook.
2. The Terms of Reference for the Committee mandate the committee 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.

Observations

1. At its meeting on September 5, 2002, the Senate Committee on Academic Computing discussed a document prepared by Lori Wallace, Director, Distance Education, as revised by the Sub Committee on Digital Copyright Clearance, entitled "Proposal for a Digital Copyright Clearance Pilot Project". [Copy attached]
2. The Committee recognized that the introduction of the pilot project requires funding.
3. The pilot project hopes to establish:
 - a digital copyright clearance service that would entail researching contact information for copyright holders, requesting clearances, and tracking and paying clearance charges;
 - copyright clearance guidelines and procedures;
 - regular workshops for faculty and staff at no cost;
 - a legal resource for pilot project staff regarding copyright law.

Recommendation

1. That Senate support the Digital Copyright Clearance Pilot Project, and urge that resources be allocated to the project.

Respectfully submitted,

Dr. Richard Lobdell, Chair
Senate Committee on Academic Computing

/lrj

Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

Proposal for a Digital Copyright Clearance Pilot Project

Lori Wallace, July 9, 2002. Revised Sept. 6, 2002.

Issue

There has been a significant increase in the use of the Web by UM faculty members to support on-campus/distributed courses. As a consequence, the need to distribute resource material online has grown. The mechanisms to allow efficient copyright clearance of these resources have not, however, kept pace. For example, we lack a digital copyright agreement along the lines of Cancopy and, with the exception of the support provided by the Distance Education (DE) Program for specific course developments, there are few resources available to faculty members regarding policy, procedures, and payment of digital copyright clearances.

Faculty members who use WebCT as part of their course delivery (and who do so outside the DE Program) or who post material on their own UM-server-based course Web sites are personally responsible for obtaining copyright clearance for any copyrighted materials that they wish to mount as part of their teaching resources. Failure to obtain copyright clearance prior to the mounting of material online violates the Canadian Copyright Act. If/when uncleared materials are then placed on a UM server, the institution incurs a potential liability for copyright infringement. The evidence at UM as well as at other universities suggests that faculty members have very incomplete knowledge of copyright policy and clearance procedures, and are therefore scanning and mounting digital materials without permission. Within this context, two specific and urgent issues have arisen:

- a) the need to provide faculty engaged in the delivery of online courses/resources with complete information regarding copyright and copyright clearance procedures, and
- b) given that the current process for clearing digital copyrights is very cumbersome and often expensive, an institutional response is required to provide resources to facilitate these clearances and ensure that the institution is not placed at legal risk.

Current resources

For over 20 years, the following units have been involved in copyright clearance activities:

- The UM Book Store clears copyright for print materials through Cancopy and directly through publishers. The cleared materials are photocopied by the UMSU Copy Centre, and are distributed to students, usually by sale through the Book Store. These services are available to all UM faculty members.
- The Distance Education (DE) Program creates, in partnership with the Book Store, readings packages for sale to students. In addition, DE clears copyright in-house via Cancopy and directly from publishers for print and digital text material to be included in course manuals or online resources. Material cleared by DE for digital rights is mounted on the UM server for password-protected access via WebCT. These services are currently available only to faculty members under contract to develop DE courses.
- The UM Libraries have purchased from publishers and consortia limited digital databases and collections. UM students can access these password-protected materials via the UM Libraries/NetDoc. Libraries have also negotiated several agreements with vendors and publishers for digital materials that range from full text to course notes, essays, exams, and articles. Finally, faculty members may also take personal responsibility for clearing digital copyright for items that are subsequently mounted on electronic reserve (password protected).
- Educational Support Services Educational Support Services (ESS) negotiates purchase and duplication rights for analog audio/video materials for use by all UM units as well as digital rights for audio/video materials for use in the DE Program. In addition, ESS provides supplier information to all units for the purpose of digital copyright clearance of media to be streamed via the UM RealServer (password-protected). (Faculty members take personal responsibility for clearing digital copyright for

items that are to be subsequently streamed. Information Services and Technology (IST) is currently responsible for the RealServer as well as for the WebCT server.)

Direction

At the March 13, 2002 meeting of the Digital Content/Rights Discussion Group, it was suggested that the DE Program might be in a position to begin to address both the need for staff development regarding copyright and copyright clearance policy and procedures, and the need for a digital copyright clearance service. R. Lobdell invited submission of a pilot proposal outlining the ways in which the current processes/procedures used by DE might be expanded to support delivery of online content.

The Pilot

Expanding the current DE copyright processes to encompass service at all UM academic units would involve some adaptation of the existing DE policy and procedure documents for print, digital text and graphics, and streamed media clearances. These documents would then be shared with faculty members and staff in workshops and individual consultations as well as via the UTS, Libraries, ESS/IST and DE websites.

Provision of a digital copyright clearance service would entail researching contact information for copyright holders, requesting clearances, and tracking and paying clearance charges.

Given that there are over 670 WebCT non-DE course sections currently in use, as well as another 157 courses using the Libraries' electronic reserve service, the pent-up demand for digital copyright clearance information and services is probably quite high. In order not to overtax available resources, we propose that, for the one-year duration of this pilot project:

- Copyright clearance guidelines and procedures in PDF format will be made available online on a yet-to-be determined home page, with links to relevant units (e.g., UTS, ESS/IST) and other resources.
- Regular workshops will be scheduled (four during the pilot year; minimum enrolment: 8 participants) at no cost to participants to provide another effective way of sharing information and guidelines.
- The number of clearance requests for any course be limited to three, the costs of those clearances be limited to \$100, and the maximum number of courses handled be limited to 100. Faculty members requesting print-to-digital or streaming media clearances that exceed these limits will be directed to the Libraries electronic reserve desk for information regarding how to clear copyright and submit cleared materials for inclusion in e-reserve, or to the Book Store for print-to-print clearances.
- Mounting of the digital material on the relevant UM server and password-protected course site will remain with the faculty member, working with IST, the Libraries, or the faculty technical support staff.
- A legal resource be provided to pilot project staff for the purpose of clarification on points of copyright law.

As noted above, we intend to share digital copyright policy and procedures as part of the pilot. Given that Canadian law continues to lack clarity with respect to digital rights, we intend to be very conservative in our guidance to faculty members and staff. In general, we propose to proceed as follows:

- Print-to-digital clearances of material from periodicals, books and newspapers will be sought for any material beyond ½ page in length (using guidelines similar to those used within the Cancopy agreement for print-to-print clearances).
- Clearance will be sought for all images and graphics, including tables and figures.
- Clearance will be sought for any requests for streaming of audio/video material.
- Clearances for material that exists on the Web will not be sought. Given that this material is already in digital form, instructors will instead be asked to direct students to the relevant URL (first or home page only).

Partners

The following units have been consulted regarding the pilot project proposal and have agreed to the provide the supports listed:

- Continuing Education Division/DE Program will provide office space, furnishings, supplies, computer equipment, and photocopying as well as covering long distance telephone and fax charges.
- The UM Book Store (Pat Reid) will, for clearances that exceed the scope of the project, continue to provide copyright clearance services for print-to-print materials for sale as course packs.
- UTS (Lynn Taylor) will schedule and advertise the free copyright clearance workshops.
- Educational Support Services (ESS)/Information Services and Technology (IST) (Gina Neufeld) will continue to provide supplier contact information to facilitate the clearance of media for streaming via the UM RealServer.
- The UM Libraries (Carolynne Presser) will provide information regarding the pilot project services as well as information on copyright for faculty members considering placing materials on reserve (e.g., via the brochure, Reserve Services: Guidelines for Instructors) to interested faculty members and staff. The Libraries will also continue to assist faculty members with mounting materials on e-reserve. The responsibility, however, for obtaining copyright clearance will rest with the individual making the request.

Representatives from each these units will meet regularly as a group with DE reps, and will provide evaluative feedback to DE and to R. Lobdell.

If the pilot project is deemed a success after the one-year period, the University may wish to explore the establishment of a permanent digital copyright clearance center, with the participation of DE, UTS, the Libraries, ESS/IST, and the Book Store.

Costs

Figures below assume a workload maximum of 300 clearances (total of 100 courses), and a per-course direct clearance expense of \$100, plus a minimum of four workshops delivered at no charge to participants. We will seek additional clearances beyond these limits if staff time permits and clearances can be obtained without incurring direct costs.

Overhead reimbursement.

L. Wallace: 5% (1.75 hrs/week): covered by Continuing Education Division.

OA4: 25% allocation of salary, payroll levy and benefits (8.75hrs./week). Representative duties: Participating in development and delivery of copyright clearance workshops, consulting with faculty members, submitting digital clearance requests, tracking expenses, finalizing and submitting costs, and consulting with faculty members and staff regarding digital clearances. Total: \$8,677.

OA3: 20% allocation (7 hrs./week). Representative duties: locating contact information for copyright owners, preparing copyright clearance request correspondence and copyright clearance logs, and filing. Total: \$6,496.

AA3: 5% allocation (1.75 hrs/week). Representative duties: participating in development and delivery of copyright clearance workshops, training and supervising clearance staff, and consulting with faculty members. Total: \$2550.

Total overhead cost: \$17,723.

Direct expenses.

Digital clearances: Maximum \$10,000.

Total budget requested: \$27,723.

October 7, 2002

Report of the Senate Committee on Rules and Procedures

Preamble

1. The Committee on Rules and Procedures has as one of its responsibilities the review and editing of individual Faculty/School Council Bylaws. A Faculty Council Bylaw was received from the Faculty of Environment requesting the Committee on Rules and Procedures review and recommend to Senate this Bylaw for approval. This Bylaw was circulated to members of the Committee on Rules and Procedures.
2. Terms of Reference of the Committee on Rules and Procedures are found in section 8.33 of the *Senate Handbook* (Revised 1992).

Observation

1. This is the first Faculty Council Bylaw for the Faculty of Environment and this Bylaw is in agreement with the Faculty and School Council General Bylaw (Policy 402).

Recommendation

THAT the Senate Committee on Rules and Procedures recommends that Senate approve the Faculty of Environment Faculty Bylaw.

