S.95-57

SIMON FRASER UNIVERSITY

MEMORANDUM

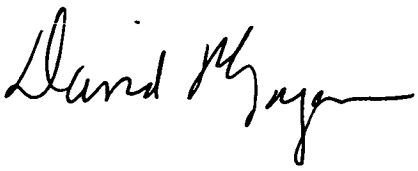
To:	Senate	**From:**	D. Gagan, Chair Senate Committee on Academic Planning
Subject:	Curriculum Revisions Faculty of Applied Sciences	**Date:**	October 16, 1995

Action undertaken by the Senate Committee on Undergraduate Studies and the Senate Committee on Academic Planning gives rise to the following motion:

Motion:

"that Senate approve and recommend approval to the Board of Governors the curriculum revisions for the Faculty of Applied Sciences as set forth in S.95-57 as follows:

S.95-57a	School of Communication
S.95-57b	School of Computing Science
S.95-57c	School of Engineering Science
S.95-57d	School of Kinesiology"



In all cases agreement has been reached between the Faculty and the Library in the assessment of library costs associated with new courses.

S.95-57a

School of Communication

Reference: SCUS 95 - 12 a
SCAP 95 - 47a

i) New courses:
CMNS 200 - 3 Effective Communication
CMNS 435 - 4 Information Rights in the Information Age

ii) Proposed Post Baccalaureate Diploma in Communication

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL

Calendar Information

Course Number: *200*

Course Title: *Effective Communication*

Credit Hours: *3* Vector: *2-0-1*

Course Description (for Calendar). Attach a course outline to this proposal.

Introduction to techniques and methods of communicating effectively in complex organizations; with the media, government, the public; in the work place, in local and international business and trade, etc. The challenge of working in meetings, doing research in teams, preparing analytic/technical reports and press statements, managing complex interactive communication processes will be addressed, with special reference to the role of culture, policy, and law, technical change, and potential conflict.

Prerequisites: *25 credit hours*

Corequisite: *—none —*

Special Instructions: *This course is strongly recommended for Cmns Co-op students.*

Course(s) to be dropped if this course is approved: *—none —*

Rationale for Introduction of this Course: Will this be a required or elective course in the curriculum; probable enrollment when offered?

Students require knowledge of effective communication, both within and outside the University. The School already provides introductions to the use of communication technology, and now we wish to provide an introduction to other communication methods, specially those which are used in our later courses (300, 400 level). To our knowledge no other course exists in the University like this one. We therefore anticipate no overlap with other courses.

Scheduling and Registration Information

Indicate Semester and Year this course would be first offered and planned frequency of offering thereafter.

Summer, 1996; at least once every year.

Which of your present CFL faculty have the expertise to offer this course? Will the course be taught by sessional or limited term instructors?

R. Anderson, R. Hackett, P. Hindley, P. Howard, D. Gutstein, W. Richards, C. Murray

Are there any proposed student fees associated with this course other than tuition fees? *—none —*

Is this course considered a "duplicate" of any current or prior course under the University's duplicate course policy? Specify, as appropriate. *No.*

Approvals

Chair, Department/School	Chair, Faculty Curriculum Committee	Chair, SCUS
30.3.95		
Date	Date	Date

CMNS 200: EFFECTIVE COMMUNICATION

1. Rationale:

Indicate the major reasons for the addition or alteration of the course. These might include: changes in faculty; expansion of areas of study within the department; support to joint programs or cognate departments, etc.

Students require knowledge of effective communication, both within and outside the University. The School already provides introductions to the use of communication technology, and now we wish to provide an introduction to other communication methods, specially those which are used in or later courses (300, 400 levels).

To our knowledge, no other course exists in the University like this one, with the exception of the courses specifically targeted at Engineering Science students (ENSC 101-108). We anticipate no overlap with other courses.

2. Calendar description:

Introduction to the techniques and methods of communicating effectively; in complex organizations, with the media, government, the public; in the work place, in local and international business and trade, etc. The challenges of working in meetings, doing research in teams, preparing analytic/technical reports and press statements, and managing complex interactive communication processes will be addressed, with special reference to the role of culture, policy and law, technical change, and potential conflict.

3. Instructors:

R. Anderson; R. Hackett; P. Hindley; P. Howard; D. Gutstein; W. Richards; C. Murray

4. Week by Week Course Plan:

Week 1	Introduction, Framework, Expectations — preparing for research for academic papers and communication projects
Weeks 2 & 3	technical writing (reports, manuals)
Weeks 4 & 5	writing for newspaper, magazines, TV, radio
Week 6	MIDTERM
Weeks 7 & 8	planning for communication press kit writing, including press release writing
Week 9	the meeting as communication in complex organization
Week 10	public presentations and organizing presentations
Week 11	dealing with media and controversy
Week 12	working in teams and projects
Week 13	being interviewed, interviewing others

5. Readings:

a) O'Hair, D., Friedrich, G.W., Wiemann, J.M., and M.O. Wiemann. *Competent Communication*, St. Martin's Press, New York, N.Y., 1995, 626 p.

b) students will be shown/given examples of the techniques of communication which are the subject of the course

6. Grading

Grades will be awarded as followed:

A. In-class presentations and participation in discussions:	25%
B. Short assignments due in weeks 3, 5, 8, 10, 12:	25%
C. Midterm:	25%
D. Participation in tutorial exercises and demonstrations:	25%

7. Library Report:

see attached

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL

Calendar Information

Course Number: *435*

Course Title: *Information Rights in the Information Age*

Credit Hours: *4* Vector: *0-3-0*

Course Description (for Calendar). Attach a course outline to this proposal.

An advanced seminar to examine key information-policy issues and the actors involved in setting policy (governments, information industry, news media, libraries, citizen groups) in Canada, with international comparisons.

Prerequisites: *75 credit hours and at least one of CMNS 253, 353, 333, 334, 335, or permission of the instructor.*

Corequisite: *—none —*

Special Instructions: *—none —*

Course(s) to be dropped if this course is approved: *—none —*

Rationale for Introduction of this Course: Will this be a required or elective course in the curriculum; probable enrollment when offered?

This course addresses an area under-represented in the School's curriculum. Privacy, access to information, and the information highway have leapt to the forefront of public and academic discussion and debate in the past few years. The School has recognized this deficiency in its desire to hire in the area of Information Industries/Cultural Industries. Since this position will not be filled immediately, there is a gap in the curriculum.

This course links Communication offerings in policy and information technology. It allows students who have taken CMNS 253/353 to broaden their focus from technical to public policy concerns. It provides an additional policy course for students who have taken 333, 334, or 335. Finally, this course provides an additional upper-level offering desperately needed by Communication majors.

Scheduling and Registration Information

Indicate Semester and Year this course would be first offered and planned frequency of offering thereafter.

Spring, 1997; once every year.

Which of your present CFL faculty have the expertise to offer this course? Will the course be taught by sessional or limited term instructors?

D. Gutstein, P. Anderson

Are there any proposed student fees associated with this course other than tuition fees? *—none —*

Is this course considered a "duplicate" of any current or prior course under the University's duplicate course policy? Specify, as appropriate. *No.*

Approvals

Chair, Department/School	Chair, Faculty Curriculum Committee	Chair, SCUS
Date	Date	Date

CMNS 435-4
INFORMATION RIGHTS IN THE INFORMATION AGE

Submitted by Donald Gutstein
8 June 1995

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1. Proposed title and number of course

CMNS 435-4: Information Rights in the Information Age

2. Number of credits and specification of number of lecture/ tutorial/seminar/lab hours per week

4 credits / one three-hour seminar per week

3. Proposed Calendar description for the course

An advanced seminar to examine key information-policy issues and the actors involved in setting policy (governments, information industry, news media, libraries, citizen groups) in Canada, with international comparisons.

4. Week-by-week breakdown of course content

Week 1: Introduction
Introduction to course, sources of information and Internet resources. Discussion re filing Privacy requests.

Week 2: Information rights in the information society -- an overview
This session discusses major information rights: right of individuals/groups to have access to the information necessary to be effective in a democratic society; right of individuals to control access to information about themselves; right of groups/nations to communicate their views and values. How will these rights be exercised in the information society? Will information technology expand our rights and improve our lives? Or will information technology create a surveillance society, reducing information rights?

Week 3: Privacy rights in the public sector
The first of a two-part survey of privacy rights -- the right to control access to information about oneself. This session examines threats to privacy engendered by computer communication technologies and the protections afforded by privacy laws (in Canada, the US and Europe). The emphasis is on the public sector: law enforcement, health records, government records, use of SIN, etc.

Week 4: Privacy rights in the private sector
This session examines the almost unregulated private sector. It looks at threats to privacy in the workplace and the marketplace, and efforts to regulate these. Should industry regulate itself through voluntary codes or should government pass laws to regulate the private sector?

Week 5: Access rights and government -- freedom of information
This session examines the other side of privacy laws: freedom of information. What rights do citizens have to information collected by government at taxpayers' expense? What is the balance between right to privacy and right to access? Is privacy being used to undermine access? We examine FOI laws federally and provincially, and compare experiences in other countries.

Week 6: Access rights and government -- disseminating government information
This session continues with government information policies: the dissemination of government information. With most government information now produced in electronic format, how should access be provided? What fees, if any, should be charged? How should information be disseminated -- through libraries or through private sector database vendors, or some combination? What is the future of government depository programs?

Week 7: Access rights and libraries -- privatizing the information commons?
The next two sessions examines two major stakeholders in government information policy debates: the information industry and the library system. For a century libraries have been seen as bastions of democracy, protectors of the information commons. Today, library budgets are shrinking, and governments are supporting the growth of the information industry. What are the consequences for libraries and for the tradition of free public access?

Week 8: The information industry
This session focuses on the information industry - the driving force behind the information society. The industry may be thought of narrowly as packaging and distributing computer databases. But it makes more sense to conceive of the information industry in very broad terms, including telecommunications (satellite communications, data communication equipment makers, and networks), data processing (computer hardware and software), and content provision (publishing, film, video, records, news, advertising, cable, television, databases).

Week 9: News media -- key information industry players
Another major stakeholder in information policy is the news media industry. News media organizations are part of the information industry, but require a separate treatment because of their special role. It is predominately through the news media that people find out about information technologies and information issues, especially about the information highway. Yet the news media are in a conflict-of-interest position because they stand to benefit so significantly from the developments they report on.

Week 10: Canadian information policy -- information rights on the information highway
This week the discussion turns to the setting of national policies regarding access, dissemination, competition, Canadian culture, privacy, etc. It traces the development of information policy in Canada over the past ten years, through the Department of Communication, Industry Canada, the Information Highway Advisory Council, and the CRTC and its landmark hearings since 1992. It looks at the main industry players and the issues as defined by the Canadian government and the Information Highway Advisory Council.

Week 11: National Information Infrastructure (NII) and public access in the United States
Canadian policy-makers follow closely on the heels of the Americans. This session traces national information policy-setting in the US since the late 1970s. It contrasts the initiatives of the Reagan and Clinton administrations and focuses on Clinton-Gore's National Information Infrastructure.

Week 12: Global information issues -- 'right to communicate' vs. 'free flow of information'
In this session the discussion shifts to an international perspective. Many of the same issues in the Canadian information highway debate are expressed here too. In particular, this session considers two concepts in conflict: the "right to communicate" and the new world information order (sponsored by Third World nations) vs. the "free flow of information" and the global information infrastructure (sponsored by the US and transnational media corporations).

Week 13: Information alternatives -- from national information services to democratic communication
This final session discusses the prospects for alternative, democratic communication and sources of information. A range of possibilities is discussed: those that deal with one-way information flows such as a national information service, and those that deal with two-way communication: cable-TV community channels, cooperative and non-profit radio, and computer networks.

