Registrar description: Introduction to graduate level cognitive psychology for first year graduate students in psychology. Course serves as the basis for more advanced graduate courses on specific topics in this area.

Goals: This is a diverse group with varying levels of expertise in cognitive psychology. To benefit everybody, the course has been designed with several general goals in mind:

Goal 1: To give perspective and breadth to cognitive students and relevant background for general comprehension to non-cognitive students. Broad knowledge outside of your primary research area can help in many aspects of your academic life, such as in getting the most out of departmental colloquia and conferences, in being able to talk to colleagues in other fields, and in finding unseen connections to your research.

Goal 2: To highlight new and exciting findings and approaches in the study of cognition. While the content is specific to particular sub-domains, the underlying trends and debates may apply more generally.

Goal 3: To help you practice being an academic, including: reading papers efficiently, writing scientific prose, giving presentations, asking questions in front of an audience, and formulating research ideas. The intention is to focus on what you will be expected to do over the next several years, and to help you develop transferrable and lasting skills.

Format: Each week we'll tackle one aspect of cognition in two parts. The first half of each meeting will contain a mix of lecture and discussion about the background in a specific subfield, often on the basis of a handful of seminal experiments. The second half of each meeting will center on student 'journal club' presentations of recent papers and will often be attended by a relevant expert from our department.

Readings: You will be responsible for two sets of readings per week, typically: 3-4 background papers and 2 journal club papers. The background papers will either be historical (at the time groundbreaking) experiments or review articles. The journal club papers will be recent advancements in the particular subfield. It is essential that you carefully read and consider the background papers (even if some are already familiar). Since your colleagues will be presenting the journal club papers in depth, it's up to you to decide how much time to spend reading them in advance. Note that this is an extremely common situation in academia, and that ultimately your understanding and
ability to discuss these papers with the group will benefit greatly from reading them thoroughly. I know that the primary literature can seem daunting, especially outside of your field, so please come to see me if you are having trouble with the readings or would like additional background material.

Evaluation:

**Background Reading Responses (10%)**
To encourage you to read the background papers, you will be required to turn in a response for each of the background reading (in paper). You should write one short paragraph for each background reading. This short paragraph can take on many forms including, but not limited to: what you thought was interesting, uninteresting, confusing, wrong, open questions, insightful connections to other papers or fields, what you think is out-of-date or has been forgotten. This is not intended to be a lot of work, but rather to encourage you to read the papers and provide some form of evidence that you actually read them. The easiest way to generate such responses is to make inline notes as you read the paper about passages that seem interesting or confusing. The length is flexible, but your combined responses each week should never exceed one page. You will receive the maximum credit each week if your responses exhibit clear and thoughtful effort, half of the maximum for rushed or incomplete answers, and no credit if you fail to turn something in on time.

**Journal Club Paper Responses (10%)**
You will need to turn in a response (in paper) for each of the journal club papers, even during the weeks that you are presenting. These responses will be more structured than the background reading responses and they should answer the following questions:

1. What was the purpose of the research? What open question did it address?
2. Could the authors have addressed the problem in a different way? Is this the best approach?
3. How do the results support the author’s interpretation? Is it appropriate?
4. What is one problem with the paper or what don’t you understand about the paper?
5. If you were one of the author’s, what would be your next follow-up experiment?
6. If you were a reviewer, would you recommend the article for publication?

The point of this exercise is for you to think critically about these experimental papers and by doing this exercise, you will have a number of questions to ask your fellow students when they are presenting the paper. You will receive the maximum credit each week if your responses exhibit clear and thoughtful effort, half of the maximum for rushed or incomplete answers, and no credit if you fail to turn something in on time.

**Journal club presentations (30%)**
Presenting your work and others people’s work is a crucial part of your life as a graduate student and academic. To practice this difficult task, each week we will assign two people to present two different papers to present. You will be tasked with preparing a well-designed slide presentation (PowerPoint, Keynote, etc.) that: summarizes the
motivation, methods, results, and interpretation in the paper (you can use their figures); evaluates the experimental logic and methods; considers whether the conclusions are supported by the data; and highlights open questions and future directions. Your presentation should last approximately 30 minutes and, hopefully, you will be interrupted with questions so that the presentation lasts between 30-45 minutes. You will be graded based on the following criteria: design and visual interest of slides; clarity and accuracy of summary; critiques, novel interpretations, future directions (i.e. some original and creative contribution). You are expected to give four presentations during the semester.

