Washington State University
MAJOR CURRICULAR CHANGE FORM - - COURSE
(Submit original signed form and ten copies to the Registrar's Office, zip 1035)

Future Effective Date: 07/01/2015
(Effective date cannot be retroactive)

☐ New course        ☐ Temporary course        ☐ Drop service course
☐ There is a course fee associated with this course (see instructions)

☐ Variable credit: 3
☐ Increase credit (former credit _________)
☐ Number (former number _________)
☐ Crosslisting (between WSU departments)
(Must have both departmental signatures)
☐ Conjoint listing (400/500)
☐ Request to meet Writing in the Major [M] requirement (Must have All-University Writing Committee Approval)
☐ Request to meet GER in _________ (Must have GenEd Committee Approval)
☐ Professional course (Pharmacy & Vet Med only)
☐ Graduate credit (professional programs only)
☐ Other (please list request)

Neurosci 540
Special Topics in Integrative Neuroscience

| V (1-3) | [ ] | [ ] | [ ] |
| credit | lecture hrs | lab hrs | studio hrs |
| per week | per week | per week |

Description (20 words or less)
May be repeated for credit; cumulative maximum 6 hours. Concepts and controversies in neuroscience involving integrative properties of cell systems.

Instructor: Steve Simasko
Contact: Becky Morton
Campus Zip Code: 7620

Phone number: 335-6624
Email: simasko@vetmed.wsu.edu

Phone number: 335-6621
Email: bmorton@wsu.edu

Please attach rationale for your request, a current and complete syllabus, and explain how this impacts other units in Pullman and other branches (if applicable).

Secure all required signatures and provide 10 copies to the Registrar's Office.

Chair/date

Dean/date

General Education Com/date

Chair (if crosslisted/interdisciplinary)*

Dean (if crosslisted/interdisciplinary) *

Graduate Studies Com/date

All-University Writing Com/date

Academic Affairs Com/date

Senate/date

*If the proposed change impacts or involves collaboration with other units, use the additional signature lines provided for each impacted unit and college.
From: Department of Integrative Physiology and Neuroscience

Proposal: To change the course credits for all four courses in the Special Topics series from 3 credits to variable credit (1-3 credits). Specific courses may be repeated as often as desired.

Courses effected:

- Neurosci 540 Special Topics in Integrative Neuroscience
- Neurosci 541 Special Topics in Cellular and Molecular Neuroscience
- Neurosci 542 Special Topics in Interdisciplinary Neuroscience
- Neurosci 543 Special Topics in Behavioral/Clinical Neuroscience

Rationale for requested change:

Description of current courses. These four courses are the advanced literature review courses for the graduate neuroscience program. They are focused on current concepts and controversies in the neuroscience literature with focused discussions/critiques on readings from the primary literature. Because the materials in the courses focus on the latest work in the field, the specific materials under discussion change every time one of the specific courses is taught. Thus these courses may be repeated for a cumulative maximum of 6 hours. Completing at least two special topics courses (6 credits) is a requirement of the PhD program.

Problems associated with the current structure. The traditional structure of these courses has been to assign three professors that work in related areas to a single course. Each block lasts approximately 5 weeks in duration. However, we have found that often a student may be interested in one or two of the blocks of materials, but not the entire sequence. Some examples:

- A course focused on neuronal plasticity (Neurosci 540) may have a block on changes in gene regulation, a second block on changes in synaptic function, and a final block on neuronal plasticity as it relates to learning and memory. There might be students interested in synaptic changes and learning and memory issues, but less interested in gene regulation. On the other hand, there may be a student only interested in the more molecular events covered in the first one or two blocks, but not the learning and memory issues of the final block. This can extend beyond just our program in that a student in a related program (e.g., Molecular Biosciences) may be interested in the gene issues, but not the learning and memory issues.
- A course focused on neuronal biophysics (Neurosci 541) may start with simple approaches worthy of study by all students in the program, but end up with highly advanced topics of interest only to the few electrophysiology aficionados. Often the general student will not sign up for the 15 week course because they are not interested beyond the first unit.
- Some themes (for example, feeding, addiction, or sleep) have a large audience within the program, but other themes (such as neural development, mental diseases) have a smaller audience. This results in less popular topics not being offered very often, and then when offered, suffering from lower enrollment.
- Within neuroscience new technical develops are happening all the time (e.g., optogenetics and DREADDs). These approaches may be worthy of a 5 week focused module, but not an entire 15 weeks of study. In our current structure we are hampered in exposing our students to these developments because we don’t have the flexibility in our structure to have short, focused courses.

These issues are not just unique to neuroscience, but plague many programs in the biomedical sciences. What we propose is a new structure that enables us to be innovative and creative in a way beyond the traditional three credit course, while maintaining the fundamental element of these courses, which is to teach graduate students how to properly read and critique the primary literature.
Proposed changes:
Change the courses listed from three credits to variable credits (1-3).

Operational impact. Such a change will require only a few minor operational changes. First, rather than 3 units that ‘roughly’ fit into blocks of 5 weeks each or intertwined throughout the semester, there would be a hard deadline that at the end of each 5 week block there is a final grade for the block. This would be true whether the transition is a hard transition from topics considerably different from one another, to a soft transition in which the following block merely develops a more sophisticated approach to the same materials covered in the first block. Thus all graded materials, be they in-class or take-home exams; a written essay, proposal, or critique; or a final oral presentation, must be completed by the end of the 5 week block. A final grade is then assigned to the block. Students would have to announce at the beginning of the semester (i.e., when registering) which blocks within the semester they intend to take. The final grade for the entire course is the average of the grades earned in individual blocks.

As is the current policy, selection of topics for courses for the next academic year will be done at the annual winter neuroscience graduate faculty meeting (held the 3rd week of January).

Expected outcomes. In some cases (traditional topics in which the linkage between blocks is very tight) this change would have minimal change to how materials are covered. The only real change would be the requirement that there be a grade associated with each 5 week block, which may be a positive development in providing timely feedback to students. However, in other cases, the changes could be near revolutionary to the program:

- Students could develop a customized program in which they select a unique set of modules from a menu of options that fit exactly what they are interested in.
- Because of greater flexibility, students are more likely to find topics of interest earlier in their program than now. As our program is now structured a student may have to wait for a topic to come up every other year (and if it occurs in the fall semester of their first year, they have to wait until their 3rd year before it comes around again). This situation is even worse on topics of less general interest – miss it in your first year and it may not be until your 4th or 5th year before it comes around again. With the new structure we could offer popular focuses yearly (albeit only in a 5 week block) and less popular focuses at least every other year. This enables most students to get the relevant blocks before completing their 2nd year in the program.
- On the other hand, when a new development occurs (such as optogenetics), a 5-week block could be organized, and this focused effort would now appeal to senior students interested in the topic but not interested in registering for 15 weeks of course work.
- Students in other related biomedical programs may now find discrete single units of particular interest to them, whereas in the past would not wanted to have devoted a full 15 weeks to the topic.

This final item has much potential for impacting biomedical education beyond just our program. Other biomedical programs at WSU (Immunology and Infectious Diseases, Molecular Bioscience) have been encouraged to develop a parallel structure to our proposal. When this structure is in place students in all three programs can benefit from discrete specialized modules offered in adjacent programs that will not require a 15 week commitment. This could lead to an unparalleled degree of cross fertilization between programs and allow WSU to develop a truly innovative and unique suite of biomedical graduate programs. At the same time, the traditional programs can retain their identity if a student selects to remain exclusively within offerings from their home program. Thus we foresee virtually no downside risk, and a huge potential upside benefit to this change in course structure (essentially, creating a mechanism to offer highly focused micro-courses on topics with a high degree of broad current interest).