Credit Hour Explanation

<table>
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<tr>
<th>Program credit hour requirements</th>
<th>A) Number of credit hours in current program (Quarter credit hours)</th>
<th>B) Calculated result for 2/3rds of current (Semester credit hours)</th>
<th>C) Number of credit hours required for proposed program (Semester credit hours)</th>
<th>D) Change in credit hours</th>
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<tr>
<td>Total minimum credit hours required for completion of program</td>
<td>120</td>
<td>80.0</td>
<td>80</td>
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<td>Required credit hours offered by the unit</td>
<td>Minimum</td>
<td>3</td>
<td>2.0</td>
<td>2</td>
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<tr>
<td></td>
<td>Maximum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required credit hours offered outside of the unit</td>
<td>Minimum</td>
<td>117</td>
<td>78.0</td>
<td>78</td>
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<tr>
<td></td>
<td>Maximum</td>
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<tr>
<td>Required prerequisite credit hours not included above</td>
<td>Minimum</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Maximum</td>
<td></td>
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Program Learning Goals

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

- Develop a core curriculum which provides an introduction to all the major fields of neuroscience: cell and molecular neuroscience, structure and function of the nervous system, neurophysiology, neuropharmacology, and the neural basis of behavior.
- Prepare students to be independent researchers in academia and industry.
- Combine mentored laboratory research with a rigorous and modern curriculum.
- Provide training in professional development utilizing lectures, workshops, and/or seminars.
- Develop advanced electives in specialized topics related to student’s thesis research.

Assessment

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? Yes

Does the degree program or major have an assessment plan on file with the university Office of Academic Affairs? No
Program Specializations/Sub-Plans
If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

Pre-Major

Does this Program have a Pre-Major? No

Attachments

- Program Cover Letter.docx: Cover Letter
  (Letter from Program-offering Unit. Owner: Bishop, Georgia Ann)
- NGSP Program Cover Letter.pdf: Revised Cover Letter
  (Letter from Program-offering Unit. Owner: Bantz, Keri Richelle)

Comments

Workflow Information

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<th>User(s)</th>
<th>Date/Time</th>
<th>Step</th>
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<td>Bantz, Keri Richelle</td>
<td>09/23/2010 09:45 AM</td>
<td>Submitted for Approval</td>
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<td>11/12/2010 11:06 AM</td>
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September 16, 2010

Office of Academic Affairs
203 Bricker Hall
190 North Oval Mall
Columbus, OH 43210-1358

To whom it may concern,

Program Rationale Statement:
I am writing this letter on behalf of the Neuroscience Graduate Studies Program (NGSP). This is an interdisciplinary graduate program that currently is under the academic direction of the Graduate School. The College of Medicine has assumed direct oversight of the program. The only degree offered by the program is a Ph.D.

The NGSP is an interdisciplinary graduate program with faculty from several different colleges (e.g., Medicine, Social and Behavioral Science, Dentistry, Veterinary Medicine, BMAPS) participating. Neuroscience is a multidisciplinary field that encompasses studies in molecular and cellular neurobiology, developmental neurobiology, neuroimmunology, neural degeneration and regeneration, neuropharmacology, neurophysiology, behavioral neuroscience, sensory and motor neuroscience, etc. Students entering the program take a team taught core curriculum that covers all aspects of Neuroscience. They then select a lab in one of the several different subspecialties of Neuroscience noted above.

The major changes in the curriculum are related to the core courses which are designed to provide a basic foundation for any student in the program, regardless of the subdiscipline they select for their thesis project. After several discussions, we decided to deconstruct and reconstruct the core curriculum. The committee was made up of faculty members, who were course directors of the original courses, faculty who participate in teaching the courses, and a junior and senior graduate student who successfully completed the core curriculum. Based on our discussions, we have reduced the overall number of courses without compromising the material to be covered. In the quarter system, we required students to enroll in 5 core courses (Cell and Molecular Neuroscience, Neurophysiology, Structure and Function of the Nervous System, Neuropharmacology, & Behavior). The committee determined that there was overlap in many of the topics covered in the individual courses. After evaluating the content of our courses, we determined it was best to develop a Neuroscience curriculum that covered all the material presented in the current 5 core courses in a 2 semester format. Areas of overlap will be merged and discussed one time. In some areas we determined that there was a presentation of more details than were needed for an introductory level course. Therefore, the more advanced concepts will be provided in newly developed electives (e.g., Psychopharmacology, Behavior, and Development) which can be taken by students needing more in depth knowledge of a specific topic. These electives are being developed by faculty members in various departments that participate in the NGSP. Another minor change was to separate the lecture and laboratory portion of the Structure and Function of the Nervous System Course. In the present format, the lab is required of all students and is graded together with the lecture part of the course. This has not been an issue for students in our program; however students from other disciplines often take this course as well. For example, we have had students from
Engineering, Philosophy, Clinical Psychology, and Dentistry take this course. Many of these students are primarily interested in the lecture portion of the course. In the new format, the lab will be divided into 2 parts. In the first part, students learn the anatomy of the human brain through specimens, MRIs, cross sections and discussion of case studies. In the second part it switches to a more experimental model in which students work with rodents, the primary research animal in Neuroscience. They learn basic techniques for handling animals, carrying out a surgical procedure, injecting substances into a targeted area, processing the tissue and analyzing their results. While most students find the first part of the lab highly beneficial, some do not need to take the second part. Therefore, the lab will be subdivided in the new curriculum into two 7 week sessions. NGSP students will be required to take both sessions. Students from other programs may elect to take one, both or neither lab session. The lab sessions will have their own course numbers and be graded separately.

