SIMON FRASER UNIVERSITY

MEMORANDUM

To: Senate

From: J.M. Munro, Chair
Senate Committee on
Academic Planning

Subject: Faculty of Applied Sciences -
Graduate Curriculum Revisions

Date: November 18, 1993

Action undertaken by the Senate Graduate Studies Committee 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.93-59 as follows

S.93-59a	School of Computing Science
S.93-59b	School of Engineering Science
S.93-59c	School of Kinesiology"

School of Computing Science

Summary of Graduate Curriculum Revisions

SGSC Reference: Mtg. of October 25, 1993
SCAP Reference: SCAP 93 - 37a

Changes to the Graduate Program Regulations

Proposed Revisions to the
Computing Science Graduate Program Regulations

This document presents a proposal for major revision of the Computing Science Graduate Program Regulations. It is the product of a series of joint meetings and consultations involving faculty and graduate students in the School of Computing Science between May 1993 and August 1993. The regulations proposed here are endorsed by both the faculty and the graduate students.

Over the last few years, dissatisfaction with the operation of the current regulations has been building within the School. The dissatisfaction centered on the Ph.D. Breadth Requirement: Its intricate interweaving of breadth structure, course offerings, and comprehensive examinations was causing distortions in the graduate program and was not able to provide sufficient flexibility to respond to the growth in the body of knowledge comprising computing science or to the School's desire to accommodate interdisciplinary work. This led the School to embark on a comprehensive review of the Graduate Program Regulations, with the result presented here.

Two changes are central to the proposed regulations:

❖ The initial evaluation point for Ph.D. students has been shifted from an evaluation following completion of comprehensive examinations to an evaluation following completion of a depth examination. In spirit, this represents a change in the scope and focus of the evaluation, from an emphasis on breadth to an emphasis on depth and research. This reflects the belief of the faculty and graduate students that original research is at the heart of a Ph.D. degree, so that depth and research skill should be emphasised at important evaluation points in the program.

❖ A new, more flexible structure is used to define breadth requirements, affecting both the M.Sc. and Ph.D. breadth requirements. It is a hybrid structure based on the Association for Computing Machinery (ACM) curriculum recommendations and the strengths of the School's faculty. It provides a mechanism for growth within computing science and in interdisciplinary work.

1. Discussion of Current and Proposed Regulations

1.1. Admission

The current regulations were designed to make it effecitvely impossible to enter the Ph.D. program without completion of a Master's degree. The proposed regulations relax this, in line with the desire of the faculty to be more flexible in this regard. The School is seeing an increasing number of qualified applicants and wants the regulations to show that admission to the Ph.D. program before completion of a Master's is an option.

1.2. Breadth Structure

The current regulations use a breadth structure which is tied to the Ph.D. Breadth Requirement and comprehensive examinations. It divides knowledge in computing science into 6 broad areas: Artificial Intelligence, Computer Design and Organization, Computer Systems, Database Systems, Programming Languages and Systems, and Theoretical Computing Science. Associated with each area is a survey course (the "700-level" course for the area).

A course breadth requirement for M.Sc. students is defined implicitly by requiring two 700-level courses (hence two areas). At the Ph.D. level, the course breadth requirement is subsumed by the Ph.D. Breadth Requirement.

These area divisions are adequate for the purpose of defining a breadth distribution within computing science. However, as the body of knowledge in computing science has grown, they have become too broad for the other purposes

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they are made to serve: defining the scope of a comprehensive examination and the associated 700-level course. Nor do they provide for subject areas outside of computing science which are essential for good interdisciplinary work.

The proposed regulations define a new structure which identifies three major areas: Formal Topics in Computing Science, Computer Systems, and Knowledge and Information Systems. Within these three areas, subareas are defined. The structure is a hybrid based on ACM curriculum recommendations [1, 2] and the strengths of the School's faculty. Table 1 in the proposed regulations shows an initial set of subareas within computing science. It is expected that new subareas will be identified and defined as the body of knowledge in computing science continues to grow. It is also expected that interdisciplinary work will require the definition of subareas outside of computing science. The proposed regulations provide for the approval of new subareas, when justified, by a Graduate Breadth Evaluation committee.

