NEUR*4000, Course Outline: Fall 2019

General Information

Course Title: NEUR*4000 Current Issues in Neuroscience

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

Credit Weight: 0.5

Academic Department (or campus): Psychology

Semester Offering: Fall 2019

Class Schedule and Location: Tuesday and Thursday 2:30PM - 4:00PM, Macdonald Stewart Hall (MACS), Room 121

Instructor Information

Instructor Name: Dr. Elena Choleris
Instructor Email: echoleri@uoguelph.ca
Office location and office hours: MacKinnon Annex (MCKN) 4020, T&T 4:30-5:30 PM or by appointment

GTA Information

GTA Name: Pietro Paletta
GTA Email: ppaletta@uoguelph.ca

GTA Name: Marieka DeVuono
GTA Email: mdevuono@uoguelph.ca

GTA office hours: Meeting by appointment, e-mail at all times.

GTA office location: TBA

Course Content

Specific Learning Outcomes:

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. Various neuroscientists will be invited to give a seminar on their field of research. Groups of students will take turns

presenting research papers relevant to the 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 brain effects of estrogens, cannabinoids, developmental ethanol, stress, hormonal interactions, and opiates, as well as the neurobiological underpinnings of motivation, attention, memory, body posture, locomotion, brain development, brain evolution, Alzheimer disease, and pain.

At the beginning of the semester, students will be divided into groups of 4-5 and assigned a seminar presentation day. Classes with a guest speaker will be structured as follows: 1 group of students will first give presentations (10 mins) on an assigned research article related to that week's invited neuroscientist's research. There will then be a brief group discussion. 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.

Weekly participation, in the form of 2 submitted questions relating to the assigned reading, 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 students with reading these types of publications to extract key points and clearly convey this information to their peers.

As a capstone experience, students, in the same groups from the research article presentation, will develop a scientific study that will identify and address a problem within a current issue based upon material discussed in class or directly related to neuroscience. Each group will prepare a written proposal as well as a presentation of the proposed solution to the identified problem, to be presented during the last four class days. This exercise will allow students to explore relevant real-world problems in the field of neuroscience, through application of critical and creative thinking, and problem-solving skills. Students must assess, evaluate, and integrate the current literature and apply this knowledge to develop a unique proposal to address their specific solution. Through this assignment, students will have the opportunity to improve their literacy skills (research and writing), oral communication skills, and apply these skills directly in developing their scientific study.

Lecture Content:

Date	Assignments and Topic
Sept 5	Introduction to course, information on assignment of presentation groups/dates/topics-tutorials, how to do a pubmed search and how to read an article
Sept 10	Introduction to course – tutorials on how to prepare a presentation, how to identify a problem, and how to design a scientific study
	Assignments: Student paper presentations, Weekly Participation Questions due
Sept 12	Guest Speaker: **Elena Choleris**, Dept. of Psychology.
	Title: Rapid effects of estrogens on learning/memory and the brain.
	Assignments: Student paper presentations, Weekly Participation Questions due
Sept 17	Guest Speaker: **Marieka DeVuono**, Dept of Psychology
	Title: Cannabinoid hyperemesis: interaction between endocannabinoids, stress, and nausea.
	Assignments: Student paper presentations, Weekly Participation Questions due
Sept 19	Guest Speaker: **Craig Bailey**, Dept. of Biomedical Sciences
	Title: Does developmental ethanol exposure alter development of the prefrontal cortex?
	Assignments: Student paper presentations, Weekly Participation Questions due
Sept 24	Guest Speaker: **Melissa Perreault**, Dept. of Molecular and Cellular Biology
	Title: Sex differences in innate and stressed-induced neural oscillatory activity predict depression-like susceptibility in rodents.
	Assignments: Student paper presentations, Weekly Participation Questions due
Sept 26	Guest Speaker: **Pietro Paletta**, Dept. Of Psychology
	Title: The interplay of estrogens and oxytocin in the brain in the regulation of social recognition.
	Assignments: Student paper presentations, Weekly Participation Questions due
Oct 1	Guest Speaker: **Mark Fenske,** Dept. of Psychology
	Title: Neurocognitive mechanisms underlying the affective and motivational consequences of attention-, response-, and memory-related inhibition.
	Assignments: Student paper presentations, Weekly Participation Questions due
Oct 3	Guest Speaker: **Leah Bent**, Human Health and Nutritional Sciences
	Title: One Foot in Front of the Other: a Role for Skin in Posture and Locomotion
Oct 4	**Assignment: Outline of Scientific Proposal due *via* Dropbox on Courselink**
Oct 8	Assignments: Student scientific study outline presentations 5-6 min
	Feedback Participation Form
Oct 10	Assignments: Student scientific study outline presentations 5-6 min
	Feedback Participation Form
Oct 15	**Holiday NO CLASSES SCHEDULED -- classes rescheduled to Thursday, November 28**

