# SIMON FRASER UNIVERSITY

## MEMORANDUM

То	SENATE	From	SENATE GRADUATE STUDIES COMMITTEE
Subject	CHANGES IN KINESIOLOGY GRADUATE COURSES AND MASTERS PROGRAM	Date	APRIL 16, 1974

MOTION:

"That Senate approve, as set forth in S.74-54B and summarized in S.74-54A, the changes in the Kinesiology graduate program."

#### SUMMARY OF CHANGES

1. Change in regulations covering credits and courses for the M.Sc. (Kinesiology) degree.

#### 2. (a) Retain

Kines.805-3 - Special Topics, but add description
Kines.898 - M.Sc.(Kinesiology) Thesis

#### (b) Discontinue

Kines.803-3 - Seminar Kinesiology I

Kines.806-3 - Anatomical, Physiological and Mechanical Aspects

Kines.807-3 - Psycho-Social, Cultural and Development Aspects

Kines.811-3 - Special Topics - Anatomy

Kines.812-3 - Special Topics - Anthropometry

Kines.813-3 - Special Topics - Biomechanics

Kines.814-3 - Special Topics - Cultural Aspects

Kines.815-3 - Special Topics - Exercise Biochemistry

Kines.816-3 - Special Topics - Exercise Physiology

Kines.817-3 - Special Topics - Learning and Motor Performance

Kines.818-3 - Special Topics - Sports Medicine

#### and Substitute

Kines.820-5 - Human Physiological Systems I
Kines.825-3 - Seminar - Learning and Motor Development
Kines.830-3 - Functional Human Anatomy
Kines.835-3 - Kinanthropometry and Human Development
Kines.840-3 - Gross Body Mechanics
Kines.850-3 - Selected Topics in Mammalian Bioenergetics
Kines.860-5 - Human Physiological Systems II
Kines.865-3 - Neural Control of Movement
Kines.870-3 - Human Systems Modelling
Kines.875-3 - Histo-physiology
Kines.880-3 - Internal Biomechanics
Kines.885-3 - Seminar on Man-Machine Systems

Kines.890-3 - Engineering Aspects of Human Function

S.74-54B

AS AMENDED AND APPROVED BY SGSC FEB.12, 1973 AND APR.8, 1974. THE ACADEMIC PLANNING COMMITTEE HAS RULED THAT THESE CHANGES DO NOT CONSTITUTE THE FORMATION OF A NEW PROGRAM.

KINESIOLOGY GRADUATE COURSE PROPOSAL

#### RATIONALE

The revisions to the graduate program which are proposed are designed so that a student can specialize in an area of interest more than is possible under the present system, yet which will provide a program of sufficient flexibility to allow in depth studies in adjacent areas of interest. This proposal therefore, represents a more structured approach in terms of subject matter, but allows more freedom for the graduate student in planning his or her education.

The graduate offerings have been expanded slightly to take advantage of special competencies of the faculty in Kinesiology. Up to the present time, most of the graduate students in the department have taken the human physiology course offered by the Faculty of Medicine at U.B.C. This is no longer possible, due to the increased intake of Medical students. However, the planned Physiology courses, if implemented, will replace this and will result in considerable convenience to students with consequent benefits to the University through the retention of these students on campus. Otherwise, the contents of the proposed courses represents material currently taught under the special topics courses now available. The additional courses proposed will not cause an increase in the total number of courses offered over a given period of time, since, in general, a special topics course that would otherwise be taught in that period, would not be offered.

A significant increase in our graduate student enrollment has already resulted in an increase in the frequency with which existing courses are offered. The proposed repacking of content may in fact decrease the total course offerings by enabling us to offer formally a specified course content at a given time. Graduate students can thus plan in advance to receive certain material together in a group and classes will be larger, but will be taught less frequently. At the same time, students will receive recognition on their transcripts for having gained competence in the areas specified explicitly in the course titles.