Respectfully submitted,

Dr. T. Secco, Chair
Senate Committee on Rules and Procedures

Comments of the Senate Executive Committee:
The Senate Executive Committee endorses
the report to Senate.

UNIVERSITY OF MANITOBA BYLAW

41

No. _____	Effective Date: _____
Title: <u>Faculty of the Environment Council Bylaw</u>	Review Date: <u>November 2013</u>

Approving Body: <input type="checkbox"/> Board of Governors <input checked="" type="checkbox"/> Senate <input type="checkbox"/> Faculty/School Council	
Authority:	<input type="checkbox"/> University of Manitoba Act section # _____ <input checked="" type="checkbox"/> Other legislation [name and section #] <u>Policy 402 Faculty and School Council General Bylaw</u>
Contact:	_____

Applies to:	<input type="checkbox"/> Board of Governors members <input type="checkbox"/> Senate members <input checked="" type="checkbox"/> Faculty/School Councils <input checked="" type="checkbox"/> Students	<input type="checkbox"/> External Parties [Specify applicable External Parties] _____ <input type="checkbox"/> Employees [Specify applicable employee organizations and employment groups] _____
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1.0 Reason for Bylaw

The Faculty and School Council General Bylaw approved by Senate describes the membership and powers delegated to Faculty and School Councils in general. This Faculty Council Bylaw establishes and sets out the membership and powers of the Faculty Council of the Faculty of Environment.

2.0 Rule/Principle

2.1 Membership of Faculty Council

The members of the Faculty Council of the Faculty of Environment (the "Faculty Council") are:

- (a) the President;
- (b) the Vice-President designated by the President;
- (c) the Dean;
- (d) all those holding nil-salaried appointments in the Faculty of Environment;
- (e) four support staff (one of each elected by and from each of the following disciplines: geography, geological sciences, environmental sciences, and natural resources management);

- (f) four students (one of each elected by and from each of the following disciplines: geography, geological sciences, environmental sciences, and natural resources management); and
- (g) such others as may be authorized by the Faculty Council.

2.2 Limitations on the Participation of Members:

The Student representatives shall have full status with the following exceptions:

- (a) Student representatives shall not participate in the nomination, election, or removal of representatives from the Faculty Council to the University of Manitoba Senate.
- (b) Student representatives shall be excluded from those portions of any Faculty Council meetings or committee meetings considering the content of examinations, examination results, individual cases related to admission, individual cases related to student progress, and prizes and awards where academic ability is a consideration. A simple majority vote shall decide where such limitation should apply.

2.3 Powers to Act

The Faculty Council, in addition to any other power set forth in this Bylaw and subject to the plenary powers of the Board of Governors and the general charge of all matters of an academic character vested on the Senate, shall have the following power to:

- (a) provide for the regulation and conduct of its meetings and proceedings;
- (b) appoint such committees as it may deem necessary and to confer on them the power and authority to act for it with respect to such matters as it may deem expedient;
- (c) elect and remove its representatives on the Senate in accordance with the Act, and the rules and procedures authorized by the Senate;
- (d) make and administer regulations with respect to the attendance, conduct and progress of students who are registered in the Faculty;
- (e) administer the rules and regulations of the Senate as they affect the students registered in the Faculty;
- (f) prepare and publish Faculty timetables;
- (g) consider and determine appeals by students from a decision of a member of the academic staff of the Faculty; and
- (h) establish department councils and following guidelines approved by Senate, prescribe how they shall be consulted.

2.4 Powers to Recommend

The Faculty Council shall have the power to make such recommendations as it deems advisable to the appropriate persons or bodies and without restricting the generality of the foregoing, may make recommendations concerning:

- (a) The conferring of the title Professor Emeritus/Emerita and Dean Emeritus/Emerita;
- (b) Athletic, social or other extra-curricular activities of students;
- (c) The establishment of, the abolition of, any changes in division, departments, chairs, lectureships in the Faculty;
- (d) The establishment of or the abolition of or any changes in exhibitions, bursaries, scholarships, and prizes to be awarded to students registered in the Faculty;
- (e) The conditions of entrance to the Faculty and the standing to be allowed students entering the Faculty and all matters relating thereto;
- (f) The regulations, methods, and the limits of instruction in the Faculty;
- (g) The academic standing of all undergraduates in the Faculty;
- (h) The conditions on which candidates shall be received for examination and the conduct and results of examinations in the Faculty;
- (i) The degrees, diplomas and certificates of proficiency to be granted by the University pertaining to courses of study in the Faculty, and the persons to whom they shall be granted and the course of study required for any such degree, diploma and certificate of proficiency;
- (j) The discipline of students registered in the Faculty;
- (k) The acquisition and use of facilities within the Faculty;
- (l) The requirements for lecture rooms and other facilities; and
- (m) The dates for the beginning and ending of lectures in the Faculty.

2.5 Council Meetings

- 2.5.1 Meetings of the Faculty Council shall be called by the Dean on her/his own motion, or at the written request of ten members of the Faculty Council.
- 2.5.2 The Faculty Council shall meet at least once each term.
- 2.5.3 At least five days written notice of any Faculty Council meeting shall be given.

- 2.5.4 A quorum of Faculty Council shall be one third of the eligible members.
- 2.5.5 The presiding officer at all meetings of Faculty Council shall be the Dean or his/her designate.
- 2.5.6 All meetings of the Faculty Council shall be open, subject to the Faculty Council moving into closed sessions by a vote of a simple majority of the members present and voting. An "open Council meeting" means a meeting of a Faculty Council or portion thereof in which members of the University Community may attend as non-participating observers and spectators, subject to the limitations of space and orderly conduct. A "closed council meeting" means a meeting of Faculty Council or portions thereof, in which only Faculty Council members and those specifically invited by Faculty Council may attend.

2.6 Rules of Order

- 2.6.1 The Faculty Council may enact or amend standing rules and procedures for conduct of the affairs of the Faculty of Environment by a majority of those members of Faculty Council present and voting at the time the vote is called, provided that five days' notice of the proposed standing rule has been given to all members of the Faculty Council prior to the meeting at which such enactment of amendment is to be made.
- 2.6.2 Except where otherwise provided in the standing rules, "Robert's Rules of Order" shall govern the conduct of the Faculty Council meetings.

2.7 Removal

- 2.7.1 The Faculty Council may remove its representative(s) on Senate at any time by a two-thirds majority of those members present and voting at a duly called and constituted meeting thereof.
- 2.7.2 At least seven days' notice shall be given of a motion to remove a Senate representative and such notice shall specify the reasons for the proposed action.
- 2.7.3 The person concerning whom the motion is made shall have the right to be heard at the Faculty Council meeting held to consider the motion.

2.8 Enactments and Amendments

- 2.8.1 This Bylaw is supplementary to the Faculty and School Council General Bylaw.
- 2.8.2 Before this Bylaw is effective, it must be:
 - (a) approved by two-thirds of the members of the Faculty Council

present and voting. At least seven days' notice in writing of any amendment shall be given to the members of the Faculty Council concerned;

- (b) edited by the Committee on Rules and Procedures; and
- (c) approved by Senate.

3.0 Accountability

- 3.1 The University Secretary or the President is responsible for initiating a formal review of this Bylaw and Secondary Documents.
- 3.2 The Dean or Acting Dean for the Faculty of Environment is responsible for ensuring that:
 - (a) Faculty Council actions comply with this Bylaw; and
 - (b) duly approved Faculty Council actions and recommendations are implemented.

4.0 Secondary Documents

- 4.1 The Faculty Council may approve Department Council Bylaws and Policies and Procedures which are secondary to and comply with this Bylaw, subject to the following limitations:
 - (a) those set out in Policy 403 (Departmental Council Bylaws)

5.0 Review

- 5.1 Formal Bylaw reviews will be conducted every ten (10) years. The next scheduled review date for this Bylaw is November, 2013.
- 5.2 In the interim, this Bylaw may be revised or rescinded if the Approving Body deems necessary.
- 5.3 If this Bylaw is revised or rescinded, all Secondary Documents will be reviewed as soon as reasonably possible in order to ensure that they:
 - (a) comply with the revised Bylaw; or
 - (b) are in turn rescinded.

6.0 Effect on Previous Statements

None.

Cross References

[Indicate names and numbers of other specific Governing Documents which should be cross referenced to this Governing Document. Include section # of other Governing Documents if appropriate.]

Cross referenced to: (1) Policy 402 Faculty School Council (3) Policy 403 Departmental Council
General Bylaw Bylaws
(2) Policy 1002 Deans of Faculties (4)




UNIVERSITY
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MEMORANDUM

To: Deans and Directors

From: Michael W. McAdam, Vice-President (Administration) 

Date: June 5, 2002

Subject: A Discussion Paper on Information Technology

Attached you will find a Discussion Paper on Information Technology that has been prepared at my request by Information Services and Technology. The document deals with significant issues relating to information technology and provides thirteen recommendations for action to address these issues.

The Paper is designed to generate discussion within your unit on issues related to information technology, and provides recommendations that will impact the operations of all units on campus. The thirteen recommendations are subject to modification based on feedback from your area(s). These recommendations, as modified based on your feedback, will be adopted no later than April 1, 2003. Please share this material with those in your area(s) involved/interested in IT issues.

Commentary on the Discussion Paper will also be sought from both the Senate Committee on Computing and the Senate Planning and Priorities Committee.

Questions of clarification, if needed, should be addressed to Gerry Miller, Executive Director of IST. Please provide your comments, preferably via e-mail, to both Gerry and myself. Comments on the Paper should be received no later than October 31, 2002.

MWM/cp

cc Senate Committee on Computing
Senate Planning and Priorities Committee
Dr. Emőke Szathmáry
Dr. Joanne Keselman
Prof. Karen Ogden
Ms Elaine Goldie



A Discussion Paper on
Information Technology
at the
University of Manitoba

June, 2002



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CENTRAL ACADEMIC COMPUTING SUPPORT

History and Current Status

The University has provided central support for academic computing since the mid '60's. The first central mainframe was installed in 1965, funded by an NRC grant.

Academic computing relied for many years on a single mainframe. Access was initially through punched cards and later through "dumb" terminals.

