



Accepted PhD  
NBS Requirements

Department of  
Physiology and Pharmacology

11 December, 2001

Re: Changes to the Requirements for the PhD and MD/PhD Neural and Behavioral Science Graduate Program at SUNY Downstate in Brooklyn

Dear Provost Salins,

I am requesting approval of a change in the requirements for the Program in Neural and Behavioral Science at SUNY's Downstate Medical Center Campus leading to the PhD or MD/PhD degrees. The only change is in the number of courses that are considered Mandatory Requirements. The current Program Requirements for the PhD degree mandate 8 courses (for a total of 27/46 credits), exclusive of seminar series and journal clubs. The Neuroscience Program Faculty feel this is too restrictive, preventing any serious tailoring of the training program to the needs of individual students. Finally, I ask that we be allowed to immediately apply the new requirements to all students if permission to revise the requirements is granted.

MD/PhD students will continue to get a total of 24 credits by taking all courses in the first two years of the Medical School Curriculum. MD/PhD students will continue to be specifically credited for Biochemistry and Neuroscience. Ethics will continue to be Mandatory, as will attendance at the Seminar Series and one of the Journal Clubs.

On behalf of the Executive Committee and the entire Neuroscience Faculty, I am proposing the following specific changes:

For PhD students

- 1) reduce the number of mandated courses from 8 to 4;
- 2) define a set of Major Electives, from which students must select at least 2;
- 3) leave all other courses as Elective and the total credit requirements (46) unchanged.

For MD/PhD students

- 1) Introduction to Cellular and Molecular Neuroscience will be Mandatory.
- 2) One Major Elective will be required.

The current and proposed requirements are contrasted in the attached table.

Our Neuroscience Faculty has nearly doubled in the last few years, standing at more than 40. This new faculty population includes laboratories with interests (e.g. neural prosthetics, imaging, computer modeling) that are not well served with the Current Requirements. The Proposed Requirements provides a "core" set of courses that establish a foundation from molecules to behavior that will support all neuroscientific sub-disciplines. The Major Elective category recognizes courses as important electives that will be the starting point for tailoring a curriculum for an individual student. The advanced courses (Electives) continue to provide specialized training. The Proposed

Requirements will permit more flexibility in training, thereby better serving the needs of students and faculty. I want to stress that the proposed changes do not indicate a diminishing interest in molecular biology. This remains a fundamental area. Molecular Neuroscience is intensively covered in the Introduction to Cellular and Molecular Neuroscience course that remains mandatory. We have also added a number of excellent Major and Regular Electives for molecular and cellular neuroscience.

Our secondary justification for revising the Program Requirements is to achieve parity with the MCB Program. Recently, the Molecular and Cellular Biology Program established its requirements after serious outside review criticised the former heavy load of mandatory courses. Its more flexible course requirements have attracted a number of excellent students out of the Neuroscience Program.

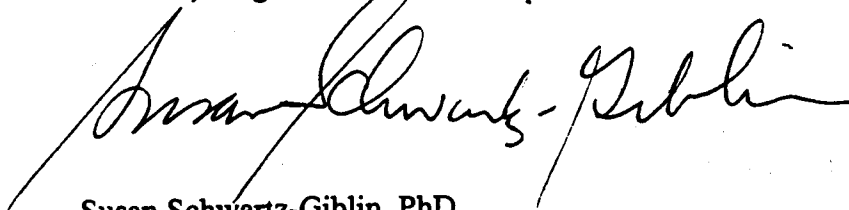
I have also enclosed a list of the current Neural and Behavioral Science Faculty with brief descriptions of their research interests.

Thank you for your consideration.

