NEUR*4000 Current Issues in Neuroscience

Fall 2018
Section(s): C01

Department of Biomedical Sciences
Credit Weight: 0.50
Version 2.00 - September 07, 2018

1 Course Details

1.1 Calendar Description

This course will consist of guest lectures offered by faculty who are working in the field and will complement the seminars given by the students on topics that they have prepared in studying the primary literature. Students will also prepare a major paper on a neuroscience topic.

Pre-Requisite(s): 14.00 credits
Restriction(s): Enrolment restricted to BSC.NEUR major and minor.

1.2 Course Description

This course will consist of assigned readings, student presentations, attending research seminars and participating in open class discussion about current issues in the field of neuroscience. Each week, a neuroscientist will be invited to give a seminar on their field of research. Students will take turns presenting research papers relevant to the weekly seminar and will be expected to participate in and lead an open class discussion on this topic.

Current neuroscience research being performed at the University of Guelph will be covered, emphasizing such topics as: the neurobiology of social cognition, attention deficit and Fetal Alcohol Spectrum Disorder, standing and balance, learning in amphibians, the genetics of neuronal function, the impact of Environmental Stress, Parkinson's disease, learning and memory, neural regeneration, attention and epilepsy.

Each class will be structured as follows: three groups of students will first give presentations (15 min each) on assigned research articles related to that week's invited neuroscientist's research. There will then be a brief group discussion on all articles, followed by a 10-15 min class break. The invited neuroscientist will then present their research seminar (about 45 min) and we will then have an open class discussion on the research presented.

1.3 Timetable

Timetable is subject to change. Please see WebAdvisor for the latest information.

1.4 Final Exam

This course does not have a final exam.

2 Instructional Support

2.1 Instructional Support Team

Course Co-ordinator: Bettina Kalisch
Email: bkalisch@uoguelph.ca
Telephone: 519-824-4120 x54939
Office: OVC 1646F

Course Co-ordinator: Jibran Khokhar
Email: jkhokhar@uoguelph.ca
Telephone: +1-519-824-4120 x54239
Office: OVC 2608

2.2 Teaching Assistant(s)

Teaching Assistant: Bryan Jenkins
Email: bjenki01@uoguelph.ca
Telephone: 519-824-4120 x
Office Hours: Meeting by arrangement, e-mail at all times.

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3 Learning Resources

Any additional resources will be provided on Courselink.

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4 Learning Outcomes

Specific Learning Outcomes:

Weekly participation, in the form of peer review, one submitted question per article relating to the assigned reading and two important take-home messages from the faculty presentation, will assess the understanding and application of learned material and prepare the students to participate meaningfully in class discussions. On the indicated class periods students will gain oral communication skills as they present an assigned journal article. This will allow further exploration of relevant original research articles and familiarize them with reading these types of publications to extract key points and clearly convey this information to their peers.

As a capstone experience, each student will develop a written research proposal based upon material discussed in class or directly related to neuroscience. This exercise will allow students to explore a research question of interest, through application of critical and creative thinking. Students must assess, evaluate, and integrate the current literature and apply this knowledge to develop a unique proposal to investigate their specific research question. Through a writing services workshop geared towards this research proposal, students will have the opportunity to improve their literacy skills (research and writing) and apply these skills directly in developing their research proposal.

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Identify main concepts of journal articles and apply this knowledge to formulate questions

and participate in discussion
2. Oral communication skills; synthesis and presentation of scientific publication material for peers
3. Develop research question and discuss how you will test it; gain feedback to improve final proposal
4. Critical and creative thinking; learn to assess, evaluate, integrate literature; improve literacy skills

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5 Teaching and Learning Activities

Class Schedule and Location: Monday 2:30PM - 5:20PM,MacDonald Institute (MINS) 106

5.1 Lecture

Mon, Sep 10

Topic(s): Introduction

Introduction to course, information on assignment of presentation groups/dates/topics

Bettina Kalisch, Jibran Khokhar, Bryan Jenkins

Mon, Sep 17

Topic(s): Substance Use in Patients with Schizophrenia: Cracking the Chicken-or-egg Problem

Guest speaker: **Dr. Jibran Khokhar**, Dept. of Biomedical Sciences

Student presentations, weekly forms due.

Mon, Sep 24

Topic(s): Neural Oscillations and Network Communication Dysfunction in Neuropsychiatric Disorders

Guest speaker: **Dr. Melissa Perreault**, Dept. of Molecular and Cellular Biology

Student presentations, weekly forms due.