In the 1990's a transition occurred from a single mainframe to a collection of computers running the Unix operating system. The central computing facility now consists of a number of systems, each providing a specialized service such as login, email, file sharing and high performance computing. The systems are connected to the campus network and are available 24 hours a day, 7 days a week. Since the University is connected to the Internet and to CA*net 4, these systems are available not only locally, but nationally and internationally.

The growth has been not only in computing power, but also in the number of people using these central facilities. There are now about 20,000 email and login accounts, up from a few hundred not too many years ago. These facilities have evolved from specialized research tools used by a few people to generalized computing and communication facilities used by almost all University staff and students.

All central academic IT support is considered a core service and is supported directly from IST budgets. This includes provision of Unix based server platforms, a wide variety of application software, technical and hot line support, etc. Charges for local support are levied only to recover any incremental cost to IST in providing that



support. An example of this would be per user licensing for Novell software.

A list of chargeable and non-chargeable services may be found in Appendix 1.

Issues

In general, the central academic computing facilities are adequate to meet the current demand. This is due to the increased price performance of Unix systems which has allowed for the provision of more computing and communication power within fixed budgets. It is also due to the high levels of discount we have negotiated with equipment suppliers.

One barrier to effective use of academic computing facilities is the varying levels of local IT support in faculties. Some faculties have deemed this support a priority and made resources available. Some have deemed it less of a priority and as such the local support available is less.

Strategies

IST will continue to concentrate resources on support of core central services including email, file sharing, high performance computing and access to national and international research networks. IST will also work on improving facilities for remote access and improvements in security and file backups. Finally, IST will continue to provide software suites through enterprise site licenses in order to encourage standards in software.

Other models of local support should be explored. A good alternative model for local support is for faculties to contract local support to IST. The faculty funds the position(s) and IST manages their work. The support staff are located in the faculty but report to IST and have



direct access to other IST staff. Service level agreements are in place so each party understands what will be provided. In some cases smaller faculties share a support position. This model is in place in a number of faculties and works well.

Recommendation 1

It is recommended that faculties be asked to review by March 2003 their requirements for local IT support and to assess alternatives for funding and the provision of such support.



OPEN AREAS

History and Current Status

Student access to computing has always been a priority for IST. In the single mainframe era, access was at first through punched cards and later "dumb" terminals. Open areas were established in a number of areas to provide a space where students could access central IT facilities 24 hours a day, 7 days a week. Eventually the dumb terminals were replaced by PC's connected to the campus network.

IST currently operates a number of open area computer laboratories that most students use as part of their course work, a requirement which has grown to where open areas are now a core service used by almost all teaching programs at the University. A survey done by IST in February 2000 confirmed that these areas are critical to the student community.

Open areas are considered a core service and supported directly from IST budgets.

An inventory of open area equipment may be found in Appendix 4.

Issues

The open areas should be available during the time when students need to do their work. The need for universal availability is in conflict with the need for faculties to book time in the open areas for certain classes, making the computers unavailable to the drop in student. Compromises have been reached in availability because the need for booked time is important and there are no alternatives on campus.

Open areas should provide acceptable levels of performance. Many faculties have specialized high end computing requirements that require large monitors, disk storage and specialized equipment.



Limited financial resources are reducing IST's capabilities to meet these requirements.

While the current installed base of equipment is adequate to meet the students needs, computers in open areas need to be in good working order and have current hardware and software technology. Funding restrictions make keeping equipment current impossible given the current inventory (over 500 workstations). Also, as equipment ages it breaks down more often, a source of frustration for students.

At the current annual level of funding for replacement equipment (\$207,000 out of an open area budget of \$311,000), the replacement cycle is over 7 years, which is far too long. The industry standard for desk top equipment replacement is 3 years. The funding required for a 3 year replacement cycle based on the current inventory is \$509,000.

These issues are detailed in the *Open Area Study (2000)*¹

Strategies

There are two alternatives for implementing a reasonable replacement cycle in the open areas:

The first is increased funding for replacement. In order to have a four year equipment replacement cycle, which is the limit given the rate of change in desk top technologies, the existing annual replacement budget would have to be more than doubled or funds reallocated from other sources.

The second alternative is to reduce the number of open areas to a level that can be maintained within current funding. This model would have IST concentrate resources on two to three open areas at the Fort Garry and Bannatyne campuses. The remaining open areas

¹ This study is available at <http://www.umanitoba.ca/acn/reports>



would be closed over a two year period or responsibility for the area, including support and equipment renewal, would be transferred to the appropriate faculty. Such transfers have already occurred in a number of cases.

Open areas are an important and necessary core service for students. Access to them is essential for competitive reasons and to enhance the learning experience at this University.

Recommendation 2

It is recommended that IST sustain the open areas at up-to-date levels and that a technology fee, levied on all students, be considered as a means of funding ongoing equipment renewal. No further transfers to faculty administration will occur.



CLASSROOM AND TEACHING SUPPORT

History and Current Status

Until recently technology in the classrooms meant overhead projectors, slide projectors and VCR units. These were supplied and managed by what was then known as Instructional Media Services.

There have been fundamental changes in classroom technologies in the last few years. Instructors now need computers at the lecture podium attached to the network and to data projection equipment. The web environment has become a means of creating instructional material and presenting it to students. Teaching is now dependent on these technologies being readily available in classrooms and on the availability of technical support for instructors.

One example of this change is the growth of the use of WebCT, the software platform used at the University to develop and present web based teaching material. Over the last three years, the use of WebCT has grown to a current level of approximately 19,000 course registrations. Since a student may be taking more than one course using WebCT, the head count is less. Estimates are that 12,000 to 13,000 students use WebCT. The growth in usage will continue.

Many courses are now being given online. Students can learn the material and be tested at their own speed and are less dependent on the lecture model of teaching.

In recognition of these changes, the University has embarked on a five year upgrading program of technology in classrooms. FY 2002/2003 will be the second year of this project. Initial funding is from the capital budgets for renewal provided by the Province to the University. Funding for replacement and renewal of equipment will have to come from IST operating budgets. Priorities for classroom upgrades are set by PPEM in consultation with IST, the administration and deans and directors.



Support of technology in classrooms for teaching of credit courses is considered a core service and is supported directly from IST budgets except for direct incremental costs of supplies. Charging for non-credit activities is done to recover incremental costs of materials and labour only.

Issues

The allocation of capital funding for five years to technology renewal in teaching will allow the University to make available facilities in support of new teaching models being adopted by faculty. The barriers will be in supporting the faculty using these technologies in their teaching. Many other universities have a dedicated centre providing technical and content development support for faculty using computing and networking technologies in teaching. The University of Manitoba does not. As such, support is variable across faculties and as a result the quality of teaching material being developed suffers.

Ongoing funding for software licensing in this area will be an issue as the vendors are significantly increasing prices.

There are also issues of recognizing development of teaching materials in promotion and tenure evaluations and ownership of intellectual property.

Recommendations

Recommendation 3

That the five year plan for upgrading classroom technologies continue. A review will be done annually on priorities for upgrading and appropriate technologies to be implemented.



Recommendation 4

It is recommended that the University establish a Centre for Instructional Support at the University to meet the growing demand for support of faculty developing web based teaching materials and support the operating costs of new technologies. The Centre would be governed by UTS with support from IST and the libraries.

Recommendation 5

It is recommended that faculties review, with support from IST and PPEM, alternative models for classroom IT support such as student owned laptops and wireless networks; this review to be completed by March 2003.



ADMINISTRATIVE SYSTEMS

History and Current Status

The University of Manitoba's has five enterprise administrative systems: the Human Resource Information System (HRIS), the Financial Management System (FMS), the Student Information System (SIS), the Alumni and Development System and the Library Systems. All but the Library System run on a mainframe computer running the O/S390 operating system. These systems have been developed and evolved in-house over the past 25 years or more. They have served the University well over this time frame, some being considered among the best of their class in Canada. These systems are a core service enabling efficient administration of the University.

The systems are outdated. There are significant functional gaps and the existing technology is old and out of date. To remain competitive, the University must provide 24x7 web based services, enhanced functionality and better, more timely information reporting. Updated systems and new technology are required to accomplish this.

A study was completed on the viability of the mainframe platform and functional assessments were recently conducted for the Human Resource Information System (HRIS), the Financial Management System (FMS) and the Student Information System (SIS). These assessments resulted in the following conclusions;

- The mainframe is not a viable platform for renewal.
- There are significant functional gaps for each of the three systems.
- There is a need to reduce shadow systems.
- Web self-service is required and it is expected it will be available 24 hours per day, seven days per week (24x7).
- There is a need for better access to data, better and more timely reporting and better tools for generating and analysing data.



- Systems renewal provides an opportunity to adopt best practices.
- The University is falling behind in this area.

In summary, administrative systems renewal is required for the University to remain competitive, to meet functional requirements, to enhance the efficiency and effectiveness of administrative policies and procedures and to replace outdated technology.

Centrally supported administrative systems are considered core services and funded directly from IST budgets.

Issues

There are a number of obstacles to overcome for the successful completion of administrative systems renewal.

- The cost of acquiring new systems is large. Costs relate not only to the acquisition and implementation of new hardware and software, but also to properly resource change management.
- Managing change on this scope and scale will be difficult. Adopting best practices, adapting to new systems and implementing new functions will result in significant change.
- The University community must be willing to accept change. Policies and procedures must be implemented to encourage and facilitate change.
- Staff must accept that packaged systems cannot be functionally modified on demand.



- Risks associated with systems renewal are high. There are many reports of failed projects in terms of cost over-runs, projects taking much longer than expected and projects being abandoned. Well defined project management will be required to ensure success.

Strategies

A systems steering group has been created for each of the Human Resources, Financial and Student Information systems.

Recommendations

Recommendation 6

Human Resource Information System - It was recommended that a package be purchased as system features are well defined, there are many viable products on the market and there are significant gaps with the existing system. Implementation is underway.

Recommendation 7

Financial Management System - It was recommended that a package be purchased as system features are well defined, there are many viable products on the market and there are significant gaps with the existing system. Packages are currently being evaluated.