5. Description of assignments and how grades will be awarded

(A) In-class presentation and report: *Students are required to select an organization active in the information-policy arena, research it mainly through Internet sources, present their findings orally to the class, and prepare a five-page written profile of the organization. Worth: 20 per cent*

(B) Attendance at seminars and participation in discussions

Worth: 10 per cent

(C) Mid-term take-home question: *Students are required to answer a question based on the readings and lectures of weeks 2 - 6. Worth: 15 per cent*

(D) Filing a privacy request: *Students are required to file requests under provincial and federal laws for personal information, to keep a journal of the process, and to prepare an evaluation of their experience. Worth: 15 per cent*

(E) Term paper: *Students are required to research and write a 15-page essay on a topic selected by themselves after consultation with the instructor. Worth: 40 per cent*

6. List of required readings

See attached list

7. List of recommended readings

NIL

8. Has this course been taught as a Special Topics?

The course was taught as a Special Topics, CMNS 486, in 94-3 and will be taught again in 95-3. It was taken by 22 students and I expect about the same number this time.

9. Explanation of how this course fits into the curriculum

This is a new course in an area currently under-represented in the School curriculum. Privacy, access to information, and the information highway have leaped to the forefront of public and academic discussion and debate in the past few years. The School has recognized this deficiency in its desire to hire in the area of Information Industries / Cultural Industries. Since this position will not be filled immediately, there is a gap in the curriculum.

This proposed course will link Communication offerings in policy and information technology. It will allow students who have taken 253 / 353 to broaden their focus from technical to public policy concerns. And it will provide an additional policy course for students who have taken 333, 334, or 335.

Finally this course will provide an additional upper-level offering so desperately needed by Communication majors.

10. Prerequisites for the proposed course

Students must have a) 75 credit-hours and b) credit for either a policy course (333, 334, 335) or an information technology course (253, 353) or the permission of the instructor.

11. Who will teach the proposed course?

Donald Gutstein will teach the course. Because of the increase in his appointment, he does not have to give up any courses in order to teach it.

12. How often will it be offered?

The course will normally be offered once each calendar year.

13. Does the course require any special resources?

The course requires in-class demonstrations of Internet sites relevant to the subject, from time to time. A class mailist will be set up.

14. Are there connections between the proposed course and courses offered in other departments that we should be aware of?

There are no overlaps that we are aware of and we do not anticipate any problems with other departments.

We wish to have the following entry added to the Calendar description for the School of Communication:

Post Baccalaureate Diploma in Communication

The Post Baccalaureate Diploma program in Communication is available for students who have already completed a degree.

For information, refer to *Continuing Studies*.

Requirements

Successful completion of an approved program comprised of 32 credit hours of upper division or graduate level courses (eight 4-credit courses numbered 300 or above). Courses must be selected from an approved listing in consultation with a program advisor. At least 5 of the upper level courses (20 credits) be in Communication; the remaining 10-12 credits could be in related disciplines, such as sociology, Canadian Studies, history/english/women's studies, etc. Students may also be required to take some background lower level courses in preparation for the advanced courses. For example, a student who has a BA in an area not related to CMNS would be encouraged to do at least CMNS 110 and 130 before enrolling in any the 300/400 level courses.

Rationale:

Currently, we use the PBD in Applied Sciences. We note that both CMPT and KIN have their own PBD's. We spend a fair bit of time answering questions about PBD and wish to normalize the procedure by putting it in the Calendar.

S.95-57b

School of Computing Science

Reference: SCUS 95 - 12 b
SCAP 95 - 47 b

i) New courses -

CMPT 110 - 3	Event-Driven Programming in Visual Basic
CMPT 212 - 3	Object-Oriented Applications Design in C++
CMPT 318 - 3	Special Topics in Computing Science
CMPT 365 - 3	Multimedia Systems
CMPT 408 - 3	Theory of Computer Networks/Communications
CMPT 470 - 3	Advanced Application Development Tools

ii) Course deletions:

CMPT 391 - 4	Computer Design Workshop
CMPT 490 - 3	VLSI Systems Design
CMPT 495 - 3	Digital Systems Design and Specification Project
CMPT 496 - 3	Digital Systems Implementation Project

For Information:
Acting under delegated authority of Senate, SCUS has approved the following revisions as detailed in SCUS 95 - 12 b:

Course title/description changes: CMPT 101-4, 104-2, 105-3, 201-4

Prerequisite changes: CMPT 354-3, 411-3, 413-3, 419-3

Renumbering of: From CMPT 410-3 to CMPT 310-3

Changes to Calendar entry

Simon Fraser University

MEMORANDUM

To: Parveen Bawa, Associate Dean Faculty of Applied Sciences	**From:** Ze-Nian Li Director, Undergraduate Programs Computing Science
Subject: Curriculum Revisions	**Date:** August 31, 1995

Please forward the following curriculum revisions from the School of Computing Science to the Senate Committee on Undergraduate Studies. This package includes revisions approved by the School of Computing Science on June 28, 1995 and August 18, 1995. All items were approved by the Undergraduate Curriculum Committee, Faculty of Applied Sciences on August 30, 1995 and all suggested minor changes have been taken care of.

Attached please also find the Library Assessment for all proposed new courses. The School of Computing Science agrees to pay the one time costs of $584 as assessed.

The proposed calendar changes are as follows:

1. New courses:

   CMPT 110-3 "Event-Driven Programming in Visual Basic"

   CMPT 212-3 "Object-Oriented Applications Design in C++"

   CMPT 318-3 "Special Topics in Computing Science"

   CMPT 365-3 "Multimedia Systems"

   CMPT 408-3 "Theory of Computer Networks / Communications"

   CMPT 470-3 "Advanced Application Development Tools"

2. Changes in existing courses:

   (a) Course title/description changes:

   CMPT 101-4

   CMPT 104-2

   CMPT 105-3

   CMPT 201-4

   (b) Prerequisite changes:

   CMPT 354-3 "Database Systems I"

   CMPT 411-3 "Knowledge Representation"

   CMPT 413-3 "Computational Linguistics"

   CMPT 419-3 "Special Topics in Artificial Intelligence"

3. Course deletions:

   CMPT 391-4 "Computer Design Workshop"

CMPT 490-3 "VLSI Systems Design"

CMPT 495-3 "Digital Systems Design and Specification Project"

CMPT 496-3 "Digital Systems Implementation Project"

** This year the School of Computing Science will also delete CMPT 111-1, CMPT 113-1, CMPT 114-1 and CMPT 115-1 which have not been offered for more than 6 semesters and will not be offered in the future. A separate memo was sent to you on July 17, 1995.

4. Renumbering of courses:

   CMPT 410-3

5. Miscellaneous

1 Notes on Creating New Courses

SCUS forms, detailed course outlines, and library resource forms for all new courses can be found as attachments to this memo (pages A1 to A33).

A relatively large number of new course are being proposed this year. CMPT 110 is a service course in response to the need from Faculty of Business Administration and other students. CMPT 318 is a special topics course to provide necessary flexibility in the curriculum. Other courses are created to meet the challenge of the rapidly changing world of computing. Since we are also deleting four regular courses and four 1-credit courses this year, we do not anticipate shortage of instructional resources because of the creation of these new courses.

Consequent changes to Table 1 (Page 68 of SFU 95/96 Calendar)

1. CMPT 365 should be added to Table 1 – Computing Science Concentrations in SFU 95/96 Calendar under *Computer Graphics.*
2. CMPT 408 should be added to Table 1 – Computing Science Concentrations in SFU 95/96 Calendar under *Theoretical Computing Science.*
3. CMPT 470 should be added to Table 1 – Computing Science Concentrations in SFU 95/96 Calendar under *Information Systems.*

2 Course Alteration and Rationale

2.1 Course Title/Description Changes

Detailed course outlines for CMPT 101, 105 and 201 can be found as attachments to this memo (pages B1 to B4).

2.1.1 Title and description changes for CMPT 101

From: CMPT 101-4 Modula 2
An intensive introduction to Modula 2 for the student with considerable previous computing experience. Review of fundamental programming concepts, including integer and real numbers as data objects, variables, assignment, conditional statements and loops. The concept of an algorithm. Structured programming using subprograms, recursion, modules and libraries. Structured data objects including arrays, strings and records. Program and user documentation. (Lecture/Laboratory) Prerequisite: CMPT 098 and MATH 100. CMPT 098 is waived for those with a minimum grade of B in BC High School Computer Science 12 or equivalent experience with Pascal. MATH 100 is waived for those with a minimum grade of B in BC High School Algebra 12. Students with credit for CMPT 102, 103 or 104 may not take CMPT 101 for further credit.

To: CMPT 101-4 Introduction to Computer Programming

Introduction to problem solving using a computer. Techniques and methodologies for the analysis and decomposition of the problem; the structural and algorithmic design of a solution; and the modular implementation and testing of the design. Structured programming using sub-programs, recursion, modules and libraries. Structured data objects including arrays, strings and records. (Lecture/Laboratory) Prerequisites: CMPT 098 and MATH 100. CMPT 098 is waived for those with a minimum grade of B in BC High School Computer Science 12 or CMPT 100, or equivalent experience with computer programming. MATH 100 is waived for those with a minimum grade of B in BC High School MATH 12. Students with credit for CMPT 102, 103 or 104 may not take CMPT 101 for further credit.

Rationale: Modula 2 was a good programming language for teaching CMPT 101, but it is outdated. The School has adopted C/C++ as the instructional programming languages for CMPT 101. Therefore the title and calendar description for the course must be changed. "A minimum grade of B in CMPT 100" is now also accepted as a substitute to the CMPT 098 prerequisite to reflect the recent enhancement of programming in CMPT 100. To be language independent, "equivalent experience with Pascal" is replaced by "equivalent experience with computer programming".

** There is little change in course outline (see attached pages B1-B2).

2.1.2 Title change for CMPT 104

From: CMPT 104-2 Introduction to Modula 2 as a Second High Level Programming Language

To: CMPT 104-2 Computer Programming

Rationale: Similar to CMPT 101, Modula 2 is no longer the programming language for CMPT 104. The School has adopted C/C++ as the instructional programming languages for CMPT 104 as well. Therefore the title for the course must be changed.

** There is no change in course outline except the change of the programming languages.

2.1.3 Title and description changes for CMPT 105

From: CMPT 105-3 Fundamemtal Concept of Computing
Introduces fundamental concepts and procedures by which problems are defined, described, and implemented on computing machines. The student learns principle organizations of computer architecture, how instructions are implemented, the principles of machine, assembly and higher order languages, principles of monitors and executive systems, interactions of hardware and software design. (Lecture/Laboratory) Prerequisite: CMPT 101, 102 or 104 (may be taken concurrently).

To: CMPT 105-3 Computer Organization and Assembly Language Programming
Introduces the underlying architecture of a computer (e.g., CPU registers, memory, input/output ports), and how, at this fundamental level, various types of data are represented and manipulated. The machine level instruction set for a popular CPU is introduced, and macro assembly language programming assignments covering basic data manipulation, control branching, linking, and interrupt handling will be given. (Lecture/Laboratory) Prerequisite: CMPT 101, 102 or 104 (may be taken concurrently).

Rationale: This is a major step in restructuring our Computer Architecture/Hardware stream which consists of CMPT 105, 290 and 390. The current version of CMPT 105 was often criticized as being too generic and some of its teaching materials was out-dated. The revised CMPT 105 will be a more focused course as a first introduction to computer organization and assembly language programming. It is now very much a standard course highly recommended by ACM/IEEE-CS Joint Curriculum Task Force.
Course outline on page B3.