#### PRIORITIES

The human physiology courses represent the most urgent of the changes, and should substantial delay in approving this proposal seem likely, we request as an interim measure, the following change in the graduate calendar:

#### Substitute:

Study Program and Courses

The minimum requirements for M.Sc. (Kinesiology) are 18 semester hours of graduate courses and a thesis. At least 9 credit hours will be selected from the graduate course offerings in Kinesiology. These and courses in ancilliary areas will be chosen in consultation with the candidate's supervisory committee. For further information and regulations, refer to General Regulations section, pages XX to XX.

\* Insert For:

Study Program and Courses

The minimum requirements for M.Sc. (Kinesiology) degree are

18 semester hours of graduate courses and a thesis.

Two courses offered by the Department are required:

Kines. 806-3 Anatomical, Physiological and Mechanical Aspects.

Kines. 807-3 Psycho-Social, Cultural and Development Aspects.

Under the direction of the candidate's supervising committe, the balance of the 18 course hour requirement may be made up of:

Kines. 803-3 Seminar Kinesiology (when it is offered)

and one of:

Kines. 805-3 Special Topics

or Kines. 811-3 to 818-3

and any graduate level course offered by other departments of the University.

For further information and regulations, refer to General Regulations section, pages XX to XX.

Note: If the subject matter of a listed course has been previously completed with graduate incidit the course may not be taken again for credit

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c) Library resources

Date:

Senate: \_\_\_\_\_Date:\_\_\_\_\_

# Kines. 820-5

Human Physiological Systems I

- 1. Together with Kines 866-5, this will comprise a two semester course equivalent in depth and content to a medical physiology course.
- 2. Blood, haemostatics and haemodynamics, lymphatics and body fluid compartments. Patholgical aspects.
- 3. Principles of cardiovascular and respiratory mechanics. Clinical evaluation of function, and the nature of disease processes.

	•	•	
1.	CALENDAR INFO	PRMATION:	
4	epartment:	KINESIOLOGY	Course Number: 825-3
		gi Tear	rning and Motor Development
	Title:	Seminal - Lear	s will learning including the development
	Description:	Study of selec	cted topics from skill learning including the development
	of ski	lls in children s	and changes in skill due to aging.
	Condit Hours	·	Vector: Prerequisite(s) if any:
	Credit Hours	**	
2.	ENROLLMENT	AND SCHEDULING:	
	Entimated Fi	prollment: 5-10	When will the course first be offered: When approved
	Estimated b		e offered: Annually subject to demand
	How often w	ill the course be	e offereu
3.	JUSTIFICATI	ON:	
	See g	eneral rationale	
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	Which Facu	lty member will r	normally teach the course: J. Montgomery, T. Calvert
	What are t	he budgetary imp]	lications of mounting the course: No additional expense,
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	Are there	sufficient Libra	ary resources (append details): Yes, see librarians report
	Appended:	b) An indicati	ion of the competence of the factory
		c) Library res	cources
			Page 1
1	Approved:	Departmental Gr	raduate Studies Committee:Date:
1	. •	Paculty Graduat	te Studies Committee:Date:
			Date:
•			Date:
• ;		Senate Graduate	e Studies Committee:
1	•		Date:

Senate:\_

# Kinesiology 825-3

Seminar - Learning and Motor Development

### Topics of Study:

Seminar study of skill learning and human performance including:

- 1) Skills in civilized man
- 2) Learning and Skilled Performance
- 3) Component Processes and Performance
- 4) Fatigue
- 5) Measurement of skill
- 6) Human Capacity
- 7) Ergonomics

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	•	· •	New Graduate Course Proposal Form	Form GS.8
	CALENDAR INFORM	iation:		
	Department:	Kinesiology	Course Nu	mber: 83 <u>0-3</u>
	Title:	Functional h	luman Anatomy	
	Description:	A detailed s	study of how the musculo-skeletal system	functions normally
	and how a	and whu norma	l function is disturbed by trauma and di	isease
	Credit Hours:	100 100 100 100 100 100 100 100 100 100	Vector:Prerequis	site(s) if any:
	ENROLLMENT AND	SCHEDULING:		
	Estimated Enro	11ment: <u>5-10</u>	When will the course first be off	ered: When approved
	How often will	the course h	be offered: <u>Annually, subject to demand</u>	
١.	JUSTIFICATION:			
	See_gene	ral rationale		
4.	RESOURCES:			
			normally teach the course: G. Bhakthan.	
	What are the	budgetary im	olications of mounting the course: No add	ditional expense,

