

## **PSYD50-11F: Current Topics in Memory and Cognition**

Class Meeting Time: Tuesday 9-11

Classroom: BV264

### **Contact Information for Instructor:**

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### **Introduction to the Course**

This seminar course is designed to help you develop your critical thinking, research, writing, and verbal communication skills. We will accomplish this through a detailed study of three topics that share one common theme: to what extent is the human brain shaped by innate vs. computational pressures to form regions of cortex dedicated for processing specific types of information (e.g., objects vs. faces). The three topics span object recognition, conceptual memory, and language. Specifically, they are known as the face-processing debate, the category-specific semantic deficit debate, and the past-tense debate, respectively. Each of these debates has played a central role in defining modern day cognitive neuroscience research.

There are several reasons why I believe these topics are ideal for study in a course at this level. First, the patient deficits discussed in each topic are fascinating, and trying to make sense of the complex patterns of impairment provides a challenging intellectual puzzle. Second, although strong opinions are offered by proponents of each side of each debate, along with what they think is the most important scientific evidence, there are no definitive correct answers (at least not yet). There are only major classes of theories, all incomplete, jockeying for position. We will evaluate these theories, and it will be your job to decide which ones you think are closest to the truth. Third, for each topic, important data and ideas have emerged from many of the fields of cognitive science, using many varied techniques, including clinical behavioral testing, functional neuroimaging, and computational modeling. We will sample broadly from all of these kinds of evidence in our survey of the literature, providing a solid foundation in modern day, interdisciplinary research. Finally, many mistakes have been made by researchers along the way, including the use of poorly designed tests, use of questionable data analysis techniques, and pronouncement of inconsistent theoretical claims. The literature is thus replete with examples of what to do, and what not to do, when conducting research, and these examples will be used to illustrate a rigorous, yet appropriately skeptical, scientific approach to conducting research and developing theory.

By the end of this course you should have a deep understanding of the main issues at play in each of the topics covered, and you should be able to generalize this knowledge to other related topics. You should be able to explain why each debate is important at a level that would be appropriate for an article in a national magazine or newspaper (e.g., *The Globe and Mail*). You should be able to generate a new research idea for at least one of the topics. You should also have a feel for the strengths and weaknesses of each the main approaches used to study each topic, and you should have formed strong, justified opinions about how you think innate vs. computational principles govern the structure of the human brain.

## Calendar & Topics:

Week 1:	Introduction to the Course
Week 2:	Introduction to the Theme of the Course: Modularity vs. Computation
Week 3:	Introduction to the Face-Processing Debate
Week 4:	Presentations
Week 5:	Introduction to the Category-Specific Semantic Deficit Debate
Week 6:	Presentations
Week 7:	Introduction to the Past-Tense Debate
Week 8:	Presentations
Week 9:	Synthesizing the Data: Modularity or Computation?
Week 10:	Student Presentations
Week 11:	Student Presentations
Week 12:	Student Presentations

## Required Readings:

### *Weeks 2-3:*

- Kanwisher, N. (2000). Domain specificity in face perception. *Nature Neuroscience*, 3(8), pp. 759-763.
- Tarr, M. J., & Gauthier, I. (2000). FFA: a flexible fusiform area for subordinate-level visual processing automatized by expertise. *Nature Neuroscience*, 3(8), 764-769.

### *Weeks 4-5:*

- Warrington, E. K., & Shallice, T. (1984). Category specific semantic impairments. *Brain*, 107, 829-854.
- Caramazza, A., & Shelton, J. R. (1989). Domain-specific knowledge systems in the brain: The animate-inanimate distinction. *Journal of Cognitive Neuroscience*, 10(1), 1-34.

### *Weeks 6-7:*

- Pinker, S., & Ullman, M. T. (2002). The past and future of the past tense debate. *TRENDS in Cognitive Sciences*, 6(11), pp. 456-463.
- McClelland, J. L., & Patterson, K. (2002). 'Words or Rules' cannot exploit the regularity in exceptions. *TRENDS in Cognitive Sciences*, 6(11), pp. 464-465.
- McClelland, J. L., & Patterson, K. (2002). Rules of connections in past-tense inflections: what does the evidence rule out? *TRENDS in Cognitive Sciences*, 6(11), pp. 465-472.
- Pinker, S., & Ullman, M. T. (2002). Combination and structure, not gradedness, is the issue. *TRENDS in Cognitive Sciences*, 6(11), pp. 472-474.

NB: for each topic, you are required to find and read 2 primary sources (i.e., research articles, published in academic journals, that describe original data collected from human participants, or computational models). The first page of each of these articles must be printed and attached to the notes you submit at the beginning of class weeks 3, 5, and 7.