2.1.4 Title and description changes for CMPT 201

From: CMPT 201-4 Data and Program Organization
Reviews the basic organization of programs, data, and control languages and input/output routines. Advanced methods will be introduced for the design and implementation of large programs including the need for, type of, and implementation of modular design programs. (Lecture/Laboratory) Prerequisites: CMPT 101 (or 104), 105, MACM 101.

To: CMPT 201-4 Data and Program Abstraction
Introduction to various widely used data structures such as strings, sets, stacks, queues, lists, hash tables and trees, and algorithms for searching and sorting. Several powerful tools and concepts such as interpretive languages, functional programming, modularization, abstract data types, object-oriented programming, specialized debuggers, extensible languages, and automatic garbage collection will also be covered. (Lecture/Laboratory) Prerequisites: CMPT 101 (or 104) and MACM 101.

Rationale: The course has been revised to take a functional programming approach to address fundamental issues in data structures, simple algorithms for searching and sorting, and programming. The CMPT 105 prerequisite is dropped, since the course is at present not highly dependent on CMPT 105.
Course outline on page B4.

2.2 Prerequisite changes

2.2.1 CMPT 354-3 Database Systems I

From: CMPT 201, MACM 201

To: CMPT 201, MACM 101

Rationale: MACM 101/201 is a new sequence of courses on discrete mathematics starting 95-3. After careful examination of the detailed MACM course descriptions, the CMPT 354 instructors strongly believe that MACM 101 is sufficient as a prerequisite for CMPT 354.

2.2.2 CMPT 411-3 Knowledge Representation

From: CMPT 384 or 410

To: Completion of nine credits in Computing upper division courses or, in exceptional cases, permission of the instructor.

Rationale: It is argued that the course doesn't really rely on CMPT 410 (310) nor CMPT 384. The new requirement of nine upper division CMPT credits will guarantee that students have sufficient computing background before enrolling in this course.

2.2.3 CMPT 413-3 Computational Linguistics

From: CMPT 201 and MACM 101 (or CMPT 205), or CMPT 103 and LING 405 and 406.

To: Completion of nine credits in Computing upper division courses or, in exceptional cases, permission of the instructor.

Rationale: The "CMPT 103 and LING 405 and 406" option was never used by any student in recent years. The new requirement of nine upper division CMPT credits will guarantee that students have sufficient computing background before enrolling in this course.

2.2.4 CMPT 419-3 Special Topics in Artificial Intelligence

From: CMPT 410

To: CMPT 310 or permission of the instructor.

Rationale: CMPT 410 is being changed to CMPT 310. The proposed prerequisite is necessary and more appropriate.

3 Rationale for Deletion of Courses

3.1 CMPT 391-4 Computer Design Workshop

Rationale: This course has been taken mostly by Engineering Science students. Arrangement has been made between the School of Computing Science and School of Engineering Science to move this part of the curriculum to Engineering Science.

3.2 CMPT 490-3 VLSI Systems Design

Rationale: Similar to CMPT 391, this course has been taken mostly by Engineering Science students. Arrangement has been made between the School of Computing Science and School of Engineering Science to move this part of the curriculum to Engineering Science.

3.3 CMPT 495-3 Digital Systems Design and Specification Project

Rationale: This course was part of the curriculum for Digital Systems Design (Honors) which was dropped a couple of years ago.

3.4 CMPT 496-3 Digital Systems Implementation Project

Rationale: This course was part of the curriculum for Digital Systems Design (Honors) which was dropped a couple of years ago.

** In addition, CMPT 111-1, CMPT 113-1, CMPT 114-1 and CMPT 115-1 will also be deleted this year because they have not been offered for more than 6 semesters and will not be offered in the future.

4 Rationale for Renumbering CMPT 410

From: CMPT 410-3 Artificial Intelligence Survey
Prerequisites: CMPT 201 and 384, MACM 101 (or CMPT 205)

To: CMPT 310-3 Artificial Intelligence Survey
Prerequisites: CMPT 201 and MACM 101 (or CMPT 205)

Rationale: Currently, all CMPT courses in Artificial Intelligence (AI) are at 400-level. It is argued that CMPT 410, the AI Survey course, fits better at the 300-level in the curriculum and students are ready for it.
The previous CMPT 384 prerequisite was not a strong one. It should be dropped especially after the course is changed to CMPT 310.

5 Miscellaneous

5.1 Deletion of Computing Presentation Requirement

Calendar change: Delete from p.69 of SFU 95/96 Calendar
" • **Computing Presentation Requirement**
One of CMPT 428 or 493 must be completed."

Rationale: This was a requirement fulfilled by either finishing 3 terms of co-op (CMPT 428-0) or taking a one credit course (CMPT 493-1). Obviously, it was a null requirement for the students who finished at least 3 terms of co-op. At the same time, the School had to routinely offer the 1-credit course with controlled low enrollment for the minority of the students who did not actively participate in the co-op program. It is argued that the importance of written and oral presentations can and should be more effectively emphasized throughout the curriculum. The requirement at its present form is therefore dropped.

5.2 Proposed Changes in Concentrations in Table 1 - Computing Science Concentrations (p. 68, 95-96 SFU Calendar)

(a) Merge "Computer Design and Organization" into "Computing Systems".

The new "Computing Systems" will include:

CMPT 300-3 Operating Systems I
371-3 Data Communications and Networking
390-3 Digital Circuits and Systems
400-3 High-Performance Computer Architecture
401-3 Operating Systems II
402-3 Operating System Software Laboratory
479-3 Special Topics in Computing Systems
499-3 Special Topics in Computer Hardware

Rationale: Four courses (CMPT 391-4, 490-3, 495-3, 496-3) in "Computer Design and Organization" are being deleted this year, only three left, too few for a separate concentration.

(b) Name Change of Concentration "Computer Graphics"

From: "Computer Graphics"

To: "Computer Graphics and Multimedia"

Rationale: The concentration covers more than Computer Graphics. With the creation of the new course "Multimedia Systems", the proposed new name is even more appropriate.

5.3 Clean-ups because of deletion of CMPT 111, 113, 114, 115

1. The sentence "Students may not receive credit for more than two of CMPT 111, 112, 113, 114, 115, or 116." in CMPT 112-1 and CMPT 116-1 descriptions (p.189, SFU 95/96 Calendar) should be deleted.

2. In Program Requirement for Certificate in Computing (p.70, SFU 95/96 Calendar), change

From:

"**Elective Courses**
two of
CMPT 111-1 Introduction to an Additional Programming Language - COBOL
112-1 Introduction to an Additional Programming Language - C
113-1 Introduction to an Additional Programming Language - PL/1
114-1 Introduction to an Additional Programming Language - FORTRAN
115-1 Introduction to an Additional Programming Language - PASCAL
116-1 Introduction to a Second Programming Language: SMALLTALK"

To:

"and both
CMPT 112-1 Introduction to an Additional Programming Language - C
CMPT 116-1 Introduction to a Second Programming Language: SMALLTALK"

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL

Calendar Information

Course Number: **CMPT 110**

Course Title: **Event-Driven Programming in Visual Basic**

Credit Hours: **3** Vector: **3-0-0**

Course Description (for Calendar). Attach a course outline to this proposal.
Introduction to programming in the event-driven paradigm using the Visual Basic language. Forms, controls, events, menus, objects; subprograms, modular design; decisions and repetition; file and data management; special features. (Lecture/Laboratory)

Prerequisites: **BC Math 12 or Math 100 or Math 110**

Corequisite: **None**

Special Instructions: **None**

Course(s) to be dropped if this course is approved:
None

Rationale for Introduction of this Course: Will this be a required or elective course in the curriculum; probable enrollment when offered?
This is an introductory course in programming in Visual Basic for students of both Business and Computing Science; it could also be profitably taken by other students. This will be an elective course. Probable enrollment: 50 students per semester.

Scheduling and Registration Information
Indicate Semester and Year this course would be first offered and planned frequency of offering thereafter.
Twice a year starting 96-3.

Which of your present CFL faculty have the expertise to offer this course? Will the course be taught by sessional or limited term instructors?
P. Brearley, M. Drew, R. Tront have the expertise to offer this course. Yes, the course will sometimes be taught by sessional or limited term instructors.

Are there any proposed student fees associated with this course other than tuition fees?
No.

Is this course considered a 'duplicate' of any current or prior course under the University's duplicate course policy? Specify, as appropriate.
No.

Approvals

Chair, Department/School	Chair, Faculty Curriculum Committee	Chair, SCUS
Sept. 1, 1995	Sept 6, 1995	
Date	Date	Date

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SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL - RESOURCES

Course Number: CMPT 110

Resource Implications:
Note: Senate has approved (S.93-11) that no new courses should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering.

None.

Does this course require specialized space or equipment not readily available in the department or university, and if so, how will these resources be provided?

No.

Does this course require computing resources (e.g. hardware, software, network wiring, use of computer laboratory space) and if so, describe how they will be provided.

Software licenses for Visual Basic are required. At present, the price for 50 copies of Visual Basic for PC is approximately $2,000. Faculty of Business Administration (contact person: Dr. Chris Jones) has agreed to pay for 20 copies, and School of Computing Science will cover the remainder from its 1995-1996 equipment budget.

School of Computing Science
Simon Fraser University

CMPT 110 Event-Driven Programming in Visual Basic
Course Outline

Note that there should be time available for some of the "Special Features" listed. Emphasis is on rudimentary, but disciplined, programming in the event-driven paradigm.

1. Introduction to Computers and Visual Basic [1 week]
   (a) Introduction to Computers
   (b) Using Windows
   (c) Introduction to Visual Basic
2. Problem Solving [0.5 week]
   (a) Program Development Cycle
   (b) Programming Tools
3. Fundamentals of Programming in Visual Basic [1.5 week]
   (a) Visual Basic Objects
   (b) Visual Basic Events
   (c) Numbers
   (d) Strings
   (e) I/O
   (f) Built-In Functions
4. Procedures [2 week]
   (a) Event-Driven Programming
   (b) General and Sub Procedures
   (c) Arguments and Parameters
   (d) Local Variables, Pass-by-Reference
   (e) Data Types
   (f) User-Defined Functions
   (g) Modular Design
   (h) Scope: Module level, Form level, Subprogram level, Private
5. Control [1.5 week]
   (a) Relational and Logical Operators
   (b) If Blocks
   (c) Select Case Blocks
   (d) Loops: For-Next; D0-Loop;

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6. Print Format [0.5 week]
   (a) Print Zones
   (b) CurrentX, CurrentY
   (c) Format
7. Arrays [2 week]
   (a) Arrays
   (b) Control Arrays
   (c) Sorting and Searching
   (d) Two-Dimensional Arrays
   (e) Objects and Variables
   (f) Object Aliases
   (g) Multiple Forms and Modules
   (h) Managing Modules and Other Files
   (i) Collections of Objects
8. File and Data Management [1 week]
   (a) File and Directory Management, List Box, TextBox, Combo Box
   (b) Sequential Files
   (c) Random Access Files
9. Graphics and Animation [1.5 week]
   (a) Charts
   (b) Lines, Shapes, Colours
   (c) Graphics Containers
   (d) Forms and Pictures
   (e) Image Control
   (f) Animation Techniques
10. Special Features of Visual Basic [1.5 week]
   (a) Custom Menus
   (b) (If time:) Keyboard Events, Mouse Events, Clipboard Interaction, Dynamic Data Exchange (DDE), Object Linking and Embedding (OLE), API and DLL, Grid Control, Common Dialog Control, Multiple Document Interface (MDI), Data control, Help file construction

Textbook:
An Introduction to Programming using Visual Basic, D.I. Schneider, Prentice-Hall, 1995.
(*Likely a somewhat more in-depth text will be available by 96-1.*)

Student evaluation:
Assignments 30%, midterm 30%, and final exam 40%.