At both the M.Sc. and Ph.D. levels, the proposed regulations define course breadth requirements by specifying that courses must span a minimum number of subareas, with a specific distribution among the three major areas.

1.3. Supervisory Committees

There is no corresponding section in the current regulations. This material is added to the proposed regulations to make it clear that selection of a senior supervisor should be by mutual consent based on commonality of research interests.

1.4. Research Topics Seminars

This seminar series has been used for several years to acquaint new graduate students with the research interests of the faculty.

In the proposed regulations, it is expanded to include the thesis seminars that students are expected to give at thesis completion. The hope is that this will increase research interaction among the graduate students, give new graduate students an idea of what constitutes a thesis, and relieve some minor scheduling problems associated with thesis seminars.

1.5. M.Sc. Program

The current regulations specify a course requirement of 6 courses, with a breadth requirement of two 700-level courses. Research work culminating in the writing and defense of a thesis completes the degree.

The proposed regulations do not change the basic structure of the M.Sc. program. The number of courses is reduced from 6 to 5, while the breadth required is increased slightly to a range roughly equivalent to three of the existing 700-level courses. These changes remain well within the normal range of requirements for computing science Master's programs.

1.6. Ph.D. Program

The current regulations specify a Breadth Requirement composed of courses and comprehensive exams, and a course requirement which is usually satisfied using the same courses as are applied toward the Breadth Requirement. Research work culminating in the writing and defense of a thesis completes the degree.

The initial evaluation of a student in the Ph.D. program is for satisfaction of the Breadth Requirement. Comprehensive examinations are held in late April, following the end of the Spring semester; the evaluation follows immediately afterward. The faculty have become increasingly dissatisfied with the Breadth Requirement for many reasons:

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❖ If any single quality can be identified as most important to successful completion of a Ph.D. degree, it is the. ability to do original research. Performance over two semesters of courses and exams designed to measure breadth can be used to predict research ability, but better evaluation methods are possible.

❖ The notion of breadth at the Ph.D. level requires changes to accommodate growth in computing science and in interdisciplinary work, but changes could not be made without also changing the structure of the Ph.D. Breadth Requirement.

❖ The absolute requirement to offer the 700-level courses once a year was consuming the School's graduate teaching capacity, straining our ability to offer the advanced courses necessary for a top quality graduate program.

❖ The structure of the Ph.D. Breadth and course requirements (which allow students to use up to three 700-level courses in lieu of comprehensive exams and double count them toward the Ph.D. course requirement), together with the critical importance of satisfying the Breadth Requirement, led Ph.D. students to concentrate entirely on survey courses and review during their first two semesters in the program.

❖ The importance of CGPA in university scholarship competition encouraged students to devote maximum effort to obtaining high marks in the three 700-level courses applied to satisfying the Ph.D. Breadth and course requirements, and then discouraged them from risking that CGPA by taking advanced courses for credit.

In sum, the Ph.D. Breadth Requirement and its side-effects have introduced distortions into the graduate program which the faculty feel are undesirable.

The proposed regulations change the structure of the Ph.D. program to address these concerns. First, the initial evaluation is shifted to follow a depth exam which will normally occur before the end of the student's second year in the program. This allows time for the student to develop depth in her/his chosen research area and gives the faculty time and a base of experience with which to accurately evaluate the student's research potential as well as depth and breadth of knowledge. The Breadth Requirement of the current regulations is eliminated.

The Ph.D. course and breadth requirements in the proposed regulations are defined within the new structure outlined in §1.2. This provides a more flexible structure in which the actual academic work required to provide breadth can be tailored to the background and research plans of the student. The overall breadth required of Ph.D. students will remain roughly the same. The ability to incorporate breadth areas revelant to interdisciplinary research and new developments in computing science will be enhanced.

The Ph.D. program structure proposed here is within the range typical for computing science Ph.D. programs.

References

[1]   Denning, P., Comer, D., Gries, D., Mulder, M., Tucker, A., Turner, A., Young, P.
Computing as a Discipline: Final Report of the ACM Task Force on the Core of Computer Science.
ACM Press. Association for Computing Machinery, 11 West 42nd Street, New York, New York, 10036, 1988.
ISBN 0-8791-293-4.

