

DEGREE PROGRAM GRADUATE CERTIFICATE IN NEUROSCIENCE

Certificate Type

Degree Program Certificate in Neuroscience

Program Offering Graduate Certificates in Neuroscience

Interdisciplinary Neuroscience Program (INP)

Educational Objective

The purpose of this certificate is to provide formal recognition to graduate students who are specializing in neuroscience and performing research in this area. This Degree Program Certificate will allow graduate students in general life sciences departments (e.g. Biological Sciences, Psychology, Biological Engineering, Biochemistry, etc) a means to specify and to be recognized for their specialization in neuroscience.

Demonstrated Need

At the MU campus, the Interdisciplinary Neuroscience Program (INP) is a degree-granting program for MA and PhD students performing neuroscience research. However, for financial reasons, most of the neuroscience graduate students on campus are in general life sciences departments, such as Biological Sciences, Psychology, Biological Engineering, Veterinary Biomedicine, and several medical school departments. The purpose of this certificate is to provide formal recognition to graduate students who are specializing in neuroscience research. This degree program certificate would allow graduate students in general life sciences departments a means to highlight their specialization in neuroscience.

Impact on Existing Graduate Degree Programs

All of the possible courses students might take (see below) are already offered by various departments on campus. Thus, besides a very slight increase in enrollment in some of these courses, there should be little or no negative consequences to existing graduate degree programs. The main benefit of this certificate will be that existing graduate students who are engaged in neuroscience research will receive an official certificate that emphasizes this research focus much more clearly than the student's home department designation (e.g. Biological Sciences).

Course Work List

(1) Required core courses: All students who will receive a Graduate Degree Program Certificate in neuroscience will be required to take the following two courses: (a) BioSci 8440 and BioSci 8442 - Integrative Neuroscience I and II (3 credit hr each; cross listed as Neurosci 8440 and 8442).

Rationale: Virtually all of the graduate students on campus who perform neuroscience research already enroll in Integrative Neuroscience I & II, and obtaining a Graduate Certificate in Neuroscience will allow these students to formally be recognized for specializing in this area of research. These two graduate courses expose students to a broad range of topics in neuroscience as well as allow students to learn from a large fraction of neuroscience faculty on campus.

(2) Graduate students receiving a Graduate Degree Program Certificate in neuroscience will select two courses from one of the following groups.

(a) Cellular/molecular courses:

- i. BE 7070 - Bioelectricity (3 credit hrs)
- ii. BioSci 7002 - Neurobiology of Disease (3 credit hrs)
- iii. BioSci 8450 - Developmental Neurobiology (3 credit hrs)
- iv. MPP 9421 - Neural Pharmacology (1-3 credit hrs)
- v. MPP 9424 - Principles of Drug Action (4 credit hrs)
- vi. MPP 9426 - Transmembrane Signaling (4 credit hrs)
- vii. MPP 9432 - Mammalian Membrane Physiology (1-3 credit hrs)

(b) System/behavior courses:

- i. BioSci 7560 - Sensory Physiology and Behavior (3 credit hrs)

- ii. BioSci 7986 - Neurology of Motor System (3 credit hrs)
- iii. BioSci 7580 - Computational Neuroscience (4 credit hrs)
- iv. ECE 8570 - Theoretical Neuroscience I (3 credit hrs)
- v. ECE 8580 - Theoretical Neuroscience II (3 credit hrs)
- vi. Psych 7240 - Cognitive Neurosciences (3 credit hrs)
- vii. Psych 8210 - Functional Neuroscience (3 credit hrs)
- viii. Psych 9210 - Psychopharmacology for Psychologists (3 credit hrs)
- ix. Psych 9001.5 - Advanced Neural Systems (3 credit hrs)
- x. VBMS 8100 - Veterinary Neuroscience (2 credit hrs)
- xi. VBMS 9467/MPP 9437 - Neural Control of the Circulation (1-3 credit hrs)

Rationale: Many of the graduate students on campus who have an interest in neuroscience already enroll in one or more of the above courses. The proposed requirements for the Graduate Degree Certificate will allow students to focus on their specific area of neuroscience (cellular/molecular or systems/behavioral) and be recognized for this specialization. It should be noted that departments will not be obligated to offer any course listed above in “a” and “b”, and some courses may not be available. In addition, students may petition the INP to make appropriate substitutions to the courses listed in “a” and “b” depending on student interest and focus. However, the substitute courses must be bona fide neuroscience courses with substantial neuroscience content.

Sample Plan of Study and Proposed Completion Timeline

On the attached page is a sample Plan of Study for the Degree Program Certificate in Neuroscience. This certificate should be completed within 24 months.

Management Structure

(1) Designated Director of the Graduate Certificate in Neuroscience. This will be the faculty member who is the current Director of the Interdisciplinary Neuroscience Program (INP) at MU.

Current Director of INP: Andrew McClellan
 114 Lefevre Hall
McClellanA@missouri.edu
 882-1447

This individual will oversee the program, communicate applications to the Advisory Committee, maintain files of participants, and help determine participants’ progress towards completion of the Certificate. The Director will also ensure that the INP web site (<http://www.neurosci.missouri.edu>) contains an informational section on Graduate Certificates in Neuroscience and is up-to-date, including links to relevant web sites, <http://gradschool.missouri.edu/programs/graduate-certificates/index.php>; <http://gradschool.missouri.edu/policies/faculty-senate/curriculum/grad-certificate-changes.php> as well as forms and application material (e.g. “[Plan of Study form for a graduate certificate](#)”; “[Application for Graduate Change of Division, Program, Degree Emphasis or Adviser Form](#)”).

(2) Advisory Committee. This committee will be made up of members of the Graduate Recruitment Committee of INP as well as the Director of INP and will consider student applications for the Graduate Certificate in Neuroscience as well as determine participants’ progress towards completion of the Certificate.

Current Members of Committee:	David Beversdorf (chair) Kevin Gillis Dennis O’Brien Gary Weisman Matt Will Troy Zars	Neurology, Psychology Biological Engineering Vet Biomedicine Biochemistry Psychology Biological Sciences
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(3) Participating Faculty Members. All of the current faculty who are members of INP are eligible to participate in the Certificate program (see <http://gradschool.missouri.edu/programs/catalog/neuroscience/> and <http://www.neurosci.missouri.edu>).

(4) Tuition Dollars. The INP would like to receive a fair share of tuition dollars that are collected from students who enroll in the Graduate Certificate Program in Neuroscience to help pay for the INP seminar series and poster sessions, and to improve INP to make it competitive for training program grants.



Graduate Certificate Plan of Study

Submit to the Graduate School, 210 Jesse Hall.

Student name: _____

Mizzou ID number: _____

Certificate program: _____

Anticipated certificate completion date: _____
_____ (if applicable) _____

Academic program: _____

Degree (i.e. MS, MA, PhD): _____ Major: _____

Consult the Graduate Catalog for a list of approved graduate courses.

leave grade blank if
you have not yet
taken the course

Proposed Plan of Study: List the course numbers, course titles, number of credit hours and the term in which the courses have been/will be taken. The certificate Plan of Study must be approved by the official certificate coordinator.

Example

Course number	Title	Hours	Semester/Year	Grade

Total Hours (12 graduate hours minimum) _____

The program of study is approved as stated. Subsequent changes must be reported on a Program of Study Course Substitution form.

Student signature Date

Graduate dean's signature Date

Certificate coordinator's signature Date

**DO NOT WRITE
IN THIS BOX
(office use only)**

Date copies sent to the coordinator: _____