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Library Resources for proposed course on
CMPT 110 Event-Driven Programming in Visual Basic

Recommended book for this course (to be ordered by the library)

An Introduction to Programming using Visual Basic,
D.I. Schneider, Prentice-Hall, 1995
(**Note:** This text may change.)

Reference books

Visual Basic
Holzner, Steven.
New York : Brady Pub., c1991.
The Peter Norton programming library.
QA 76.65 H65 1991

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A5

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL

Calendar Information

Course Number: **CMPT 212**

Course Title: **Object-Oriented Applications Design in C++**

Credit Hours: **3** Vector: **3-0-0**

Course Description (for Calendar). Attach a course outline to this proposal.
Introduction to object-oriented software design concepts, the object-oriented features of the C++ language, other advanced C++ features, plus a simple introduction to the fundamentals of graphical user interfaces and the development of windowed applications. (Lecture/Laboratory)

Prerequisites: **CMPT 101. CMPT 201 recommended.**

Corequisite: **None**

Special Instructions: **None**

Course(s) to be dropped if this course is approved:
None

Rationale for Introduction of this Course: Will this be a required or elective course in the curriculum; probable enrollment when offered?
It is becoming important to give students an early understanding of the increasingly important concept of object-orientation, and of the most widely-used object-oriented language, C++. In addition, students will get an introduction to the underlying mechanisms and programming of graphical user interfaces (GUIs) for modern windowed software applications. This will prepare students to participate in a junior role in modern applications development during co-op work terms, and to motivate students to further study these and supporting/surrounding concepts in later courses. The course will not be required, but most computing majors will take it for future employment reasons (120 students/year).

Scheduling and Registration Information
Indicate Semester and Year this course would be first offered and planned frequency of offering thereafter.
Every semester starting 96-3.

Which of your present CFL faculty have the expertise to offer this course? Will the course be taught by sessional or limited term instructors?
R. Tront, M. Drew, D. Fracchia, M. Evans. There will also likely be occasion to use sessional or limited term instructors.

Are there any proposed student fees associated with this course other than tuition fees?
No.

Is this course considered a 'duplicate' of any current or prior course under the University's duplicate course policy? Specify, as appropriate.
No.

Approvals

Chair, Department/School	Chair, Faculty Curriculum Committee	Chair, SCUS
Sept. 1, 1995	Sept. 6, 1995	
Date	Date	Date

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A7

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL - RESOURCES

Course Number: **CMPT 212**

Resource Implications:
Note: Senate has approved (S.93-11) that no new courses should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering.

None

Does this course require specialized space or equipment not readily available in the department or university, and if so, how will these resources be provided?

No.

Does this course require computing resources (e.g. hardware, software, network wiring, use of computer laboratory space) and if so, describe how they will be provided.

Approximately $2500 of software will be spent from the department's budget for use in the ACS Assignment Lab.

Detailed Course Outline for
CMPT 212 - Object-Oriented Applications Design in C++

1. Calendar Description:

(a) *Course Outline:* Introduction to object-oriented software design concepts, the object-features of the C++ language, other advanced C++ features, plus a simple introduction to the fundamentals of graphical user interfaces and the development of windowed applications. (Lecture/Laboratory)

(b) *Prerequisites:* CMPT101 (If CMPT 101 was taken before 96-1, then CMPT 112-1 is required as well). CMPT 201 recommended.

2. Place of the course within the computing curriculum:

(a) *Goals of the course:* It is becoming important to give students an early understanding of the increasingly important concept of object-orientation, and of the most widely-used object-oriented language, C++. In addition, students will get an introduction (though maybe not in an object-oriented manner) to the underlying mechanisms and programming of graphical user interfaces (GUIs) for modern windowed software applications. This will prepare students to participate in a junior role in modern applications development during work terms, and to motivate students to further study these and surrounding concepts in CMPT 363 - Graphical User Interfaces, CMPT 370 - Information Systems Design, CMPT 300 - Operating Systems, CMPT 361 - Introduction to Computer Graphics, etc.

(b) *Reason for the prerequisites:* Students must have mastered at least the C subset of C++ at a university level before attempting this intensive course. Computer languages are becoming increasingly burdened with powerful features that are not trivial to understand or master. This can only be done in a second course. Also, most OO language libraries use data structures discussed in CMPT 201.

3. Course Outline:

(a) Object Orientation - encapsulation of data and operations, abstraction, instanciation, inheritance, and polymorphism [1 week]

(b) Object Oriented Design - introduction to object relationship diagrams, event-driven application architectures, interacting instances, message event traces on object communication diagrams [1 weeks]

(c) C++ OO basics - classes, subclasses, inheritance, instanciation [2 weeks]

(d) C++ Polymorphism - method overriding, virtual methods, method dispatching, static methods, abstract classes, run-time type identification [2 weeks]

(e) Class Libraries - templates, containers, frameworks, browsers used to view classes [2 weeks]

(f) C++ advanced features - exceptions, assertions, namespaces [1 week]

(g) Introduction to GUI concepts: visual interface concepts, model/view/controller paradigm, registering callbacks, event loops [2 weeks]

(h) Programming of Simple GUI Applications - simple programming of simple, mouse-driven applications using an industry standard GUI. [2 weeks].

4. **Student evaluation:**
   Programming assignments 25%, midterm 25%, and final exam 50%. Consideration should be given to having students work in 2 person teams on their programming assignments.

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Library Resources for proposed CMPT-212 course

Required book for this course (ordered by the library)

A required textbook has not yet been selected yet as one will not be needed until May'96, and many new ones will be coming on the market before then. We may even be able to have students re-use their text from CMPT 101 after that course is changed to C++.

Library books available as reference texts

The following reference books are already available in the SFU Bennett Library:

"C++ and the OOP Paradigm" by Bindu Rama Rao, McGraw-Hill, c1993.

"C++ primer for C programmers" 2nd ed., by Jay Ranade and Saba Zamir, McGraw-Hill, c1995.

"The C++ programming language" 2nd ed., by Bjarne Stroustrup, Addison-Wesley Pub. Co., 1991.

"C++ with object-oriented programming" by Paul S. Wang, PWS Pub. Co., c1994.

"The design and evolution of C++", by Bjarne Stroustrup, Addison-Wesley, c1994.

"Object-oriented programming with Visual C++ 1.5" by Jack Tackett,Jr., Ed Mitchell, Que, c1994.

"Using Visual C++ 2" special edition, by Paul Perry et al, Que Publishing, 1994.

"Microsoft Windows : Guide to programming" by Microsoft Corporation, Microsoft Press, c1990.

"Microsoft Windows programming Tools : new for version 3" by Microsoft Corporation, Microsoft Press, 1990.

"Object-oriented programming for Windows" by Ernest R.Tello, Wiley, c1991.

"Windows programming : An Introduction" by William H. Murray, III and Chris H. Pappas, Osborne Mcgraw-Hill, c1990.

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A11

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL

Calendar Information

Course Number: **CMPT 318**

Course Title: **Special Topics in Computing Science**

Credit Hours: **3** Vector: **3-0-0**

Course Description (for Calendar). Attach a course outline to this proposal.
Special topics in computing science at 300-level. Topics that are of current interest or are not covered in regular curriculum will be offered from time to time depending on availability of faculty and on student interest.

Prerequisites: **CMPT 201**

Corequisite: **None**

Special Instructions: **None**

Course(s) to be dropped if this course is approved:
None

Rationale for Introduction of this Course: Will this be a required or elective course in the curriculum; probable enrollment when offered?
Special topic courses provide opportunities for introducing new topics to supplement the existing curriculum. They are especially useful in areas like Computing Science when new technologies are emerging at the current rate. The School of Computing Science has special topics courses at 200 and 400 levels, but none at 300-level so far. This will be an elective course. Probable enrollment: 30-40 students/semester as most CMPT upper division courses.

Scheduling and Registration Information
Indicate Semester and Year this course would be first offered and planned frequency of offering thereafter.
It varies depending on the need.

Which of your present CFL faculty have the expertise to offer this course? Will the course be taught by sessional or limited term instructors?
Depending on the topics.

Are there any proposed student fees associated with this course other than tuition fees?
No.

Is this course considered a 'duplicate' of any current or prior course under the University's duplicate course policy? Specify, as appropriate.
No.

Approvals

Chair, Department/School	Chair, Faculty Curriculum Committee	Chair, SCUS
Sept. 1, 1995	Sept. 6, 1995	
Date	Date	Date 29.

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SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL - RESOURCES

Course Number: **CMPT 318**

Resource Implications:
Note: Senate has approved (S.93-11) that no new courses should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering.

None.

Does this course require specialized space or equipment not readily available in the department or university, and if so, how will these resources be provided?

No.

Does this course require computing resources (e.g. hardware, software, network wiring, use of computer laboratory space) and if so, describe how they will be provided.

Depending on the topics. The School of Computing Science will make sure all required computer resources of any offering of this course can be provided before scheduling.

Course Outline for
CMPT 318 Special Topics in Computing Science

1. **Calendar Description:**

   (a) Special topics in computing science at 300-level. Topics that are of current interest or are not covered in regular curriculum will be offered from time to time depending on availability of faculty and on student interest.

   (b) *Prerequisites:* CMPT 201.

2. **Course Outline:**

   Apparently, there is no generic detailed outline for this course. It will depend on the topics.

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Library Resources for proposed course
CMPT 318 Special Topics in Computing Science

Required books and journals for this course:

As the title suggested, this is a special topic course in Computing Science. There is apparently not a fixed set of library items that are needed for this course. The School of Computing Science will make sure each offering of CMPT 318 will have sufficient library resource before its scheduling.

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A 15

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL

Calendar Information

Course Number: **CMPT 365**

Course Title: **Multimedia Systems**

Credit Hours: **3** Vector: **3-0-0**

Course Description (for Calendar). Attach a course outline to this proposal.
Multimedia systems design, multimedia hardware and software, issues in effectively representing, processing, and retrieving multimedia data such as text, graphics, sound and music, image and video. (Lecture/Laboratory)

Prerequisites: **Completion of 60 credits including CMPT 201**

Corequisite: **None**

Special Instructions: **None**

Course(s) to be dropped if this course is approved:
None

Rationale for Introduction of this Course: Will this be a required or elective course in the curriculum; probable enrollment when offered?
Multimedia has become an indispensable part of modern computer technology. It is necessary to have a specialized course in this field to prepare students for the challenge of the new technology. In this course, students will be introduced to principles and current technologies of multimedia systems design and gain hands-on experience in this area. This will be an elective course. Probable enrollment: 30 students/semester.

Scheduling and Registration Information
Indicate Semester and Year this course would be first offered and planned frequency of offering thereafter.
Twice a year starting 96-3.

Which of your present CFL faculty have the expertise to offer this course? Will the course be taught by sessional or limited term instructors?
Drs. T. Calvert, M. Drew, D. Fracchia, B. Funt, Z.N. Li have the expertise to offer this course. No, the course will not be taught by sessional or limited term instructors.

Are there any proposed student fees associated with this course other than tuition fees?
No.

Is this course considered a 'duplicate' of any current or prior course under the University's duplicate course policy? Specify, as appropriate.
No.

