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MEMORANDUM

ATTENTION Senate **DATE** February 10, 2010
FROM Jon Driver, Vice-President, Academic and Provost, and Chair, SCUP **PAGES** 1/1
RE: Graduate Certificate in Neuroscience (SCUP 10-19)

At its February 10, 2010 meeting SCUP reviewed and approved the proposal for a Graduate Certificate in Neuroscience.

Motion

That Senate approve and recommend to the Board of Governors the proposal for a Graduate Certificate in Neuroscience.

encl.

c: C. Krieger
T. Herdman
M. Silverman



MEMO

Dean of
Graduate Studies

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TO Senate Committee on University Priorities | TEL

FROM Wade Parkhouse, Dean, Graduate Studies *W. Parkhouse*

RE Faculty of Science: Neuroscience Graduate Certificate
[GS2009.33]

CC D. Bingham

DATE January 8, 2010

At its meeting of 14 December 2010, SGSC reviewed the proposal for a Neuroscience graduate certificate and is recommending it to SCUP.
[GS2009.33]



SIMON FRASER UNIVERSITY
THINKING OF THE WORLD

FACULTIES OF SCIENCE, HEALTH SCIENCES, ARTS AND SOCIAL SCIENCE

February 10, 2010

Neuroscience Graduate Certificate Proposal

1. **Certificate Name:** Certificate in Neuroscience
2. **Justification:** The Departments of Biological Sciences, Biomedical Physiology and Kinesiology, Molecular Biology and Biochemistry, Psychology and the Faculty of Health Sciences wish to establish a Graduate Certificate in Neuroscience. The certificate program is intended to be inclusive of all SFU departments wishing to participate and that offer graduate courses in neuroscience. A Neuroscience Certificate Steering Committee would determine the inclusion of future courses to be added to Neuroscience Certificate Requirements. The certificate is designed to recognize demonstrated Neuroscience expertise in the context of a program of study at SFU. This certificate is designed to attract students to SFU interested in pursuing graduate research in the neurosciences. It is intended to complement graduate study in specific disciplines which may be located in the Faculties of Arts and Social Sciences, Health Sciences and Science. The neuroscience certificate will allow students to be exposed to the broad spectrum of neuroscience courses and research being conducted throughout SFU leading to increased opportunities for interdisciplinary research within the field of neuroscience. Students interested in completing the certificate will be encouraged to work with the Neuroscience Certificate Steering Committee to determine how best to incorporate these courses into their graduate degree program. No net new courses or resources are necessary at this time to administer the proposed certificate requirements. Students earning the certificate will be better situated to join the international research community in Neuroscience. Neuroscience programs are available at many major Universities, reflecting the general interest students have in taking these programs. The lack of a Neuroscience program at SFU, places us at a disadvantage to attract students to SFU who wish training in such a program. In addition, we have researchers carrying out neuroscience-related research who attract graduate students, but these students receive no formal recognition that they have pursued a neuroscience program. Furthermore, the Neuroscience certificate initiative may increase the overall faculty productivity by developing interactions between synergistic research programs.
3. **Agreements from departments to admit students from other programs to courses designated as certificate courses:** A large number of courses with appropriate content already exist at SFU and students from other departments already register in these courses. All of the departments and faculties involved have agreed to allow students from outside their departments or faculties to register for the courses designated as certificate courses. Because requirements will be satisfied through existing course offerings, creation of the certificate entails no outlay of additional resources.

4. **Approval by relevant graduate program committee(s)**: All the departments involved have approved the certificate. Students must fulfil their home Department's graduation requirements.
5. **Calendar entry**: Requirements for the certificate include the completion of at least 4 graduate level courses in Neuroscience for a minimum of 12 credits, from at least two different departments or a non-departmentalized Faculty. Courses will be taken for credit and will require a grade. Courses will not be selected from a diploma program. There is no application process for the certificate which is awarded at the time of graduation upon recommendation of the Neuroscience Certificate Steering Committee to the Dean of Graduate Studies. The degree requirements in specific disciplines generally include the recommendation of taking two courses in a specific discipline, but this is a recommendation, and is not required.