Recommendation 8

Student Information System - The Student Information System is the University's core system as it administers academic policies and procedures and impacts the student experience on campus. This system, therefore, can deliver strategic differentiation. Also, system features are less well defined and there are not as many available products on the market. It was concluded that packages would be evaluated to determine the degree of fit with our requirements. It is recommended that the review of possible packages proceed with input from the academic community on potential changes in business processes.



Recommendation 9

Alumni and Development System – This system will have to be moved off the mainframe. It is recommended that an initial assessment of options be done.

Recommendation 10

Library System – The University is currently running a packaged library system. Recently the system vendor was bought out by another library system vendor, and development on the product we run was frozen. It is recommended that the option of converting to the Library System supported by our new vendor be done. Funding for conversion will be from Library operating budgets.



UMINFO

History and Current Status

UMINFO, the University web site, was first brought online in 1995 as an experiment in the then new web technology. It quickly grew and became popular among both local and distant users.

A seminal event in UMINFO's history was the 1997 flood. The site became a primary source of information for the local community on flood preparations and the University's role therein. Graduates and others who were concerned about what was happening relied on the site for current information. CNN, the New York Times and other media advertised the site and the number of hits on the site increased dramatically.

The same phenomenon occurred during the Pan Am games in 1999.

One phenomenon on the web is that if people visit a site they like they tend to come back. The increase in visits to UMINFO persisted and UMINFO now gets an average of 170,000 page visits a day, or about 5 million a month. It is one of the busiest sites in Manitoba and in the country.

Services provided by UMINFO are a front door to the University for staff, students, and the wider community; the student portal providing access to student information; WebCT and associated teaching services and the news space which is used by a variety of units to present announcements of events, schedules, etc.



UMINFO has evolved from an interesting experiment in new technologies to an essential core service. It has become a key element in promoting the University and in delivering a variety of services to a number of client groups.

Core services supported directly from IST budgets include provision and support of the main University web space, news management, systems control and integration, development of the presentation layer for web accessible corporate systems, and technical support of information providers in faculties and units.

Faculties and units are responsible for production and management of their own web content.

Issues

With such rapid growth have come many challenges. Faculties and units using UMINFO for delivery of services and provision of information have had to develop local expertise since there are not enough resources centrally to do all content development. This has resulted in increased workload in faculties.

The look and feel of University web pages varies widely. Standards need to be developed to provide visitors with a consistent look and feel in the UMINFO space. Implementing these standards will require senior management support.

The appropriate role of UMINFO is to provide the tools which units may use to develop professional and quality web spaces around University standards for the presentation of material. These include platform support, developing tools for content development and templates for presentation, training and support of information



providers in faculties and units, and the development of presentation standards.

Strategies

Additional technical and clerical positions will be created to augment UMINFO resources.

An advisory group representing a number of University constituencies will be struck to periodically advise IST on UMINFO practices and policies.

An internal IST senior management group will set priorities for UMINFO activities.

Projects will be initiated in reviewing possibilities for content management and enterprise portal systems.

Recommendation 11

It is recommended that faculties and units be required to use standard web templates in their web spaces to ensure consistency of presentation on University pages. Templates will be supplied by UMINFO along with content management tools. Production of the content within these templates will be the responsibility of the faculty or unit.



NETWORKING

History and Current Status

All of the areas above depend on the campus network. This network allows delivery of these services to the entire University community in a timely and productive fashion.

The network in most buildings at the University originated in the late 1980's. Over 80% of the buildings use shared media coaxial cable – a technology that is three generations behind the industry standard network. The network in University buildings was obsolete 7 years ago. The applications in demand, such as large research and financial distributed databases, access to high performance computing, and multimedia and desktop video conferencing all require the consistent bandwidth of a modern high speed network.

The current campus backbone network equipment is reliable and has availability of between 99.0% and 99.5%. However, the actual availability at the desk top in buildings with shared cabling is in the 95% to 98% range due to local network problems and performance. Clearly this is not good enough. The University needs to upgrade to current cabling and switching technologies in building networks.

Network upgrades have occurred in a few buildings, specifically part of Drake and PPEM. Plans for 2002/2003 include upgrading Engineering III, University Centre and those offices in CED containing central administrative staff.

The *Campus Network Study (1998)* and the *Buildings Cable Plant Study (1999)* assessed the status of the network in 74 buildings. Priorities were established in the *Campus Network Progress Review (2001)*.²

² These reports are available at <http://www.umanitoba.ca/acn/reports>



The network architecture in use today is based on a highly resilient implementation of Gigabit IP technology, an industry standard used in large networks around the world. While technology, applications and products will change drastically from year to year, it is not unreasonable to expect 8 to 10 years of useful life from an upgraded network.

A second component of the University network infrastructure is the Corporate Network System (CNS) which provides staff with access to networked file and printer services, applications and databases. It consists of three central primary servers and several secondary servers with a capacity of 3,000 concurrent users. Most offices are completely reliant on this facility and when a server is unavailable work essentially stops. Availability of the servers is in the 98% to 99% range. However, given the impact of down times, measures need to be taken to improve reliability even further.

Issues

The faculty, researchers, students and staff at the University of Manitoba require a fast and failure resistant network to use the technology and applications that are commonly part of the University learning and research experience.

Under the current funding structure, IST is responsible for the campus backbone network between buildings as well as gateways to external networks such as the commercial Internet and CA*net 4, the national R&D network. Faculties and units are responsible for local building cabling and switching as well as local support for users of the facilities.

The level of support and the health of the local network in faculties and units varies widely depending on the funds available, local priorities and service level expectations. There is frustration due to differing interpretations as to who buys what and who is responsible



for support in various areas. It is very difficult to maintain networking standards under this current funding model. The lack of central control of building networks also results in fragmented planning for renewal.

The University wishes to provide a total network service to the wall plate in offices, but there is no capital base or revenue stream in place to provide the basis for enterprise wide equipment purchases and cabling renewal. Alternate means of funding building network upgrades need to be explored.

Strategies

Building networking is a core utility service, and like other such services such as power and water, it needs to be delivered in a reliable fashion following well defined standards.

In some cases, alternative technologies may be used. For example, faculties are evaluating wireless networking where that technology may be appropriate. Typically this is in teaching spaces where fixed cabling is not possible. However, the CAT-6 switched cable standard will predominate.

In the case of the CNS network facility, a technique called clustering will be implemented on the central servers to improve reliability and availability.

New strategies need to be explored to fund network upgrades in buildings across the campus. In other words, this is a financial challenge, not a technical one.

There are essentially two options for financing;



The first is support from unit budgets where a faculty, school or administrative unit chooses to fund their building network upgrades from their existing operating budgets, following institutional cabling standards. This has occurred in a number of units. Research faculties may have a unique opportunity through CFI grant applications for network centric upgrades that support research.

The second is a fee based structure where the costs of building networking are recovered through an annual fee for service. (Some call this the telephone model.) This model is common at other institutions and is worthy of further consideration as it provides for predictable annual network costs. The initial problem is finding the capital monies to install the upgrades; the annual funding is the second problem, as the source of this funding will normally be faculty and departmental operating budgets.

The total cost of upgrading campus building networks is in the range of \$13M. The University should be investing about \$4M per year over the next 3 to 4 years in this effort.

The University will also continue to explore external funding sources at the provincial and federal levels to help with these costs.

Recommendation 12

It is recommended that the second option be explored further, and that the central administration takes operational and financial responsibility for delivery of the campus network to buildings. Deans and Directors are asked to provide comments in response to this discussion paper on the second option, especially the need to provide funding on an annual basis to support ongoing maintenance of the infrastructure. Priorities for building upgrades will be set by the central administration in consultation with unit heads, the Senate Committee on Academic Computing, IST and PPEM. Installation will be done by PPEM and IST.



IT STANDARDS

History and Current Status

Hardware and software standards are regularly being developed by IST as technology changes. These standards reflect the best practices in the IT sector. Compliance with standards by all sectors of the University using IT is necessary to maximize scarce support resources and to get the best return on IT investment for the University.

Issues

There is no central policy requiring units to comply with University IT standards in the acquisition of hardware and software, in the installation of new equipment and networks or in the development of local administrative systems.

While many recognize the benefit of following standards and do so in their operations, some do not. This results in unnecessary technical problems and impacts on the networking infrastructure and technical support resources throughout the institution.

Strategies

IST will continue to develop and publish IT standards as technology develops. IST will also through site licenses and volume purchasing arrangements make standardized IT products readily available to the University community.

Recommendation 13

In order to ensure compliance it is recommended that IT purchases and administrative systems development funded from University operating budgets be in agreement with current IT standards.



Appendix 1 – Chargeable and Non-chargeable Services

IST - Internal income analysis

Software:

Currently available:	Chargeable Yes/No	Fee Charged
ACN services:		
Novell	Yes	\$25/user to maximum of \$2500 per unit
Corporate Time	Yes	\$25/user one time fee
Individual userid	No	nil
30 Hours dial up time	No	nil
Mail systems	No	nil
SAS/SPSS internal sales	Yes	\$75 per user
WebCT	No	nil
Web home page space	No	nil
TSO-Huron	No	nil
Anti-virus software	No	nil
Shazam	No	nil
Adobe Acrobat	No	nil
Question Assistant	No	nil
Respondus Lite	No	nil
Shockwave	No	nil
1st Page	No	nil
Free Zip	No	nil
Power Archiver	No	nil
Zip Central	No	nil
File transfer WS-ftp le	No	nil
Quicktime	No	nil
RealPlayer	No	nil
RealPresenter Basic	No	nil
RealProducer Basic	No	nil
RealSlideShow Basic	No	nil
Winamp	No	nil
QWS3270	No	nil
Tera Term	No	nil
Internet Explorer	No	nil
Open area desktops	No	nil
Open area printers	No	nil
Technical support (repairs, Umnet etc.)	Yes	varies
Parts	Yes	varies
SmartForce on line courseware	No	No
Microcomputer Centre courses	No	No
Web courses	Yes	\$25.00