**Mini-grant proposal (30%)**
The most fun part of research is thinking up new experiments to answer some burning question. As a final assignment for the course, you will prepare a mini-grant proposal formatted in the same spirit as a real submission, including: specific aims, significance, innovation, and approach (more details about each of these sections will follow). I will give you an example grant so that you can get a sense of how your research paper should be formatted. The proposed research must concern one of the topics we discussed, and be strictly focused on an issue in cognitive psychology. You will need to set up a meeting with me to seek approval for your topic before the Thanksgiving break. However, I encourage you to discuss your proposal with me at all stages. You should aim to find a niche of novel, important, and tractable big-picture questions that remain unanswered and could constitute a research program. The research can take many forms, including all relevant approaches in psychology (psychophysics, surveys, eye-tracking, computational modeling, etc.) and neuroscience (e.g., fMRI, EEG, TMS, neurophysiology, etc.), or any combination of converging approaches. While this could in principle be a very convenient requirement for cognitive students (who may be doing this anyway with their advisors), for the sake of fairness you must propose research outside of your primary area. The ideas you develop may end up serving as the foundation of a secondary research program or new collaboration. You will be graded based on the following criteria: sophistication and importance of specific aims; breadth and effectiveness of significance; novelty and excitement of innovation; plausibility and conclusiveness of approach; and quality of writing and proofing.

**Participation (20%)**
The success and energy of the class depends on you! In particular, evaluating research and developing ideas is inherently a collaborative process, and I want to encourage such interactions. There will be opportunities to join the discussion during lectures and journal club presentations. You should always feel free to ask questions, discuss something related that you know about, state an opinion, etc. You are not supposed to know or understand everything -- this is the point of graduate school! I think you will find that questions/ideas start popping into your head and that your shyness will fade as you participate more and more. I expect such discussions to happen organically, but to emphasize the importance of this aspect of the course you will receive a grade for participation in every class, ranging from maximum credit for frequent contributions demonstrating thoughtful reading of the papers, to no credit for staying quiet and providing no evidence that you read the papers.
Missed class policy: Attendance is mandatory because of the nature of the course and because the semester is short. You will not be penalized for missing one meeting. If you know in advance that you will miss more than one meeting, please let me know.

Preliminary Weekly Schedule (subject to change):

Week 1: Historical Foundations  
September 17

Week 2: Attention - Tim Buschman  
September 24

Week 3: Perception - Nick Turk-Browne  
October 1

Week 4: Working Memory and Intelligence - Andy Conway  
October 8

Week 5: Memory Systems - Ken Norman  
October 15

Week 6: Learning - Yael Niv  
October 22

Week 7: Cognitive Control - Wouter Kool  
November 5

Week 8: Knowledge, Concepts, and Categories - Dan Osherson  
November 19

Week 9: Judgment, Decision-Making, and Reasoning - Jon Cohen  
November 26

Week 10: Language - Adele Golberg  
December 3

Week 11: Cognitive Development - Asif Ghazanfar  
December 10

Week 12: Embodied Cognition  
December 13 (or TBD)

Please note that we will not be meeting on the following Tuesdays: October 29 and November 12.
READING LIST

Week 1: Historical Foundations

Background Readings

Week 2: Attention

Background Readings

Student Presentations

Week 3: Perception

Background Readings

Student Presentations

**Week 4: Working Memory and Intelligence**

**Background Readings**

Miller GA. (1956). The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information. *The Psychological Review.* 63(2):81-97


**Student Presentations**


**Week 5: Memory Systems**

**Background Readings**


**Student Presentations**


**Week 6: Learning**

**Background Readings**

Week 7: Cognitive Control November 5, 2013

Background Readings

Student Presentations

Week 8: Knowledge, Concepts, and Categories November 19, 2013

Background Readings

**Student Presentations**


**Week 9: Judgment, Decision-Making, and Reasoning** November 26, 2013

**Background Readings**


**Student Presentations**


**Week 10: Language** December 3, 2013

**Background Readings**


**Student Presentations**


Week 11: Cognitive Development

December 10, 2013

Background Readings

Student Presentations

Week 12: Embodied Cognition

December 13, 2013

Background Readings

Journal Club