Approvals

Chair, Department/School	Chair, Faculty Curriculum Committee	Chair, SCUS
Sept. 1, 1995	Sept. 6, 1995	32.
Date	Date	Date

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SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL - RESOURCES

Course Number: **CMPT 365**

Resource Implications:
Note: Senate has approved (S.93-11) that no new courses should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering.

None.

Does this course require specialized space or equipment not readily available in the department or university, and if so, how will these resources be provided?

No.

Does this course require computing resources (e.g. hardware, software, network wiring, use of computer laboratory space) and if so, describe how they will be provided.

Yes, School of Computing Science will use a major portion of its 1995-1996 equipment budget to build a PC lab for several upper division CMPT courses that require access to PC. The multimedia hardware and software required by this course are included in the purchase.

Detailed Course Outline for
CMPT 365 Multimedia Systems

1. **Calendar Description:**

   (a) *Course Outline:* Multimedia systems design, multimedia hardware and software, issues in effectively representing, processing, and retrieving multimedia data such as text, graphics, sound and music, image and video.

   (b) *Prerequisites:* completion of 60 credits including CMPT 201.

2. **Place of the course within the computing curriculum:**

   (a) *Goals of the course:* Multimedia has become an indispensable part of modern computer technology. In this course, students will be introduced to principles and current technologies of multimedia system design and gain hands-on experience in this area.

   (b) *Courses having this course as a prerequisite:* none

3. **Course Outline:**

   (a) Multimedia Systems Design [2 weeks]
   - content design
   - technical design
   - visual design

   (b) Multimedia Hardware and Software [2 weeks]
   - storage, graphics, sound, video, auxiliary devices
   - authoring, animation, sequencing, image and video editing, etc.

   (c) Networking [1.5 week]
   - World-Wide Web (WWW)
   - Asynchronous Transfer Mode (ATM)
   - Integrated Services Digital Network (ISDN)
   - interactive TV

   (d) Sound and Music [2 weeks]
   - Digital recording (sampling rates, storage, compression)
   - music synthesis (FM, wavetable)
   - MIDI
   - sequencing, notation

   (e) Graphics and Animation [1.5 weeks]

   (f) Images and Video [3 weeks]
   - image formats
   - video standards (NTSC, PAL, SVHS, Hi-8, HDTV, etc.)
   - compression (JPEG, MPEG-1, 2, and 4)
   - nonlinear video editing

   (g) Digital library: content-based retrieval [1 week]

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4. **Student evaluation:**
   Homework assignments 20%, midterm 20%, project 30%, and final exam 30%.

5. **Texbook:**
   Jeff Burger, *The Desktop Multimedia Bible*, Addison-Wesley, 1993.

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Library Resources for proposed course CMPT 365

Required book for this course:

Jeff Burger, *The Desktop Multimedia Bible*, Addison-Wesley, 1993.
(**Note:** This text may change. Also numerous on-line teaching materials on multimedia will be adopted in electronic form available from the WWW.)

Library journals available as references:

ACM Transactions on Graphics

CVGIP: Graphical Models and Image Processing

IEEE Computer Graphics and Applications

IEEE Multimedia

IEEE Transactions on Acoustics, Speech, and Signal Processing

IEEE Transactions on Pattern Analysis and Machine Intelligence

IEEE Transactions on Visualization and Computer Graphics

Pattern Recognition

Library books available as reference texts:

John F. Koegel Buford (Ed.), *Multimedia systems*, Addison-Wesley, 1994.

Feldman, Tony, *Multimedia*, Blueprint, 1994.

Begault, Durand R., *3-D sound for virtual reality and multimedia*, AP Professional, 1994.

Muhlhauser, Max (Ed.), *Cooperative computer-aided authoring and learning : a systems approach*, Kluwer, 1995.

Alber, Antone F., *Interactive computer systems : videotex and multimedia*, Plenum Press, 1993.

Matthew E. Hodges, Russell M. Sasnett (Eds.), *Multimedia computing : case studies from MIT Project Athena*, Addison-Wesley, 1993.

Robert Aston and Joyce A. Schwarz. (Eds.), *Multimedia : gateway to the next millennium*, AP Professional, 1994.

Desmarais, Norman, *Multimedia on the PC : a guide for information professionals*, McGraw-Hill, 1994.

Simon J. Gibbs, Dionysios C. Tsichritzis, *Multimedia programming : objects, environments, and frameworks*, Addison-Wesley, c1995.

Cotton, Bob and Richard Oliver, *Understanding hypermedia : from multimedia to virtual reality*, Phaidon Press, 1993.

December, John and Neil Randall, *The World wide web unleashed*, SAMS Publishing, 1994.

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A 20

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL

Calendar Information

Course Number: **CMPT 408**

Course Title: **Theory of Computer Networks / Communications**

Credit Hours: **3** Vector: **3-0-0**

Course Description (for Calendar). Attach a course outline to this proposal.
Network design parameters and goals, dynamic networks and permutations, routing in direct networks, structured communication in direct networks, other topics of interest to the students and instructor.

Prerequisites: **CMPT 307 and CMPT 371**

Corequisite: **None**

Special Instructions: **None**

Course(s) to be dropped if this course is approved:
None. (This course was offered in 95-1 as CMPT 409 - Special Topics in Theoretical Computing Science.)**

Rationale for Introduction of this Course: Will this be a required or elective course in the curriculum; probable enrollment when offered?
Communication networks such as telephone networks, broadcast networks (including satellite-based communication), cable television networks, and the Internet affect almost all aspects of our society and new technologies are constantly being introduced. Networks of communication paths are also needed within computers to support the movement of large amounts of audio and visual data. This course will introduce students to the design and efficient use of communication networks. The emphasis will be on the theory of design and analysis. The theory will be illustrated with case studies of existing networks and data-parallel computers. The course is designed to complement CMPT 371 which emphasizes hardware and communication protocols. It will be an elective course with estimated enrollment of 20 students each time.

Scheduling and Registration Information
Indicate Semester and Year this course would be first offered and planned frequency of offering thereafter.
It will be offered every fourth or fifth semester starting 97-3.

Which of your present CFL faculty have the expertise to offer this course? Will the course be taught by sessional or limited term instructors?
A. Liestman, J. Peters, R. Krishnamurti have the expertise to teach this course. No, it will not be taught by sessional or limited term instructors.

Are there any proposed student fees associated with this course other than tuition fees?
No.

Is this course considered a 'duplicate' of any current or prior course under the University's duplicate course policy? Specify, as appropriate.
No.

Approvals

Chair, Department/School	Chair, Faculty Curriculum Committee	Chair, SCUS
Sept. 1, 1995	Sept. 6, 1995.	
Date	Date	Date

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SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL - RESOURCES

Course Number: **CMPT 408**

Resource Implications:
Note: Senate has approved (S.93-11) that no new courses should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering.

None.

Does this course require specialized space or equipment not readily available in the department or university, and if so, how will these resources be provided?

No.

Does this course require computing resources (e.g. hardware, software, network wiring, use of computer laboratory space) and if so, describe how they will be provided.

No.

Detailed Course Outline for
CMPT 408 Theory of Computer Networks / Communications

1. **Calendar Description:**

   (a) *Course Outline:* Network design parameters and goals, dynamic networks and permutations, routing in direct networks, structured communication in direct networks, other topics of interest to the students and instructor.

   (b) *Prerequisites:* CMPT 307 and CMPT 371. A solid background in discrete mathematics, especially graph theory will be an asset.

2. **Place of the course within the computing curriculum:**

   (a) *Goals of the course:* The goal of this course is to introduce students to the design and efficient use of communication networks. The emphasis will be on the theory of design and analysis. The theory will be illustrated with case studies of existing networks and data-parallel computers. The course is designed to complement CMPT 371 which emphasizes hardware and communication protocols.

   (b) *Reason for the prerequisites:* The course requires some familiarity with communication protocols and physical properties of networks (CMPT 371). The design and analysis tools are mathematical and require reasonable mathematical maturity (CMPT 307 and background in discrete mathematics).

   (c) *Courses having this course as a prerequisite:* none

   (d) *Related Courses:* CMPT 405, 95-1 offering of CMPT 409

3. **Student evaluation:**
   Homework assignments 40%, participation in electronic and class discussions 10%, presentation 20%, project or final exam 30%.

4. **Course Outline:** See attached detailed course summary for the 95-1 offering of CMPT 409. The summary covers the first 10 weeks of the course; the last three weeks of the course were used for student presentations. The proposed course will replace the section on sorting networks with a section on ATM (Asynchronous Transfer Mode) networks or another topic chosen by the class and instructor. The student presentations will be case studies and will be spaced throughout the semester rather than at the end. The electronic discussion will use existing network resources and a software package such as Hypermail (which is already available).

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A24

CMPT 408 Course Summary

1. Introduction to Interconnection Networks and Communication Algorithms

(a) *design goals:*

- design parameters affecting performance and cost
- tradeoffs between high performance and low cost
- distributed memory vs. shared memory

(b) *design approaches:*

- design network that is best for given applications
- design network that can simulate other networks efficiently
- design good algorithms and simulations for a given network

2. Survey and Classification of Concurrent Systems

(a) *architectural characteristics:*

- static (point-to-point) networks and dynamic (multistage) networks
- synchronism and asynchronism
- centralized and decentralized control
- SIMD and MIMD
- multiprocessors and multicomputers
- processors: RISC, CICS, pipelines

(b) *examples:*

- central shared memory architecture with crossbar: C.mmp
- distributed shared memory with busses: Cm*
- shared memory with multistage network: NYU Ultracomputer
- common static networks: hypercubes, toroidal meshes, butterflies, etc.

3. Dynamic Networks

(a) *classification:*

- crossbar, single stage, multistage
- blocking, weakly non-blocking (rearrangeable), strongly non-blocking
- full access, unique path
- bounds on numbers of switches in k-stage, full access, and unique path networks

(b) *blocking networks:*

- permutations: shuffle, unshuffle, bit reversal, butterfly, exchange, k^{th} sub-shuffle, k^{th} supershuffle, etc.
- unique path, full access networks: baseline, omega, indirect binary n-cube, inverse networks
- topological and functional equivalence
- on-line routing algorithm and collisions in omega network

(c) *non-blocking networks:*

- Clos networks: 3-stage network, reducing switches by increasing number of stages
- Benes networks: recursive construction, analysis, routing using Hall's Theorem

4. Routing in Direct Networks

(a) *architecural characteristics:*

- nodes: internal and external channels, router, buffers
- networks: bisection width, channel width, channel rate, channel bandwidth

(b) *communication time:*

- components: start-up latency, network latency, blocking time
- other factors that can affect communication time: channel contention, router contention, etc.

