1 Course Details

1.1 Calendar Description

This is a two-semester undergraduate project course in which students conduct a comprehensive, independent research project in neuroscience under the supervision of a faculty member. The faculty member can be from any department at the University, so long as the project falls within the field of neuroscience. Projects involve original research communicated in oral presentations and in written reports, including a publication quality final report. This two-semester course offers students the opportunity to pursue research questions and experimental designs that cannot be completed in the single semester research courses. Students must make arrangements with a faculty supervisor and submit a completed registration questionnaire to the course coordinator before registering for this course. This two-semester course is offered over consecutive semesters. Students will select NEUR*4421 in the first semester and NEUR*4422 in the second semester. A grade will not be assigned to NEUR*4421 until NEUR*4422 has been completed.

Pre-Requisites: 14.00 credits
BIOM*4510, BIOM*4521, BIOM*4522, NEUR*4401, NEUR*4402, NEUR*4450. Instructor consent required.
Restrictions: Restricted to students in BSCH.NEUR, BSCH.NEUR:C and NEUR minor.

1.2 Course Description

Objectives: This research course is designed to expose students to neuroscience research where information is created, interpreted, and integrated with current knowledge, and to teach effective skills for communicating scientific information orally and in writing.

It is important to realize that this course is at the undergraduate level. The research project should be well-defined and have a reasonable likelihood of success. This course is not mini-Masters and certainly should not involve a rigorous series of experiments.
1.3 Timetable

There will be an optional introductory class held at the beginning of the semester, where the course coordinator will be available to answer questions about the course. Student oral presentations will take place the second last week of the semester.

1.4 Final Exam

There will be no final examination for this course.

2 Instructional Support

2.1 Instructional Support Team

Course Co-ordinator: Craig Bailey  
Email: baileyc@uoguelph.ca  
Telephone: +1-519-824-4120 x54954  
Office: OVCE 2602

Program Advisor: Jenna Penney  
Email: penneyj@uoguelph.ca  
Office: SSC 3516

Program Advisor: Kimberly Best  
Email: kbestb@uoguelph.ca  
Telephone: +1-519-824-4120 x54918  
Office: OVCE 2633

3 Learning Resources

Please refer to the CourseLink site for available learning resources. A dropbox folder will be available to assess your written reports for originality using the TurnItIn originality check. This feature is provided as a learning resource for the student and not to check final reports.

4 Learning Outcomes

4.1 Course Learning Outcomes

1. Critically evaluate multiple perspectives, ideas, and arguments related to neuroscience by gathering and integrating relevant information from the literature, assessing its credibility, and synthesizing evidence to draw conclusions.
2. Identify a problem and propose a neuroscience related research question using creativity, interdisciplinary experiences, and a depth and breadth of knowledge/expertise in neuroscience.

3. Accurately and effectively communicate ideas, arguments and analyses, to a range of audiences, in graphic, oral and written form.

4. Apply scientific methods to construct an appropriate study design to investigate a research question in neuroscience.

5. Generate and interpret unbiased and sufficient data using quantitative, qualitative and analytical methodologies and techniques to draw conclusions and make scientifically based observations.

6. Identify and apply relevant contemporary research methods, skills and techniques to conduct independent inquiry in neuroscience.

7. Reflect on the personal and professional development through the completion of a research project.

5 Teaching and Learning Activities

Teaching and Learning Activities

5.1

1. Near the beginning of the semester:

- there will be an optional introductory class held by the course coordinator.
- students will complete online CourseLink modules on (i) professionalism in the workplace, (ii) Principles of Belonging, (iii) laboratory safety and WHMIS, and (iv) project management.

2. Near the end of the semester:

- students will complete on-line CourseLink modules on (1) academic integrity and (ii) how to perform a reflection exercise.
- oral presentations are held the second last week of classes.
- the written report and reflective activity normally are due around the last day of classes.

5.2
1. When the seminar begins, students should contact their supervisor and begin working on their laboratory project according to his/her directions.
2. Maintain regular contact with your supervisor throughout the semester, to discuss your progress. Many supervisors arrange a regularly weekly meeting with students.
3. You need to discuss with your supervisor the points raised in the Seminar Questionnaire. This form needs to be returned to Kim Best (rm 2633, OVC; kbestb@uoguelph.ca) before the deadline date to facilitate planning the seminar days. If this questionnaire is not received by the date in the deadline dates, 5 marks will be deducted from your final grade.
4. You will prepare your seminar slides/presentation using PowerPoint and upload this file to Sharepoint (information and link provided by Kim). The due date for uploading is 8a the day of your presentation. If you are late uploading your presentation, 5% will be deducted from your final grade.
5. Preview and practice your presentation with your supervisor/lab group.
6. You are expected to participate in and critique your colleagues’ presentations by completing five peer evaluation during the seminar week. A Sharepoint link will be provided with an on-line evaluation form. Please make sure, when completed, your evaluation form has been successfully uploaded.
7. We ask that you complete an on-line course evaluation during the last 2 weeks of classes.
8. A preliminary draft of your written report should be submitted to your supervisor for general comments and feedback before the final copy is submitted. Allow time for this to occur in consultation with your supervisor. The date provided in the Semester Deadlines is to be used as a guideline. Consult with your supervisor when report is due.