Neuroscience Certificate Requirements (course descriptions in appendix)

Completion of minimally four courses from the following list of courses:

BISC846-3: Insecticide Chemistry and Toxicology

BISC 869-3 Special Topics: Neurobiology of Disease

BISC881-3 Special Topics in Cell and Molecular Biology: Neuronal Cell Biology

MBB 744-3 Developmental Neurobiology course

MBB 724-3 Channel Physiology

HSCI 774-3 Neuropharmacology

KIN 825-3 Behavioural Neuroscience

KIN 835-3 Neuromuscular Disorders

KIN 861-3 Neuroscience

KIN 865-3 Neural Control of Movement

PSYC 600-3 Biological Bases of Behaviour

PSYC 907-3 Cognitive Aging and Dementia

PSYC 925-3 Seminar in Cognitive Processes

PSYC 930-3 Seminar in Perception

PSYC 935-3 Seminar in Sensation

PSYC 980-3 Seminar in Biological Psychology

PSYC 985-3 Seminar in Animal Behaviour

EDUC 907 Special Topics: Educational Neuroscience: Background, Theories, and Methods

The Neuroscience steering committee is planning a seminar series in neuroscience that Neuroscience certificate students are expected to attend.

6. **Steering committee**: The steering committee is comprised of Drs. T. Herdman (Psychology), Dr. C. Krieger (Biomedical Physiology and Kinesiology) and Dr. M. Silverman (Bioscience). The steering committee will review on a regular basis the structure of the certificate and decide whether particular courses are appropriate for inclusion in the program.
7. **Space and Resources**: The certificate requirements can be fulfilled with existing space and resources as students will be taking existing courses. The following faculty members have expressed interest in directing their students into courses that would allow them to obtain the Neuroscience Certificate:

BISC – Drs. F. Breden, H. Hutter, R. Nicholson, G. Rintoul, M. Silverman

BPK – Drs. C. Krieger, D. Marigold, P. Ruben

ENSC- Dr. M. F. Beg

HSCI – Dr. E. Goldner, F. Lee, Dr. T. Niikura

MBB- Drs. N. Hawkins, E. Young

PSYC- Drs. T. Herdman, R. Mistlberger, M. Liotti, U. Ribary, N. Watson, J. McDonald

Appendix

Course Descriptions

BISC 846-3 Insecticide Chemistry and Toxicology The chemistry of insecticides, with emphasis on their toxicology, metabolism and molecular mechanism of action.

BISC 869-3 Special Topics II A student participation seminar course focusing on recent literature on selected topics in neuroscience. Prerequisite: permission of the instructor

BISC 881-3 Special Topics in Cell and Molecular Biology A student participation seminar course focusing on recent literature on selected topics in cellular, developmental, and molecular biology. Prerequisite: permission of the instructor

Note- Topics for this course vary depending on the instructor. Thus the suitability of this offering for the Neuroscience Certificate will be assessed by the steering committee on semester basis. Previous topics have included "Nerve Cell Biology" (Silverman) and "Mechanisms of Neurodegeneration" (Rintoul). These topics will be offered again along with "Mechanisms of Axon Pathfinding" (Hutter).

MBB 744-3 Developmental Neurobiology The course will examine recent literature on neuronal growth cones and axonal guidance. Cell cultural, biochemical, and molecular genetic approaches will be emphasized in assessing the roles and functions of guidance cues. Prerequisite: MBB/BISC 331 and BISC 333 or equivalent and permission of the instructor.

MBB 724-3 Membrane Transport Mechanisms Structure and function of molecules that mediate transport across membranes including channels, carriers, and pumps. Primary literature from the fields of biochemistry and physiology will be explored through lectures and independent study. Prerequisite: MBB 321, 322 and either MBB 323 or CHEM 360 or permission of the instructor.

Note- This course focuses on ion channel function and disorders and while not specifically dealing with Neuroscience, an understanding of ion channel function as provided here is important for understanding Neuroscience.

HSCI 774-3 Seminar in Neuropharmacology Mechanisms of drug action in the brain, including several classes of drugs and neurotransmitter systems that are involved in mental health disorders, drug addiction and neurodegeneration. Prerequisite: HSCI 323, MBB 331, or permission of the instructor.

KIN 825-3 Behavioural Neuroscience 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 835-3 Neuromuscular Disorders Provides a broad understanding to the student as to the way nervous system disease is believed to occur, some of the mechanisms behind these processes, the ways that are used to study these mechanisms and the ability to think about

these processes as expressed in a critique of a research paper. It will include discussions of ALS, Alzheimer's disease, stroke and myasthenia gravis among others. Students with credit for this course when taught as KIN 806 may not take KIN 835 for additional credit.

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 865-3 Neural Control of Movement The course covers the peripheral nervous system including reflexes and spinal cord organization in detail. This prepares the student with a thorough understanding of general functioning of the nervous system. In addition, the course covers the neurophysiology of the cerebellum, motor cortex, basal ganglia, vestibular system and other related structures involved in central control of movement. Laboratory demonstrations are part of the course.