[2]   Tucker, A., Barnes, B.
Flexible Design: A Summary of *Computing Curricula 1991*.
Computer 24(11):56-66, November, 1991.
A similar summary article can be found in *Communications of the ACM*, June, 1991.

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Current and Proposed Computing Science Graduate Program Regulations

On the following pages, the revised portions of the current and proposed Graduate Program Regulations are presented in a side-by-side format to facilitate comparison.

Current Regulations	Proposed Regulations
1. Admission To qualify for admission to the M.Sc. program, a student must satisfy the general University regulations and must have a Bachelors degree, or the equivalent, in Computing Science or a related field. To qualify for admission to the Ph.D. program, a student must satisfy the general university regulations and must have a Masters degree, or the equivalent, in Computing Science or a related field. To qualify for admission to the Ph.D. program before completion of an M.Sc. program, a student must be enrolled for at least two semesters in the M.Sc. program, must complete the M.Sc. Course Work requirement, and must complete the breadth requirements for the Ph.D. program, as described below, within 12 months of first enrolment in the M.Sc. program. Permission is also required from the Computing Science Graduate Program Committee and the Senate Graduate Studies Committee. For further information, refer to Section 1.3 of the *Graduate General Regulations*.	**1. Admission** To qualify for admission to the M.Sc. program, a student must satisfy the University admission requirements stated in section 1.3 of the Graduate General Regulations and must have a Bachelor's degree or the equivalent in Computing Science or a related field. To qualify for admission to the Ph.D. program, a student must satisfy the University admission requirements stated in section 1.3 of the Graduate General Regulations and ❋ have a Master's degree or the equivalent in Computing Science or a related field; or ❋ have a Bachelor's degree or the equivalent in Computing Science or a related field, with a cumulative grade point average of 3.5 (on a scale of 0.0 - 4.0) or the equivalent. At its discretion, the School's Graduate Admissions Committee may offer either M.Sc. or Ph.D. admission to students applying to the Ph.D. program without a Master's degree or equivalent in Computing Science or a related field. Students enrolled in the M.Sc. program may apply to transfer to the Ph.D. program after two semesters in the M.Sc. program; the School's evaluation procedure for such applications is the same as that used for outside applicants.

The current regulations use a rigid breadth structure comprised of six major areas: Artificial Intelligence, Computer Design and Organization, Computer Systems, Database Systems, Programming Languages and Systems, and Theoretical Computing Science. Corresponding to each area, there is a 700-level course. Breadth is defined in terms of a selection of 700-level courses (cf. §2.1, §3.1 in the current regulations).

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2. Structure for Breadth and Course Requirements

For purposes of defining the M.Sc. and Ph.D. breadth requirements in §5.1 and §6.1, a set of subareas are identified and grouped into three major areas: Formal Topics in Computing Science, Computer Systems, and Knowledge and Information Systems. Table 1 shows the standard subareas within each area.

Area I Formal Topics in Computing Science	Area II Computer Systems	Area III Knowledge and Information Systems
Algorithms and Complexity	Operating Systems and Networks	Artificial Intelligence and Robotics
Formal Logic and Language Semantics	Computer Design and Organization	Database and Information Retrieval Systems
Discrete Mathematics	Programming Languages and Compilers	Numerical and Symbolic Computing
Operations Research		Computer Graphics and Interfaces
		Software Methodology and Engineering

Table 1: Composition of Major Areas

The course requirements for the M.Sc. and Ph.D. degrees each have a distribution requirement to ensure breadth across the major areas defined in Table 1. This requirement is specified in terms of number of courses and subareas selected from each of the three major areas. At its discretion, the Graduate Breadth Evaluation Committee may accept requests to define subareas other than those in Table 1 for the purpose of satisfying M.Sc. or Ph.D. breadth requirements.

cf. §2.3, §3.4 in the current regulations

3. Supervisory Committees

A supervisory committee, at either the M.Sc. or Ph.D. level, consists of the student's senior supervisor, at least one other Computing Science faculty member, and other members (typically faculty) as appropriate. The choice of senior supervisor should normally be made by mutual consent of the graduate student and faculty member based on commonality of research interests. The student and senior supervisor should consult on the choice of the remainder of the committee members.

