

Research in Neurosciences **NEUR*4450, NEUR*4401, NEUR*4402**

Objectives

These research courses are 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.

Goals

The specific goals of these courses are to: (a) develop an appreciation for research, (b) improve library skills by researching the literature on a specific topic, (c) develop awareness of current research techniques, (d) develop the techniques and attitudes of critical thinking through evaluation of research data, (e) teach problem solving and (f) improve written and oral communications skills. The courses are designed to give the student a realistic view of research by providing an opportunity for “hands-on” research.

It is important to realize that these courses are at the undergraduate level. The research projects should be well-defined and have a reasonable likelihood of success. These courses are not mini-Masters and certainly should not involve a rigorous series of experiments. Students will not be penalized when 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.

Faculty and Student Commitments

Neuroscience minors may require one of the double-weighted courses for their programs. 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. Students should also feel free to talk to the course coordinator.

‘Animal Utilization Protocol’ Approval

Some projects may require working with live animals. Faculty supervisors are responsible for obtaining the appropriate Animal Utilization Protocols to cover the work being done by Research project students under their supervision. Students should be aware of these protocols and understand their purpose. Discuss these with your supervisor.

Academic Misconduct

The University of Guelph has adopted a set of policy guidelines to deal with academic misconduct. Please see:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>. It is the student’s responsibility to be aware of and follow these regulations.

Course Evaluation (important feedback - Please do not neglect!)

Course evaluations will be turned on the last 2 weeks of classes.

https://courseeval.uoguelph.ca/CEVAL_LOGIN.php

If you see ways that the course could be improved, please say so on the evaluation form! Your feedback is vital for us to assess the impact of the research courses and to fine tune the way we operate. This feedback will be provided to the course coordinator ONLY after the final grades have been submitted to the Registrar's Office and will be used to make improvements to the course.

Methods of Evaluation

- NEUR 4450:**
- a) Formal seminar presentation - 30%.
 - b) Evaluation of your colleagues' seminars within your group - 5%
 - c) Final written report in the form of a research project paper - 35%
 - d) Assessment by the supervisor* - 30%

- NEUR 4401/2:**
- a) Interim report (1st semester) - 15% ---7.5% seminar and 7.5% written report
 - b) Evaluation of your colleagues' seminars within your group - 5%
 - c) Formal seminar presentation (2nd semester) - 30%.
 - d) Final written report in the form of a research project paper (30%).
 - e) Assessment by the supervisor* - 20%.

* The supervisor's assessment might include factors such as: interaction with others on the laboratory, organization of time, preparation for meetings, development of technical competence and quality of laboratory notes, etc . The student should discuss the specific criteria for this assessment with the supervisor before the project begins.

The Formal Seminar

All students are required to give an oral presentation. This formal seminar will be presented using the 10/5 format commonly used in scientific meetings - a 10 minute presentation and a 5 minute question period. The emphasis in the presentation, and in the evaluation, should be on development of logical ideas and on effective communication utilizing MS PowerPoint 2010 only.

Ideally, the seminar should include the following components:

1. An Introduction - general terms to orient the audience and provide background information.
2. Objectives/Hypothesis - definition of the scope of the experimental project.
3. Methodology/Experimental Design - this will provide an overview of the methods used.
4. Experimental Results.
5. Discussion of Results.
6. Summary/Conclusions - review of the main points and concise conclusions.

Seminar Preparation:

All seminars are to be computer-generated presentations using the program, MS PowerPoint 2010 only. Supplemental audiovisual aids are **NOT** permitted. The presenter must keep in mind the time restrictions for the seminar. The presentations will be timed.

All students registered in the Neuroscience Research Project courses require a network account (free of charge). To set this up after the course begins, go to:

<https://www.uoguelph.ca/ccs/apps/password/change/>

This will change both your e-mail and your network (CFS) password synchronously. If you do not actually want to change your (e-mail etc.) password now - although we encourage you to do so regularly - just re-enter the same one three times. This will set your CFS password. If you neglect to do this, you will find it difficult to use most computers in OVC, which require CFS login. With this network account, students have access to the computers in the OVC. Students will be able to use these computers for: (a) word processing, (b) searching the literature, (c) organizing your references (save references from searches to Ref Works), (d) producing visual materials for your seminars (use PowerPoint 2010), and (e) sending and receiving e-mail (we will use e-mail to correspond with you during the semester). The computer in the seminar rooms (ROMs 1642 & 3648, Biomedical Sciences) use PowerPoint 2010. Specific rehearsal times using that computer are provided in the week before the seminars. A sign-up sheet will be placed on the door a day or two before rehearsals begin.