PSYC 600-3 Biological Bases of Behavior No description in catalogue

PSYC 907D-3 Advanced Topics in Biological Psychology: Cognitive Aging and Dementia
No description in catalogue

PSYC 925-3 Seminar in Cognitive Processes No description in catalogue

PSYC 930-3 Seminar in Perception No description in catalogue

PSYC 935-3 Seminar in Sensation No description in catalogue

PSYC 980-3 Biological Psychology No description in catalogue

PSYC 985-3 Seminar in Animal Behavior No description in catalogue

EDUC 907-5 Educational Neuroscience: Background, Theories, and Methods This course provides an overview of a potentially foundational new area of educational research. It will introduce new quantitative perspectives to areas of qualitative research in education concerned with cognition, affect, and learning. The course has no prerequisites, but is specifically aimed toward graduate students in education, and graduate students in the cognitive sciences with a humanist interest.

ADDITIONAL REVENUE						TOTAL	TOTAL	TOTAL
		Estimated Student Enrollment		Expected Course Fee	No of semesters per Year			
	Tuition fees							
	Normal		X		X	0		
	Premium		X		X	0		
	Supplementary Fees		X		X	0		
		Estimated Student Enrollment		Annual Grant per Student				
	Government Grant		X			\$0		
	TOTAL					0	0	0
ADDITIONAL EXPENSES						TOTAL	TOTAL	TOTAL
		Number		Salary & Benefits	% allocated to Programme			
	Teaching Resources							
	CFL		X		X	0		
	Limited Term/Sessionals		X		X	0		
	T. A.s		X		X	0		
	Other		X		X	0		
	Operating Expenses							
	General							
	Promotional							
	Admin support							
	IT Support							
	Travel							
	Supplies							
	Other							
	Other							
	Library							
	TOTAL					0	0	0
OPERATING NET	(Revenue - Expenses) Contribution to SFU Overhead					0	0	0

ADDITIONAL CAPITAL REQUIREMENTS						TOTAL	TOTAL	TOTAL
	Space Requirements							
	Renovations etc					0		
	Other					0		
	Furniture & Equipment					0		
	Other					0		
	TOTAL					0	0	0

B FUNDING SOURCES

FUNDING BEING MADE AVAILABLE	Estimated Student Enrollment	Assumed WAFTE Value	Year 1	Year 2	Year 3
			TOTAL	TOTAL	TOTAL
WAFTE Funding (Growth only)		X	0		
Faculty Contribution					
Departmental contribution					
Other					
TOTAL			0	0	0



TO: W. Parkhouse
Dean of Graduate Studies

FROM: D. Bingham, Chair
Faculty of Science Graduate Studies
Committee

RE: Neuroscience Certificate

DATE: October 26, 2009

**New Courses - BISC 820,
EASC 601 and EASC 602**

The following have been approved by the Faculty of Science and are forwarded for approval by the Senate Graduate Studies Committee. Please include these on the next SGSC agenda.

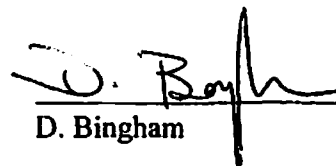
Neuroscience Graduate Certificate Proposal

New Courses:

BISC 820-3 Molecular Mechanisms of Microbial Pathogenesis

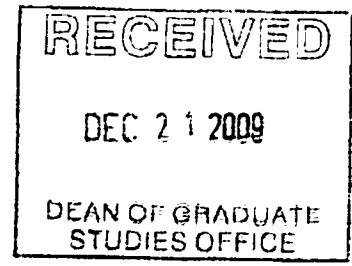
EASC 601-3 Advanced Groundwater Geochemistry

EASC 602-3 Environmental Isotopes


D. Bingham

Enclosure

c. M. Plischke



FACULTY OF
ARTS AND SOCIAL SCIENCES

MEMO

TO: Wade Parkhouse, Dean, Graduate Studies

FROM: Paul Budra, Chair, FASS Graduate Studies Committee

RE: Neuroscience Graduate Certificate

DATE: December 21, 2009

Please be advised that the Faculty of Arts and Social Science Graduate Studies Committee has recently voted by electronic ballot to approve the revised Neuroscience Graduate Certificate proposal. The original proposal was brought forward by the Department of Psychology at our October 22nd FASSGSC meeting.

Would you please place this item on the agenda of the next meeting of the Senate Graduate Studies Committee.

A large, stylized handwritten signature in black ink, consisting of a long horizontal stroke with a large loop at the end and a shorter stroke crossing it near the beginning.

:pl