Yours sincerely,



Mark Stewart, MD, PhD  
Director, Program in Neural and Behavioral Science



Susan Schwartz-Giblin, PhD  
Dean, School of Graduate Studies

COURSE	CREDIT	CURRENT PROGRAM REQUIREMENTS	PROPOSED PROGRAM REQUIREMENTS
<b>FUNDAMENTALS</b>			
Graduate Biochemistry	4	Mandatory	Mandatory
Introduction to Cellular and Molecular Neuroscience	3	Mandatory	Mandatory
Neuroscience (includes laboratory component)	6	Mandatory	Mandatory
Ethics and Responsibility in Research	1	Mandatory	Mandatory
<b>MAJOR COURSES</b>			
Molecular and Cell Biology 1	4	Mandatory	<i>Choice of 2 required</i> Major Elective
Molecular and Cell Biology 2	4	Mandatory	Major Elective
Graduate Statistics	3	Mandatory	Elective
Gross and Cellular Neuroanatomy	3	Elective	Major Elective
Mathematical Modeling in Life Sciences	2	Elective	Major Elective
Cellular Physiology and Biophysics	3	Elective	Major Elective
Membrane Function and Junctional Transmission	2	Elective	Major Elective
Receptors and Ion Channels: Structure, Function and Regulation	2	Elective	Major Elective
Principles of Instrumentation in Neuroscience	2	Elective	Major Elective
Dendritic Spines: Structure, Function and Plasticity	2	Elective	Major Elective
Developmental Biology	3	Elective	Major Elective
<b>ELECTIVES GROUPED BY THEME</b>			
<b>BIOPHYSICS</b>			
Current Topics in Physiology and Biophysics	2	Elective	Elective
Directed Readings in Electrophysiology	3	Elective	Elective
<b>DEVELOPMENTAL NEUROBIOLOGY</b>			
Current Concepts in Developmental Neuroscience	2	Elective	Elective
<b>GENERAL NEUROSCIENCE</b>			
Selected Topics in the Limbic System	3	Elective	Elective
Directed Readings in Neuroscience	2	Elective	Elective
Discussions in Behavioral Neuroscience	1	Mandatory, 2 years	Elective
<b>MOLECULAR NEUROSCIENCE</b>			
Reverse Genetics for Neuroscientists (includes laboratory component)	4	Elective	Elective
Current Topics in Experimental Pathology (Neuropathology)	1	Elective	Elective
Human Immunology	3	Elective	Elective
Proteomics and Genomics	1	Elective	Elective
Biochemistry: Protein Structure and Function	4	Elective	Elective
Advanced Immunology	3	Elective	Elective
<b>NEUROPHARMACOLOGY</b>			
Directed Readings in Neuropharmacology	2	Elective	Elective
Current Topics in Neuropharmacology	1	Elective	Elective
Pharmacology Methods and Experimental Pharmacology	2	Elective	Elective
Selected Topics: Pharmacology of Cell Death	1	Elective	Elective
<b>OTHER REQUIREMENTS, NOT STRICTLY COURSEWORK</b>			
<b>SEMINARS AND JOURNAL CLUBS</b>			
Seminar Series in Neuroscience	1	Mandatory, all years	Mandatory, all years
General Neuroscience Journal Club	1	Choice of JC mandatory, all years	Choice of JC mandatory, all years
Molecular and Cellular Neuroscience Journal Club	1	Choice of JC mandatory, all years	Choice of JC mandatory, all years
Laboratory Rotation	3	2 rotations required	2 rotations required
Teaching		50 hours required	50 hours required
Work-in-progress series		Attendance and presentation required	Attendance and presentation required
<b>Total Credit Requirement: 46 Credits</b>		<b>27 Credits Mandatory (exclusive of seminar, journal club)</b>	<b>14 Credits Mandatory (exclusive of seminar, journal club)</b>

Dear Provost Salins,

Please direct correspondence regarding this request to:

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SUNY Downstate Medical Center  
Department of Physiology and Pharmacology  
Box 31  
450 Clarkson Avenue  
Brooklyn, NY 11203

phone: 718-270-1167

fax: 718-270-3103

e-mail: [mark@theta.hscbklyn.edu](mailto:mark@theta.hscbklyn.edu)

Thank you.

A handwritten signature in black ink, appearing to read "Mark".

## **NBS COMPREHENSIVE EXAMINATION**

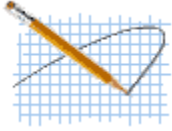
The comprehensive exam in the Neural Science and Behavior Program tests for a broad, basic knowledge in the field of neuroscience as well as an ability to describe and critique three bodies of scientific literature. The exam should be taken between the end of the first and second years following completion after the core curriculum.

The exam process begins when the student, with the help of the program director, selects a committee of three members of the neural and behavioral science program. Each committee member chooses for the student a combination of books, review papers or primary research papers in a specific area of neuroscience. The research area should not be directly related to the thesis work of the student. The student is encouraged to meet with the committee members to discuss the readings.

After each committee member has determined that the student has mastered the reading material, the student will take both written and oral exams. The written portion of the exam consists of three questions, one from each committee member. The student is given six days to answer the questions. The answer to each question must fit into 10 double-spaced typed pages. The answers should be scholarly and be fully supported by the scientific literature.

On the day following the submission of the answers, the student will be examined orally by the committee. The committee will ask questions on the answers to the written exam as well as the student's basic understanding of neuroscience.

The exam can be scheduled throughout the academic year between September and June, but will not be administered in the months of July and August.




**Peter Bergold/Downstate**

12/11/2008 04:38 PM

To Ed Throckmorton/Downstate@Downstate

cc Richard Lipkin/Downstate@Downstate

bcc

Subject Re: Computational Motor Control and Neuro-Robotics - major  
elective credit 

Dear Ed-

Please consider the following course to fulfill the requirement for a major elective credit.

GNBS 0270 - Computational motor control and Neuro-Robotics

Many thanks,

Peter

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