Mon, Oct 1

Topic(s): Controlling Brain Development Via Post-transcriptional Gene Regulation by RNA-binding Proteins

Guest speaker: **Dr. John Vessey**, Dept. of Molecular and Cellular Biology

Student presentations, weekly forms due.

Mon, Oct 8

Topic(s): Holiday - NO CLASSES SCHEDULED

Classes rescheduled to Friday, November 30th.

Mon, Oct 15

Topic(s): Cholinergic Regulation of Object Memory Destabilization

Guest speaker: **Dr. Boyer Winters**, Dept of Psychology

Student presentations, weekly forms due.

Outline of Research Proposal due at the start of class.

Mon, Oct 22

Topic(s): One Foot in Front of the Other: a Role for Skin in Posture and Locomotion

Guest speaker: **Dr. Leah Bent**, Dept. of Human Health and Nutritional Sciences

Student presentations, weekly forms due.

Mon, Oct 29

Topic(s): Got Estrogen? – The Role of Estrogen in Autonomic Function

Guest speaker: **Dr. Tarek Saleh**, Dept. of Biomedical Sciences

Student presentations, weekly forms due.

Mon, Nov 5

Topic(s): Neuroprotective Effects of Androgen Metabolites: Sex Differences in Alzheimer's Disease

Guest speaker: **Dr. Neil MacLusky**, Dept. of Biomedical Sciences

Student presentations, weekly forms due.

Mon, Nov 12

Topic(s): Neurocognitive Mechanisms of Attention-, Response-, and Memory-related Inhibition Have Affective and Motivational Consequences

Guest speaker: **Dr. Mark Fenske**, Dept. of Psychology

Student presentations, weekly forms due.

Mon, Nov 19

Topic(s): The Comparative Epilepsy Program

Guest speaker: **Dr. Fiona James**, Dept. of Clinical Studies

Student presentations, weekly forms due.

Mon, Nov 26

Topic(s): Neurogenesis, Spinal Cord Repair, and Other Lessons from Lizards

Guest speaker: **Dr. Matthew Vickaryous**, Dept. of Biomedical Sciences

Student presentations, weekly forms due.

Fri, Nov 30

Topic(s): No Class

NOTE THAT THIS IS A FRIDAY

No Student paper presentations or weekly forms due

Final Research Proposals due - to be submitted through the Drop Box on CourseLink

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6 Assessments

6.1 Assessment Details

Weekly Questions (15%)

Date: Weekly on the indicated Guest Speaker class dates (due at the end of class)
Attendance at all class meetings is strongly encouraged.

Each student is expected to read all of the assigned research papers provided by the invited neuroscientist (to be posted in CourseLink) before each class and is expected to actively participate and contribute to the group discussion both after the student presentations and the invited speaker's seminar presentation.

At the end of each class, students will hand-in a peer review of the student presentations, one question per article for the week's assigned research papers and a list of the key take-home points based on the guest lecture. A hard copy of the form to be filled in will be handed out at the start of class (forms will be not be available beyond the first journal club presentation) and will only be accepted at the end of class. Early, late and emailed submissions **will not be accepted**. There are ten weeks of presentations, so to account for illness and other potential emergencies, students are required to submit at least seven of these reports for the semester.

Oral Research Paper Presentation (25%)

Date: Date/topic/group assigned Sept 10, 2018

The presentations will be based on assigned scientific research papers that will be provided by the invited neuroscientist and posted to CourseLink two weeks before the class. Papers will be presented in pairs with each student receiving the same grade for their presentation. It is entirely up to the two students presenting to distribute their efforts for their presentation but each student should present approximately equal amounts of material. Please let the course coordinators know well before the presentation date if there are any issues with the degree of effort being made by a presentation member.

An overview of the full research paper should be presented, including the Introduction, Methods, Results and Discussion. The Introduction and Methods should clearly describe the background information and rationale for performing the research study (including any particularly relevant recent findings that lead directly to the current study), as well as the key primary methods employed in the research study. The Results and Discussion should clearly describe the main results, their implications in light of other relevant studies, and the authors' conclusions. You may include any information from the assigned research papers including their figures, and should also include information obtained from other sources such as other published research papers. The evaluation of the presentation will be based on both style and content. It is important that students demonstrate a clear understanding of the material being presented and that this material is clearly conveyed to the audience. Overly flashy presentations will not earn extra points if the material covered is highly superficial and/or poorly communicated. For full marks, students should endeavor to go beyond a surface level presentation of the assigned material, incorporating additional readings and their own critical thoughts and, ideally, clearly describing empirical findings that support the arguments being made. The findings of the assigned paper should be discussed in the broader context of the research field.