Unix OS management	Yes	\$250/user
Help desk support	No	nil
Advisor services support	No	nil
Admin Systems services:		
Optical scoring	Yes	varies
Misc desktop support	Yes	varies
IMS-Financial Records	No	nil
IMS-HRIS	No	nil
IMS-Student Records	No	nil
IMS-Alumni	No	nil
Bannatyne IST: (non-credit only)		
Materials (film, processing, consumables)	Yes	Cost + markup
Labour (photographers, video, network techs)	Yes	partially subsidized
Web consultant	No	nil
Help desk support	No	nil
Classroom Services:		
Audio visual support to credit class	No	nil
Audio visual support to non-credit class	Yes	varies
Videoconferencing network	Yes	partially subsidized
WebCT support	No	No
Technical services	Yes	parts and labour
Technical services AV maint contract	Yes	\$35 each piece
Classroom design/equipment installs...	No	No
Production & Imaging Services:		
Production support to credit class	Yes	materials only
Production support to non-credit class	Yes	materials and labour
Imaging materials (film, processing, consumables)	Yes	cost + markup
Imaging labour	Yes	partially subsidized



Appendix 2 – Building Cabling Costs

Costs by Faculty	Owner	Recommended Building Network		
		Cabling	Electronics	Total
University Centre	Administration	\$368,963	\$303,244	\$672,207
Physical Plant	Administration	\$0	\$24,288	\$24,288
Tache Hall - East	Administration	\$78,857	\$85,341	\$164,198
Services Building	Administration	\$0	\$77,805	\$77,805
Administration Building	Administration	\$132,260	\$126,048	\$258,308
Chancellor's Hall	Administration	\$0	\$9,191	\$9,191
Powerhouse	Administration	\$24,405	\$15,097	\$39,502
Stores Building	Administration	\$13,292	\$9,191	\$22,483
Visitor Centre	Administration	\$15,142	\$9,191	\$24,333
Alumni House	Administration	\$18,317	\$9,191	\$27,508
Pembina Hall	Administration	\$26,452	\$15,097	\$41,549
Tache Hall - West	Administration	\$167,752	\$106,016	\$273,768
University College Residence	Administration	\$271,224	\$119,800	\$391,024
Tache Hall - Center	Administration	\$1,181	\$9,191	\$10,372
	Total	\$1,117,845	\$918,691	\$2,036,536
Agriculture Building	Agriculture	\$0	\$159,533	\$159,533
Plant Science	Agriculture	\$87,110	\$24,288	\$111,398
Ellis Building	Agriculture	\$218,898	\$98,481	\$317,379
Animal Science Entomology	Agriculture	\$156,691	\$30,195	\$186,886
Grain Storage Research Facility	Agriculture	\$0	\$9,191	\$9,191
Plant Science Field Stations	Agriculture	\$10,562	\$9,191	\$19,753
Agriculture Lecture Block	Agriculture	\$0	\$9,191	\$9,191
Botany Green Houses	Agriculture	\$630	\$9,191	\$9,821
Vegetable Storage Building	Agriculture	\$0	\$9,191	\$9,191
Dairy Science	Agriculture	\$26,990	\$15,097	\$42,087
Agriculture Engineering Annex	Agriculture	\$590	\$9,191	\$9,781
Animal Science Research Unit	Agriculture	\$12,137	\$9,191	\$21,328
	Total	\$513,608	\$391,931	\$905,539
Architecture 2	Architecture	\$79,828	\$105,372	\$185,200
Russell Building - Architecture	Architecture	\$117,590	\$91,589	\$209,179
Ctr. Arch. Structures & Technol.	Architecture	\$0	\$74,856	\$74,856
	Total	\$197,418	\$271,817	\$469,235



Isbister Building	Arts	\$176,477	\$164,770	\$341,247
Duff Roblin Building	Arts	\$279,884	\$152,642	\$432,526
Tier Building	Arts	\$87,963	\$90,932	\$178,895
University College	Arts	\$117,617	\$91,589	\$209,206
Fletcher Argue Building	Arts	\$258,641	\$119,156	\$377,797
Total		\$920,582	\$619,089	\$1,539,671
Continuing Education	Continuing Education	\$82,321	\$91,589	\$173,910
Dentistry Building	Dentistry	\$133,795	\$98,481	\$232,276
Education Building	Education	\$178,734	\$148,359	\$327,093
Engineering Building	Engineering	\$634,807	\$337,703	\$972,510
Agriculture Engineering Building	Engineering	\$25,442	\$15,097	\$40,539
McMath High Voltage Lab	Engineering	\$14,827	\$9,191	\$24,018
Total		\$675,076	\$361,991	\$1,037,067
Human Ecology	Human Ecology	\$107,107	\$30,195	\$137,302
Robson Hall	Law	\$137,390	\$91,589	\$228,979
Elizabeth Dafoe Library	Libraries	\$231,809	\$178,895	\$410,704
Medical Library	Libraries	\$58,375	\$22,646	\$81,021
Total		\$290,184	\$201,541	\$491,725
Drake Centre	Management	\$112,119	\$112,264	\$224,383
Basic Medical Sciences Building	Medicine	\$224,841	\$166,425	\$391,266
Brodie Centre	Medicine	\$0	\$600,563	\$600,563
Chown Building	Medicine	\$132,024	\$9,191	\$141,215
Medical Services	Medicine	\$65,881	\$91,589	\$157,470
Basic Science	Medicine	\$102,265	\$77,805	\$180,070
Pathology Building	Medicine	\$100,914	\$30,195	\$131,109
Immunology	Medicine	\$40,872	\$9,191	\$50,063
Total		\$666,797	\$984,959	\$1,651,756
Helen Glass Center for Nursing	Nursing	\$0	\$393,815	\$393,815
Pharmacy Building	Pharmacy	\$101,124	\$30,195	\$131,319



Investors Group Athletic Centre	Physical Education	\$0	\$15,097	\$15,097
Frank Kennedy Centre	Physical Education	\$82,374	\$24,288	\$106,662
Max Bell Centre	Physical Education	\$38,628	\$24,288	\$62,916
Swimming Pool	Physical Education	\$11,323	\$9,191	\$20,514
Total		\$132,325	\$72,864	\$205,189
Fitzgerald Building - Fine Arts	School of Art	\$45,005	\$24,288	\$69,293
Fine Arts Annex	School of Art	\$1,811	\$9,191	\$11,002
Sculpture/Ceramics Building	School of Art	\$10,956	\$9,191	\$20,147
Total		\$57,772	\$42,670	\$100,442
School of Music	School of Music	\$62,836	\$24,288	\$87,124
School of Music Annex	School of Music	\$16,926	\$9,191	\$26,117
Total		\$79,762	\$33,479	\$113,241
Machray Hall	Science	\$480,517	\$310,136	\$790,653
Allen Physics Building	Science	\$118,706	\$84,697	\$203,403
Wallace Building	Science	\$151,836	\$91,589	\$243,425
Parker Chemistry Building	Science	\$181,135	\$119,156	\$300,291
Armes Lecture Building	Science	\$0	\$15,097	\$15,097
Buller Biological Building	Science	\$150,104	\$84,697	\$234,801
Total		\$1,082,298	\$705,372	\$1,787,670
St. Andrews College	St Andrews	\$117,617	\$77,805	\$195,422
St. John's College	St Johns	\$142,428	\$84,697	\$227,125
St. John's College Residence	St Johns	\$99,064	\$84,697	\$183,761
Total		\$241,492	\$169,394	\$410,886
Sinnott Building	St Pauls	\$36,017	\$24,288	\$60,305
St. Paul's College	St Pauls	\$178,446	\$91,589	\$270,035
Total		\$214,463	\$115,877	\$330,340