6 Assessments

6.1 Marking Schemes & Distributions

Students will not be penalized if a project fails due to circumstances beyond their control. In such cases, however, students should give a critical appraisal of the problem(s) encountered, and the emphasis of the project may be re-directed to improving the methodology.

Please Note: the percentage allocations below contribute to the overall grade for NEUR*4421 AND NEUR*4422 together, which will be calculated and provided on your transcript once NEUR*4402 is completed. An ‘in progress’ INP will appear on your transcript for both NEUR*4421 until NEUR*4422 is completed, at which time the overall grade will appear for
both courses.

**Interim Seminar Presentation (10%)**
Students will deliver an interim seminar presentation for the first semester on their progress to-date. This consists of an oral presentation in the form of a 10min powerpoint presentation followed by a 5minute question period. Please note that the powerpoint ‘presenter view’ will not be available for the oral presentation. The primary purpose of the interim seminar presentation is to identify the objectives/hypothesis being tested in the research project, the research protocol for the project, and any progress to date. The formal seminar presentation given in the second semester of the course (NEUR*4422) concentrates more on the results and discussion of the overall project.

**Interim Written Report (10% - 1 reviewer)**
Students will complete an interim written report for the first semester on their progress to-date. This consists of a written paper in the form of a 6-page double-spaced report to be provided to the supervisor by the appropriate semester deadline date (see Semester Due Dates). The primary purpose of the interim written report is to identify the objectives/hypothesis being tested in the research project, the research protocol for the project, and any progress to date. The final written report to be prepared in the second semester of the course (NEUR*4442) concentrates more on the results and discussion of the overall project.

**Evaluation of your Colleagues’ Seminars (2.5% - 5 in total)**
Students are required to assist with the evaluation of their colleagues’ presentations and to participate in the question periods. Each student must submit a minimum of 5 peer evaluations each semester (5x0.5% each = 2.5%). The presenter’s seminar mark will be calculated as the average of all faculty scores submitted, however presenters and supervisors will receive a copy of all faculty & peer evaluations in order to evaluate all feedback provided for the presentation. Students are encouraged to review this feedback with their supervisor.

**Reflective Activity (2.5%; 1 page max)**
Students will prepare a written reflection on their personal and professional development throughout the first semester of this research project.
7 Course Statements

7.1 Faculty and Student Commitments

Neuroscience majors may select one of the University's double-weighted research courses as a restricted elective for their major. The ‘0-6’ and 0-12’ hr/week labels on the courses should be regarded as the minimum time commitment for students. In other courses, students are expected to work on course material after lectures and laboratories are finished.

Research course students can expect that they will have to spend more than the listed time/week to complete their research work. Students may have to deliberately limit the time that they devote to these courses if they find the work particularly interesting or demanding. If a student feels that a problem is arising, he/she must talk to the supervisor about either becoming more efficient or limiting the workload.

If a student wishes to perform their research off-campus, they must secure a co-supervisor who is a faculty member of the University of Guelph.

If a student has questions or concerns regarding any aspect of the research or academic aspects of this course, they are encouraged to talk with the course coordinator.

8 University Statements

8.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

8.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Graduate Calendar - Grounds for Academic Consideration
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml
8.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

Graduate Calendar - Registration Changes
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-regregchg.shtml

Associate Diploma Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml

8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For Guelph students, information can be found on the SAS website
https://www.uoguelph.ca/sas
For Ridgetown students, information can be found on the Ridgetown SAS website
https://www.ridgetownc.com/services/accessibilityservices.cfm

8.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

Graduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

8.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

8.8 Resources

The Academic Calendars are the source of information about the University of Guelph’s procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars
https://www.uoguelph.ca/academics/calendars

8.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.
This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (https://news.uoguelph.ca/2019-novel-coronavirus-information/) and circulated by email.

8.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g., final exam or major assignment).

8.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- https://news.uoguelph.ca/return-to-campuses/how-u-of-g-is-preparing-for-your-safe-return/
- https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.