

Tuesday/Thursday 12:05pm to 1:25pm, JS Coon 148

Course Description

Advanced survey of theory and data in cognitive psychology and cognitive science. Major topics are perception, pattern recognition, attention, memory, language, concepts, reasoning, and decision making. Focus is on theory and data in mainstream cognitive psychology and while making contact with research in machine learning, linguistics, and neuroscience. Central themes are the nature of mental representations, cognition as constraint satisfaction, encapsulation versus modularity, and computational approaches for understanding human information processing.

Contact Information

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Ofc Hours: Wednesday 11:00 am to 12:00 pm, or by appointment
URL: <http://oak.psych.gatech.edu/~spieler/cog06.html>

Exams

There will be a midterm and a final exam. Two to three weeks prior to each, I will provide you with a list of about 15 questions. These questions will be general and broadly integrative. You will need to prepare answers for all of these questions prior to the exam. The day of the exam, I will randomly select 3 or 4 questions for the exam and you will have the class time to complete the exam. The final exam is cumulative. Studying for the exam with other members of the current class is allowed and encouraged. Sharing of written answers for the exam with other members of the class is not forbidden but it is not encouraged. My experience has consistently shown that sharing of written answers helps the poorer students but hurts the good students. Collaboration or sharing of any materials with students not currently enrolled in the course is expressly forbidden and doing so would constitute academic misconduct (see section on Academic Integrity, below)

Final Paper

You will write a final paper of no more than 12 pages (1 inch margins, double spaced, 11-12 pt font, excluding references) on a topic of your choice closely related to the course (Cognitive Psychology). The paper should culminate in a proposal for an experiment that could be conducted on this topic. As a model, I would recommend organization similar to the Introduction section in a Journal of Experimental Psychology article. Your experiment should be tractable and concrete (and a true experiment with at least one manipulated independent variable). You do not need to include a complete Methods section. Primary source material for your paper must be peer review journals from some area of experimental psychology. There must be a minimum of 10 such references. Books, tech reports, and other sources are acceptable but are not a substitute for peer reviewed research and these do not count towards the minimum references required. Please be aware that it is inappropriate to cite papers that you have not actually read. If you wish to refer to sources that you have not directly accessed, you should refer to it "as cited in ...".

This paper should not be directly related to a one of your current research projects. It must be unrelated to either your first year project or Master's thesis. If you are unsure about the meaning of "related", talk to me well prior to October 17. If you have never written a research paper of this type, I also strongly recommend speaking with me soon.

To help you identify a topic, you must meet with me prior to the midterm to discuss possible topics. By Oct 17, you must provide me with a 1 to 2 page prospectus, submitted via email. Formal approval is required for all papers (my reply email to you must include "This is approved"). Papers not approved will not be accepted. I apologize for the formality of this process but experience has shown that its best to avoid all misunderstandings.

Papers should be submitted to me electronically in Word (doc), Star/OpenOffice (sxw/odt), or Rich Text Format (rtf) formats. The criteria for grading these papers includes clarity of exposition, demonstration of understanding of the topic, and quality of logical argumentation.

Readings

You will note that there is a fairly heavy reading list. The goal is to provide you with a broad exposure to current and historical work in cognitive psychology. Some of the material will not be discussed in detail in class. Your responsibility is to make sure you understand the readings. To paraphrase the old Chicago motto about voting, you should read early and often. If you do not understand what you are reading, talk to your classmates, ask questions in class, or come talk to me (or some combination of these). You are responsible for the primary readings. Secondary readings will also be made available to you. These are papers that I would like to have assigned but try as I might, it was not possible within our time constraints.

Course Email List

I have set up an email list for this course. If you send email to this address: psy6011@lists.gatech.edu , an email will go out to all of the members of the course. You are required to make use of this at least 10 times during the course of the semester. Your contributions will be your thoughts, questions, or critiques of the readings or topics covered in class. To count towards the 12 contributions, your comment should show some careful thought. It does not need to be long (paragraph) nor does it need to be entirely factual (opinion that is backed with evidence is great) and it can just be a question that also gives evidence of thought about the matter. Contributions of the form "What is a hopfield network?" or other definition questions are acceptable but they do not count towards your requirement. Responses to other people's emails are fine as long as they also display careful thought on the matter and these responses will count toward the requirement.

What is the point? First, it is practice in formulating your thoughts clearly and succinctly, hopefully without fear of exposing what you do not know. All of us can learn from each other and your thoughts will be helpful. Second, it should foster some interaction between people in the class. This is important because class time might be the only time that all of us are actually physically in the same room. Third, it should encourage you to think about the topics in a way that is not just passive reading or listening in class. Please do not think of this as a requirement but rather as a resource.

Academic Integrity

Students are assumed to have read and understood the Honor Code and to have an intimate understanding of what constitutes academic and scientific misconduct. This includes but is not limited to plagiarism and pro-

viding or receiving unauthorized assistance. As graduate students and scholars, you will be held to the highest standards of academic and scientific integrity. Especially be aware that the presentation of the words or ideas of others without citation of the source constitutes plagiarism and is considered academic misconduct. Academic misconduct will result in a failing grade for the course and referral to the Dean of Students.

Important Dates

- October 12 - Midterm Exam
- October 19 - Final Paper Prospectus
- October 26 - Final Approval of Propectus
- December 4 - Final Paper Due
- December 12 - Final Exam Period, 8:00 am to 10:50 am

Schedule

All readings are available on the course web page. Lecture slides will be available after lecture.

<u>Date</u>	<u>Topic</u>	<u>Readings</u>
August 22	Introduction	Marr 1
August 24	Process and Representation	Steedman, Sejnowski
August 29	Computation and Vision	Marr 2, Hubel
August 31	Featural Analyses	Miller
September 5	Features and Context	PDP Chapter 1, McClelland & Rumelhart
September 7	Object Recognition	Biederman, Tarr
September 12	Objects and Faces	Farah, Spelke
September 14	Early Studies of Attention	Pashler
September 19	Visual Attention 1	Kanwisher
September 21	Visual Attention 2	Doshier
September 26	Visual Attention 3	----
September 28	Control and Automaticity	Simons
October 3	Process Dualism in Memory	JA Anderson
October 5	Working Memory	Baddeley
October 10	Visual Imagery	Kosslyn
October 12	Midterm	----
October 17	Fall Recess	----
October 19	Encoding and Retrieval	O'Reilly
October 24	Encoding and Reviewal 2	JR Anderson
October 26	Process Dualism Revisited	Winkielman, Roediger, Garry
October 31	Categorization 1 - Basics	Laurence
November 2	Categorization 2 - Similarity	Tversky; Medin, Goldstone & Gentner
November 7	Categorization 3 - Representation	----
November 9	Probabilistic Reasoning	Osherson
November 14	Decision Making	Shafir
November 16	Psychonomics (no class)	----
November 21	Reading	Seidenberg
November 23	Thanksgiving	----
November 28	Language Comprehension	Seidenberg & MacDonald
November 30	Language and Constraint Satis.	Tanenhaus
December 5	Language Production	Bock; Dell
December 7	Conversation	Clark