Buildings by Priority		Capital				Redundant		Non-Redundant	
		Redundant Building Network			Running Total	Total	Running Total	Total	Running Total
		Cabling	Electronics	Total					
0					\$0	\$0			\$0
1	525 231 Engineering Building	\$634,807	\$337,703	\$972,510	\$972,510	\$27,813	\$27,813	\$23,574	\$23,574
2	525 155 Machray Hall	\$480,517	\$310,136	\$790,653	\$1,763,163	\$25,469	\$53,282	\$21,230	\$44,804
3	444 151 Allen Physics Building	\$118,706	\$84,897	\$203,603	\$1,966,566	\$11,543	\$64,825	\$3,515	\$48,319
4	430 113 Isbister Building	\$176,477	\$164,770	\$341,247	\$2,307,813	\$18,574	\$83,399	\$14,560	\$62,879
5	429 117 Drake Centre	\$112,119	\$112,264	\$224,383	\$2,532,196	\$13,887	\$97,286	\$9,873	\$72,752
6	389 156 Wallace Building	\$151,836	\$91,589	\$243,425	\$2,775,621	\$12,129	\$109,415	\$4,101	\$76,853
7	383 456 Basic Medical Sciences Building	\$224,841	\$166,425	\$391,266	\$3,166,887	\$20,830	\$130,245	\$12,802	\$89,655
8	378 454 Brodie Centre	\$0	\$600,563	\$600,563	\$3,767,450	\$49,043	\$179,288	\$40,585	\$130,220
9	369 321 Elizabeth Dafoe Library	\$231,809	\$178,895	\$410,704	\$4,178,154	\$22,002	\$201,290	\$13,974	\$144,194
10	366 401 Dentistry Building	\$133,795	\$98,481	\$232,276	\$4,410,430	\$12,715	\$214,005	\$4,687	\$148,881
11	364 11 Agriculture Building	\$0	\$158,533	\$158,533	\$4,569,963	\$20,244	\$234,249	\$12,216	\$161,097
12	363 261 Architecture 2	\$79,828	\$105,372	\$185,200	\$4,755,163	\$13,301	\$247,550	\$9,287	\$170,384
13	362 211 Education Building	\$178,734	\$148,359	\$327,093	\$5,082,256	\$17,402	\$264,952	\$9,374	\$179,758
14	353 283 Helen Glass Center for Nursing	\$0	\$393,815	\$393,815	\$5,476,071	\$31,914	\$296,866	\$27,675	\$207,433
15	347 153 Parker Chemistry Building	\$181,135	\$119,156	\$300,291	\$5,776,362	\$14,473	\$311,339	\$10,459	\$217,892
16	336 25 Plant Science	\$87,110	\$24,288	\$111,398	\$5,887,760	\$1,758	\$313,097	\$1,758	\$219,650
17	334 159 Fitzgerald Building - Fine Arts	\$45,005	\$24,288	\$69,293	\$5,957,053	\$1,758	\$314,855	\$1,758	\$221,408
18	304 187 Duff Roblin Building	\$279,884	\$152,642	\$432,526	\$6,389,579	\$19,858	\$334,513	\$11,531	\$233,039
19	297 144 Sinnott Building	\$36,017	\$24,288	\$60,305	\$6,449,884	\$1,758	\$336,271	\$1,758	\$234,797
20	292 303 University Centre	\$368,963	\$303,244	\$672,207	\$7,122,091	\$24,883	\$361,154	\$20,644	\$255,441
21	262 315 Investors Group Athletic Centre	\$0	\$15,097	\$15,097	\$7,137,188	\$1,172	\$362,326	\$1,172	\$256,613
22	260 37 Ellis Building	\$218,898	\$98,481	\$317,379	\$7,454,567	\$12,715	\$375,041	\$4,687	\$261,300
23	256 15 Animal Science Entomology	\$156,691	\$30,195	\$186,886	\$7,641,453	\$2,344	\$377,385	\$2,344	\$263,644
24	247 81 Human Ecology	\$107,107	\$30,195	\$137,302	\$7,778,755	\$2,344	\$379,729	\$2,344	\$265,988
25	246 609 Physical Plant	\$0	\$24,288	\$24,288	\$7,803,043	\$2,344	\$382,073	\$2,344	\$268,332
26	242 309 Frank Kennedy Centre	\$82,374	\$24,288	\$106,662	\$7,909,705	\$1,758	\$383,831	\$1,758	\$270,090
27	241 457 Chown Building	\$132,024	\$9,191	\$141,215	\$8,050,920	\$586	\$384,417	\$586	\$270,676
28	235 310 Continuing Education	\$82,321	\$91,589	\$173,910	\$8,224,830	\$12,129	\$396,546	\$4,101	\$274,777
29	228 340 Tache Hall - East	\$78,857	\$85,341	\$164,198	\$8,389,028	\$12,715	\$409,261	\$4,687	\$279,464
30	226 251 Robson Hall	\$137,390	\$91,589	\$228,979	\$8,618,007	\$12,129	\$421,390	\$4,101	\$283,565
31	225 145 St. Paul's College	\$178,446	\$91,589	\$270,035	\$8,888,042	\$12,129	\$433,519	\$4,101	\$287,666
32	223 315 Tier Building	\$87,963	\$90,932	\$178,895	\$9,066,937	\$12,129	\$445,648	\$4,101	\$291,767
33	221 131 University College	\$117,617	\$91,589	\$209,206	\$9,276,143	\$12,129	\$457,777	\$4,101	\$295,868
34	214 191 Pharmacy Building	\$101,124	\$30,195	\$131,319	\$9,407,462	\$2,344	\$460,121	\$2,344	\$298,212
35	210 152 Ames Lecture Building	\$0	\$15,097	\$15,097	\$9,422,559	\$1,172	\$461,293	\$1,172	\$299,384
36	205 111 Fletcher Argue Building	\$258,641	\$119,156	\$377,797	\$9,800,356	\$14,473	\$475,766	\$10,459	\$309,843
37	199 141 St. John's College	\$142,428	\$84,897	\$227,325	\$10,027,681	\$11,543	\$487,309	\$3,515	\$313,358
38	198 451 Medical Services	\$65,881	\$91,589	\$157,470	\$10,184,951	\$12,129	\$499,438	\$4,101	\$317,459
39	195 318 Max Bell Centre	\$38,828	\$24,288	\$63,116	\$10,248,067	\$1,758	\$501,196	\$1,758	\$319,217
40	191 157 Butler Biological Building	\$150,104	\$84,897	\$235,001	\$10,483,068	\$11,543	\$512,739	\$3,515	\$322,732
41	185 337 Services Building	\$0	\$77,805	\$77,805	\$10,560,873	\$10,957	\$523,696	\$2,930	\$325,662
42	182 455 Basic Science	\$102,285	\$77,805	\$180,070	\$10,740,943	\$10,957	\$534,653	\$2,930	\$328,592
43	181 12 Agriculture Engineering Building	\$25,442	\$15,097	\$40,539	\$10,781,082	\$1,172	\$535,825	\$1,172	\$329,764
44	180 331 Administration Building	\$132,260	\$126,048	\$258,308	\$11,039,390	\$15,059	\$550,884	\$11,045	\$340,809
45	178 459 Medical Library	\$58,375	\$22,646	\$81,021	\$11,120,411	\$1,758	\$552,642	\$1,758	\$342,567
46	163 201 Russell Building - Architecture	\$117,590	\$91,589	\$209,179	\$11,329,590	\$12,129	\$564,771	\$4,101	\$346,668
47	161 26 Grain Storage Research Facility	\$0	\$9,191	\$9,191	\$11,338,781	\$586	\$565,357	\$586	\$347,254
48	155 205 Ctr. Arch. Structures & Technol.	\$0	\$74,856	\$74,856	\$11,413,637	\$10,371	\$575,728	\$6,357	\$353,611
49	151 461 Pathology Building	\$100,914	\$30,195	\$131,109	\$11,544,746	\$2,344	\$578,072	\$2,344	\$355,955
50	143 463 Immunology	\$40,872	\$9,191	\$50,063	\$11,594,809	\$586	\$578,658	\$586	\$356,541
51	127 39 Plant Science Field Stations	\$10,562	\$9,191	\$19,753	\$11,614,562	\$586	\$579,244	\$586	\$357,127
52	126 271 School of Music	\$62,836	\$24,288	\$87,124	\$11,701,686	\$1,758	\$581,002	\$1,758	\$358,885
53	123 14 Agriculture Lecture Block	\$0	\$9,191	\$9,191	\$11,710,877	\$586	\$581,588	\$586	\$359,471
54	122 171 Botany Green Houses	\$630	\$9,191	\$9,821	\$11,720,698	\$586	\$582,174	\$586	\$360,057
55	117 353 Chancellor's Hall	\$0	\$9,191	\$9,191	\$11,729,889	\$586	\$582,760	\$586	\$360,643
56	117 38 Vegetable Storage Building	\$0	\$9,191	\$9,191	\$11,739,080	\$586	\$583,346	\$586	\$361,229
57	113 158 Fine Arts Annex	\$1,811	\$9,191	\$11,002	\$11,750,082	\$586	\$583,932	\$586	\$361,815
58	96 147 St. Andrews College	\$117,817	\$77,805	\$195,622	\$11,945,504	\$10,957	\$594,889	\$2,930	\$364,745
59	91 615 Powerhouse	\$24,405	\$15,097	\$39,502	\$11,985,006	\$1,172	\$596,061	\$1,172	\$365,917
60	89 617 Stores Building	\$13,292	\$9,191	\$22,483	\$12,007,489	\$1,172	\$597,233	\$1,172	\$367,089
61	86 27 Dairy Science	\$28,990	\$15,097	\$44,087	\$12,049,576	\$1,172	\$598,405	\$1,172	\$368,261
62	85 333 Visitor Centre	\$15,142	\$9,191	\$24,333	\$12,073,909	\$586	\$598,991	\$586	\$368,847
63	57 355 Alumni House	\$18,317	\$9,191	\$27,508	\$12,101,417	\$586	\$599,577	\$586	\$369,433
64	52 311 Swimming Pool	\$11,323	\$9,191	\$20,514	\$12,121,931	\$586	\$600,163	\$586	\$370,019
65	51 345 Pembina Hall	\$28,452	\$15,097	\$43,549	\$12,165,480	\$1,172	\$601,335	\$1,172	\$371,191
66	51 342 Tache Hall - West	\$167,752	\$106,016	\$273,768	\$12,439,248	\$14,473	\$615,808	\$10,459	\$381,650
67	50 22 Agriculture Engineering Annex	\$590	\$9,191	\$9,781	\$12,449,029	\$586	\$616,394	\$586	\$382,236
68	48 133 University College Residence	\$271,224	\$119,800	\$391,024	\$12,838,053	\$15,644	\$632,038	\$11,531	\$393,767
69	47 237 McMath High Voltage Lab	\$14,827	\$9,191	\$24,018	\$12,862,071	\$586	\$632,624	\$586	\$394,353
70	46 263 Sculpture/Ceramics Building	\$10,956	\$9,191	\$20,147	\$12,882,218	\$586	\$633,210	\$586	\$395,039
71	36 143 St. John's College Residence	\$99,064	\$84,897	\$183,961	\$13,066,179	\$11,543	\$644,753	\$3,515	\$398,554
72	23 21 Animal Science Research Unit	\$12,137	\$9,191	\$21,328	\$13,087,507	\$586	\$645,339	\$586	\$399,140
73	18 341 Tache Hall - Center	\$1,181	\$9,191	\$10,372	\$13,097,879	\$586	\$645,925	\$586	\$399,726
74	12 273 School of Music Annex	\$18,926	\$9,191	\$28,117	\$13,125,996	\$586	\$646,511	\$586	\$400,312
		\$7,159,829	\$5,963,967	\$13,123,796		\$646,511		\$400,312	