Another important aspect of the presentation will be for the presenters to stimulate a good class discussion. While your marks won't suffer if the class is quiet that day, your effort to foster discussion and participation from the class will be considered in your mark for this exercise.

Each presentation should be approximately 15 minutes long, and allow for 5-7 minutes of questions and class discussion. These times will be strictly enforced. The mark of the presentation will suffer if it is shorter than 10 minutes or longer than 20 minutes. Please use PowerPoint to make your presentation slides.

The morning of your presentation, by 10 AM, one group member must e-mail the presentation file (in power point) to the TA so that it can be loaded and ready to go for the classroom. Failure to do so will result in a **5 point** deduction.

Outline of Research Proposal (20%)

Due: October 15, 2018 (due at the start of class)

The proposal topic must be different from the student's assigned research paper but may be (but does not have to be) related to one of the more general topics covered in class.

Each student will first prepare a two-page double-spaced outline (with references on additional pages) of their research proposal in neuroscience and submit it by hard copy at the **start**

of class on Monday, October 15th. Be on time! A late penalty of 10 % will be applied for outlines handed in later during class and a late penatly of 10 % per day will be added for outlines handed in after October 15th.

The outline must identify your proposed research topic/question, briefly describe how you will answer this question (methods), along with a list of references containing at least 5 journal article references that are directly relevant to answering your specific research question. A handout detailing requirements will be provided on Courselink.

Constructive feedback on the outline will be provided, which will help in preparing the final written research proposal.

Final Research Proposal (40%)

Due: November 30, 2018 (submitted via CourseLink drop box)
Students will write a 10-page double-spaced (title page, abstract and references are not included in the page limit) research proposal and submit an electronic copy (word or pdf format) due November 30, 2018. There will be a penalty of 20% per day for late submissions (includes weekends).

The proposal will outline the design of an experiment to address a question related to a topic in neuroscience. The topic must be different from the student's assigned research paper but may be related to one of the more general topics covered in class, or it can be from any other topic in neuroscience.

The proposal will be written in the format of a scientific article, using **The Journal of Neuroscience** style, including a Title Page, Abstract, Introduction, Methods, Expected Results, and References. A handout detailing requirements will be provided on Courselink.

The **Introduction** should be no longer than five pages and should refer to material from at least five peer reviewed primary references (i.e. journal research papers) based on an independent literature search. Non peer--reviewed publications (e.g. Wikipedia) are not acceptable references.

The **Methods** section should describe the proposed experimental methodology and data analysis in sufficient detail to be replicated and should be written in the future tense.

The **Expected Results** should include mock data, graphs and/or tables to demonstrate the type of data that are expected to be generated from this experiment.

The **Discussion** should be no longer than 3 pages and it should consider the predicted findings in the context of the literature presented in the introduction.

The **References** should be formatted according to **The Journal of Neuroscience,** and a full list of references in alphabetical order should appear at the end of the proposal.

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7 Course Statements

7.1 Course Policy on Group Work

Students will work in pairs for the oral presentations. Each group member must evenly contribute to the presentation preparation, as well as the in class presentation of the material. Failure to do so will be reflected in a student's grade for this component of the course. Please let the course coordinator know well before your presentation date if there are any issues in the degree of effort being made by a presenting group member.

7.2 Additional Course Information

Course instructors are allowed to use software to help in detecting plagiarism or unauthorized copying of student assignments. Plagiarism is one of the most common types of academic misconduct on our campus. Plagiarism involves students using the work, ideas and/or the exact wording of other people or sources without giving proper credit to others for the work, ideas and/or words in their papers. Students can unintentionally commit misconduct because they do not know how to reference outside sources properly or because they don't check their work carefully enough before handing it in. As the 2014/15 Undergraduate Calendar states: "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" (p. 31).

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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 regulations and procedures for Academic Consideration are detailed in the Undergraduate Calendar.

8.3 Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for Dropping Courses are available in the Undergraduate Calendar.

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 book their exams at least 7 days in advance, and not later than the 40th Class Day.

More information: www.uoguelph.ca/sas

8.6 Academic Misconduct

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 discourages misconduct. 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.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar.

8.7 Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate 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 which apply to undergraduate, graduate and diploma programs.
