New Course

Proposal Reference Number : 8328
PRN Alias : 13-14#1741
Version No : 6
Submitted By : Prof Shelton Hendricks
Edited By : Ms Josie D'Amico

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	New Data
Program Affected?	Y
Program Change Form Submitted?	N (Simple Change) - Add BIOL 580 under Other Complementary Courses in sub-section "400- and 500--level courses," in the B.Sc. Major and Honours Programs in Neuroscience. Also, add BIOL 580 in the B.Sc. Major in Biology and Mathematics under Neurosciences Stream under "At least 12 credits selected from."
Subject/Course/Term	BIOL 580 • one term
Credit Weight or CEU's	3 credits
Course Activities	Schedule Type / Hours per week A - Lecture / 1 M - Seminar / 2 Total Hours per Week : 3 Total Number of Weeks : 13
Course Title	Official Course Title : Genet Approaches to Neur Syst Course Title in Calendar : Genetic Approaches to Neural Systems
Rationale	This course will add to the neurobiology offerings in the Department of Biology and provide a needed addition to the courses available to graduate students and senior undergraduates. The material covered is from the primary literature, and will encompass new advances in methodologies in the fast-moving field of neuroscience. This will familiarize current graduate students to cutting edge techniques relevant to their research, and expose advanced undergraduates to contemporary neuroscience tools.
Responsible Instructor	
Course Description	This course will focus on recent research employing genetic-based methods to examine the functional and structural properties of the nervous system. The focus

	will be on approaches for studying neural circuits and behavior in a range of model organisms. Topics will include recent technological advances, such as optogenetics for modifying and controlling neuronal activity, and animal models of neurological diseases. Students will critically analyze the application of these methods to current research through in-class discussion of primary literature, student presentations, and written assignments.
Teaching Dept.	0286 : Biology
Administering Faculty/Unit	SC : Faculty of Science
Prerequisites	BIOL 306 or permission of the instructors. Web Registration Blocked? : N
Corequisites	
Restrictions	
Supplementary Calendar Info	
Additional Course Charges	
Campus	Downtown
Projected Enrollment	18
Requires Resources Not Currently Available	N
Explanation for Required Resources	
Required Text/Resources Sent To Library?	
Library Consulted About Availability of Resources?	
Consultation Reports Attached?	
Effective Term of Implementation	201409
File Attachments	• BIOL580 syllabus 17 Feb 2014.docx View
To be completed by the Faculty	
For Continuing Studies Use	

Approvals Summary

Show all comments

Version	Departmental	Departmental	Departmental	Other	Curric/Academic	Faculty	SCTP	Version Status

McGill Biology Department

Guidelines for the Course Proposal/Change Form

CONSULTATION REPORT FORM
RE: COURSE / PROGRAM PROPOSALS

DATE: _____Feb 14 2014_____

TO: ____Wendy Brett and/or Monroe Cohen, NSCI_____

FROM: _Nancy Nelson, Biology Advisor_____

The attached proposal has been submitted to the Curriculum/Academic Committee, and it has been decided that your department should be consulted.

Course #: ____BIOL 580, Genetic Approaches to Neuronal Systems

Would you be good enough to review this proposal and let me know no later than __Feb 20 2014_____ , on this form, whether or not your department has any objections to, or comments regarding, the proposal.

_____√_____ NO OBJECTIONS _____ SOME OBJECTIONS

COMMENTS:

BIOL 580 would also be an excellent addition to the Neuroscience Major and Honours programs. If this is acceptable, then it should be added to the list of "Other Complementary Courses" in the sub-section "400- and 500-level courses".

Signature: M. W. [illegible]

Date: FEB 17, 2014

McGill Biology Department

Guidelines for the Course Proposal/Change Form

CONSULTATION REPORT FORM
RE: COURSE / PROGRAM PROPOSALS

DATE: ____Feb 14 2014_____

TO: ___IPN c/o Katherine Vanka—ipn@mcgill.ca

FROM: _Nancy Nelson, Biology Advisor_____

The attached proposal has been submitted to the Curriculum/Academic Committee, and it has been decided that your department should be consulted.