Appendix 3 – IST Budget Summary

Unit	FTE	Salaries & Benefits	Supplies	Budget Total
IST Central Administration				
IST Central	10.0	\$722,012	\$352,482	\$1,074,494
UMInfo	7.5	\$372,670	\$5,785	\$378,455
Sub-Total	10.0	\$1,094,682	\$402,955	\$1,497,637
Academic Computing & Networking				
620-6215- Facilities	7.0	\$268,256	\$0	\$268,256
620-6220- Networking	6.0	\$289,119	\$0	\$289,119
620-6224- Unix Support	11.0	\$391,664	\$0	\$391,664
620-6225- User Services	8.5	\$564,384	\$0	\$564,384
620-6230- Hardware	7.2	\$421,715	\$0	\$421,715
620-6235- Lan Support	8.0	\$461,922	\$0	\$461,922
Sub-Total	47.7	\$2,397,060	\$0	\$2,397,060
Administrative Systems				
620-6240- Data Control	5.3	\$271,920	\$0	\$271,920
620-6245- Student Records	7.0	\$475,305	\$0	\$475,305
620-6250- Financial Records	4.0	\$243,232	\$0	\$243,232
620-6255- Application Technologies	6.0	\$440,727	\$0	\$440,727
620-6260- Database Support	8.0	\$613,148	\$0	\$613,148
620-6270- Employee Records	5.0	\$327,478	\$0	\$327,478
620-6280- Systems Renewal	6.0	\$514,527	\$181,192	\$695,719
Sub-Total	41.3	\$2,886,337	\$181,192	\$3,067,529
Educational Support Services				
620-6110-30 Classroom Services	15.0	\$565,556	\$50,930	\$616,501
620-6110-31 Technical Services	0.0	\$0	\$58,387	\$58,387
620-6110-32 Production & Imaging Services	9.5	\$416,287	\$128,910	\$545,207
620-6110-36 Videoconferencing Services	0.0	\$0	\$52,308	\$52,308
Sub-Total	24.5	\$981,843	\$242,535	\$1,224,378
IST Bannatyne				
620-6114-02 Bannatyne Campus Services	10.5	\$469,593	\$47,502	\$517,106
Sub-Total	10.5	\$469,593	\$47,502	\$517,106
Telecommunications				
620-6155 Telephone Office	8.5	\$353,850	\$46,756	\$400,615
711-6931 Telephone Utility	0.0	\$0	\$1,750,000	\$1,750,000
Sub-Total	8.5	\$353,850	\$1,796,756	\$2,150,606



Total: 142.5 \$8,183,365 \$2,718,940 \$10,850,041

Capital Account (Equipment) 0.0 \$0 \$3,836,808 \$3,836,808

Academic Computing & Networking

Academic Computing/Unix/Micro Apps \$408,600
Lan Support \$265,400
Consulting Advisors \$4,000
Data Storage \$142,104
MCC \$33,320
Misc Maint & Hardware \$93,785
Networking \$358,292
Open Areas \$311,000
Deferred Projects/Unallocated \$4,250

Total Academic Computing & Networking \$1,620,756

Administrative Systems

Libraries \$205,235
Mainframe/MVS \$615,720
Migration/Sybase \$193,490

Total AS Budget \$1,014,445

IST Bannatyne:

IST Bannatyne \$45,000

Total IST Bannatyne Budget \$45,000

Central Administration

Admin Software & Services \$499,025
Telephones/Data/Telecommunications \$442,067
Physical Plant \$10,000
Security/UPS \$35,000
WEB/Uminfo \$99,188
Deferred Projects/Unallocated \$70,332
Customs/Couriers \$1,000

Total Central Administration \$1,156,612

Total combined

Breakdown by purchase type Allocation amount

Software renewal 1,089,629
Hardware purchase 1,056,713
Miscellaneous purchase 1,044,615 (incl printing, telecomm & imaging specialist base costs)
Hardware maintenance 451,166
Software purchase 194,685

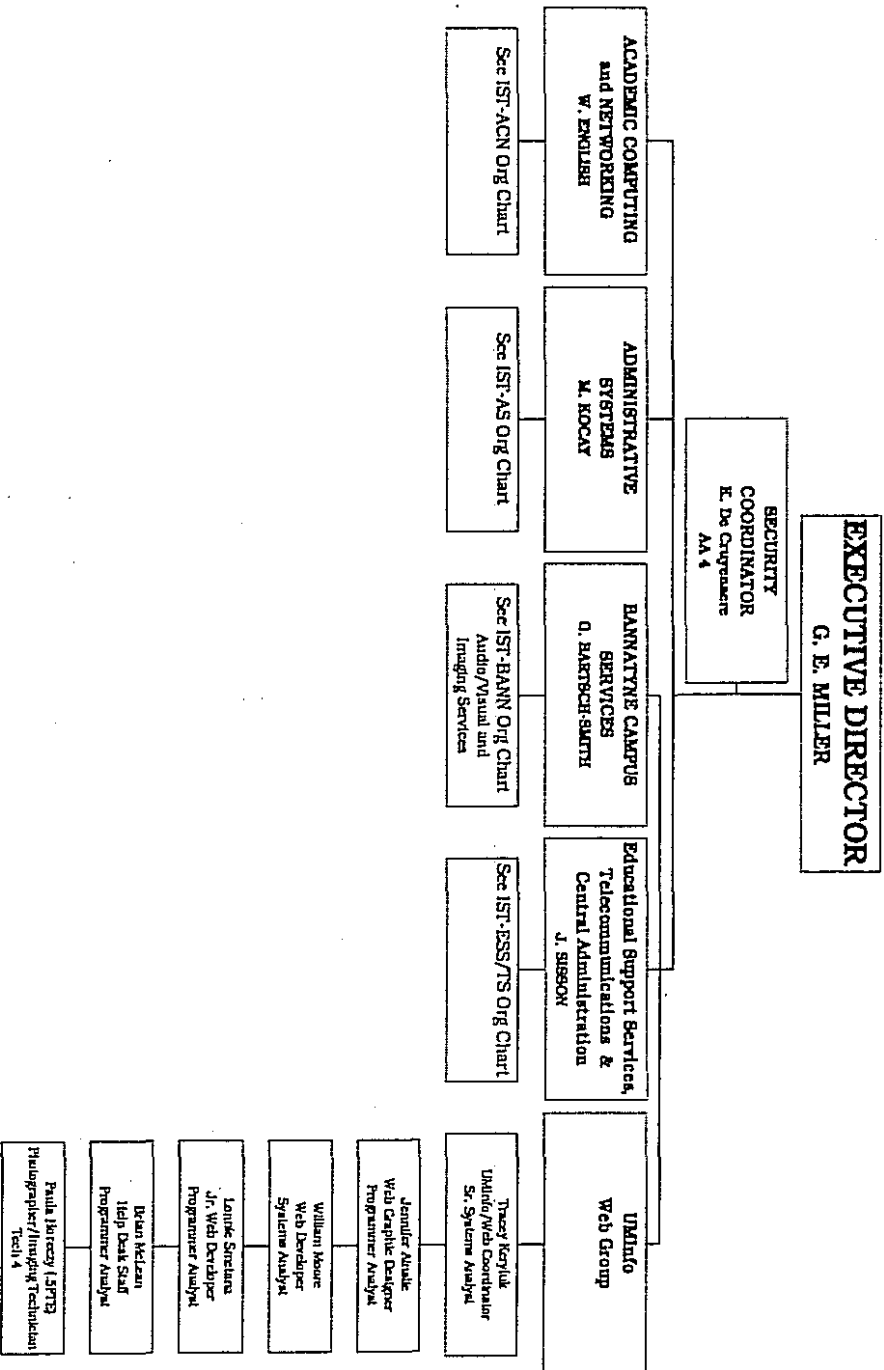
Total \$4,636,948



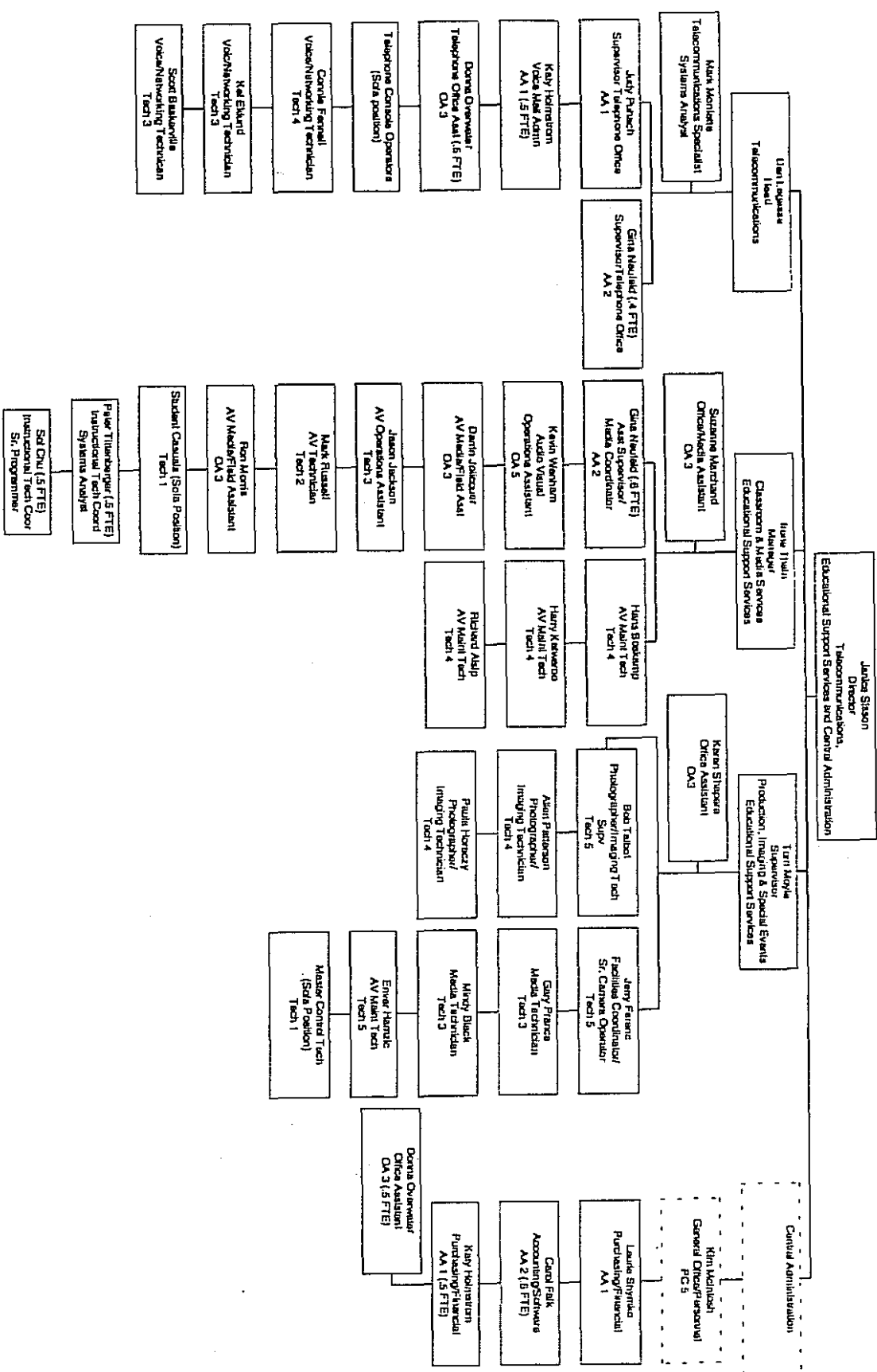
Appendix 4 – Open Area Inventory

Location	PC's	MAC's	Printers	Unix	Replacement cost (est)
Agriculture	24		2	4	\$73,894
Medicine	30	1	1	2	\$82,638
Dafoe	70		6	60	\$306,068
Education	25	16	4		\$116,087
Engineering	44		7	61	\$249,773
Fitzgerald		16	1		\$42,850
Frank Kennedy	25		2		\$68,865
Human Ecology	30		3		\$85,262
Machray	109		8	31	\$354,711
St John's	10		1		\$28,421
St Paul's	15		1		\$40,445
University College	24		2	7	\$79,468
	406	33	38	165	\$1,528,482