*NOTE: All final seminar presentations must be e-mailed to Kim Best (kbestb@uoguelph.ca) by 8:00a the day of your presentation. If not received by the required time, 10 marks will be deducted from your final seminar average. This process precludes rebooting the computer between presentations. Use of laptop computers or flash cards is not permitted for the seminar presentations.

Seminar Presentation:

Specific days have been designated for the seminar presentations. After soliciting student/supervisor input (Seminar Questionnaire), a presentation scheduled for a specific morning(s) and/or afternoon(s) will be provided. Interim seminars will be scheduled at 10 minute intervals and final seminars will be scheduled every 15 minutes, with every attempt being made to accommodate your first choice of day/time (am/pm). It is important that your presentation be thoroughly rehearsed to ensure that it meets these time restriction. Presentations **will not** be allowed to run overtime.

Students are required to be present for the duration of their session to assist with the evaluation of their colleagues' presentations and to participate in the question periods. Each student must submit evaluations for all of the peer presentations in their group. These evaluations must have their name clearly printed on the bottom of the page to receive the five marks assigned for peer review. If you cannot be present for your entire seminar session you are required to attend other sessions and evaluate a minimum of 6 seminar presentations. All present in the audience will be asked to evaluate and grade each seminar. Only seminar scores provided by the Faculty present will be used in determining the grade for the presentation. All evaluation forms will ultimately be returned to the student and their supervisor, and the supervisor will be expected to review these with the student as a means of providing feedback on the oral presentation.

The Final Written Report

The final written report on the experimental project is due on the specified date (Semester Deadlines). The report can be submitted electronically or in duplicate paper copies for assessment by the supervisor and by a second senior reviewer not from their laboratory, chosen by the supervisor.

Reports should be written in the format of a Neuroscience journal of the supervisors choosing, with the following sections: Title Page, Abstract, Key Words, Introduction, Materials and Methods, Results, Discussion, Conclusions, and References. The emphasis will be on the presentation and discussion of the research data generated during the semester. The references for this report should be in the format of the chosen journal.

It is appropriate for the supervisor to read a draft of the project final report once, and offer specific suggestions for improvement before the student submits the final version. Faculty supervisors provide advice and feedback to their graduate students when the latter are drafting MSc or PhD thesis. This feedback is part of the learning process and should be part of the research project course experience as well. Students should schedule this preliminary reading with their supervisors well in advance of the due date of the report.

The Interim Report (NEUR*4401 students only)

Students taking the two semester course will be required to provide an interim report for the first semester on their progress to date. This report consists of two components: an oral presentation (a 5 minute PowerPoint presentation followed by 5 minute question period) on one of the regularly scheduled seminar days for that semester **and** a written (2 page single spaced report) provided to the supervisor on the same date that all final reports are due to be handed in to supervisors. The purpose of the interim report is primarily 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 given in the second part of the course (NEUR*4402) concentrates more on the results and discussion of the overall project.