(c) *routing (path selection):*

- source routing, distributed routing
- dimension order (deterministic) routing, adaptive routing
- minimal (shortest path) routing

(d) *flow control (allocation of channels and buffers):*

- output selection policy, input selection policy

(e) *switching:*

- store-and-forward: linear cost model, lower bounds, pipelining, disjoint paths
- circuit-switching: linear cost model, virtual cut-through, wormhole routing
- advantages and disadvantages of different switching modes
- deadlock detection, channel dependency graphs, virtual channels

5. Structured Communication

(a) *sparse broadcast graphs:*

- unit cost model, broadcast graphs, broadcast time, minimum broadcast graphs
- hypercubes, Cayley graphs with $2^k - 2$ nodes
- ad hoc constructions: chordal rings, node addition, node deletion
- construction methods: 2-way, 3-way, 5-way splits, compounding
- matchings, partial matchings, compounding relative to a set
- solid 1-covers, broadcast algorithm, solid 2-covers, Cayley graphs with $2^k - 8$ nodes
- k-way splits

(b) *bounded degree graphs:*

- lower bounds on broadcast time
- cube connected cycles
- de Bruijn graphs, broadcast algorithm for de Bruijn graphs
- compounding with de Bruijn graphs, bounds on broadcasting in compound graphs

(c) *line broadcasting:*

- line broadcasting model
- broadcasting in cycles: nestedness, flatness, fullness, Gray code numbering
- using graph products to broadcast in toroidal meshes

(d) *circuit-switched broadcasting on 2-D torus (all-ports model):*

- model and lower bounds
- recursive tiling algorithm to minimize rounds
- divide-and-conquer algorithm with pipelining
- arc-disjoint spanning trees with pipelining
- multi-dimensional toroidal meshes

(e) *structured communication on toroidal meshes (1-port model):*

- circuit-switched linear cost model using virtual channels
- lower bounds for broadcast, scatter, gossip, multiscatter
- store-and-forward broadcasting on a cycle
- circuit-switched broadcasting and scattering on cycles and toroidal meshes
- store-and-forward gossiping
- circuit-switched gossiping on a cycle using virtual cycles to simulate 2-D store-and-forward algorithm
- circuit-switched gossiping by simulating algorithm for Knödel graphs
- multiscattering

(f) *linear gossip graphs:*

- bounds on numbers of communications (4-cycle theorem) and rounds (Knödel)
- linear cost model: rounds (β) and steps (τ)
- minimum time for n even using linear cost model
- gossiping in Knödel graphs
- gossiping algorithm for a ring when $\beta = 0$
- gossip graphs when $\beta > 0$, $\tau = 0$
- properties of gossip algorithms when $\beta\tau > 0$
- families of minimal linear gossip graphs
- bounded degree linear gossip graphs
- gossip algorithms for n odd: algorithm for ring when $\beta = 0$, properties, trade-offs between rounds and steps, asynchronism

(g) *broadcasting in butterflies:*

- models: linear cost, full- and half-duplex, 1-port and all-ports
- lower bounds
- construction of perfectly balanced spanning trees
- broadcasting using 4 spanning trees (2 ascending, 2 descending)
- bounds using 2 short spanning trees
- scattering algorithm

Library Resources for proposed course on
CMPT 408 Theory of Computer Networks / Communications

Recommended book for this course (to be ordered by the library)

J. de Rumeur, *Communications dans les réseaux de processeurs.* Masson, Paris, 1994 (in French). (**Note:** An English translation of this book will be available later this year.)

Library journal subscriptions

The course will attempt to be as current as possible so most of the material will be taken from technical reports and recent articles from the following journals.

Networks

Journal of Parallel and Distributed Computing

Discrete Mathematics

Discrete Applied Mathematics

SIAM Journal on Discrete Mathematics

SIAM Journal on Computing

Journal of the ACM

Information Processing Letters

Parallel Processing Letters

IEEE Transactions on Computers

IEEE Transactions on Parallel and Distributed Systems

IEEE Transactions on Communications

46.

A29

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL

Calendar Information

Course Number: **CMPT 470**

Course Title: **Advanced Application Development Tools**

Credit Hours: **3** Vector: **3-0-0**

Course Description (for Calendar). Attach a course outline to this proposal.
Review of object-oriented and database concepts, client/server architecture, interpreter-based vs. compiler-based object-oriented languages, visual programming, event-driven programming, application development tools, comparative studies, case studies in database, multimedia, and distributed applications.

Prerequisites: **CMPT 212, CMPT 354**

Corequisite: **None**

Special Instructions: **None**

Course(s) to be dropped if this course is approved:
None

Rationale for Introduction of this Course: Will this be a required or elective course in the curriculum; probable enrollment when offered?
With the advent of graphical user interfaces, most applications are now developed using a wide variety of tools, complimented by procedural languages. Nonetheless, these tools are often based on key computing science principles. The main objective of this course is two-fold: to provide deeper understanding of these principles by working with these tools and to reduce the steep learning curve normally required to work with a new application tool. This is an elective course with an estimated enrollment of 30 students each time.

Scheduling and Registration Information
Indicate Semester and Year this course would be first offered and planned frequency of offering thereafter.
once or twice a year starting 96-3.

Which of your present CFL faculty have the expertise to offer this course? Will the course be taught by sessional or limited term instructors?
The course will be taught by our present CFL faculty Drs. W.S. Luk, M. Drew, and S. Atkins.

Are there any proposed student fees associated with this course other than tuition fees?
No.

Is this course considered a 'duplicate' of any current or prior course under the University's duplicate course policy? Specify, as appropriate.
No.

Approvals

Chair, Department/School	Chair, Faculty Curriculum Committee	Chair, SCUS
Parveen Bawa		
Sept. 1, 1995	Sept. 6, 1995.	46.
Date	Date	Date

A30

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL - RESOURCES

Course Number: **CMPT 470**

Resource Implications:
Note: Senate has approved (S.93-11) that no new courses should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering.

None

Does this course require specialized space or equipment not readily available in the department or university, and if so, how will these resources be provided?

None

Does this course require computing resources (e.g. hardware, software, network wiring, use of computer laboratory space) and if so, describe how they will be provided.

Covered by 1995-1996 School's equipment budget, and software donated by IBM.

Detailed Course Outline for
CMPT 470 Advanced Application Development Tools

1. **Calendar Description:**

   (a) *Course Outline:* Review of object-oriented and database concepts, client/server architecture, interpreter-based vs. compiler-based object-oriented languages, visual programming, event-driven programming, application development tools, comparative studies, case studies in database, multimedia, and distributed applications.

   (b) *Prerequisites:* CMPT 212, CMPT 354

2. **Place of the course within the computing curriculum:**

   (a) *Goals of the course:* With the advent of graphical user interfaces, most applications are now developed using a wide variety of tools, complimented by procedural languages. Nonetheses, these tools are often based on key computing science principles. The main objective of this course is two-fold: to provide deeper understanding of these principles by working with these tools and to reduce the steep learning curve normally required to work with a new application tool.

   (b) *Reason for the prerequisites:* CMPT 354 provides basic database concepts and CMPT 212 provides basic object-oriented concepts.

   (c) *Courses having this course as a prerequisite:* none

   (d) *Related Courses:* CMPT 275, CMPT 370

3. **Course Outline:**

   (a) Review of Object-Oriented and Database Concepts, [1 week]

   (b) Smalltalk and its Comparison with C++ [3 weeks]

   (c) Introduction of Client/Server Architecture [1 week]

   (d) In-depth Study of an Application Development Tool [3 weeks]

   (e) Comparison of Popular Application Development Tools [2 weeks]

   (f) Case Studies [3 weeks]

4. **Student evaluation:**
   Homework assignments 20%, midterm 30%, and final exam 50%. (final exam consists of application development problems using an application development tool)

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Library Resources for proposed course on CMPT 470 Advanced Application Development Tools

Library books available as references:

Smith, David K., IBM Smalltalk: the Language, Addison-Welsey, 1995

Lalonde, W., Discovering Smalltalk, Benjamin/Cummings, 1994

Lalonde, W. and Hugh, J., Inside Smalltalk, Prentice-Hall, 1990

Library journals available as references:

ACM Transactions on Database Systems

ACM Transactions on Information Systems

IEEE Software

IEEE Transactions on Data and Knowledge Engineering

Information Systems

49.

A 33

S.95-57c

School of Engineering Science

Reference: SCUS 95 - 12 c
SCAP 95 - 47 c

i) New course -
ENSC 427 - 4 Communication Network

For Information:
Acting under delegated authority of Senate, SCUS has approved the following revisions as detailed in SCUS 95 - 12 c:

Change of description: ENSC 327, 395, 396, 428

Change of title, description and number: ENSC 280, 382

Change of prerequisites: ENSC 300, 330, 365, 423, 438, 439, 429, 498

Change of Calendar entry

SCHOOL OF ENGINEERING SCIENCE
SIMON FRASER UNIVERSITY
MEMORANDUM

To: P. Bawa, Associate Dean
FAS
From: M. Saif
ENSC
Date: September 7, 1995

Subject: ENSC proposed Calendar changes/revision

Attached is a list of Calendar changes from the School of Engineering Science which was approved by the FAS UCC at its August 3rd meeting. Minor changes suggested in that meeting have all been incorporated. These changes were approved by the Engineering Science Faculty at its meeting on July 6th.

The content of the changes are

1. **New Courses** (pages 3-7)

   ENSC 427-4 Communication Network

2. **Changes in existing courses**

   a) Course description change only

   ENSC 327 - Communication Systems (page 8)
   ENSC 395 - Job Practicum V (page 9)
   ENSC 396 - Job Practicum VI (page 9)
   ENSC 428 - Data Communication (page 8)

   b) Renumbering, title, and description change of courses (pages 10-12)

   ENSC 280 - Linear Systems I to ENSC 381 - Feedback Control Systems
   ENSC 382 - Linear Systems II to ENSC 281 - Linear Systems

   c) Changes in the pre-requisites of the existing courses (page 13)

   ENSC 300 - Engineering Design and Management
   Drop the existing prerequisite of ENSC 301.

   ENSC 330-Engineering Materials
   Change the prerequisites **from** CHEM 103, PHYS 121 **to** CHEM 102, PHYS 121.

   ENSC 365-Intoduction to Electro-Mechanical Sensors and Actuators
   Change prerequisite **from** ENSC 280 **to** ENSC 381.

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50.

Memorandum

School of Engineering Science

To: *Mehrdad Saif, Chair, Undergraduate Corriculum Committee*
From: *Steve Hardy, Head, Communications Group*
Date: *07/27/95*
Subject: *New Course, EnSc 427*

Attached are a revised course outline and proposal form for the new proposed course, EnSc 427, *Communication Networks*.

I have revised the outline to more accurately elucidate the analytical nature of this course, and to clarify the engineering design aspects of the material. I have also revised the calendar description portion of the New Course Proposal form, to achieve these same goals.

I have compared this new proposed course with the outline for Computing Science CMPT 371. This new course will be of a quantitiative nature, emphasizing design and analysis, and will use a text book that stresses analysis of each topic. However, the indications from the CMPT 371 outline are that it is of a much more qualitative nature, and does not have an engineering design content.

The topics of the two courses are different as well. The mathematical foundations of communications network analysis, the sections on wireless mobile networks, and queueing analysis of most of the networks introduced, are some examples of topics unique to the proposed 427 course.

Please let me know if you have any further comments or require any more information.

52.

SIMON FRASER UNIVERSITY
SCHOOL OF ENGINEERING SCIENCE

May 1, 1995

Course Outline, Engineering Science 427, Communication Networks:

Text: Schwartz, *Telecommunication Networks,* Addison Wesley, ISBN 0-201-16423-X. Alternate text is Bertsekas and Gallager, *Data Networks*, Addison Wesley, 1992. Other reference material will be assigned, and placed in the Reserve Reading Room of the Bennett Library.

Instructor: Dr. Steve Hardy.

This course will take a quantitative approach, and will include techniques of design and performance analysis of data and integrated services networks. Also included will be material on analysis of asynchronous time division multiplexing (ATM) networks, as well as a section on wireless network performance analysis. Laboratory exercises in the use of discrete event simulation tools will be assigned, to complement the analytical approach.

Topics to be covered:

Mathematical basis for telecommunication network performance design and analysis.

Performance analysis of retransmission error recovery schemes

Networks of queues, Jackson's theorem, mean value analysis of internetworks, virtual circuit models for analysis of congestion control, comparative performance of distributed routing strategies

Analysis of TCP congestion control mechanisms, slow-start algorithm

Analysis of multiple access techniques. Design of local area networks and packet radio networks.

