

COGNITIVE NEUROSCIENCE II (PSYCH4BN3) Course Outline - Winter 2016-17, Term II

NOTE: This course outline may be updated as the course proceeds. For the most up-to-date version please go to <http://www.science.mcmaster.ca/psychology/psych4bn3>.

Instructor

Professor Sue Becker, *becker at mcmaster dot ca*
Office hours: by appointment.

Course Assistance - TAs:

Jessica Connolly, *connoj1 (at mcmaster dot ca)*
Craig Hutton, *huttoncp (at mcmaster dot ca)*

Schedule

Thursdays 11:30-2:20 PC-204 and PC-205

Course Objectives

This course will allow the student to gain an in-depth level of insight into selected topics in cognitive neuroscience. In the Winter 2016-17 term, the particular focus will be the functions of the medial temporal lobe (MTL) memory system, executive functions of the prefrontal cortex (PFC) and the fronto-striatal reward (FSR) system, and how alcohol abuse affects these functions. This course will have relatively few formal lectures, and will rely heavily upon small group projects and problem-based learning. Students will read, present and discuss articles from the primary literature, design their own experiment, and conduct a pilot study into the relationship between alcohol consumption and either MTL, PFC or FSR cognitive functions, and analyze and present their results to the class.

Materials and Fees

There is no course textbook.

Assessment

Participation 20%

Assignment 1 5% Submit hard-copy at start of class week 2

Assignment 2 10% Submit via email to instructor by 5pm on class day, week 3

Assignment 3 5% Submit hard-copy at start of class week 4

Assignment 4 15% Submit writeup and poster via email to instructor by 5pm on April 10

Presentation 1 15% In class, week 7

Presentation 2 15% In class, week 12

Final Project 15% Submit hard-copy to instructor by April 15, 10am

Participation:

Participation marks will be based on 3% attendance, 7% in-class discussions, and 10% group work conducted during class time. The group work component will be based 1/5 on peer assessments of each person's contribution to the group, and 4/5 on the assessment by the TA's and professor.

Assignment 1. Selection of cognitive tests: see [this link](#).

Assignment 2: Ethics application (group work) , see [this link](#).

Here is the main [MREBFormForAssignment2.docx](#) , with sections highlighted in yellow that you will need to complete, and some sections already completed (in red typeface)

Samples of Letter of Information/Consent and recruitment materials can be found [on the MREB website](#)

A generic version of the experimental protocol we will be following has been approved by the McMaster Research Ethics Board, contingent upon the instructor's approval of the specific projects to be carried out. All projects must be approved by the course instructor before the research can be carried out.

Assignment 3. Selection of research articles see [this link](#).

Assignment 4. Outreach Activity.

Students will present the results of their lit review and/or preliminary findings to a school or community group, targeting adolescents or young teens. The presentation will be accompanied by a poster. The poster and a writeup summarizing this outreach experience will be submitted by email to the instructor.

Final project write-up. see [this link](#).

Presentation 1: Literature Review. see [this link](#).

Presentation 2: Final Project Presentation. see [this link](#).

Policy on missed work, extensions and late penalties

In the event of an absence for medical or other reasons, students should review and follow the Academic Regulations in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work". Please note these regulations have changed beginning Fall 2015. Late assignments will not be accepted unless for valid medical or extenuating personal reasons, in which case a make-up assignment may be assigned in lieu of the missed work, at the instructor's discretion.

Late projects will result in a penalty of 20% per day deducted from the project mark.

Missed presentations due to illness: It is the student's responsibility to create powerpoint slides for his/her portion of the group presentation well in advance of the presentation date so that in the event of an illness, other group members can present the slides on behalf of the student. If there is an extended illness that prevents a student from working on the presentation, please discuss the matter with your instructor and special arrangements will be made for you to do a make-up presentation or other project.

Academic Integrity

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: .Grade of F assigned for academic dishonesty.), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to McMaster's <http://www.mcmaster.ca/academicintegrity>.

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

Academic accommodation of students with disabilities

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information, consult [McMaster University's Policy for Academic Accommodation of Students with Disabilities](#).

Week-by-week Course Outline

NOTE:In case a class must be cancelled due to weather etc, everything in the schedule will shift 1 week later.

At certain points in the course it may make good sense to modify the schedule outlined below. The instructor reserves the right to modify elements of the course and will notify students accordingly (in class, via email and post any changes to the course website).

Week 1 Jan 5

Lecture

- Overview of course structure and evaluation.
- Effects of alcohol on the brain and body, Part I.
- Functions of the medial temporal lobe (MTL), prefrontal cortex (PFC) and fronto-striatal reward system (FSR). Common tests of MTL, PFC and FSR functions.
- [Link to lecture notes \(pdf\)](#)

Group work: divide into groups, discuss MTL/PFC/FSR tests and alcohol questionnaire.

Homework: Assignment 1 due at the start of class in Week 2.

Week 2 Jan 12

Due today at start of class: Assignment 1 - Test descriptions.

Group work: Discuss tests, and choose 1-2 tests for your study.

Lecture:

- Effects of alcohol on the brain and body, Part II.
- Research ethics overview.

Link to slides will be added here

Class discussion: ethics issues specific to the proposed study, e.g. legal and confidentiality issues re studying underage drinking, right to withdraw, social/peer pressure in recruitment and in group test situations.

Group work: Discuss logistics of carrying out the study. How will it be implemented, e.g. in powerpoint etc. How will data be collated, analyzed etc. Work on ethics application, consent and debriefing forms.

Homework: Assignment 2 (Ethics app) is due by 5pm on the day of the class in week 3.

Week 3 Jan 19

Due today at 5pm: Assignment 2 (Ethics applications). Submit one per group via email to your professor.

Group work: Finalize ethics application. Begin setting up the study. Discuss lit review and presentations. Begin tracking down articles and planning the presentation.

Homework: Assignment 3. Each group member should have selected 2-3 articles to include in their group's Lit Review Presentation. Bring copies of full references including abstracts to hand in at start of class in week 4.

Week 4 Jan 26

Due today at start of class: Assignment 3 (selection of research articles).

Discuss Assignment 4: Outreach Activity

Group work: Finalize setting up the study. Work on Literature Review presentations.

Week 5 Feb 2

First dry run of your experiment

Work on Lit Review Presentations

Work on Outreach Activity

Week 6 Feb 9

Second dry run of your experiment

Work on Lit Review Presentations

Work on Outreach Activity

Week 7 Feb 16

Lit Review Presentations

Week 8 Mar 2

Group work: Collect data, work on data analysis.

Week 9 Mar 9

Group work: Collect data, work on data analysis

Week 10 Mar 16

Group work: Collect data, work on data analysis

Week 11 Mar 23

Group work: Finalize analyses, prepare presentations

Week 12 March 30

Project Presentations

Week 13 April 6

Work on outreach presentations, final project writeup unless a class earlier in the schedule must be cancelled due to weather etc, in which case everything in the schedule will shift 1 week later.

Apr 10: Assignment 4 poster and writeups (group work) due.

Apr 15: Final project (individual) writeups due.

Related courses taught by Sue Becker

Psych 3BN3 - Cognitive Neuroscience I

[Psych 734 - Neural network models of cognition and perception \(graduate course\)](#)