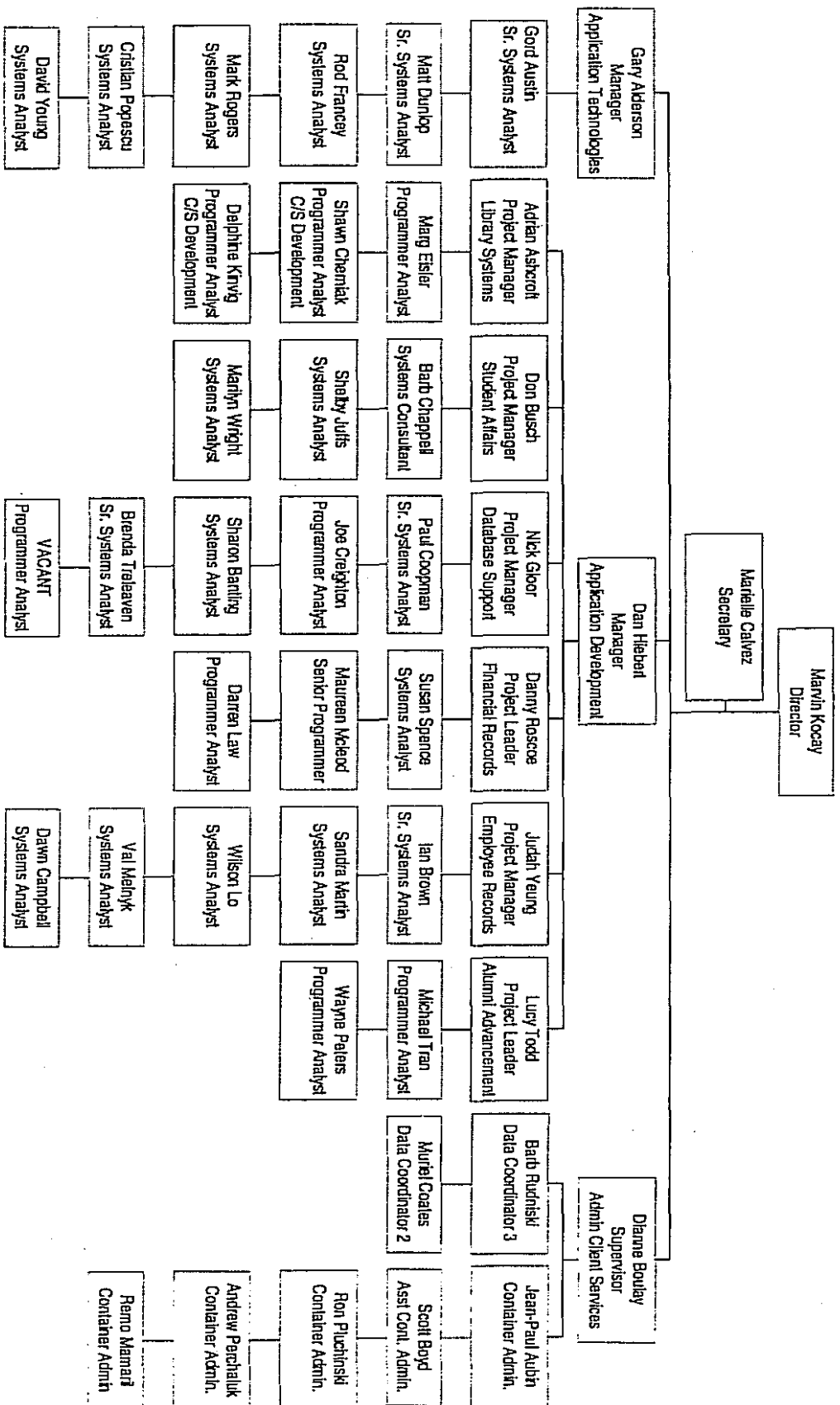
Appendix 5 – Organization Charts







AS-IST
Administrative Systems Organization Chart



Report of the Senate Committee on Academic Computing on "A Discussion Paper of Information Technology at the University of Manitoba"

Preamble

1. Terms of Reference of the Committee on Academic Computing are found in section 8.9 of the Senate Handbook.
2. One of the functions as per the Terms of Reference of this Committee is 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

Observations

1. The Senate Committee on Academic Computing reviewed "A Discussion Paper on Information Technology at the University of Manitoba" at its meeting of September 5, 2002.
2. The Committee supports Recommendation #2 respecting the introduction of a technology fee to be paid by students as a means of supporting ongoing renewal of the Information Technology system.
3. The Committee supports Recommendation #4 respecting the establishment of a Centre for Instructional Support at the University.
4. With respect to Recommendation #12, the Committee is willing to participate in consultations respecting priorities for network building upgrades.

Respectfully submitted,

Dr. Richard Lobdell, Chair
Senate Committee on Academic Computing

/lrj

Report of the Senate Planning and Priorities Committee on the Discussion Paper on Information Technology

Preamble

1. The terms of reference of the Senate Planning and Priorities Committee are found in the *Senate Handbook*, section 8.32.
2. SPPC was given the opportunity to review this discussion document and comment on the recommendations. It is the view of SPPC that it deals with the issue of information technology more comprehensively than has been done in the past. The recommendations are numerous and address a complex series of issues that include the technical, financial, administrative, teaching and research issues surrounding information technology (IT) and the delivery of IT services. The document, while containing many important recommendations, is consultative in tone.

Observations:

1. Centralization versus dispersal of IT resources is a significant theme. An argument is made that it is more efficient to centralize and standardize at least some aspects of the delivery of IT support. While it was noted that this approach might not be applicable to all platforms or applications, in regard to the technical, organizational and financial aspects of IT, SPPC expects there is some merit to this. However, there is also the strongly held view that we need to maintain some level of local (Department of Faculty) service. These concepts are not mutually exclusive. However, there needs to be clearly defined areas of technical, administrative and financial responsibility. It is also likely that Faculties and departments will want to retain some autonomy, or at least influence, over how their technology is serviced.
2. Support for student open computing areas was considered. The time frame for equipment renewal is currently seven years whereas the industry standard is three years. There is probably room for some intermediate time frame on the order of four to five years; while the technology is changing it is not immediately clear that usage is changing on the same time frame. There may be technical areas or disciplines where rapid advances would require more rapid or timely replacement of equipment. Our organization and administration of IT should be structured and resourced in such a way that it can assess such changes.
3. IST is recommending that a technology fee be levied on students. This clearly has ramifications for the overall fee structure and may infringe the current Provincial freeze on increasing tuition. It was noted that such a fee would add to the complexity of our fee structure, which in the past was considered undesirable. Any consideration of such a fee will likely form part of the discussion between the University and COPSE during the estimates process. SPPC notes that any technology fee would have to be approved by the Board of Governors.

4. Classroom technical upgrades are on going within a 5-year plan and are to be coordinated with capital project priorities where classroom environments are also being upgraded. A review of the order of replacement is currently done annually to allow for continued feedback from academic units. As part of ensuring good use of, and wide understanding of how to use the upgraded classroom facilities, IST proposes the creation of Center for Instructional Support to be coordinated with UTS and the Libraries.
5. It is clear that all recommendations cannot be implemented at once and will be phased in over a number of years. It would be appropriate for IST to report to Senate (for information) when a particular recommendation is to be acted on and how it will be implemented.

Recommendation

The development and maintenance of IST resources will clearly be an ongoing at the University of Manitoba; SPPC endorses the IST report to senate for information and as a basis for an institutional dialogue.

Respectfully submitted,

Norman M. Halden, Chair
Senate Planning and Priorities Committee

/jml

Comments of the Senate Executive Committee:

The Senate Executive Committee endorses the report to Senate.

REPORT OF THE SENATE COMMITTEE ON NOMINATIONS

Preamble

1. The terms of reference of the Senate Committee on Nominations (SCN) empower the Committee to "nominate persons to serve on committees of Senate...".
2. The terms of reference for the SCN are found in Section 8.31 of the *Senate Handbook* (Online version).

Observation

1. The Senate Committee on Nominations last reported to Senate on October 2, 2002. At that time, five vacancies remained on Senate Committees, and the Committee has since found members of the University Community to serve on the five Committees.

Recommendation

The Senate Committee on Nominations recommends that Senate approve the following nominees:

Committee	Nominees	Faculty/School	Term Ending
Senate Committee on Admission Appeals	Prof. R. Burleson	Music	31.05.05
Senate Committee on Appeals	Prof. T. Galloway	Agricultural and Food Sciences	31.05.03
Joint Senates Committee on Master's Programs	Prof. B. Ferguson	Arts	31.05.05
Senate Committee on University Research	Dean J. de Vries	Dentistry	31.05.05
Senate Committee on the Ethics of Research Involving Human Subjects	Prof. H. Davidson	Continuing Education	31.05.05

Respectfully submitted,

Professor B. Dronzek, Chair
Senate Committee on Nominations

mms