Which	h Faculty member will normally teach the cours	e: <u>G. Bhakthan. A. Chapman</u>
What	are the budgetary implications of mounting th	ne course: No additional expense.
see	rationale.	
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Are there sufficient Library resources (append details): yes, see librarians report

- 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:
	Paculty Graduate Studies Committee:	Date:
	Faculty:	Date:
	Senate Graduate Studies Committee:	Date:
•	Conches	Date:

#### Kines. 830-3

Functional Human Anatomy

- 1. The functional units of the musculo skeletal system and their associated structures.
- 2. Adpatations of the musculo-skeletal system to compensate a disability due to injury.
- 3. Development and classification of joints
- Metabolic disorders of muscle and bone and inflamatory diseases of joints.

CALENDAR INF	ORMATION:	
Department:	Kinesiologu	Course Number: 835-3
utle: Ki	n Anthropometry and Human Development	
escription:	To provide detailed insights into strategeme, composition, proportion, maturation, gross al growth, exercise, performance and nutrition	ns and tactics in studying human sfunction as related to normal
Credit Hours	s:	Prerequisite(s) if any:
ENROLLMENT	AND SCHEDULING:	
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	Faculty Graduate Studies Committee:	Date:
	Faculty:	D. 4.4.4
	Senate Graduate Studies Committee:	•
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Senate:\_\_

#### Kines. 835-3

Kinanthropometry and human development.

- 1. Physical anthropology, anthropometry, kinanthropometry. Academic disciplines and commercial concern.
- 2. Design of cross sectional and longitudinal multi-variable studies
- 3. Theory of error applied & kinanthropometric technique.
- 4. Selected kinanthropometric techniques.
- 5. Human dimensional analysis.
- Physique rating systems.
- Maturation indicies.

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## Form GS.8

# New Graduate Course Proposal Form CALENDAR INFORMATION:

	KINESIOLOGY Course Number: \$40-3.
itle:	Gross Bodu Mechanics
	or the same and make an analysis of the same and make an
escription	To study in dept, the selected aspects of the application and relevence of mechanics to human gross bodily movement. Emphasis will be in terms of quant
Newtonian I	rement of forces produced in human movement and their accuracy in both predic
redit Hour	s:Prerequisite(s) if any:
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NROLLMENT	AND SCHEDULING:
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low often w	ill the course be offered: Annually, subject to demand
JUSTIFICATI	on:
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DESCUIDCES.	
	ty member will normally teach the course: A. Chapman
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### Kines. 840-3

#### Gross Body Mechanics

- 1. The muscles as generators of impulse including the modification and intergration of muscular force.
- The relationship between (linear and angular) forces transmitted to the floor and subsequent movements of the body.
- 3. Measurements of both impulse and movements of segments of the body and their applications to prediction of maximal and submaximal performance and modification of techniques.

Date:

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CVTENDAR IN	FORMATION:					
	KINESIOLOG			Course N	  umber:_ 8 <b>5</b> 0-3	3
Title:	Selected I	<u>'opics in Mamma</u>	alian Bioenero	etics		<del></del>
Description	: As in titl	e				
				Prerequi		ny:
Credit Hou	:s: <u>3</u>	¥ C				
ENROLLMENT	AND SCHEDULIN	G:		<i>‡</i>		
			will the cour	se first be of	fered: When a	pproved
How often t	will the cours	e be offered:_	Annually, sub	ject to demand		
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Senate:

Kines. 850-37

Selected Topics in Mammalian Bioenergetics

# Topics of Study:

1. A study in detail of selected aspects of the energetics of human function, from the thermodynamics of digestive absorbtion or cardiovascular function to the energy metabolism of muscle or brain. Treatment will be a series of seminars covering selected areas in depth, rather than an attempt at a comprehensive overview.