Section 1.6 of the Graduate General Regulations specifies that a senior supervisor will normally be appointed no later than the beginning of the student's 3rd semester in the program, and that the remainder of the supervisory committee will normally be chosen in the same semester in which the senior supervisor is appointed.

cf. §2.2, §3.3 in the current regulations.

4. Research Topics Seminars

The Research Topics Seminar series is presented over the course of the year by faculty and graduate students. Faculty presentations are designed to acquaint new graduate students with the research interests of the faculty. Graduate student presentations typically showcase thesis research. Students in the first year of graduate study are required to attend faculty Research Topics Seminars to become familiar with the research interests of the faculty.

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2. M.Sc. Program

2.1. Course Work

The minimum course requirement for the M.Sc. degree is 18 semester hours of graduate level course credit. At least 15 of these 18 semester hours must be in Computing Science and at least 9 of these 18 semester hours must be 700-level Computing Science courses. The Graduate Program Committee may require additional undergraduate or graduate courses or a different number of 700-level semester hours in certain circumstances.

2.2. Research Topics Seminar Series

The Research Topics Seminar Series is presented in the Fall and Spring semesters to acquaint graduate students with the research interests of the faculty. All M.Sc. students are required to attend the Research Topics Seminars during their first year of enrolment in the M.Sc. program.

2.3. Research

✾ The student is required to submit a Research Proposal to the School for approval by the student's Supervisory Committee. The Supervisory Committee consists of the student's Senior Supervisor, at least one other faculty member from the School of Computing Science, and other committee members as appropriate.

✾ The student is required to present a seminar based on his/her thesis research.

✾ The student is required to submit and defend a thesis based on independent work by the student. For regulations governing the composition of M.Sc. Examining Committees and the conduct of M.Sc. Thesis Examinations, see Sections 1.9 and 1.10 of the *Graduate General Regulations*.

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5. M.Sc. Program

Students in the M.Sc. program are expected to acquire breadth of knowledge through a sequence of courses and depth of knowledge through completion and defense of a thesis based on independent work. Under normal circumstances a M.Sc. degree should be completed within 6 semesters and should not require longer than 8 semesters.

5.1. Breadth Requirement

M.Sc. students must take at least 15 semester hours of graduate level course credit (typically five courses) such that at least one course is chosen from each of Area I, Area II and Area III of Table 1. At least 12 of the 15 semester hours (typically 4 courses) must be taken in Computing Science. Course work will normally be completed by the end of the student's 5th semester in the program.

This material is covered in §4 in the proposed regulations.

5.2. Depth Requirement

M.Sc. students are required to submit and defend a thesis based on their independent work. The student, in consultation with her/his supervisory committee, will formulate and submit for their approval a written thesis proposal, normally not later than the end of the 3rd semester in the program.

Regulations specifying the composition of the examining committee and the procedures for the final public defense of the thesis can be found in Sections 1.9 and 1.10 of the *Graduate General Regulations*. M.Sc. students are required to give a seminar. Typically this will be on their thesis research and will be presented in the interval between distribution of the thesis to the committee and the defense.

3. Ph.D. Program

3.1. Breadth Requirement

A candidate for the Ph.D. degree must satisfy the Graduate Program Committee that he/she possesses suitable breadth of knowledge in Computing Science. Normally, this requirement is satisfied during the first year of enrolment through a combination of courses and Comprehensive Examinations as described below, although exceptions are possible at the discretion of the Graduate Program Committee in consultation with the Ph.D. Breadth Committee. The Ph.D. Breadth Committee is elected annually by and from the faculty of the School of Computing Science.

A Ph.D. candidate must demonstrate breadth in Theoretical Computing Science and four of the following five areas: Artificial Intelligence, Programming Languages and Systems, Database Systems, Computer Design and Organization, and Computer Systems. Breadth in an area can be demonstrated by taking the 700-level course in the area or by writing the Comprehensive Examination in the area. In most cases, 700-level courses taken while in the M.Sc. program can be used to satisfy the Ph.D. Breadth Requirement. Breadth in at least two areas must be satisfied by writing Comprehensive Examinations. The Comprehensive Examinations test breadth of knowledge at the M.Sc. level, and are normally written at the end of April during the first year of enrolment. A candidate should inform the Ph.D. Breadth Committee, in writing, no later than the end of January of the first year of enrolment, which examinations he/she intends to write.