	Assignments: Student paper presentations, Weekly Participation Questions due
Oct 17	Guest Speaker: **John Vessey**, Dept. of Molecular and Cellular Biology
	Title: The role of post-transcriptional gene regulation in building a brain.
Oct 22	Society for Neuroscience Conference **NO CLASSES SCHEDULED**
Oct 24	Society for Neuroscience Conference **NO CLASSES SCHEDULED**
	Assignments: Student paper presentations, Weekly Participation Questions due
Oct 29	Guest Speaker: **Caleb Axelrod,** Dept. of Integrative Biology
	Title: Brain size and the environment: intraspecific brain size variation in coexisting sunfish ecotypes
	Assignments: Student paper presentations, Weekly Participation Questions due
Oct 31	Guest Speaker: **Neil MacLusky**, Dept. of Biomedical Sciences
	Title: Sex differences in Alzheimer's disease: are androgens neuroprotective in males?
	Assignments: Student paper presentations, Weekly Participation Questions due
Nov 5	Guest Speaker: **Jasmin Lalonde,** Dept. of Molecular and Cellular Biology
	Title: The unsuspected influence of cannabis-derived flavonoids on neuron biology and their potential against glioblastomas.
	Assignments: Student paper presentations, Weekly Participation Questions due
Nov 7	Guest Speaker: **Giannina Descalzi**, Dept. of Biomedical Sciences
	Title: Cellular and molecular mechanisms of pain
	Assignments: Student paper presentations, Weekly Participation Questions due
Nov 12	Guest Speaker: **Jibran Khokar,** Dept. of Biomedical Sciences
	Title: Cannabis: Routes of administration and effects across the lifespan.
	Assignments: Student paper presentations, Weekly Participation Questions due
Nov 14	Guest Speaker: **Francesco Leri**, Dept. of Psychology
	Title: Effects of opiates and opiate withdrawal on memory consolidation.
Nov 15	**Assignment: Final Scientific Proposals due *via* Dropbox on Courselink**
Nov 19	Assignments: Student scientific study presentations 15+min Weekly Participation Questions
Nov 21	Assignments: Student scientific study presentations 15+min Weekly Participation Questions
Nov 26	Assignments: Student scientific study presentations 15+min Weekly Participation Questions
Nov 28	Assignments: Student scientific study presentations 15+min Weekly Participation Questions

Course Assignments and Tests:

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Weekly Questions	Weekly on the indicated Guest Speaker class dates **(due in the end of class)**	12%	Identify main concepts of journal articles and apply this knowledge to formulate questions and participate in discussion
Written Outline of Scientific Proposal	October 4, 2019 **(to be submitted on Courselink)**	10%	Develop research question and discuss how you will test it; gain feedback to improve final proposal
Presentation of Scientific Proposal Outline	October 8 or 10, 2019 (based on chosen theme)	10%	Oral communication skills; synthesis and presentation of scientific publication material for peers
Peer-Feedback	October 8 and 10, November 19, 21, 26, and 28, 2019	6%	Critical assessment and reflection of oral presentations
Oral Research Paper Presentation	Date/topic/group assigned Sept 5, 2019	20%	Oral communication skills; synthesis and presentation of scientific publication material for peers
Final Scientific Proposal	November 15, 2019 **(to be submitted on CourseLink)**	30%	Critical and creative thinking; learn to assess, evaluate, integrate literature; improve literacy skills
Presentation of Final Proposal	Date/theme/group assigned Sept 5, 2019 November 19, 21, 26, or 28, 2019	12%	Oral communication skills; synthesis and presentation of scientific publication material for peers

Additional Notes:

Oral Research Paper Presentation (20%):

The presentations will be based on assigned scientific research papers that will be provided by the invited neuroscientist and posted to CourseLink 1-2 weeks before the class. Papers will be presented in working groups that are created at the beginning of the semester. It is entirely up to those students to distribute their efforts for their presentation, but each student should present part of the material.

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 10 minutes long, and will be followed by 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 8 minutes or longer than 11 minutes. Please use PowerPoint to make your presentation slides.

The morning you present, before 12PM one group member must have emailed me your presentation file (in powerpoint) so that it can be loaded and ready to go for the classroom. Failure to do so will result in a **5 point** deduction. Please see Courselink for Presentation Tips.