1.	CALENDAR	INFORMATION:

	•
KINESIOLOGY	Course Number: 860-5
Human Physiological Systems II	
Study of the integrative and reconnais on the functioning of the e	rulatory mechanisms of the human body, endocrine and nervous systems and the
s:Vector:_	Prerequisite(s) if any:
AND SCHEDULING:	
$\frac{5-10}{2}$ When will t	he course first be offered: When approved
ill the course be offered: Annual.	ly, subject to demand
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	T. Calvert
e budgetary implications of moun	ring the course: No additional expense
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a) Outline of the Course	nce of the Faculty member to give the course
Departmental Graduate Studies Co	mmittee:Date:
·	
Senate Graduate Studies Commercial	Date:
	whasis on the functioning of the ens between them.  s:

#### Kines. 860-5

Human Physiological Systems II

- 1. Positive and negative feedback in homeostatic mechanisms and the role of the endocrine system and the central nervous system.
- 2. Principals of reflex action and controls in the central nervous system.
- 3. Integrative mechanisms in the endocrine system, the autonomic nervous system, the hypothalamon/hypophysial systems, the endocrine system, and related neuroendocrine interactions.

## . CALENDAR INFORMATION:

epartment:		Course Numbers Ode 2
	Kinesiology	Course Number: 865-3
itle:	Neural Control of Movement	
escription information will be an	: The elaboration of cubernetic processing, statistical decision emphasis on the functional factor	models for skill performance which includes on making and control components. There exist in the central nervous system which limit  Prerequisite(s) if any:
redit Hour	S:	
	AND SCHEDULING:	
Estimated E	nrollment: 5 - 10 When will	the course first be offered: When approved
low often w	ill the course be offered: Annua	lly, subject to demand
JUSTIFICATI	ON:	
See genera	l rationale.	
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RESOURCES:		
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#### Kines. 865-3

#### Neural Control of Movement

- Attention and physiological limits to information processing.
- Information queueing and and sampling.
- 3. Statistical basis for decisions.
- 4. Closed loop and open loop control of motor output.
- 5. Automation and central programming.

# Form GS.8

# New Graduate Course Proposal Form

CALENDAR IN	IFORMATION:	
Department	KINESIOLOGY	Course Number: 870-3 =
Title:	Human Systems Modelling	
	: Systems analysis will be applied to a	·
Quantitati	ve tools will be developed and computer	simulation will be introduced.
	rs: 3 Vector:	•
ENROLLMENT	AND SCHEDULING:	
	Enrollment: 5 - 10 When will the cou	urse first be offered: When approved
	will the course be offered: Annually, sul	1
JUSTIFICAT	ION:	
See genera	l rationale	·
000 90020		
RESOURCES:		
	lty member will normally teach the cour	Se: T Calvert
	•	•
	he budgetary implications of mounting the	me course. No additional expense
see ration	iale	
Are there	sufficient Library resources (append de	tails): Yes, see librarian's report
Appended:	<ul><li>a) Outline of the Course</li><li>b) An indication of the competence of</li><li>c) Library resources</li></ul>	the Faculty member to give the course
Approved:	Departmental Graduate Studies Committe	e:Date:
• -	Faculty Graduate Studies Committee:	Date:
	Paculty:	
	Senate Graduate Studies Committee:	Date:

## Kines. 870-3

Human Systems Modelling

- 1. An introduction to the theory of feedback control systems. Analysis techniques for the frequency and time domains will be developed.
- Analog and degital techniques for computer simulation.
- 3. The application of (1) and (2) to a variety of physiological systems, e.g. respiratory, cardio-vascular, movement and posture control.