The standing of a Ph.D. candidate is reviewed within 12 months of first enrolment by the Ph.D. Breadth Committee. If the Ph.D. Breadth Committee decides that the candidate has not satisfied the breadth requirement, it may ask the candidate to

* do additional courses, projects, exams, or other work
* transfer to the M.Sc. program, or
* withdraw from the University.

The second of these recommendations must also be approved by the Graduate Program Committee and the Senate Graduate Studies Committee.

3.2. Course Work

In most cases, Ph.D. candidates will be required to take 9 semester hours of Computing Science graduate level course credit during the first year of enrolment in the Ph.D. program. The Graduate Program Committee may waive part or all of this requirement, or may require additional under-graduate or graduate courses in certain circumstances.

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6. Ph.D. Program

Students in the Ph.D. program are required to demonstrate breadth of knowledge as outlined below and demonstrate the capacity to conduct original research through the completion and defense of an original thesis. Under normal circumstances a Ph.D. degree should be completed within 12 semesters and should not require longer than 15 semesters.

6.1. Breadth Requirement

Ph.D. students are required to demonstrate breadth to a level equivalent to at least 21 semester hours of graduate level course credit (typically 7 courses), subject to the following distribution:

* Three courses chosen such that one course is drawn from each of Area I, Area II and Area III of Table 1.

* Two additional courses chosen from any two of Area I, Area II, and Area III and from subareas different than those used for the first three courses.

* Two additional courses chosen by the student.

Up to two courses outside of Computing Science may be used in satisfying the breadth requirement, subject to approval by the student's supervisory committee and the Graduate Breadth Committee. A Ph.D. student is expected to achieve a minimum CGPA of 3.4 and passing marks in all courses.

Each student is required to submit a proposal describing her/his plan for satisfying the breadth requirement within 2 months of entering the program. In the proposal, a student may request that up to four courses and any portion of the breadth distribution be waived based on previous graduate course work, or by examination. A minimum of 9 semester hours of course work (typically 3 courses) is required. Proposals must be approved by the Graduate Breadth Evaluation Committee, which may approve the proposal or recommend alternatives at its discretion. The breadth requirement will normally be completed by the end of the student's 3rd to 6th semester in the program, in proportion to the number of courses actually required.

3.3. Research Topics Seminar Series

The Research Topics Seminar Series is presented in the Fall and Spring semesters to acquaint graduate students with the research interests of the faculty. All Ph.D. students are required to attend the Research Topics Seminars presented during their first year of enrolment in the Ph.D. program. Ph.D. students who have satisfied this requirement while in the M.Sc. program are not required to satisfy it again.

This material is covered in §4 in the proposed regulations.

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3.4. Research

The major portion of the Ph.D. program consists of original research under the direction of a Supervisory Committee. A Ph.D. Supervisory Committee consists of a Senior Supervisor, at least one other faculty member from the School of Computing Science, and other committee members as appropriate.

* The student is required to pass an oral Ph.D. Preliminary Examination. The student is required to submit before the exam a written Research Review and Proposal which should consist of a survey of the proposed research area, a summary of his/her preliminary research results, and a proposal for further research. The student must demonstrate that he/she possesses both the ability and adequate knowledge of the chosen research area to pursue and complete original research at an advanced level. Moreover, he/she should demonstrate some preliminary research results related to the proposed research. The proposal should be appropriate in level and scope for a Ph.D. thesis. The Supervisory Committee must be satisfied with the preliminary research results and the research proposal of the candidate. The Ph.D. Preliminary Examination is conducted by the student's Supervisory Committee under the arrangement of the Graduate Program Committee, and should normally take place within one year after the student has satisfied the breadth requirement. In case the student cannot take the examination within the specified period of time, he/she can request for one year extension, in writing, to the student's Supervisory Committee. A student must pass the Ph.D. Preliminary Examination within two years after he/she has satisfied the breadth requirements.

