

S.05-21

SIMON FRASER UNIVERSITY
Senate Committee on University Priorities
Memorandum

TO: Senate

FROM: John Waterhouse
Chair, SCUP
Vice-President, Academic

RE: Revisions to M.Sc. program,
Kinesiology

DATE: January 21, 2005

At its January 12, 2005 meeting the Senate Committee on University Priorities (SCUP) recommended the following motion:

Motion

That Senate approve and recommend to the Board of Governors the proposal for Revisions to the M.Sc. program, Kinesiology, in the Faculty of Applied Sciences.

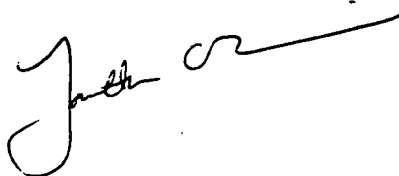
encl.

c: J. Driver
J. Dickinson
G. Nicholls

SIMON FRASER UNIVERSITY
DEAN OF GRADUATE STUDIES
MEMORANDUM

TO: SCUP
FROM: Jonathan Driver, Dean of Graduate Studies
SUBJECT: Revisions to M.Sc. program, Kinesiology
DATE: 16th November 2004
cc:

At its meeting of November 8th 2004, SGSC approved changes to the M.Sc. program in the School of Kinesiology. As these changes include a new coursework based M.Sc. option, I would consider them as major program changes, and I am therefore forwarding them to SCUP for consideration.

A handwritten signature in black ink, appearing to read "Jonathan Driver", is written in a cursive style. The signature is positioned below the main text of the memorandum.

SCHOOL OF KINESIOLOGY
REVISIONS TO THE GRADUATE PROGRAM

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* Detailed new course proposal information is available for review by contacting Bobbie Grant, Senate Assistant, 604 291-3168 or email bgrant@sfu.ca

Summary of New Courses:

KIN 801-3 Seminar on Research in Kinesiology
KIN 802-3 Statistical Applications In Kinesiology Research
KIN 804-3 Project
KIN 835-3 Neuromuscular Disorders

1. RATIONALE FOR REVISIONS TO THE CURRENT M.Sc. PROGRAM

Over the last decade there has been a reduction in the demand for the M.Sc. in Kinesiology. The numbers of applicants to the M.Sc. program has declined and the numbers of registered graduate students has also shown some reduction. This has been a cause of concern to the School and the Graduate Program Committee. In part the solution to the problem has been identified as increases in the advertising of the program as well as in the quality of the web based information available to potential students. However, it is also apparent that there are structural problems with the graduate program which need to be addressed. Following considerable discussion within the Graduate Program Committee and the School of Kinesiology the structure of the graduate program was provided as a focus question for the External Review Committee which provided a report to the School of Kinesiology in the Spring semester 2004. The current revisions to the Masters program are a result of discussions following the report of the External Review Committee. The revisions include an increase to the required number of courses required for the M.Sc. Two of these courses are now required courses for all students. They consist of a course in statistics and a seminar course which reviews the nature of the breadth of research in Kinesiology. Both of these courses were recommended by the External Review Committee. It was considered by that committee and subsequently by the School that although the majority of supervisors required graduate students to take a statistics course it should be made mandatory. Similarly with a diverse student population having a multidisciplinary educational background, it was thought essential that some overview course be presented and required of students in order that graduate students experience the breadth of Kinesiology at SFU. The seminar course is designed to provide each research laboratory with the opportunity to explain and describe the approaches to the study of human structure and function typical within that academic setting. Additionally students will be required to take at least 2 courses from a list of 8 core courses identified by the School and additional course work for a total of 18 credits. The graduate program committee and the School of Kinesiology regarded this total as an appropriate balance between establishing some breadth of experience in Kinesiology and allowing the pursuit of depth within a particular sub discipline.

2. RATIONALE FOR DEVELOPMENT OF THE COURSEWORK BASED M.Sc. PROGRAM

The School of Kinesiology initiated discussion regarding the possibility of a non-thesis masters degree in 1996. This proposal represents the fruition therefore of significant on-going discussion. This proposal has the approval of the Graduate Program Committee and the School of Kinesiology and its initiation was recommended by the External Review Committee in March 2004. The non-thesis option, requiring specific course work, provides students with an option for advanced training in Kinesiology for those who have no intention of pursuing a Ph.D. degree or a career in research. Such a qualification would be attractive to those who are currently in professional situations for which advanced study would be beneficial to career progress. Preliminary discussions with a number of organizations have indicated interest among such groups. In particular, the opinion has been sought from the BC Kinesiology Association as well as the Canadian Kinesiology Alliance and the Chiropractic Association of Canada. These organizations have expressed the opinion that a M.Sc. degree by coursework would be

attractive to their membership. In the latter case, it is feasible that the M.Sc. degree may be taken as a component to the Chiropractic Association's Fellowship in Sport Sciences. Negotiations for this are underway. It is also likely that such a degree would be attractive to those in the physical and occupational therapy fields. The non-thesis option requiring specified coursework will also provide students with a predictable time course for their degree.