CALERDAR DE	Kinesiology	Course Number: 875-3
	USTO-paystorogy	
with a	Histophysiologg, biochemical cytology and fine a emphasis on human organ system. The course will cytochemical and fine structural techniques can	comprise small research projects
Credit Hour	vector: 1-0-6	Provoquisito(s) if any: <u>K. 336</u> or equivale
	DIS COURSE INC.	
	Am scheduling: .	at he offered when annound
	Involuent: 5-10 When will the course fir	
How often w	gill the course be offered: Annually, subject	to demand
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JUSTIFICATI	10N:	
See ge	eneral rationale	
RESOURCES:		
Which Facu	ilty member will normally teach the course: N	.M.G. Bhakthan
What are t	he budgetary implications of mounting the cours	se: No additional expense
•	rationale	·
566 1	actorate	
Are there	sufficient Library resources (append details):	Yes, see librarians report
Appended:	<ul> <li>a) Outline of the Course</li> <li>b) An indication of the competence of the Fa</li> <li>c) Library resources</li> </ul>	culty member to give the course.
Approved:	Departmental Graduate Studies Committee:	. Date:
	Faculty Graduate Studies Committee:	
	Faculty:	Date:
	Senate Craduate Studies Committee:	
•	PLY THIS PARTY THE PARTY TO SERVICE THE PARTY	W

### Kinesiology 875-3

#### Histo-physiology

- 1. Histophysiology, biochemical cytology and fine structural studies of mammalian tissues.
- 2. Emphasis on human organ system
- 3. Research projects where cytochemical and fine structural techniques can be adopted to investigate the projects.

1.	CALENDAR	INFORMATION:	
		•	

Which Faculty member will normally teach the course: A. Chapman  What are the budgetary implications of mounting the course: No additional expense  see rationale  Are there sufficient Library resources (append details): Yes, see librarian's report  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:	Department:	KINESIOLOGY	Course Number: 880-3
Description: To relate the laws of machanics to the function and structure of tissues and systems of the human body. Emphasis will be in relation to internal events occurring in normal and abnormal human states.  Credit Hours: 3	Title:	nternal Biomechanics.	
ENROLLMENT AND SCHEDULING:  Estimated Enrollment: 5 - 10	and system	To relate the laws of mechanics to to of the human body. Emphasis will be i	he function and structure of tissue n relation to internal events
Estimated Enrollment: 5 - 10 When will the course first be offered: when approved  How often will the course be offered: Annually, subject to demand  JUSTIFICATION:  See general rationale.  RESOURCES: Which Faculty member will normally teach the course: A. Chapman  What are the budgetary implications of mounting the course: No additional expense  see rationale  Are there sufficient Library resources (append details): Yes, see librarian's report  Appended: a) Outline of the Course b) An indication of the competence of the Faculty member to give the cource; Library resources  Approved: Departmental Graduate Studies Committee: Date:  Faculty: Date:  Faculty: Date:  Senate Graduate Studies Committee: Date:  Date: Date: Date:	Credit Hour	s: 3 Vector: 2-1-3	Prerequisite(s) if any: <u>K</u> .
Estimated Enrollment: 5 - 10 When will the course first be offered: when approved  How often will the course be offered: Annually, subject to demand  JUSTIFICATION:  See general rationale.  RESOURCES: Which Faculty member will normally teach the course: A. Chapman  What are the budgetary implications of mounting the course: No additional expense  see rationale  Are there sufficient Library resources (append details): Yes, see librarian's report  Appended: a) Outline of the Course b) An indication of the competence of the Faculty member to give the cource; Library resources  Approved: Departmental Graduate Studies Committee: Date:  Faculty: Date:  Faculty: Date:  Senate Graduate Studies Committee: Date:  Date: Date: Date:			
How often will the course be offered: Annually, subject to demand  JUSTIFICATION:  See general rationale.  RESOURCES: Which Faculty member will normally teach the course: A. Chapman  What are the budgetary implications of mounting the course: No additional expense  see rationale  Are there sufficient Library resources (append details): Yes, see librarian's report  Appended: a) Outline of the Course b) An indication of the competence of the Faculty member to give the cource; Library resources  Approved: Departmental Graduate Studies Committee: Date:  Faculty Graduate Studies Committee: Date:  Faculty: Date:  Senate Graduate Studies Committee: Date:  Date: Date:	ENROLLMENT	AND SCHEDULING:	
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What are the budgetary implications of mounting the course: No additional expense  see rationale  Are there sufficient Library resources (append details): Yes, see librarian's report  Appended: a) Outline of the Course	RESOURCES:		
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Senate Graduate Studies Committee:	Approved:		
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# Kines. 880-3

#### Internal Biomechanics

- 1. The mechanics of muscular contraction as applied to forces induced in joints joint surfaces, tendons, ligaments, etc.) hydrodynamics of synovial fluid.
- 2. The nature and consequences of internal stresses imposed upon structures by external forces.
- 3. The effects upon 1 and 2 of exercise and therapy, and the modifications occurring in 1 and 2 as a result of abnormal states.
- The design of prostheses in relation to the mechanical modelling of internal events.