**Methods of Evaluation:**

Notes (500 words)	5%	
Position Papers (500 words)	20%	best 2 out of 3
Class Participation	10%	
Presentations	10%	
Evaluation of Presentations	10%	
2500 Word Term Paper	45%	due the last day of classes

**Notes**

At the beginning of each of the “Debate” classes (weeks 3, 5, and 7) you must submit a 2 page, point form, set of notes in which you detail the issues, questions, observations (etc.) that arose for you as you worked through the required readings for that week. You should also attach a print out of the first page of each of 2 primary research articles that you found yourself, and read, that are related to the topic. You should bring 2 copies of the notes to class: one to submit to the instructor, and a second for you to use during the class for the discussion/debate.

**Position Papers**

At the beginning of class on weeks 4, 6, and 8, you are to submit a 300 word position paper in which you defend one of the two sides of the debate that was discussed in the previous class (e.g., week 4, you submit a paper summarizing your position for the face-processing debate). You must pick a side in the debate, and defend it to the best of your abilities, citing what you think is the strongest evidence available. A simple summary of one of the assigned readings is not acceptable. You must defend, with a thesis statement, why YOU think the evidence best supports that side of the debate, and speaks against the other side. You should reference discussion from class. Your best 2 out of 3 marks will be counted towards your final grade in the course.

**Class Participation**

Students are expected to participate actively in class. Attendance in class is expected, and will not be rewarded. In other words, class participation marks must be earned, by contributing to the class discussion, be this by asking relevant and probing questions, answering questions posed by others, or posting relevant and interesting information, along with appropriate analysis and discussion, on the class discussion board.

**Presentations**

You will give 2 presentations in the course. The first will be a short 5 minutes presentation on one of the 3 topics we are covering together as a class, and you will do this in either week 4, 6, or 8. You must clear your topic with the instructor before presenting. You will receive feedback from both the instructor and students about this presentation. You will then give a second presentation, 10 minutes long, during the last 3 weeks of the course, on a topic of your choosing related to the main theme of the course. Your presentation grade will be based on this second presentation, and will be based primarily on the quality of your ideas and clarity of your presentation, but will also include a small component (2%) assessing your improvement on any weaknesses observed in your first presentation.

### **Evaluation of Presentations**

Whenever a student presents in class, you will be asked to complete an evaluation form on which you express your justified opinions about the strengths and weaknesses of the presentation. You will not be asked to provide a grade for the presentation. This feedback will be given to the student who presented.

### **Final Term Paper**

You will submit a final term paper by the last day of classes (Thursday Dec. 1st, 2011). This paper will take the form of an extended version (2500 words) of the position papers you will have written throughout the term in which you will pick a topic of interest in the field of cognitive neuroscience for which the modularity vs. computation distinction can be applied (e.g., music processing, social processing about others, number processing, etc.). Your task will be to pick a position, and defend it, to the best of your abilities. You must submit both a hard copy to the instructor, and an electronic copy to the instructor's email account ([george.cree@utoronto.ca](mailto:george.cree@utoronto.ca)) before the deadline. Topics must be approved by the instructor before the beginning of Week 10. Approval should be obtained through email (please email a short statement of your thesis and topic, no longer than 100 words, for approval).

### **Late Assignments**

A penalty of 5% (out of 100%) will be deducted for each 24 hour period that an assignment is late. I do not have jurisdiction to extend deadlines for assignments beyond the last day of classes (Dec. 1st, 2011), so be sure to submit all materials by that time. If necessary, students may petition the Registrar's office for permission to submit assignments after the last day of classes. Such petitions are not automatically granted, and indeed, will likely be denied without a valid reason. Such petitions must be submitted by the last day of the final examination period of the term.

### **Academic Writing**

Writing assignments make-up a large component of this course. If you are not comfortable with your writing abilities, or would like a quick refresher on specific topics, then be sure to make use of the following two excellent resources:

**UTSC Writing Centre:** AC 210, <http://www.utsc.utoronto.ca/~tlsweb/TWC/index.htm>

**U of T Advice on Academic Writing:** <http://www.utoronto.ca/writing/advise.html>

### **Policies on missed exams and assignments.**

If you miss a class due to illness, be sure to get appropriate medical documentation.

Please be aware that I cannot, by U of T policy, accept assignments after the last day of classes.

## Other Important Information

The University of Toronto is dedicated to fostering an academic community in which the learning and scholarship of every member may flourish, with vigilant protection for individual human rights, and a resolute commitment to the principles of equal opportunity, equity and justice.

### AccessAbility

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).

### Academic Integrity

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:

- **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.
- **Tests and Exams:** Using or possessing unauthorized aids. Looking at someone else's answers during an exam or test. Misrepresenting your identity.
- **Other 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>).

*The above schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances.*