With a known cohort of graduate students enrolled in the non-thesis option the ability to plan course offerings in the graduate program will be enhanced. A disadvantage of the low enrolment in the current masters program has been the frequent cancellation of courses and therefore uncertainty with respect to semesters necessary for completion. Establishment of a graduate program by coursework will enable a guarantee of course offerings for the students not only of that program but also the thesis option students and Ph.D. students requiring classroom training in sub disciplines.

3. NEW CALENDAR ENTRY

NOTE:

- 1) All other aspects of the program will be identical to the information in the current Calendar.
- 2) The vector for all courses except KIN 802 is 3-0-0 indicating 3 hours of contact time (either lecture or seminar or a combination of these). KIN 802 is the Statistics course and this has a 3 hour lecture component and a 1 hour laboratory and this is reflected in the 3-1-0 vector.
- 3) MSc (Coursework) students are required to complete a project (KIN 804). A faculty member will act as supervisor. The project will be evaluated in accordance with university guidelines.

MSc PROGRAM (THESIS)

The MSc Thesis Program requires a minimum of 18 credit hours of graduate courses and a thesis. If a supervisory committee deems that preparation is inadequate, more than this minimum may be required. At least 12 of these credit hours must be from the graduate course offerings in Kinesiology.

- All students must take Kin 801 and 802
- Students must also take four additional courses at least two of which must be from KIN 810, 812, 821, 825, 840, 850, 861, 870.

Remaining credits may be selected from any KIN grad courses, and any other graduate courses at SFU or other universities with prior approval of the GPC.

Courses will be chosen by the candidate's supervisory committee after consultation with the candidate. For further information and regulations see "Graduate General Regulations."

THESIS

The School encourages early submission of the Thesis Proposal which is circulated to faculty and resident graduate students and formally presented for discussion at an open

forum. A formal defense of the completed thesis is made to the Examination Committee at an open forum. The Thesis Proposal must precede the defense by at least four months. For further information and regulations see "Graduate General Regulations."

TIME REQUIRED FOR DEGREE

Degree requirements can normally be completed in six semesters.

MSc PROGRAM (COURSEWORK)

The MSc Program by Coursework requires the completion of 30 credit hours of Graduate courses in the School of Kinesiology.

- All students are required to take KIN 801 and 802, as well as three of 810, 812, 821, 825, 840, 850, 861, 870.
- All students must take four electives, chosen from any KIN grad courses, and any other graduate courses at SFU or other universities with prior approval of the GPC.
- All students must complete a one-semester directed study project KIN 804.

TIME REQUIRED FOR THE DEGREE

It is feasible to complete the MSc Coursework in one calendar year of full-time study. However, it is anticipated that normally six semesters will be required for the completion of this degree. The program can be undertaken by students who are also employed.

4. NEW COURSE PROPOSALS KIN 801, KIN 802, KIN 804, KIN 835(attached)

5. REVISED COURSE DESCRIPTIONS

Below are listed those courses which form part of the new Graduate Program in Kinesiology in which the existing course number has been maintained. The area of instruction is identical to that previously used, however, the title has been changed and a new course description has been developed which better reflects the course as it is currently taught.

(New description and title in bold. Former title and description follows)

KIN 810-3 INTEGRATIVE MUSCLE PHYSIOLOGY
Recent developments in the application of molecular biology, biochemistry and cell biology to study muscle function during exercise. Topics will include muscle-specific gene expression, energy metabolism and its control, biochemical plasticity of muscle, hypertrophy and signal transduction.

KIN 810-3 SEMINAR IN EXERCISE BIOCHEMISTRY
A detailed study of current topics in exercise metabolism including endocrine control of exercise metabolism, protein turnover in muscle, metabolic fatigue mechanisms in muscle, and cellular adaptation to training. Prerequisite: KIN 407, 410 and 430, or equivalent.

KIN 821-3 ENVIRONMENTAL AND EXERCISE PHYSIOLOGY

Review course covering aspects of cardiovascular and respiratory physiology and/or discussion of environmental physiological topics such as thermoregulation.

KIN 821-3 ADVANCED CARDIO-RESPIRATORY PHYSIOLOGY

Detailed review of the current topics in cardio-vascular and respiratory physiology in health and disease. Prerequisite: KIN 305, 306 and 407.

