Cognitive Neuroscience

I) Course information

Course number: PSYC55H3 S

Tuesdays, 4 pm – 6 pm
Section: L01 2006 S
Place: BW 264

Prerequisites: PSYB57 & PSYB65

II) Instructor:

Dr. Matthias Niemeier
1265 Military Trail S572
phone: 416-287-7466
e-mail: niemeier@utsc.utoronto.ca I will respond within two working days.
Office Hours: Wednesdays, 12:30 pm – 1:30 pm and by appointment. Contact me by e-mail to set up a time.

I received my MA at the University of Hamburg (Germany) and my PhD at the University of Tübingen (Germany). From October 2000 – June 2003 I've been working as a postdoctoral fellow at UofT's Department of Physiology. Since July 1st, 2003 I'm an assistant professor at UTSC.

III) Teaching Assistant:

Bobby Stojanoski.
e-mail: stojanoski@utsc.utoronto.ca

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. Also, the course will hopefully help to further your critical thinking and your scientific creativity, both necessary to come up with new ideas and questions.

V) Textbook

Required
Title: Cognitive Neuroscience – the Biology of the Mind, 2nd edition
Authors: M.S. Gazzaniga, R.B. Ivry and G.R. Mangun
Publisher: W W Norton & Company: New York
ISBN: 0-393-97777-3

VI) Web pages

Course Web Site: intranet page
Here you will find the syllabus, instructions for the papers, 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

Overview:
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 (50% of the total grade) and on papers written by you (50% of the total grade). Here are the details:

15% **First reaction paper.** Choose a topic from chapter 5, 6 or 11. **Please check intranet for tips and instructions on "How to write a reaction paper"!** This first reaction paper will be due on **February 14, 2006**.

25% **Mid-term test.** Scheduled for **February 28, 2006**. Two hours, in class.

25% **Second reaction paper.** Choose a topic from chapter 7, 8 or 9. **Again, please check intranet for tips and instructions on "How to write a reaction paper"!** The second reaction paper will be due on **March 28, 2006**.

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, class attendance is highly recommended. 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 of about 1000 words each, maximum 4 type-written pages (including figures and tables), double-spaced. Fonts should be set at 12-point. For the first reaction paper choose a topic from chapter 11 (Control of Action) or 5 (Perception and Encoding) or 6 (Higher Perceptual Functions). For the second reaction paper choose a topic from chapter 7 (Selective Attention and Orienting) or 8 (Memory and Learning) or 9 (Language and the Brain).

Objectives
Writing a reaction paper will help you to develop 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 in the last two years, NOT reviews or books).The articles have to be from the following journals:

- Brain
- Cerebral 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 Feb 14, 2006. The second reaction paper is due by 5 pm Mar 28, 2006. Penalty for unjustified late assignment: 5% per day. Printer problems and other technical difficulties are not acceptable excuses for failure to hand in your reaction papers on time.

VIII) Schedule

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

Day	Topics	Chapter(s)
10 Jan	Welcome and History	1
17 Jan	The Functional Anatomy of the Brain	2, 3
24 Jan	Methods of Cognitive Neuroscience	4
31 Jan	Motor Control & Action	11
7 Feb	Perception	5
14 Feb	Object Recognition, ***deadline for 1st reaction paper***	6
21 Feb	Reading Week,	
28 Feb	***Mid-term, in class***	
7 Mar	Attention	7
14 Mar	Learning and Memory	8
21 Mar	Language	9
28 Mar	Executive functions, ***deadline for 2nd reaction paper***	12
4 Apr	Lateralization and Specialization	10
TBA	***Final term test***	

IX) Course Policies
For academic regulations (such as UTSC's official grading practices policy, petitions, code of behaviour on academic matters etc.) please refer to the UTSC calendar.