Questions on Assigned Research Articles (12%):

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 list of two important questions that they thought of while reading that week's research papers. This list will only be accepted by hard copy and only at the end of class. Early, late and emailed submissions will not be accepted. There are fourteen days of guest speaker presentations, so to account for illness and other potential emergencies, students are required to submit at least twelve of these reports for the semester.

Written Outline and Presentation of Scientific Proposal (10% each):

At the beginning of the semester, students in groups of 4-5 will pick one of four themes of current issues in neuroscience. These groups will be the same as the Oral Research Paper Presentation groups. Students will then identify a problem related to their chosen theme by exploring relevant literature and the real-world implication of the chosen theme. This year's themes are: (1) neurodegenerative disease, (2) hormones, (3) addiction, (4) brain damage.

Each group will first prepare a three-page double-spaced outline (with references on additional pages) of their research proposal in neuroscience and submit it **on Friday, October 4th (10%) via Dropbox on Courselink.**

The outline must identify the problem within your theme, briefly describe how you will test your proposed solution (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 scientific proposal.

On **Tuesday, October 8th and Thursday, October 10th (dates based on theme)**, groups will give brief oral presentations (5-6 mins) of their outline (10%). This will allow groups to obtain feedback from their peers to complement the feedback on the written proposal. **The morning you present, before 12PM** one group member must have emailed me your presentation file (in powerpoint) so that it can be loaded and ready to go for the classroom. Failure to do so will result in a **5 point** deduction.

Final Scientific Proposal (30%):

Students will write a 10-page double-spaced (plus references) scientific proposal and submit a hard copy due Friday **November 15th, 2019** *via* dropbox on courselink **(30%)**. Be on time! There will be a penalty of 20% per day for late submissions.

The proposal will outline the design of a scientific study to address and solve the problem identified within the theme of current issues 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, Implications 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 scientific 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 study.

The **Implications** should be no longer than 3 pages and it should consider the predicted findings in the context of the literature presented in the introduction as well as the real-world implication of the solution to the problem.

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.

Presentation of Final Scientific Proposal (12%):
During the last four classes (**November 19, 21, 26 or 28 –** based on themes), groups will present their final proposals to the class. Each presentation should be about 12 mins long. The mark of the presentation will suffer if it is shorter than 10 minutes or longer than 13 minutes. It is entirely up to those students to distribute their efforts for their presentation, but each student should present part of the material. Please use PowerPoint to make your presentation slides.

The presentation should be an overview of the full scientific proposal. Groups should explain the problem they have identified within their theme and clearly describe all relevant background information. The methods of the proposed study and expected results should also be discussed. Students should then discuss the real-world implications of their proposed study and how they may help solve the original identified problem.

Peer Feedback of Student Presentations (Outline and Final Scientific Proposal) (6%):
Student are expected to fill out peer-feedback forms when not presenting to be submitted **at the end of class.** There are 6 days of presentations, so to account for illness and other potential emergencies, students are required to submit at least 3 of these reports for the semester, on days they are not presenting.

Course Resources

Other Resources:

Any additional resources will be provided on Courselink.

Course Policies

Grading Policies

Oral Presentations (of a research paper, of the outline of the scientific proposal and of the final scientific proposal)
Both content and style will be evaluated for the group presentations. **The morning of your presentation, before 12AM,** one group member must have emailed me your presentation file (in power point) so that it can be loaded and ready to go for the classroom. Failure to do so will result in a **5 point** deduction.

The weekly questions on assigned research articles, are due in hard copy in the end of class. Class attendance will be taken at the beginning of class and any assignments handed in earlier or by students who were not present in the beginning of class will receive a zero mark.

Written Outline of Scientific Proposal
Due Oct 4, 2019. No late submissions will be accepted.

Written Final Scientific Proposal
Due Nov 14, 2019. There will be a penalty of 20% per day for late submissions.

Course Policy on Group Work:

Students will work in groups for the oral presentations and scientific proposals. 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 me know well before your presentation date if there are any issues in the degree of effort being made by a presenting group member.

Course Policy regarding use of electronic devices and recording of lectures:

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

University Policies

Academic Consideration

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for

Academic Consideration:
Academic Consideration, Appeals and Petitions

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:

Academic Misconduct Policy

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibility Services as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 54335 or email accessibility@uoguelph.ca or the Student Accessibility Services Website

Course Evaluation Information

Please refer to the Course and Instructor Evaluation Website **.**

Drop date

The last date to drop one-semester courses, without academic penalty, is **the last day of classes**. For regulations and procedures for Dropping Courses, see the Schedule of Dates in the Academic Calendar. Current Undergraduate Calendar

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).