:	•	New Graduate Course Pro	posal Form	Form GS.8
1.	CALENDAR INFORMATION:			
	Department: KINESIOLO	OGY	Course Numbe	er:885-3
	Title: Seminar on Man-l	Machine Systems.		
	Description: A study of	the principles involved in i	ntegrating human c	Capabilities into
	complex machine systems			
	Credit Hours: 3	Vector:	Prerequisite	e(s) if any:
2.	ENROLLMENT AND SCHEDULIN	G:		
		When will the cours	e first be offered	When approved
		se be offered: <u>Annually, subje</u>		
3.	JUSTIFICATION:			
	See general rationale.			
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4.	RESOURCES:	11	Team:	Davison Montgomeru.
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`,	Approved: Departmental	Graduate Studies Committee:		Date:
		luate Studies Committee:		Date:
	Faculty:			Date:

Senate Graduate Studies Committee:

Senate:

\_\_\_Date:\_\_\_\_\_

Date:

# Kines. 885-3

Seminar on Man-Machine Systems.

- The definition of human capabilities for sensory information processing, control and energy utilization.
- The study of elements at the interface between man and machine displays, control devices; the mechanical definition of tasks and the design of working environments.
- The integration of man in complex systems.

# CALERDAR DEPOSITATION:

expartment: KINESIOLOGY	Course Number: 890-3
Title: Engineering Aspects of Human Function	name of the state
Description: The application of engineering principles to	the study of normal and
abnormal human function.	•
Credit Hours: 3 Vector:	Prerequisite(s) if any:
ENROLLMENT AND SCHEDULING: .	
Estimated Enrollment: 5 - 10 When will the course fi	rst be offered: When approved
How often will the course be offered:	•
To strengthen the department course offerings in the area mechanical aspects of Kinesiology, and to give students a environmental problems of abnormal human function.  RESOURCES: Which Faculty member will normally teach the course: What are the budgetary implications of mounting the course	n insight into clinical and
	se: Pleparación di course
material and teaching aids	
Are there sufficient Library resources (append details):	
Appended: a) Outline of the Course b) An indication of the competence of the Fa c) Library resources	
Approved: Departmental Graduate Studies Committee:	· Date:
Faculty Graduate Studies Committee:	Date:
Faculty:	Date:
Scrate Graduate Studies Committee:	
Compatible	Date:

#### Kines. 890-3

Engineering Aspects of Human Function

#### Topics of Study:

- 1. Bio-Engineering analysis of locomotion: three dimensional analysis of dynamic force systems; forces transmitted by joints, muscles and ligaments; power requirements of normal activity; problems in abnormal human function.
- Mechanics of the spine.
- 3. Lubrication of load bearing joints
- 4. Dynamic characteristics of the human body.
- 5. Clinical and biomechanical aspects of current prosthetic practise: function of external limb prostheses and orthopaedic implants; problems in prosthetic design.
- 6. Cardio-respiratory function: mechanics of lung function; dynamics of respiratory gas flow; hemodynamics; function and design of artificial organs.

#### Library Resources:

There are a number of books available at present in the library on:

Bio Engineering - various aspects Biomechanics and Kinesiology Cardio-Respiratory function

Estimate purchase of further 12 books approximately for course.

#### Journals:

Library holds:

Bone and Joint Surgery
Journal of Biomechanics
BioMedical Engineering
plus 1 or 2 ohters in general area.

### Kines. 890-3

Engineering Aspects of Human Function

#### Teaching Resources:

Replacement staff member: background in Engineering and Physiology/Medicine

(Plus: Cooperation from U.B.C. Faculty and Hospitals)