* The student is required to present a seminar based on his/her thesis research. This seminar is normally presented a few weeks before the candidate's thesis defence.
* The student is required to submit and defend a thesis based on substantial original research. For regulations governing the composition of a Ph.D. Examining Committee and the conduct of Ph.D. Thesis Examinations, see Sections 1.9 and 1.10 of the *Graduate General Regulations*.

6.2. Depth Requirement

Ph.D. students are required to demonstrate depth of knowledge in their chosen research area through a public depth seminar and oral examination, to give a thesis proposal seminar, and to submit and defend a thesis based on their independent work which makes an original contribution to knowledge in computing science.

6.2.1. Depth Examination

The depth seminar and examination may be scheduled at any time following the student's completion of her/his breadth requirement. Typically this will be between the student's 5th and 7th semester in the Ph.D. program; a specific recommendation will be made by the Graduate Breadth Evaluation Committee, in proportion to the amount of course work required to satisfy the breadth requirement. The examining committee will consist of the student's supervisory committee and one or two additional examiners recommended by the supervisory committee and approved by the Graduate Program Committee. The scope of the exam will be centered on the student's research area(s); the examining committee, in consultation with the student, will specify the topics to be covered in the examination. The student will prepare a written survey and will give a public depth seminar, followed by the oral examination. Following the examination, the committee will meet and evaluate the student's performance in the program to that point. The committee's evaluation will be diagnostic, specifying additional work in areas of weakness if such exist. A second depth examination or withdrawal from the program may be recommended in extreme cases.

6.2.2. Thesis Proposal

The student, in consultation with her/his supervisory committee, will formulate and submit for their approval a written thesis proposal consisting of a research plan and preliminary results. The student will give a seminar and defend the originality and feasibility of the proposed thesis to the supervisory committee. The thesis proposal will normally be presented and defended within 3 semesters of the depth examination.

6.2.3. Thesis Defense

Regulations specifying the composition of the examining committee and the procedures for the final public defense of the thesis can be found in Sections 1.9 and 1.10 of the *Graduate General Regulations*. Ph.D. students are required to give a seminar; typically this will be on their thesis research and will be presented in the interval between distribution of the thesis to the committee and the defense.

School of Engineering Science

Summary of Graduate Curriculum Revisions

SGSC Reference: Mtg. of October 25, 1993
SCAP Reference: SCAP 93 - 37b

Changes to PhD Comprehensive Exams

SCHOOL OF ENGINEERING SCIENCE
SIMON FRASER UNIVERSITY
MEMO

To:	Dr Parveen Bawa, Associate Dean and Chair, FAS Grad Committee
From:	John Jones, Chair, SES Graduate Committee
Date:	23 July 1993
Subject:	Changes to Comprehensive Exams
cc:	Lou Hafer, Linda Harasim, Michael McGonigle, Glen Tibbits

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Here is a hardcopy version of the proposed calendar changes concerning the SES comprehensive exams. I will be in Texas on August 10, which would be our next meeting, so I would like to request that we meet at some alternative date, early enough to get the changes to Senate in time for the 94/95 calendar.

In two special meetings of the ENSC faculty, held on April 21 and May 26, the following changes to the calendar entry describing the PhD comprehensive exams were passed:

Current Calendar Entry:

Degree Requirements

Course Work

The minimum course requirement is 6 semester hours of graduate course credit beyond those taken for the Masters degree. No Special Topics or Directed Studies may be counted towards this requiremnt. Courses are selected in consultation with the senior supervisor. Some students may be required to supplement their graduate studies with undergraduate courses, or to take more than 6 semester hours of graduate course credit.

13.

Qualifying Examination

The student will take a qualifying examination at a time determined by his/her Supervisory Committee, normally between the 6th and 12th month from admission to the PhD program. The student must demonstrate a sophisticated understanding of material normally associated with undergraduate and first level graduate studies. Written examinations will be set in each of the following four subjects: communications, microelectronics, intelligent systems and computing, robotics and control. The material for these examinations will be determined by the departmental graduate committee. With the approval of the supervisor committee, students select two subject areas from the four mentioned above: one as a major, the other as a minor. The written examination in the major area is followed shortly by an oral examination. The possible outcomes of the qualifying examination are pass; marginal (student may be required to take more courses, and is permitted a second and final opportunity to take the full qualifying exam within 12 months); fail (the student withdraws from the PhD program.) The results are given for the full qualifying exam.