A CHECK-LIST FOR STUDENTS

1. You are responsible for finding a Professor to supervise your work. Arrange to meet with potential supervisors (from websites, past professors, professors working in an area that you now find interesting) to obtain agreement on a project (part of their research program). If you have a special project that you would like to pursue, ask the course co-ordinator for suggestions for a supervisor. Departmental Web sites or the Graduate Studies Office WWW site are also excellent because they list faculty and their interests. This should be done as far in advance of the start of the semester as possible.
2. Once you have arranged for a supervisor, have the supervisor sign your Sign-In Questionnaire indicating his/her agreement to supervise your project. Students should indicate clearly whether they plan to complete an experimental project in one or two semesters. Return this form to Kim Best (OVC 2631) and she will then sign a waiver form which allows you into the research courses. Criteria for the supervisors assessment (the 20 - 30% component of the final grade) should be discussed and agreed upon at the first meeting with your supervisor.
3. When the semester begins, students should contact their supervisor and begin working on their laboratory project according to his/her directions.
4. Arrange a time each week to meet with your supervisor to discuss your progress.
5. You need to discuss the points raised in the Seminar Questionnaire. This form needs to be returned to Kim Best, OVC Rm 2631 before the deadline date to facilitate planning the seminar days. The sooner it is returned the greater the chance of getting your first choice of time. Students taking NEUR*4401 should indicate that this will be the interim report. If this questionnaire is not received by the date in the deadline dates, completely filled out with at least a temporary title, 5 marks will be deducted from your seminar grade and you will be scheduled into one of the available presentation time slots.
6. All seminars will be prepared using PowerPoint 2010. If needed, assistance with PowerPoint can be obtained from the course coordinator. Seminars must be e-mailed to Kim Best (kbestb@uoguelph.ca) by 8:00a the day of your presentation.
7. Preview your completed computer-generated presentation with you supervisor in the seminar room. A sign-up sheet will be posted on the seminar room door several days before the practice times are scheduled.
8. You are required to be present for the entire session in which you are scheduled to give your presentation. You are expected to participate in the question periods and to critique your colleagues' presentations. Evaluation forms for everyone in your group must be completed and submitted. These evaluations must have the students name clearly printed on the bottom to get the 5 marks.
9. Complete a course evaluation on-line during the last 2 weeks of classes.

10. A preliminary draft of your experimental project report should be submitted to your supervisor for general comments and feedback before the final copy is submitted. Allow time for this to occur. The final research project report is due to your supervisor on the specified day indicated in semester deadlines.
11. Direct questions or concerns to the course coordinators:
Dr. Neil MacLusky: OVC Room 2633, nmaclusk@uoguelph.ca
Ms. Kim Best: OVC Room 2631, kbestb@uoguelph.ca

A Check List for Supervisors

1. Please read section on course objectives and goals. Students may do a laboratory research project double weighted in a single semester or single weighted in each of 2 adjacent semesters.
2. Sign the student's Sign-In Questionnaire indicating your agreement to supervise the student must be returned by the student to the course coordinators no later than the introductory session for the course so that a waiver may be signed allowing them in to course.
3. In the initial meetings with your student, focus on opening up lines of communication as regular one-on-one meetings with a professor may be a new experience for students. Discuss your expectations of the student and be sure to clearly identify the criteria you will use in assessing the student's performance (i.e. the supervisor's assessment component of the overall evaluation). Discuss with NEUR*4401/2 students, the requirements for the interim report (oral and written format).
4. Arrange regular meetings with the student to discuss progress, assign tasks, or just have a short chat. Try to monitor regularly the time that your student is spending on the course.
5. Discuss the questions posed on the Seminar Questionnaire that needs to be handed in by the specified deadline. Supervisors (or a designate if the supervisor is not available) are expected to attend their student's oral presentation and to help evaluate other seminars in the time block selected.
6. If you have to be away from campus for a significant period of time, arrange for the supervision of your student in your absence.
7. Preview your student's presentation before seminar day using the computer in the seminar presentation room (OVC Room 3648). Practice times are scheduled during the week preceding the seminars. The emphasis should be on a clear development of ideas relating to their project.
8. Discuss the seminar evaluations with your student when they are returned to you.
9. Be prepared to help your student meet your expectations if he/she is spending considerably more than 6 or 12h/wk on assigned tasks. A high standard needs to be maintained but the students also have to balance their research project with multiple other courses. These courses should not develop into high pressure stressful exercises that put students off of research.
10. Provide specific comments when your student asks you to review the preliminary draft of the final report. We help MSc and PhD students in such a way and should also be prepared to provide similar feedback to fourth-year research project students.
12. The student's final report (please indicated preference for paper or electronic version) is due in your hands by the specified deadline. Find a senior colleague (not from your lab in order to provide independent objective assessment) to mark the second copy of the report. You will submit the two individual grades out of 100%.

13. Marks must be submitted to the course co-ordinator by e-mail or hand delivered by 5:00 PM on the specified deadline so that student grades can be compiled by the course coordinator for submission to the Registrar's Office
14. All marks should be out of 100%. We will calculate the final grade.
15. Direct questions or concerns to the course coordinators:
Dr. Neil MacLusky: OVC Room 2633, nmaclusk@uoguelph.ca
Ms. Kim Best: OVC Room 2631, kbestb@uoguelph.ca