The NGSP developed the core curriculum at the time of its inception and courses were listed under NeuroGSP. As the University guidelines for providing credit for teaching changed, individual departments assumed “ownership” of the courses in which their faculty was most heavily invested. No changes were made in course content. Departments requested cross listing of the courses between the department and the program. Also, in our program, the majority of hours are derived from 999 credit hours as the students training is primarily based on working in a mentor's laboratory and learning techniques to become an independent researcher. These hours are credited to the department in which the faculty mentor has their TIU. Finally, although available, students are not required to take any electives. Whether they take them is a decision made between the student and their mentor. Most students do take advanced electives in courses in their area of research interests.

We have added one new required course to the curriculum entitled Neurobiology of Disease. This course was approved 2 year ago as an elective; we have made this a required course for several reasons. First, the NGSP is applying for training grant funds from NIH. In order to obtain this funding, the NIH requires that students have a course that covers both basic science and its relationship to clinical practice. Second, it is critical that our students have an understanding of how both basic and translational research are essential for developing strategies to understand and treat diseases. This course will be cross listed in the Departments of Neuroscience and Pharmacology based on the TIU of the two course directors.

We also have reduced the number of required seminars. Previously, students were required to take a seminar course during Fall, Winter and Spring quarter. The seminar focus changed each quarter from faculty presentations, student presentations, and a topic/theme selected by the students. In the semester format, students will be required to take the seminar during Fall and Spring Semester, reducing the number to 2. Seminars topics will be determined at the beginning of each academic year. The focus will be on faculty and student presentations. The student presentations will be critiqued by faculty and fellow students to help them improve their presentation skills. We will add a non-graded Journal Club Format that will be student initiated with faculty serving as moderators/facilitators. This will provide students in the NGSP the opportunity to select important papers relevant to their research and to discuss the data presented in the paper, as well as to evaluate the quality of the writing, with their fellow students.

The remaining credit hours in the program are derived from Individual Studies (6193) and Research in Neuroscience (8999) hours. For 6193 credit, first year students rotate through faculty labs to help them choose their thesis mentor. Both students and faculty have an opportunity to determine if there is a good fit for the student to carry out their dissertation research in the faculty member’s lab. In addition, students have an opportunity to learn a variety of experimental techniques by selecting laboratories that are carrying out different types of research. After selecting a lab for their dissertation project, the student receives credit via 8999 hours. The department designation for 6193 and 8999 is based on the TIU of the faculty mentor.

Our graduate students have had input at all levels of the reorganization of the curriculum.

List of Semester Courses:
Required:
Neurosci 7001: Foundations of Neuroscience I
Neurosci/Dent 7002: Foundations of Neuroscience II
Neurosci/Dent 7200.01: Neuroscience Laboratory
Neurosci/Dent 7200.02: Neuroscience Laboratory
Neurosci/Pharm 7050: Neurobiology of Disease
NeuroGSP 7886: Seminar in Neuroscience

Electives:
MVIMG 7500: Neuroimmunology
NeuroSci 7900: Neurodevelopment
Pharm 8500: Neuropharmacology
Psych 7260: Behavioral Neuroscience
MVIMG 8470: Cellular Mechanisms and Pathogenesis of Inflammation
NGSY 8250: Biology of the tumor Microenvironment
And other courses as developed.

Semester/Quarter Advising Sheets: NA as these are graduate courses.

Transition Statement
The directors of the program and the members of the NGSP committee all approve the new curriculum. There will be no disruption or delay of time-to-graduation for any students due to the conversion to semesters in Fall of 2012. NGSP core courses are all taken in the students' first year, and this basic curriculum schedule will not change. Therefore students who were in year 1 prior to the switch will no longer be taking courses after the switch and will not be impacted. Likewise, students who start their first year after the switch will not have any transitional issues. In addition we will see to it that any course credit discontinuities that occur due to the semester switch meet current minimum credit guidelines set by the graduate school in order to minimally affect credit requirements for doctoral candidacy as well as for doctoral completion and graduation. The appropriate formula will be applied to convert quarter hours to semester hours at the appropriate time. We will adhere to all statements in the Pledge to Students.

Most cordially,

John Oberdick and Dana McTigue
Co-Directors, Neuroscience Graduate Studies Program
The Ohio State University