COGNITIVE NEUROSCIENCE I PSYCH3BN3 Course Outline Fall 2015, Term I

NOTE: Please consult the online version of this course outline, and "refresh" your browser, as this page will be updated throughout the semester with links to readings, lecture outlines and student presentations, at www.science.mcmaster.ca/pnb/department/psych3bn3

Instructor

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

Course Assistance - TAs:

Ranya Amirthamanoharan, *amirts (at mcmaster dot ca)*
Craig Hutton, *huttoncp (at mcmaster dot ca)*

Schedule

Tuesdays 11:30-1:20, Fridays 12:30-1:20, BSB105

Course Objectives

This course will survey findings in several major areas of cognitive neuroscience, using a range of methods including brain imaging, neural network modelling, and behavioural testing of neuropsychological patients, toward an understanding of the neural mechanisms underlying cognition. Lectures will cover both textbook chapters and 24 selected readings from the current literature. Students are expected to develop an appreciation for the range of techniques used by cognitive neuroscientists, when they are applicable, and what they tell us about a range of cognitive and brain functions, as well as an ability to evaluate critically the scientific literature.

During the first three weeks, introductory material will be covered in a traditional lecture format. In subsequent weeks, for each of the 5 major topic areas, there will be a one-hour introductory lecture given by the instructor followed by four hours of paper presentations and discussions, with the papers presented by students, and the instructor and TA's directing and facilitating the discussions.

Materials and Fees

1. Course text: Cognitive Neuroscience: The Biology of the Mind, 4th Edition, By M.S. Gazzaniga, R.B. Ivry and G.R. Mangun, NY: W.W. Norton & Company, 2013.

2. 20 articles from the recent literature (see online version of syllabus).

To promote a high quality of in-class discussion, students are expected to have at least skimmed every paper before class, and to have read in great detail the 3 or more papers for which they are writing critiques.

The readings are freely available electronically from the McMaster library web pages (accessible from any on-campus computer). For your convenience, links to these online resources are included below.

Overview and Assessment

In extreme cases such as after an unanticipated university closure it may be necessary to revise the assessment scheme detailed below. The instructor reserves the right to modify elements of the assessment scheme as required and will provide students with as much prior notification and consusltation as possible, both in class and on the course website.

In case of a change in course enrolment, the instructor reserves the right to re-assign student's paper presentations, within 4 weeks of the presentation date.

Participation	10%
At least three 2-page critiques of papers (best 3 count)	30%
One 20-30 minute oral presentation	20%
One final take-home exam	40%

Participation

Marks for participation are based on 1) providing feedback to other students on their presentations, by filling out a very brief evaluation form at the end of each presentation, and 2) contributing to the class discussions of the 20 papers. The participation mark will be calculated as follows:

- Attendance at all presentations and Feedback provided to presenters: 1 mark for submitting 1-4 feedback forms with informative and helpful feedback, 2 marks for 5-8 forms, 3 marks for 9-12, 4 marks for 13-16, and 5 marks for 17 or more.
- Contribution to discussions: 1 mark for contributing in a substantial way (not just asking clarification type questions) to 1 paper discussion, 2 marks for 2-3, 3 marks for 4-7, 4 marks for 8-11, 5 marks for 12 or more.

Critiques

Students will each be randomly assigned 5 papers covering all 5 topic areas. Of those 5, they can choose at least 3 papers to critique, but the first critique (Learning and Memory topic) is NON-OPTIONAL. No matter how many critiques are turned in, only the best 3 scores will be counted. Critiques are due at the start of class on the day the paper is being presented. Hard-copy only.

Late critiques submitted after the paper has been presented in class will not be accepted under any circumstances.

Please read the **guidelines and marking scheme for critiques** on this link.

Examples of well written critiques by a student who previously took Psych3BN3 can be found here: DC-Critique3.docx, DC-Critique4.docx, DC-Critique5.docx.

Presentations

Each student will be assigned a paper to be presented. Depending on course enrolment, each presentation will be either given individually or by a pair of students. Students' requests to present individually or with a specific partner will be accommodated whenever possible. In either case, you (as an individual or pair of presenters) must meet with your instructor at least 1 week prior to your presentation date. Your outline is due at the time of this meeting and should include a point-form summary of what you consider to be the most important points in the article (intro, methods, results and discussion). For pair presentations, your outlines can either be written individually, each covering their own section, or jointly covering both students' parts of the presentation and will be marked as an individual or joint piece of work accordingly.