Analysis of delay performance of wireless networks, routing approaches in mobile networks, modifications to the slow start algorithm for cellular wireless networks.

Analysis and design of integrated services digital networks, broadband integrated services digital networks, queueing analysis of rate control schemes in high-speed wide area networks.

Performance and design of ATM networks, source characterization, switching architectures.

Course Requirements, Engineering Science 427, Communication Networks:

Students will be required to satisfactorily complete 6 homework assignments, based on the material listed above. In addition, two laboratory exercises, based on the use of network simulation tools, will be assigned. Mid-term and final exams will be required.

Allocation of marks will be as follows: Homework assignments 20%, laboratory assignments 20%, mid-term examination 20%, final examination 40%.

53.

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL

Calendar Information
Course Number (e.g. CHEM150): ENSC 427

Course Title: Communication Networks

Credit Hours: 4 Vector: 3-0-2

Course Description (for Calendar). Attach a course outline to this proposal.
Quantitative performance analysis and design of data and integrated services networks. Retransmission error recovery schemes, networks of queues, congestion control, routing strategies. Multiple access techniques in data networks, design for specified throughput and delay performance. Wireless networks, routing approaches in mobile networks. Analysis and design of broadband integrated services digital networks, asynchronous time division multiplexing. Laboratory work is included in this course. (3-0-2) *Prerequisite: ENSC 327 or permission of instructor.*

Prerequisite: ENSC 327 or permission of instructor.

Corequisite: None

Special Instructions: None

Course(s) to be dropped if this course is approved: None

Rationale for Introduction of this Course: Will this be a required or elective course in the curriculum; probable enrollment when offered?
To provide senior undergraduate students with design and analysis knowledge in communication networks, an area of increasing importance to the BC and Canadian telecommunications industry. This will be an elective course in the curriculum. Probable enrollment when offered will be 10 to 15 students.

Scheduling and Registration Information
Indicate Semester and Year this course would be first offered and planned frequency of offering thereafter.
First offering: Fall semester, 1996. Planned frequency of offering is once per year.

Which of your present CFL faculty have the expertise of offer this course? Will the course be taught by sessional or limited term instructors?
The following CFL faculty have indicated that they have the expertise to teach this course:
S. Hardy, V. Cuperman, J. Vaisey. The course will not be taught by sessional or limited term instructors.

Are there any proposed student fees associated with this course other than tuition fees?
No.

Is this course considered a 'duplicate' of any current or prior course under the University's duplicate course policy? Specify, as appropriate. No

Approvals

Albert M. Leung
Chair, Department/School

Chair, Faculty Curriculum Committee

Chair, SCUS

Date

Date

Date

54.

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL - RESOURCES

Course Number (e.g. CHEM 150): ENSC 427

Resource Implications:
Note: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Provide details on how existing instructional resources will be redistributed to accomodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering.

Two courses will be offered less frequently. ENSC 428 and ENSC 429, which were previously offered every second semester, will now be offered every third semester, or once per year. This will allow this new course to be offered once per year.

Does this course require specialized space or equipment not readily available in the department or university, and if so, how will these resources be provided?

This course will be mounted with the laboratory space now existing in the School. The existing computer resources of the School will be used for laboratory exercises.

Does this course require computing resources (e.g. hardware, software, network wiring, use of computer laboratory space) and if so, describe how they will be provided.

This course requires computing resources to conduct laboratory exercises in the simulation of the operating performance of communication networks. The existing hardware and software resources of the School's laboratories will be sufficient for the anticipated requirements. No new network wiring will be required.

55.

S.95-57d

School of Kinesiology

Reference: SCUS 95 - 12 d
SCAP 95 - 47 d

i) New course:
KIN 416 - 3 Control of Limb Mechanics
ii) Course deletions:
KIN 470 - 3 Motor Activities Laboratory I
KIN 471 - 3 Motor Activities Laboratory II
iii) Change to Kinesiology Minor Program

For Information:
Acting under delegated authority of Senate, SCUS has approved the following revisions as detailed in SCUS 95 - 12 d

Change of description: KIN 110-3, 140-3, 205-3, 220-3, 305-3, 306-3, 343-3

Change of prerequisite: KIN 351-0, 352-0, 452-0, 481-3

Change of title, description: KIN 370-3, 375-3,

Change of title, number, prerequisite, vector: KIN 410-3

Change of description, prerequisite: KIN 415-3

To: Dr. Parveen Bawa
Associate Dean
Faculty of Applied Sciences

From: Craig Asmundson
UCC Chair
School of Kinesiology

Subject: School of Kinesiology Calendar Changes

Date: August 30/95

The Calendar changes described on the following pages were approved at a School meeting on July 13/95. The changes that were suggested at the Faculty of Applied Science UCC meeting on August 29 have been made and this package of Calendar changes can be forwarded to SCUS for consideration.

Many of the Calendar changes shown below are "housekeeping" changes (ie) rewriting Calendar descriptions that haven't been looked at for as long as 10-15 years. The current Calendar descriptions no longer accurately reflect how these courses have been taught in recent years.

The proposed Calendar changes are as follows:

1. **New Courses**
   KIN 416-3 - "Control of Limb Mechanics"

2. **Course Deletions**
   KIN 470-3 - "Motor Activities Laboratory I"
   KIN 471-3 - "Motor Activities Laboratory II"

3. **Changes to Existing Courses**
   KIN 110-3 - "Current Topics in Human Nutrition"
   KIN 140-3 - "Contemporary Health Issues"
   KIN 205-3 - "Introduction to Human Physiology"
   KIN 220-3 - "Human Foods and Nutrition"
   KIN 305-3 - "Human Physiology I"
   KIN 306-3 - "Human Physiology II - Principles of Physiological Regulation"
   KIN 343-3 - "Active Health: Assessment and Promotion"
   KIN 351-0 - "Practicum I"
   KIN 352-0 - "Practicum II"

KIN 452-0 - "Practicum IV"
KIN 370-3 - "Biomechanics in Physical Activity"
Kin 375-3 - "Physiological Basis of Growth and Development - Auxology"
KIN 410-3 - "Exercise Physiology"
KIN 415-3 - "Neural Control of Movement"
KIN 481-3 - "Activity Related Musculoskeletal Disorders"

4. **Change to the Kinesiology Minor program**

5. **Changes to the admission requirements and program requirements for the Post Baccalaureate Program in Kinesiology**

1. **New course proposal** - Kinesiology 416-3, "Control of Limb Mechanics". Please refer to pages 12-15.

2. **Proposal**: Delete KIN 470, "Motor Activities Laboratory I", and 471, "Motor Activities Laboratory II" from the Calendar.

   Justification: These courses haven't been taught for a number of years and there are no plans to teach them in the near future.

3. **Proposal**: Rewrite the Calendar description for KIN 110-3, "Current Topics in Human Nutrition" from: "A study of the basic nutritional needs and general nutritional status of affluent and indigent populations. Causes and consequences of undernutrition and malnutrition, food additives and contaminants, nutrition in health, disease and in athletic preparation, etc. will be studied. (Lecture/Tutorial)"

   to: "An introduction of the principles of human nutrition with an emphasis on topics of current interest. The material Is presented in a Canadian context to focus on nutrition practices and problems in this country. Students will gain an understanding of factors affecting food selection and the role of nutrition in maintaining good health. Students will develop the ability to discriminate between reliable and unreliable information on the subject of food and nutrition. (Lecture/Tutorial)"

   Justification: This Calendar description better describes the course as it has been taught in recent years

4. **Proposal**: Rewrite the Calendar description for KIN 140, "Contemporary Health Issues" from: "Focuses on current problems in developing and sustaining the health and fitness of the nation. Topics discussed will range from indicies of current national health status, present health care delivery systems, allied paramedical agencies, new methods in marketing health, review of the concepts of preventative and rehabilitative health care across the broad spectrum of society and special topics such as drug

abuse, human sexuality, medical technology, and ergonomics. (Lecture/Tutorial)."

to: "Explores health from a holistic perspective, in which health is viewed as physical, psychological, and social well-being. Considers genetics,environment, personal health behaviours (such as diet, exercise, stress management, and drug use), socioeconomic status, health care delivery systems, and aging with the intent to improve students' abilities to evaluate health information. (Lecture/Tutorial)."

Justification: This Calendar description better describes the course as it has been taught in recent years.

5. **Proposal**: Rewrite the Calendar description for KIN 205-3, "Introduction to Human Physiology" from:
"This course will introduce the physiological concepts of membrane biophysics, the nervous system and muscles, cardiorespiratory system, kidney, and gastrointestinal system."
to:
"An introductory survey of human physiology with an emphasis on mechanisms of regulation and integration. Anatomy of structures will be detailed only when it is critical to a functional understanding. Although this is intended as a survey course, some topics will be covered in reasonable detail in order to give insight into mechanisms of function."
The course prerequisites remain unchanged.

Justification: This Calendar description better describes the course as it has been taught in recent years.

6. **Proposal**: Rewrite the Calendar description for KIN 220-3, "Human Foods and Nutrition" from: "A study of foods and the nutrients they contain from the perspective of their function in the tissues, systems and organs of the intact human organism. The emphasis will be on providing a physiological understanding of

the body's need for nutrients and the manner in which they are utilized."

to:

"The principles of nutritional biochemistry are applied to nutrition in the life cycle - pregnancy, lactation, infancy, childhood, adolescence and aging. The second part of the course deals with common disease conditions where nutrition plays an important role in prevention or treatment or both. The course is presented in the Canadian context featuring sources of help on Canadian practice, standards, and regulations."

Justification: This Calendar description better describes the course as it has been taught in recent years

7. **Proposal**: Rewrite the Calendar description for KIN 305-3, "Human Physiology I" from: "Deals with the physiology of the cardiovascular, respiratory, renal and gastrointestinal systems, and involves a detailed and vigorous analysis of both rest and exercise function under normal and extreme environmental conditions. Assumes a firm grounding in basic physiology and will cover a broad range of material."

to: "Deals with the physiology and pathophysiology of the cardiovascular, respiratory, and renal systems in detail." The course prerequisites remain unchanged.

Justification: This Calendar description better describes the course as it has been taught in recent years. The gastrointestinal system is now covered in KIN 306.

8. **Proposal**: Rewrite the Calendar description for KIN 306-3, "Human Physiology II - Principles of Physiological Regulation" from: "The control systems of the human body, principles of physiological regulation. The structure and function of the central nervous system and the endocrine system. Special senses, and sensation, neurological and endocrine control mechanisms and neuroendocrine interactions (Lecture/Tutorial)."

to: "Examines the regulation of body functions with an emphasis on the endocrine, gastrointestinal and neuronal systems. The course focuses on integration of physiological mechanisms at the cellular and organ levels. Examples of abnormal human physiology are used to illustrate important principles (Lecture/Tutorial)."
The course prerequisites remain unchanged.

Justification: This Calendar description better describes the course as it has been taught in recent years.

9. **Proposal**: Add a sentence to the Calendar description for KIN 343-3, "Active Health: Assessment and Promotion" so that it will read as follows:
"An extension of KIN 143, Exercise Management, designed to provide students with an opportunity to appreciate principles of exercise leadership, assess individual fitness needs, design programs and monitor effects of prescribed exercise. The course includes a 34-hour practicum. (Lecture/Laboratory)

Justification: Students are made aware that there is a practicum component to this course.

10. KIN 351-0. "Practicum I". The prerequisites currently are as follows: "Students must apply to the Kinesiology Co-op Coordinator at least one semester in advance. They will normally be required to have completed 45 semester hours of credit with a GPA of 2.5. A student may not concurrently register in KIN 351 and KIN 499."
Proposal: Remove the sentence, "They will normally be required to have completed 45 semester hours of credit with a GPA of 2.5."

