

S.88-77

SIMON FRASER UNIVERSITY

MEMORANDUM

TO: Senate

FROM: J.W.G. Ivany
Chair, SCAP

SUBJECT: New Graduate Course
- KIN 812-3

DATE: Nov. 15, 1988

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

Motion: that Senate approve and recommend approval to the Board of Governors as set forth in S.88-77 the proposed new graduate course

KIN 812-3 Molecular and Cellular Cardiology

New Graduate Course Proposal FormCALENDAR INFORMATION:Department: Kinesiology Course Number: KIN 812Title: Molecular and Cellular CardiologyDescription: This course involves biochemical and biophysical analyses of cardiac function. Topics for discussion include excitation, contraction, E-C coupling and the regulation of pH_i .Credit Hours: 3 Vector: _____ Prerequisite(s) if any: _____Introductory biochemistry and biophysicsENROLLMENT AND SCHEDULING:Estimated Enrollment: 5-10 When will the course first be offered: Fall '87How often will the course be offered: Once every two yearsJUSTIFICATION:

There is no such course offered in this department or any other department on campus. This course has been offered several times as KIN 806 and has had wide student appeal.

RESOURCES:Which Faculty member will normally teach the course: G. F. TibbitsWhat are the budgetary implications of mounting the course: noneAre there sufficient Library resources (append details): Yes

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: MU Savage Date: 12 Jan '88Faculty Graduate Studies Committee: MU Savage Date: 12 Jan '88Faculty: MU Savage Date: 1 April '88Senate Graduate Studies Committee: B.D. Clay Date: 30 Mar '88

Senate: _____ Date: _____

MOLECULAR & CELLULAR CARDIOLOGY

COURSE OUTLINE

1. Morphology and Ultrastructure
analysis of myocyte ultrastructure from electron micrographs
2. Contraction
contractile protein biochemistry, Ca^{2+} requirements for contraction
3. Electrophysiology and Membrane Transport
biophysics and molecular biology of Na, K, Ca channels and the Na/Ca antiporter
4. Excitation-Contraction Coupling
calcium-induced calcium release and IP_3 models of SR Ca^{2+} release
5. Regulation of Contractility
B agonist, cAMP and calmodulin regulation of intracellular calcium
6. Heart as a Pump
muscle biomechanics, Starling, pressure-volume and force-velocity relationships in the myocardium
7. Myocardial Metabolism
glycolysis, *B*-oxidation
8. Coronary Blood Flow
vascular smooth muscle biology, autoregulation of CBF
8. Atherosclerosis
etiology of plaque development in coronary arteries, molecular biology of lipoproteins and mitosis of vascular smooth muscle
9. Ischemia
regulation of pH_i , Na/H antiporter, free radicals and other mechanisms of ischemia-induced cell damage
10. Adaptation to Stressors
intrinsic myocardial adaptation to both pressure and volume overload conditions; myosin isozyme shifts, alterations in E-C coupling and hypertrophy