KIN 825-3 MOTOR LEARNING AND CONTROL

Selected aspects of research and theory in the behavioural neurosciences. The focus will be on delineating the problems of developing viable theories of motor learning and action, and on seeking solutions to those problems. The course also includes sections on information processing and co-ordination of complex movement.

KIN 825-3 SEMINAR – LEARNING AND MOTOR DEVELOPMENT

Study selected topics from skill learning and motor performance.

KIN 840-3 HUMAN BIOMECHANICS

Review the theoretical basis and tools of biomechanics and to examine how biomechanics research can contribute to our understanding of the cause, prevention and treatment of disease and injury and how biomechanics relates to neural control of movement. Topics will include static equilibrium, equations of motion, stability, inverse and forward dynamics, vibration and impact, mechanical properties of tissues, muscle models, feedback and feedforward control, impedance control and internal dynamics models.

KIN 840-3 ADAPTIVE CONTROL OF BODY MECHANICS

Adaptive control of body mechanics by modifying voluntary muscle activity and reflex feedback will be examined in the context of interaction between humans and their mechanical environment. Experimental approaches and analysis methods will be presented in the laboratory. Prerequisite: KIN 416.

KIN 850-3 CONTROL SYSTEMS IN HEALTH AND DISEASE

Biomolecular interactions exert or initiate substantive control thereby integrating cellular and physiological function. Defects in these biomolecular interactions frequently lead to altered control systems or responses of these systems in various disease states. Topics may include mechanisms of hormone action, cellular transport and signaling, immunoregulation, nutrition and metabolic control.

KIN 850-3 CELLULAR AND METABOLIC CONTROL SYSTEMS

Molecular mechanisms of cellular control, and their relationship to the integration of metabolism and physiological function. The course will cover mechanisms of hormone action, immunoregulation, carcinogenesis, and the principles of metabolic control.

KIN 861-3 NEUROSCIENCE

Topics include the physiology of walking, cerebral and cerebella cortical physiology, the generation of repetitive neural discharges, as well as hormonal control of neuron

behaviour. The emphasis will be a broad introduction to neuroscience, as well as some neuroscience research methods and applications.

KIN 861-3 CONTROL MECHANISMS IN HUMAN PHYSIOLOGY

An intensive study of human neuro-muscular control and neuro-endocrine control phenomena. Prerequisite: KIN 305, 306 and 407.

KIN 870-3 MODELING OF PHYSIOLOGICAL SYSTEMS

Introduction to the basic principles of mathematical modeling of physiological systems and mathematical techniques that are commonly used in modeling. The course will provide students with an opportunity to learn and apply some of these techniques and to develop an appreciation for the utility of mathematical models, as well as limitations and potential pitfalls.

KIN 870-3 HUMAN SYSTEMS MODELLING

Systems analysis will be applied to a variety of physiological problems. Quantitative tools will be developed and computer simulation introduced.

Course to be deleted:

KIN 875-3 HISTO-PHYSIOLOGY

Histo-physiology, biochemical cytology and fine structural studies of mammalian tissue with emphasis on human organ system. The course will comprise seminars and research projects where cytochemical and fine structural techniques can be adopted to investigate the project. Prerequisite: KIN 336 or equivalent.

Rationale: The School no longer has any faculty member researching in this area. The course has not been offered for some years.

Change of description only:

KIN 805-3 DIRECTED STUDIES

An opportunity to develop with a faculty supervisor considerable depth of knowledge and expertise in a focused area of study. Normally, Kin 805-3 may not be taken for credit more than once and may not be taken for credit by M.Sc. (Coursework) students.

KIN 805-3 DIRECTED STUDIES

Seminar opportunity to develop under a faculty supervisor, special interest in considerable depth. Normally, KIN 805 may be taken not more than once for credit toward a degree.

6. ADDITIONAL INFORMATION

Planning for the offering of the new M.Sc. program and M.Sc. (Coursework) has proceeded on the assumption that initial offering may occur in 2005-3. On that basis the schedule below shows the first two-year cycle of offerings.

**PROPOSED SCHEDULING
FOR
COURSEWORK MASTERS**

	05-3	06-1	06-2	06-3	07-1	07-2
REQUIRED	801 SEM	802 STAT		801 SEM	802 STAT	
	804	804	804	804	804	804
CORE	825	840		821	870	
CORE	812	861		810	850	
ELEC	851	890	807	885	865	826
ELEC	806		880	835		808

Note that it is anticipated that core courses will be team taught. Identified faculty will be coordinators.

Core courses will be taught every two years. Elective courses will be rotated. Offerings will be guaranteed, i.e., there will be no minimum enrolment.