Justification: The admission requirements for the Co-op program at SFU are already described in another section of the Calendar.

11. KIN 352-0 - "Practicum II". The prerequisites currently are as follows: "Students must apply to the Kinesiology Co-op Coordinator at least one semester in advance. They will normally be required to have completed KIN 351 plus 60 credits. A student may not register for KIN 499 and KIN 352 concurrently."
Proposal: Remove the phrase, " plus 60 credits."

Justification: Students don't need to have 60 credits to do KIN 352 (in fact most of them don't have 60). They need 30 credits to do 351, but beyond that there really is no "normal" amount of credit hours.

12. KIN 452-0 - "Practicum IV". The prerequisites currently are as follows: "Students must apply to the Kinesiology Co-op Coordinator at least one semester in advance. They will normally be required to have completed KIN 451 plus 90 credits. A student may not register for KIN 499 and KIN 452 concurrently."
Proposal: Remove the phrase, " plus 90 credits."

Justification: Students don't need to have 90 credits to do KIN 452.

13. **Proposal**: KIN 370-3 - "Biomechanics in Physical Activity"
#1. Change the title of KIN 370 from "Biomechanics in Physical Activity" to "Biomechanical Analysis of Sport".
#2. Rewrite the Calendar description for KIN 370 from: "To provide knowledge of a biomechanical nature which has direct application to the teaching and learning of physical skills. KIN 370 is aimed at Kinesiology Minors, Health and Fitness Certificate students and Faculty of Education students in the Minor in Elementary School Physical Education Program. (Lecture/Tutorial)."
to: "This course applies biomechanical principles to the qualitative analysis of human movement. Students will learn to assess human movement in all sporting and fitness activities (including aquatic activities). The course will also cover the mechanical interaction between athletes, their equipment and the environment. This course is amied at students with an interest in teaching and coaching sports, Kinesiology Minors, Health and

Fitness Certificate students and Faculty of Education students in the Minor in Elementary School Physical Education Program. (Lecture/Tutorial)."
The course prerequisites remain unchanged.

Justification: This course title change and the Calendar description better describes the course as it has been taught in recent years.

14. **Proposal:** Kin 375-3 - "Physiological Basis of Growth and Development - Auxology"

#1. Change the title for KIN 375, "Physiological Basis of Growth and Development - Auxology" to "Human Growth and Development"

#2. Rewrite the Calendar description for KIN 375 from: "The fundamentals of physiologic growth and development of the developing child, and the design of appropriate activity programs throughout the range from kindergarten to Grade 12. (Lecture/Tutorial)

to:

"The fundamentals of physiological growth and development from conception to maturity. Topics included form a strong foundation for those interested in designing appropriate activity programs for children of all ages" (Lecture/Tutorial)
The course prerequisites remain unchanged.

Justification:

#1. The course doesn't have an emphasis on physiology. The word "Auxology" is unnecessary and meaningless.

#2. This Calendar description better describes the course as it has been taught in recent years.

15. **Proposal:** Kinesiology 410-3 - "Exercise Physiology" - course number change, course title change, prerequisite change, and course vector change. Please refer to pages 16-17.

16. **Proposal**: KIN 415-3 - "Neural Control of Movement"

#1. Change the Calendar description for KIN 415 from: "An in depth treatment of neurophysiology. Synaptic inputs and cell interactions in the spinal cord are used to illustrate the general principles of interaction in the nervous system. Other topics include central and peripheral motor control, the vestibular system and the visual system. (Lecture/Tutorial)"

to:

"An in depth treatment of the cellular biophysics of neurons. Synaptic inputs and neuronal interactions in the spinal cord are used to illustrate general principles of neuronal function and integration in the central nervous system. The contributions of the motor cortex, cerebellum, basal ganglia, premotor cortical areas, and the vestibular system are discussed. An understanding of basic physics is essential. (Lecture/Tutorial)"

#2. Drop BISC 305 and PSYC 381 as possible prerequisite for KIN 415. The prerequisites would then reads as follows: "KIN 306 ".

Justification:

#1. This Calendar description better describes the course as it has been taught in recent years.

#2. During the past two years BISC 305 has changed and does not appear to be an adequate prerequisite. Students have also found PSYC 381 not to be an adequate prerequisite.

17. **Proposal**: Change the prerequisites for KIN 481, "Activity Related Musculoskeletal Disorders", from KIN 207 and 380 to KIN 201 and 326.

Justification: A basic knowledge of biomechanics and a good knowledge of human anatomy is needed for this course.

18. Kinesiology minor program:

Proposal: add the following sentence to the program requirements - "At least 7 semester hours of upper division Kinesiology courses used toward the minor must have been completed at Simon Fraser University.

Justification: The University policy for minors reads as follows - "at least 7 semester hours of upper division credit used toward the minor must have been completed through University courses." However, students don't notice the University policy buried in the Calendar, so it should be repeated in the Kinesiology section of the Calendar. Furthermore, students get confused by the term "University courses". They frequently interpret this to mean courses taken at any university whereas since the "U" in University is capitalized, it is intended to refer to courses taken at SFU. The proposed wording change shown above makes this clearer.

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL

Calendar Information
Course Number (e.g. CHEM150): KIN 416

Course Title: CONTROL OF LIMB MECHANICS

Credit Hours: 3 Vector: 3-0-1

Course Description (for Calendar). Attach a course outline to this proposal.

Control of the human musculoskeletal system examined from the perspective of mechanical impedance. Mechanics of individual muscles, single joints spanned by multiple muscles and multi-joint limb segments are discussed in the context of physical interaction with the environment.

Prerequisite: KIN 201 and KIN 306

Corequisite:

Special Instructions:

Course(s) to be dropped if this course is approved: None

Rationale for Introduction of this Course: Will this be a required or elective course in the curriculum; probable enrolment when offered? Elective course. Probable enrolment 15-20.
Dr. Milner recently joined the School of Kinesiology and has developed a course related to control of limb mechanics. He has taught it three times as an upper division Special Topics course with an average enrolment of 16. With the introduction of a new lower division course in biomechanics (KIN 201) the upper division courses are being restructured to give students a sequence of courses that will provide a comprehensive treatment of the mechanics of human movement. This course is unique to the Kinesiology curriculum in that it integrates the topics of motor control and biomechanics.

Scheduling and Registration Information
Indicate Semester and Year this course would be first offered and planned frequency of offering thereafter.

1997-1 offered once per year thereafter

Which of your present CFL faculty have the expertise to offer this course? Will the course be taught by sessional or limited term instructors?

Dr. Ted Milner The course will not be taught by sessional or limited term instructors.

Are there any proposed student fees associated with this course other than tuition fees? No

Is this course considered a 'duplicate' of any current or prior course under the University's duplicate course policy? Specify, as appropriate. No.

Approvals

Chair, Department/School	Chair, Faculty Curriculum Committee	Chair, SCUS
31 AUG 95	Sept 6, 1995	
Date	Date	Date

66.

SIMON FRASER UNIVERSITY
NEW COURSE PROPOSAL - RESOURCES

Course Number (e.g. CHEM 150): KIN 416

Resource Implications:
Note: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Provide details on how existing instructional resources will be redistributed to accommodate this new course. For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering.

The proposed course is currently being taught as a Special Topics course. It will replace the Special Topics course. Consequently, the total number of courses currently offered will not change if the new course is introduced.

Does this course require specialized space or equipment not readily available in the department or university, and if so, how will these resources be provided?

No.

Does this course require computing resources (e.g. hardware, software, network wiring, use of computer laboratory space) and if so, describe how they will be provided.

No.

COURSE OUTLINE/READING LIST

KIN 416 CONTROL OF LIMB MECHANICS

Objectives:

This course is designed to provide students with an appreciation of the importance of physical properties such as stiffness, viscosity and moment of inertia in the control of movement, particularly in the context of mechanical interactions between humans and their environment. Students will learn about the physiological basis for muscle viscoelastic behavior and the roles played by geometrical factors and neuromuscular feedback in the modulation of mechanical impedance.

Required and recommended readings:

A set of course notes has been developed, which summarizes the results of recent research in the field of musculoskeletal mecahanics and control of human limb mechanics. In addition, the following two texts will be placed on reserve as supplementary references.

Muscles, Reflexes and Locomotion. T.A. McMahon. Princeton University Press, 1984.
Neuromechanical Basis of Kinesiology (second edition). R.M. Enoka. Human Kinetics, 1994.

Course requirements and grading structure:

Tutorial presentation of journal article	20%
Quiz 1	5%
Quiz 2	5%
Term paper	30%
Final exam	40%

Course Outline:

1) Muscle fiber structure and micromechanics

2) Muscle force regulation

3) Viscoelastic properties of muscle

4) Mechanics of the muscle-tendon unit

5) Muscle sensory receptors and feedback control of muscle mechanics

6) Muscle geometry and joint kinematics

7) Control of single-joint motion and mechanical impedance

8) Mechanical stability of the musculoskeletal system

9) Laboratory demonstrations: joint stiffness, mechanical stability

10) Geometric transformation of joint mechanical properties

11) Control of multi-joint motion mechanical impedance

12) Mechanical interaction between humans and the environment (surfaces, tools, machines)

COURSE ALTERATION AND RATIONALE

SCHOOL OF KINESIOLOGY

FROM: Current Calendar Entry

Kin 410-3 Exercise Physiology (2,1,0) Advanced study of exercise as a perturbant to homeostasis. Focus is on the cellular mechanisms by which skeletal and cardiac muscle respond to both acute and chronic stress. (Lecture/seminar) Prerequisites: Kin 305/306.

TO: Proposed Calendar Entry

Kin 310 Exercise/Work Physiology (3,0,0): The study of human physiological responses and adaptations to acute and chronic exercise/work. Cardiorespiratory, cellular and metabolic adaptations will studied and discussed in detail. (Lecture/Seminar) Prerequisite: Kin 205. Recommended: Kin 201 and Kin 207. Students with credit in KIN 410 may not take KIN 310 for further credit.

RATIONALE:

The major changes above include an expansion of the focus to include work physiology, changing the vector to (3,0,0), changing the course from a fourth year to a third year course and changing the prerequisites to Kin 205, with Kin 201 and Kin 207 being recommended. The major impetus for the inclusion of work physiology in the course is the development of the Human Factors/Ergonomics Stream. Previously this course has centred on limits to performance primarily as they apply to high intensity athletic endeavours. Work physiology poses quite different stresses including sustained very low intensity activity frequently involving small muscle groups, and different environmental stresses including everything from temperature to lead poisoning, etc. The original course did not include these topics which appear to be central to the Human Factors/Ergonomics Stream.

To accommodate these changes it is necessary to increase the lecture time from two to three hours per week. The loss of the tutorial is not a major concern as the course has a lecture/seminar format and operated successfully this past year without one.

The change in level of this course to third year and the change in prerequisites are necessary for a natural progression through the streams. The change in prerequisites is possible due to the change in prerequisites for Kin 205. With the inclusion of BICH 221 as a prerequisite for this course, the content of Kin 205 has been expanded providing more than sufficient physiology background for an advanced course in Exercise/Work Physiology. The movement of this course to the third year level is logical in that it could be taken concurrently with Kin 343 to provide the students a more detailed knowledge of the topic for the practicium component of this course as well as providing the background for the advanced fourth year courses Kin 407, Kin 412, Kin 430, Kin 481 and the proposed Kin 443 and Exercise Prescription for Special Populations courses.