Proposed New Calendar Entry:

Degree Requirements

Course Work

The minimum course requirement is 18 semester hours of credit beyond those taken for the Masters degree. Six of these hours will be for prescribed courses in the option in which the student is enrolled; alternatives can be substituted with the approval of the student's supervisory committee. At most six credit hours can be for senior-level undergraduate courses. At most six credit hours can be for directed studies. At least six of the credit hours must be taken within Engineering Science.

Qualifying Examination

The student will take an oral qualifying examination at a time determined by his/her Supervisory Committee, normally between the 6th and 12th month from admission to the PhD program. The student must demonstrate a sophisticated understanding of material in his/her major area of research, at a level normally associated with undergraduate and first-year graduate studies. The possible outcomes of the qualifying examination are pass; marginal (student may be required to take more courses, and is permitted a second and final opportunity to take the qualifying exam within 12 months); fail (the student withdraws from the PhD program.)

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School of Kinesiology

Summary of Graduate Curriculum Revisions

SGSC Reference: Mtg. of October 25, 1993
SCAP Reference: SCAP 93 - 37c

New courses: KIN 807 - 3   Special Topics
                    KIN 808 - 3   Special Topics

SIMON FRASER UNIVERSITY

New Graduate Course Proposal Form

ENDAR INFORMATION:

Department: __SCHOOL OF KINESIOLOGY__   Course Number:__807__

Title: ___Special Topics___

Description: ___Special topics in areas not currently covered within the graduate___
___program offerings. The course may be offered as a lecture or a siminar course.___

Credit Hours: __3__   Vector: __3-0-0__   Prerequisite(s) if any: __None__

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: __4-8__   When will the course first be offered: __1993-3__

How often will the course be offered: __Whenever there is the need to offer__ more than
one special topic in any given semester.

JUSTIFICATION:

The proposed additional course numbers for Special Topics would enable the School,
in any given semester, to offer more than one identified Special Topic.

RESOURCES:

Which Faculty member will normally teach the course: _____

What are the budgetary implications for mounting the course: None that can be
identified

Are there sufficient Library resources (append details): _____

Appended: a)   Outline of the Course
            b)   An indication of the competence of the Faculty member to give the course
            c)   Library resources

Approved: Departmental Graduate Studies Committee: _____ Date: _20 July 93_

            Faculty Graduate Studies Committee: ___Parver Bawa___ Date: _Oct 8, 1993._

            Faculty: _Parver Bawa_   Date: _____

            Senate Graduate Studies Committee: _____ Date: _31 Oct/93_

            Senate: _____   Date: _____

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SIMON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: __SCHOOL OF KINESIOLOGY__   Course Number: __808__

Title: __Special Topics__

Description: __Special topics in areas not currently covered within the graduate__ __program offerings. The course may be offered as a lecture or a seminar course.__

Credit Hours: __3__   Vector: __3-0-0__   Prerequisite(s) if any: __None__

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: __4-8__   When will the course first be offered: __1993-3__
How often will the course be offered: __Whenever there is the need to offer more than__
__one Special Topic in any given semester.__

JUSTIFICATION:
__The proposed additional course numbers for Special Topics would enable the School,__
__in any given semester, to offer more than one identified Special Topic.__

RESOURCES:

Which Faculty member will normally teach the course: _____
What are the budgetary implications for mounting the course: __None that can be__
__identified__

Are there sufficient Library resources (append details): _____

Appended: a)   Outline of the Course
            b)   An indication of the competence of the Faculty member to give the course
            c)   Library resources

Approved: Departmental Graduate Studies Committee: _____ Date: _20 July 93_

            Faculty Graduate Studies Committee: _Parwen Bawa_ Date: _Oct. 8, 1993_

            Faculty: _Parwen Bawa_ Date: _____

            Senate Graduate Studies Committee: _____ Date: _31 Oct/93_

            Senate: _____ Date: _____

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