Course #: ___BIOL 580, Genetic Approaches to Neuronal Systems

Would you be good enough to review this proposal and let me know no later than __Feb 20 2014_____ , on this form, whether or not your department has any objections to, or comments regarding, the proposal.

_____X_____ NO OBJECTIONS _____ SOME OBJECTIONS

COMMENTS: While the proposed course may overlap with some of the material covered in our core courses (Principles of Neuroscience 1 and 2) in the integrated program for Neuroscience (IPN), this overlap is minimal. Further, the structure and content of the proposed course is more advanced and detailed than that in our core courses, and will be of interest and value to our IPN students pursuing studies on gene-environment interactions that influence both normal neurodevelopment and impaired function. I foresee no problems in recruiting a sufficient number of interested IPN students to guarantee minimum critical mass. The structure and evaluation methodology proposed is most appropriate for a graduate –level course. There are no concerns on either pedagogical or administrative grounds. There is no puzzle, however: As stated the course is designed exclusively for graduate students. However, my understanding is that 500-level courses are open to both graduate and upper-level undergraduate students. Some clarification of the misalignment between the targeted student population and the McGill course numbering system is called for.

Signature: Joe Rochford, IPN Associate Director and Co-Chair of the IPN Curriculum committee

Date: Feb 17, 2014_____

BIOL 580 – Genetic Approaches to Neural Systems

Instructors: Michael Hendricks (Coordinator) Office: Stewart W5/11 (by appointment)
michael.hendricks@mcgill.ca
514-398-6581

Alanna Watt Office: Bellini 265 (by appointment)
alanna.watt@mcill.ca
514-398-2806

Prerequisites: BIOL 306 or permission of the instructors.

Projected enrollment: 15-20

Description: This course will focus on recent research employing cutting-edge genetic tools to examine the functional and structural properties of the nervous system. The focus will be on genetic methods for studying neural circuits and behavior, in a range of model organisms. Topics will include recent technological advances, such as optogenetics for modifying and controlling neuronal activity, and animal models of neurological diseases. Students will critically analyze the application of these methods to current research through in-class discussion of primary literature, student presentations, and written assignments.

Evaluation:

Class participation:	15%
Oral presentation	30%
Written assignments	25%
Term paper	30%

Lecture:
There is no textbook for the course. Background lectures will be given on specific topics, but the focus of the class will be on discussion and critical evaluation of primary research articles. These articles will be selected from the recent literature and will be provided at the beginning of the course.

Presentations:
During the course, each student will select a research article (either from a list provided or one they select on their own, with approval), prepare a ~20-30 minute presentation on the background, key methodologies, and findings and lead a discussion on the paper. All members of the class will be expected to have read the paper independently, and to be prepared to ask questions and discuss the article, which will form the basis of the class participation component to the class evaluation.

Written assignments:
Each paper discussed in class will be accompanied by a set of short answer questions, due before class.

Term paper:
This assignment will take the form of a short review article that relates to a topic (either a technical method or area of research) covered in the class. The length should be 2000-2500 words. The paper may include (original) figures and should cite a minimum of 15 sources. Potential topics will be provided, or you may propose your own topic. An outline, summary paragraph, and reference list is due two weeks prior to the paper due date.

Participation:
This course seeks to engage students in critical discussions of the primary literature. Participation and attendance is therefore essential, and will be assessed for each class discussion. The instructors will confer immediately following each class to determine the assessment for each student.
0 – Absent
5 – Present but little or no participation
15 – Active participation

Topics:
We expect that topics will change from year to year as research progresses in these rapidly-moving fields.

Week 1: Review of fundamentals of neurobiology
Week 2: Review of fundamentals of neurogenetics
Week 3: Model Organisms in Neuroscience
Week 4: Genetically encoded markers, probes, and sensors
Week 5: Optogenetics and DREADDs
Week 6: Genome editing and manipulation
Week 7: Neurological disease models
Week 8: Presentations / Seminar
Week 9: Presentations / Seminar
Week 10: Presentations / Seminar
Week 11: Presentations / Seminar
Week 12: Presentations / Seminar
Week 13: Presentations / Seminar

McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/integrity *for more information).*

In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.