

# **PSYC\*4470\*01, Course Outline: Fall 2017**

## **General Information**

**Course Title:** Advanced Topics in Cognitive Neuroscience

**Course Description:** Major areas of contemporary cognitive neuroscience will be covered in a seminar format. Selected topic areas may include the neural basis of learning, memory, attention, sensation, and perception. The selected topics will vary on the basis of the expertise of the instructor.

**Credit Weight:** 0.50

**Academic Department (or campus):** Department of Psychology

**Semester Offering:** Fall 2017

**Class Schedule and Location:** Wed, Fri: 11:30AM - 12:50PM, MCKN, Room 312

## **Instructor Information**

Instructor Name: Dr. Mark Fenske

Instructor Email: mfenske@uoguelph.ca

Office location and office hours: Room 4001 - MacKinnon Extension, Thu: 2:00 – 3:00PM

## **GTA Information**

GTA Name: Krysten Spencer-Mueller

GTA Email: kspenc03@uoguelph.ca

GTA office location and office hours: TBA

## **Course Content**

### **Specific Learning Outcomes:**

Critical & Creative Thinking:

Depth & Breadth of Understanding (Master)

Inquiry & Analysis (Master)

Problem Solving (Master)

Literacy:

Information (Master)

Methodological (Master)

Quantative (Master)

Communication:

Oral (Master)

Written (Master)

Reading (Master)

Integrative (Reinforce)

Professional and Ethical Behaviour:

Ethical Reasoning (Reinforce)

Ethical Issues in Research (Reinforce)

**These Learning Outcomes will be achieved through the successful completion of the following Objectives. By the end of this course you should:**

- 1) understand and effectively communicate to others contemporary methods and recent advances within cognitive neuroscience.
- 2) demonstrate critical assessments of the usefulness of experimental designs and research techniques for revealing the cognitive and neural substrates of thought and behaviour.
- 3) be able to apply cognitive-neuroscience methods and techniques to design and report an ethical scientific study aimed at revealing new knowledge about the neurocognitive mechanisms of thought and behaviour.
- 4) show an ability to articulate the value of collaboration across scientific disciplines and the use of multiple converging approaches to address complex scientific questions.
- 5) expanded your oral and visual communication skills through the development and provision of a PowerPoint seminar and participation in question-and-answers segments of seminars led by others.

**Course Assignments and Tests:**

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Midterm Exam	Sep. 29	20	1, 2, 4
Oral presentation	TBA	30	1, 2, 5
Talk Questions & Assessments	Each 'talks' class	10 (best 10 of 13)	1, 2, 4, 5
Research Proposal	Nov. 29	40	1, 2, 3

**Additional Notes:**

**Midterm Exam:** The Midterm exam will be designed to assess students' understanding of all material covered in the readings and in-class lectures on Methods. The format of the exam will be multiple-choice questions. Exam content will cover both lectures and any assigned readings.

**Assignment – Oral presentation:** Each student will be required to complete an in-class presentation that effectively summarizes an empirical research paper within a strict 12-minute

time-limit, followed by a 5-minute question period. Possible topics are listed below. This project requires you to search for and select a journal article reporting research using one or more cognitive-neuroscience techniques to address a critical research question within your assigned topic, and then develop a thorough understanding of how your chosen study fits within the context of prior research within that area. Such background knowledge will be critical for determining which details are crucial for understanding the advance in knowledge made by the study, and how to best translate this information to make it accessible to your classmates. This project is designed to enhance your inquiry and analysis skills, your depth and breadth of understanding, and your conceptual, and methodological, and quantitative literacy, while developing valuable visual and oral communication skills.

**Assignment – Talk Questions & Assessments:** Each student will be required to watch and listen to every oral presentation (aside from their own) and provide their assessment of its effectiveness and at least one ‘burning question’ that came to mind during the talk. The questions and assessments will be completed on a paper-and-pencil form and submitted to the instructor at the end of each class. To account for the possibility of missed opportunities to observe presentations and submit questions-and-assessments forms due to sickness, only the best 10 of the 13-total possible forms will count towards your final grade. If you miss submitting a questions-and-assessments form, this will be treated as one of the three grades to be dropped—you do NOT need to provide documentation, nor inform the instructor. If you fail to submit a questions-and-assessments form three times, each additional missed submission will be given a grade of zero and count as such toward your final grade unless appropriate documentation is provided within one week to the instructor as evidence of illness or compassionate circumstances.

