**Psychology 621**

**Essentials of Cognitive Neuroscience**

**Fall 2017**

  In this course we emphasize the critical evaluation of topical issues and data in working memory research. Toward this end, we also emphasize the methods of neuroimaging, neuropsychology, repetitive transcranial magnetic stimulation (rTMS), electroencephalography (EEG), and experimental psychology.

  **Format**: Each week we discuss (at least) one article from the recent literature. These discussions are organized as informal presentations that will give us an opportunity to discuss and assess in detail the theory, methods, results, and interpretation associated with that particular paper. On occasion, these discussions are supplemented with, or supplanted by, an informal presentation of the design and/or results from an experiment being conducted in the Postle laboratory (see section on "3 credits", below). Following the discussion of a particular paper or project, we end the meeting with an attempt to integrate what we've learned from this specific information into the perspective of contemporary cognitive neuroscience inquiry.

  Levels of participation: The class may be taken for 1 or 3 credits. The **requirements for 1-credit** registrants are simply to come to class having read the assigned paper, and prepared to participate in the discussion. The additional **requirements for 3-credit** registrants are to lead one of the weekly discussions, and to write a 3-5 page paper that 1) summarizes the paper; 2) summarizes the question that it was intended to address; and 3) proposes either a) a better way to test this question, or b) a hypothesis that captures an important "next question" that can now be addressed and an experimental design that would effect this hypothesis test. The additional **requirements for 3-credit** registrants are to participate in a research project in the Postle laboratory that entails at least 10 hr./wk. of research time during two consecutive semesters.

**Grading:** **1-credit: in-class participation**

**3-credit: in-class participation, paper, and research**

*Class meets Fridays, from 9:55 am – 10:45 pm, in room 519 Psychology*

Background readings

[Postle BR (2015). The cognitive neuroscience of visual short-term memory, Current Opinion in Behavioral Sciences, 1: 40-46.](https://postlab.psych.wisc.edu/index.php/download_file/view/391/237/)

[Aschwanden C (2014). Harassment in Science, Replicated. New York Times, August 11.](http://www.nytimes.com/2014/08/12/science/harassment-in-science-replicated.html)

Postle BR (2017). [Harassment in the academic setting](https://mediaspace.wisc.edu/media/Bradley%2BPostle-%2BPsych113%2B9.19.2017%2B09.28.10AM/1_xqgxrigj). (View the first 12 minutes or so of the lecture)

September 8

[Schneegans & Bays (2017). Neural Architecture for Feature Binding in Visual Working Memory.*The Journal of Neuroscience*, 37(14):3913-3925.](https://postlab.psych.wisc.edu/index.php/download_file/view/626/264/)

September 15

No Meeting- Brad Postle at Annual meeting of Memory Disorders Research Society

September 22

[Peterson & Voytek (2017). Alpha oscillations control cortical gain by modulating excitatory-inhibitory background activity.  *bioRxiv;*doi: http://dx.doi.org/10.1101/185074.](https://postlab.psych.wisc.edu/index.php/download_file/view/635/264/)

September 29

[Konecky et al. (2017). Monkey prefrontal neurons during Sternberg task performance: full contents of working memory or most recent item? *Journal of Neurophysiology*, 117:2269-2281, doi: 10.1152/jn.00541.2016.](https://postlab.psych.wisc.edu/index.php/download_file/view/627/264/)

October 6

[Popov et al. (2017). FEF-Controlled Alpha Delay Activity Precedes Stimulus-Induced Gamma-Band Activity in Visual Cortex. *The Journal of Neuroscience, 37(15):*4117-4127.](https://postlab.psych.wisc.edu/index.php/download_file/view/628/264/)

October 13

[Trubutschek et al. (2017). A theory of working memory without consciousness or sustained activity. *eLife*, 6:e23871; doi: 10.7554/eLife.23871](https://elifesciences.org/articles/23871)

October 20

[Forschack et al. (2017). Alpha-Band Brain Oscillations Shape the Processing of Perceptible as well as Imperceptible Somatosensory Stimuli during Selection Attention. *Journal of Neuroscience, 37*(29):6983-6994.](https://postlab.psych.wisc.edu/index.php/download_file/view/629/264/)

October 27

[Foster et al. (2017). Alpha-Band Activity Reveals Spontaneous Representations of Spatial Position in Visual Working Memory. *Current Biology*.](https://postlab.psych.wisc.edu/index.php/download_file/view/640/264/)

November 3

SfN practice presentations

November 10

No Meeting- Travel day for Annual Meeting of Society for Neuroscience

November 17

[Reber et al. (2017). Single-Neuron Correlates of Conscious Perception in the Human Medial Temporal Lobe. *Current Biology*, 27: 1-8; http://dx.doi.org/10.1016/j.cub.2017.08.025.](https://postlab.psych.wisc.edu/index.php/download_file/view/638/264/)

