

# Cognitive Neuroscience

## I) Course information

Course number: PSYC55H3 S

Mondays, 9 am – 11 am  
Place: HW 309

Prerequisites: PSYB57 & PSYB65

## II) Instructor:

Dr. Matthias Niemeier  
1265 Military Trail SW569  
phone: 416-287-7466  
e-mail: niemeier@utsc.utoronto.ca I will do my best to respond within two working days.  
Office Hours: Fridays, 12 – 1 pm.

## III) Teaching Assistant:

Bobby Stojanoski.

## IV) Course coverage and goals

PSYC55 aims at introducing you to the interdisciplinary field of cognitive neuroscience. The course has two goals. The first is to provide you with a "tool-kit" of knowledge about the field. – WHAT are the important methods and findings relating brain functions to cognitive processes? Here are some of the methods that will be covered: neurophysiological methods, studies on brain-damaged patients, transcranial magnetic stimulation, functional imaging, and computer simulations. I will talk about cognitive functions such as perception, control of motor actions, attention, memory, language, and executive functions. Another goal of the course is to look at questions such as, WHY does the brain work the way it works? That is, I hope the course will help you understand the key issues and principles of cognitive neuroscience.

## V) Textbook

**Required**  
**Title:** Principles of Cognitive Neuroscience  
**Authors:** D. Purves et al.  
**Publisher:** Sinauer: Sunderland  
**ISBN:** 978-0-87893-694-6

## VI) Web pages

**Course Web Site: intranet page**  
Here you will find the syllabus, the most up-to-date version of the lecture schedule, and announcements. Also, I will put the lecture slides on that page.

Please check on a regular basis for announcements.

## VII) Evaluation

I hope that the cognitive neuroscience course will provide you with a sound knowledge about the field, and a good understanding of the important mechanisms. Besides that I think that independence and critical thinking are very important for psychology (and other sciences as well). Therefore, I will determine your grade based on two exams (60% of the total grade) and on papers written by you (40% of the total grade). Here are the details:

**15% First reaction paper.** Choose a topic from Lecture 1-6. **Please check the intranet for tips and instructions on “How to write a reaction paper”!** This first reaction paper will be due on **October 19, 2009**.

**25% Mid-term test 1.** Scheduled for **TBA**. Two hours.

**25% Second reaction paper.** Choose a topic from Lecture 7-12. **Again, please the check intranet for tips and instructions on “How to write a reaction paper”!** The second reaction paper will be due on **November 30, 2009**.

**35% Final Term test.** TBA. Two hours.

#### **Exams:**

Exams will have **multiple-choice and short-answer questions**. The final exam will be **cumulative**. Material on the exams will include both **lecture material and text readings**. Although the topics covered will overlap, different things may be emphasized in class than in the book. Therefore, I recommend class attendance. E.g., you need to come to class to hear the details and see videos and demonstrations. The text is intended to reinforce and supplement material presented in class.

#### **Some info about reaction papers:**

You are to write two reaction papers with a maximum 4 type-written pages (including figures and tables), double-spaced. Fonts should be set at 12-point. For the first reaction paper please choose a topic from Lectures 1-6. For the second reaction paper please choose a topic from Lecture 7-12.

#### **Objectives**

The purpose of writing a reaction paper is to train your skills as a critical reader of psychological research and to develop your scientific writing skills.

You are to think about a particular topic covered in the lecture and reading of your choice and to write your reaction to it. This paper should not be a summary, it should be a description of things you liked, disliked or thought could be done differently. So, the paper could be a question, a criticism or a problem, an alternative interpretation of experiments, or a suggestion for follow-up experiments. In addition to the book chapter, choose **two recently published research articles** (experimental reports published 2007-2009, NOT reviews or books). The articles have to be from the following journals:

- Brain
- Cerebral Cortex
- Cortex
- Current Biology
- Experimental Brain Research
- Journal of Cognitive Neuroscience
- Journal of Neuroscience
- Journal of Neurophysiology
- Nature
- Nature Neuroscience

- Neurology
- Neuropsychologia
- Neuron
- Psychological Science
- Science
- Vision Research

**Deadline**

Please submit your reaction papers as hard copies. The first reaction paper is due by 5 pm Oct 5, 2009. The second reaction paper is due by 5 pm Nov 16, 2009. Penalty for late assignment: 5% per day.

**Difficulties with the course**

Please talk to me or the TA if you are having difficulties with the course (or if you have personal issues). The earlier the better. Especially, please come before a reaction paper is to be written or an exam is to be held. Afterwards is too late. We are happy to help as much as possible. For example, for the reaction papers we can help at multiple stages (how to develop ideas, find articles, write etc.). Please note, however, that as per university policy it is not possible to negotiate better grades.

**VIII) Schedule**

This schedule is subject to changes as we go along. The most up-to-date schedule will be on the web.

Lec	Day	Topics	Chapters+
1	14 Sep	Introduction; How can we understand the brain?	
2	21 Sep	The Functional Anatomy of the Mind	Ch 1
3	28 Sep	Motor Control & Action	Ch 8,9,(3)
4	5 Oct	Perception	Ch 4,5,(3)
	<b>12 Oct</b>	<b>Thanksgiving Day → University closed</b>	
5	19 Oct	Middle & High-level Vision, <b>1st reaction paper due</b>	Ch 5,(3)+
6	26 Oct	Spatial cognition, Attention	Ch 10,11+
	<b>TBA</b>	<b>Mid-term</b>	<b>Ch 1,(3),4,5,8-11+</b>
7	2 Nov	Attentional Control	Ch 12
8	9 Nov	Working Memory	Ch 16
9	16 Nov	Declarative Memory	Ch 14
10	23 Nov	Language	Ch 21
11	30 Nov	Executive functions, <b>2nd reaction paper due</b>	Ch 23
12	3 Dec	Consciousness ( <b>note that this is a Thursday</b> )	Ch 28
	<b>TBA</b>	<b>Final exam</b>	<b>Ch 1,(3), 4,5,8,9,10,11- 12,14,16,21,23,28</b>

**IX) AccessAbility Statement**

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. I will work with you and AccessAbility Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. The UTSC AccessAbility Services staff (located in S302) are available by

appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or [ability@utsc.utoronto.ca](mailto:ability@utsc.utoronto.ca).

#### **X) Academic Integrity Statement**

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to: IN PAPERS AND ASSIGNMENTS: Using someone else's ideas or words without appropriate acknowledgement. Submitting your own work in more than one course without the permission of the instructor. Making up sources or facts. Obtaining or providing unauthorized assistance on any assignment. ON TESTS AND EXAMS: Using or possessing unauthorized aids. Looking at someone else's answers during an exam or test. Misrepresenting your identity. IN ACADEMIC WORK: Falsifying institutional documents or grades. Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes. All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see <http://www.utoronto.ca/academicintegrity/resourcesforstudents.html>).

#### **XI) H1N1 Statement**

Students are advised to consult the university's preparedness site (<http://www.preparedness.utoronto.ca>) for information and regular updates regarding procedures relating to H1N1 planning and individual student responsibilities.

#### **XII) Course Policies**

For all other academic regulations please refer to the UTSC calendar. Sometimes people feel that their grade is not as they had hoped. In that case, please talk to me to see how I can help you to prepare more effectively for exams and to write the reaction papers. Please come as early as possible. I cannot help after the final is written. This includes any requests to change grades post hoc.