**Assignment - Research Review/Proposal:** Each student will be required to write a brief overview of an area of cognitive-neuroscience research, identify a question of interest within the area, and propose an experiment to address the question of interest. This project is designed to provide you with experience in conducting a literature search, reading and summarizing journal articles, generating hypotheses, and applying your knowledge of cognitive-neuroscience techniques, research methods and data analysis to design a study that will test your hypotheses. The proposal should adhere to APA format guidelines. The resulting paper must not exceed 20 double-spaced pages, including the title page, abstract, references, and any tables or figures.

**Lecture Content:**

The list of topics for the dates indicated below represents a tentative course schedule that is subject to change throughout the semester.

Date	Topic
Sep. 08	Introduction and Overview of Brain
Sep. 13	Methods: Electrophysiology (intracranial, EEG/ERP & MEG)
Sep. 15	No class

Sep. 20	Methods: Functional imaging (PET & MRI/fMRI)
Sep. 22	Methods: Stimulation (TMS & tDCS)
Sep. 27	Advanced methods
<b>Sep. 29</b>	<b>Exam: Midterm</b>
Oct. 04	Tutorial: How to give a good presentation.
Oct. 06	Talks - Visual recognition: Objects / Places / Scenes
Oct. 11	Talks - Visual social recognition: Faces / Bodies / Uncanny Valley
Oct. 13	Talks - Vision for action: Navigation / Reaching / Mirror neurons
Oct. 18	Talks - Body: Somatosensation / Interoception / Nociception
Oct. 20	Research project
Oct. 25	Talks - Action: Motor execution/ Suppression / Monitoring
Oct. 27	Talks - Cognitive control: Conflict / Resolution / Error monitoring
Nov. 01	Talks - Control and negative affect: Effort / Conflict / Inhibition
Nov. 03	Talks - Adjusting control: Reward / Mistakes / Feedback
Nov. 08	Talks - Engagement: Vigilance / Mind-wandering / Boredom
Nov. 10	Talks - Attention: ERPs / Oscillations / Networks
Nov. 15	Talks - Working memory: Persistent / Activity-silent / Attention?
Nov. 17	Research project
Nov. 22	Talks - Brain training: Video games / Meditation / WM tasks
Nov. 24	Talks - Brain hacking: Electrical / Exercise / Nootropics
<b>Nov. 29</b>	<b>Course summary (Research Project: Due)</b>

## **Course Resources**

### **Required Texts:**

There is no course textbook.

### **Other Resources:**

All readings will be announced and made accessible through CourseLink.

## **Course Policies**

### **Grading Policies**

Completed assignments must be submitted directly to the instructor at the beginning of class on the due date indicated above. Early submissions are welcome, but must be made directly to the instructor. Late submissions and those submitted in any other way will not be accepted.

**Failure to submit an assignment on time will result in a grade of zero for that assignment.**

Additional grade-related information can be found in the calendar under [Undergraduate Grading Procedures](#).

**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, 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.

## **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 Student Accessibility Services (SAS) as soon as possible. For more information, contact SAS at 519-824-4120 ext. 56208 or email [accessibility@uoguelph.ca](mailto:accessibility@uoguelph.ca) or see 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 November 03, 2017. For regulations and procedures for Dropping Courses, see the [Current Undergraduate Calendar](#).

## **Additional Course Information**

### **Plagiarism Detection Software**

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. 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.

In this course, your instructor will be using Turnitin.com to detect possible plagiarism, unauthorized collaboration or copying as part of the ongoing efforts to prevent plagiarism in the College of Social and Applied Human Sciences.

A major benefit of using Turnitin is that students will be able to educate and empower themselves in preventing academic misconduct. In this course, you may screen your own assignments through Turnitin as many times as you wish before the due date. You will be able to see and print reports that show you exactly where you have properly and improperly referenced the outside sources and materials in your assignment.