November 24

No Meeting- Thanksgiving Holiday

December 1

[Liu et al. (2017). Inverted encoding models of human population response conflate noise and neural tuning width. *Journal of Neuroscience* 10.1523/JNEUROSCI.2453-17.2017.](https://postlab.psych.wisc.edu/index.php/download_file/view/642/264/)

December 8

[Merrikhi et al. (2017). Spatial working memory alters the efficacy of input to visual cortex. *Nature communications* 8:15041, 1-10; do: 10.1038/ncomms15041.](https://postlab.psych.wisc.edu/index.php/download_file/view/632/264/)

**University legislation specifies that the following must appear on the syllabus**:

 **Where to take complaints about a Teaching Assistant or Course Instructor:**

Occasionally, a student may have a complaint about a Teaching Assistant or course instructor. If that happens, you should feel free to discuss the matter directly with the TA or instructor. If the complaint is about the TA and you do not feel comfortable discussing it with him or her, you should discuss it with the course instructor. If you do not want to approach the instructor, make an appointment to speak to the Chair of The Psychology Department, Professor Hill Goldsmith (hill.goldsmith@wisc.edu).

If your complaint concerns sexual harassment, you may also take your complaint to Dr. Linnea Burk, Clinical Associate Professor and Director, Psychology Research and Training Clinic, Room 315 Psychology (262-9079; burk@wisc.edu).

If you believe the TA or course instructor has discriminated against you because of your religion, race, gender, sexual orientation, disability, or ethnic background, you may talk to the Associate Chair or the Department Chair, or you may file a formal complaint with an Equal Opportunity Complaint Investigator in the UW-Madison Office of Compliance, Room 361 Bascom Hall, 608-265-6018 (<https://compliance.wisc.edu/eo-complaint/>)

(Optional) If your TA is not a native English speaker and you have difficulty understanding his or her speech, ask the TA to repeat sentences that you do not understand.  If you have serious or prolonged difficulty understanding, discuss the problem with the course instructor.  But remember that this is a multicultural institution and that the diversity of TAs can add substantially to your education.  Some patience with unfamiliar accents may reward you with a better understanding of the world*.*

**Ethics of being a student in the Department of Psychology**

The members of the faculty of the Department of Psychology at UW-Madison uphold the highest ethical standards of teaching and research. They expect their students to uphold the same standards of ethical conduct. By registering for this course, you are implicitly agreeing to conduct yourself with the utmost integrity throughout the semester.

In the Department of Psychology, acts of academic misconduct are taken very seriously. Such acts diminish the educational experience for all involved – students who commit the acts, classmates who would never consider engaging in such behaviors, and instructors. Academic misconduct includes, but is not limited to, cheating on assignments and exams, stealing exams, sabotaging the work of classmates, submitting fraudulent data, plagiarizing the work of classmates or published and/or online sources, acquiring previously written papers and submitting them (altered or unaltered) for course assignments, collaborating with classmates when such collaboration is not authorized, and assisting fellow students in acts of misconduct. Students who have knowledge that classmates have engaged in academic misconduct should report this to the instructor.

For detailed information on how to avoid plagiarism, please see the following website: <http://writing.wisc.edu/Handbook/QuotingSources.html>

Your instructor will contact you if s/he has concerns about academic misconduct. You will have an opportunity to explain your work and address your instructor’s concerns. Following the meeting, if your instructor believes that you engaged in misconduct, s/he will decide on an action. Following UW protocol, your instructor will inform the Dean of Students’ Office of the outcome of the meeting and proposed sanction. Penalties for substantiated cases of academic misconduct include a zero on the assignment or exam, a lower grade in the course, and failure in the course. Repeated acts of academic misconduct may result in more serious actions such as probation or suspension. For complete information on proper conduct, academic misconduct, and sanctions, please see UWS Chapter 14:  <http://students.wisc.edu/saja/misconduct/UWS14.html>

**Instructional Accommodations**

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations, as part of a student’s educational record is confidential and protected under FERPA.

**Pandemic/Catastrophic Readiness**

In the event that this course is no longer able to meet face-to-face, students should be up to date with course readings and prepared to be evaluated on their knowledge/reading of these materials via email communication with the professor or the lab manager. These readings can be found on the lab website at psych.wisc.edu/postlab under the “Lab Meeting” tab. All questions during any such event should be addressed to the lab manager, Jacqueline Fulvio (jacqueline.fulvio@wisc.edu). In additions students should monitor the [UW-Madison homepage](http://wisc.edu/) for emergency information and updates.