An example of a well done presentation by a student who previously took Psych3BN3 can be found on this link (pdf file).

Please read the **guidelines and marking scheme for presentations** on this link.

The **assignment of critiques and paper presentation dates** can be found at this link.

Final exam

The final exam will be distributed during the regular final exam period. It is expected to take no more than one day to complete, but students will be given 1 week in order to fit this in around their other exams. There will be 5 exam questions, one per major topic area covered in the course, and students will be asked to provide (max 2 pages each, double-spaced) answers to 4 of the 5 questions.

Sample final exam questions from previous years can be found on this link.

Policy on missed work, extensions and late penalties

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. In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work". Please note these regulations have changed beginning Fall 2015.

Missed presentations due to illness: In case a student misses his/her presentation, an alternative make-up presentation topic will be assigned. The last 2-3 class hours at the end of term will be reserved for make-up presentations.

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.

Weekly Outline of Lecture topics, readings, and links to lecture outlines

(outlines to be added approximately 24 hours before each lecture. Readings to be finalized within the next few days.) 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, both in class and by posting any changes to the course website.

Introductory Lectures 1-9

Sept 8, 8, 11, 15, 15, 18, 22, 22, 25: Course overview, Introduction to the nervous system, and cognitive neuroscience methods.
    Readings: Chapters 1-3 in Gazzaniga textbook.
    Lectures 1-2, Sept 8: Course overview and team-building activity
    Lecture 3, Sept 11 (pdf file), (printer friendly pdf)
    Lecture 4, Sept 15, hour 1, (pdf file), (printer friendly pdf)
    Lecture 5, Sept 15, hour 2, (pdf file), (printer friendly pdf)
    Additional background readings for Lecture 9:

1. Hinton (1989) "Connectionist learning procedures",Artificial Intelligence 40:185-234 http://www.cs.toronto.edu/~hinton/absps/clp.pdf
2. Rogers & McClelland (2005), "A parallel distributed processing approach to semantic cognition: Applications to conceptual development". In Gershkoff-Stowe& Rakison (Eds), Building Object Categories in Developmental Time. http://psych.stanford.edu/~jlm/papers/RogersMcCIPSympChap.pdf

Topic 1: Learning and memory

Link to lecture outline: to be added
Readings: to be added

Topic 2: Cerebral lateralization

Link to lecture outline: to be added
Readings: to be added.

Topic 3: Emotion

Link to lecture outline: to be added
Readings: to be added

Topic 4: Reward, decision-making and cognitive control

Link to lecture outline: to be added
Readings: to be added

Topic 5: Language

Link to lecture outline: to be added
Readings: to be added

Missed Presentations

If a student must miss a presentation due to illness, then as per McMaster's Policy For Absence from School Due to Illness or Compassionate Reasons "... you must bring appropriate documentation to the Office of the Associate Dean of Science (Studies) within one week of the original date of the missed work, and fill out the Request for Accommodation of Missed Academic Work form . For further details see http://www.science.mcmaster.ca/~associatedean/forms/missedwork.html.

In such cases, the student will be required to schedule an individual appointment with the instructors at an alternative time to give his/her presentation.

In addition, the student is asked to email the instructor *and* the teaching assistant, and your presentation partner if you have one, with as much advance notice as possible, because one of them will have to cover the student's missed presentation during the originally scheduled class time so that other students may still take part in the paper discussion.

Calculator requirement:

Calculators will not be required during tests.

Calendar Description

See http://registrar.mcmaster.ca/CALENDAR/current/pg1837.html#19326.

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Notice of changes to course structure:

The university reserves the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes."

The professor reserves the right to change any and all course requirements if the need should arise. Any change in the course requirements will be posted on the webpage and emailed to the class, and the details will be announced in class. Any concerns about announced changes should be addressed with the professor as soon as the changes are announced.

Related courses taught by Sue Becker

Psych 4BN3 - Cognitive Neuroscience II
Psych 734 - Neural network models of cognition and perception (graduate course)

Outline Last Revised: Sept 7, 2014.