

# Introduction to Cognitive Psychology / AS.200.110

## Syllabus

### **Professor:**

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Ames 200a

Office phone: (410) 516-8111

Office Hours: Tuesday, 12-1 PM, and by appointment

### **TAs:**

Feitong Yang

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Office Hours: Monday, 12-2P PM, Ames 150

Li Guo

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Office Hours: Thursday, 12-1, Ames 110

### **Welcome!**

Welcome to Introduction to Cognitive Psychology! This class is all about how the mind works. Because this is an introductory class, we will spend quite a lot of time on foundational topics, such as understanding the relationship between the mind and brain, thinking about cognition in computational terms, and the various kinds of methods used to study cognition. Then we will look in depth at two classic ‘case studies’ in cognitive psychology —vision and memory— before looking at cognitive approaches to other aspects of the mind, such as thinking about numbers, thinking about other people, and making decisions.

**Class will meet every Tuesday and Thursday from 10:30 to 11:45 AM in Remsen 1. Attendance is mandatory.**

### **Feedback:**

I strongly encourage feedback with respect to how the class is going, and I promise to take your comments, concerns, and suggestions seriously. I might even alter the class in response to your suggestions, when possible. If you would like to share some thoughts with me, there are three ways you can do so. (1) You can meet with me in person, either at my regular office hours or by appointment. (2) You can send me an email. (3) If you prefer to share your feelings anonymously, you can leave a note in my mailbox, which is located in Ames 232A. Any of these approaches are welcome and encouraged, so long as you try your best to be respectful and constructive. The TAs and I are working very hard on this class, and we genuinely want it to be as educational and fun as possible.

### **Readings:**

As soon as you look at the schedule below you’ll notice that **there is no textbook** for this class. All the readings are available on Blackboard, and they come from a variety of sources, including book chapters, magazines, newspapers, and scientific journals. Why is there no textbook? There are several answers to this question, and I am happy to have a longer conversation about it with those of you who are interested. The bottom line is that there are no textbooks that I like enough to make you buy.

When you look at the schedule, you’ll also note that not all the assignments are readings. In several places you are instructed to watch a video on the web, or to do a demo on the web. When the syllabus instructs you to “watch” or “do,” I mean it. You must do or watch the thing

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referred to. The quizzes and exams will address this content as frequently as they address the reading content (items listed as “resources” or “recommended” are not required however).

Finally, I understand that there is quite a bit of reading at some points, especially at the beginning. I’ve tried to balance the class over time, rather than week-by-week. This may bug you at some points. But it is just not possible to always have an even load throughout the semester. Foundational concepts simply require more reading; but after the first exam, I think you’ll find the reading load manageable, maybe even light. I’ve also reserved at least one lecture before each exam for catch-up and review, and there are no readings assigned for those dates. And don’t be fooled by the number of entries for a given topic. Some of the readings come from sources with short formats. I recommend looking at the readings in advance to ascertain the actual workload before any given lecture. If you genuinely find the workload excessive, let me know. I will take your concerns seriously.

One thing you will notice during the semester about the readings is that many of them are covered in depth during the lecture, but some of them are covered almost not at all. This is ok. The point of school is to learn as much as possible and it seems reasonable to me that your schedules permit you to read more each week than just the amount of material that we could cover in detail in three hours of lecture. **If you find that readings are not addressed in the lectures, you may still be tested on them.** If you did not understand them, or have questions, then come to office hours or send me a note to ask your questions. But note that I am aware that not all the readings get ‘taught’ in lecture, and I think that’s a good thing.

**Remember: readings, watchings, and doings must be completed before the lecture for which they are assigned. These activities will be the basis for the quizzes to be taken online after each class, but it will be much easier to follow the lecture having done the readings.**

### **Evaluative Experiences (aka, how you get graded):**

Your final grade will comprise 4 components: 3 exams (25% each) + 10/15 quizzes (1% each) + 1 ‘blog post’ essay (15%) + extra credit obtained by participating in psychology experiments (not required, more below).

*Exams.* There will be three exams: two midterms (on 2/23 and 3/16), and a ‘final exam’ (TBA — scheduled by the university). Each of the exams, including the final, will be worth 25% of your final grade. The exams are not cumulative, though there are some recurring themes and ideas that come up throughout the course. The formats of the exams will be discussed explicitly in class as the dates approach.

***Note: There will be no makeups allowed without either a note from a dean or health services.*** If you know you will miss an exam, let me know in advance, even if it is because you are sick. It is very unlikely that you will wake up sick on the morning of an exam; if you tell me that this is what happened, I will have a hard time not saying, “That sounds unlikely.” But if you let me know that there will be a problem in advance, I will be willing to work with you to find an alternative date, time, or assignment, when necessary.

*Quizzes.* On the schedule below you’ll notice that there are **planned quizzes due before many of the classes** (but not in the first week). These quizzes will be short and easy, if you do the readings and related assignments.

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All quizzes will be administered online, via Blackboard. When a quiz is scheduled, it will become available on Blackboard within 24 hours before it is due, often even more in advance. Generally, quizzes will be due Monday and Fridays by 5PM, though there might be some deviations. A tentative quiz schedule follows after the reading schedule below. An announcement will appear on Blackboard whenever a quiz is posted.

There will be no make-ups under any circumstances. **Only your top 10 out of the 15 quizzes** will be counted towards your grade, and each counts towards 1% of your overall average. The purpose of the quizzes is twofold: to encourage you to do the readings, and to give you a sense of the style of questions we will ask on exams.

You \*may\* use your books on these quizzes. The purpose of the quizzes is to get you to do the reading, get a sense of the kinds of questions we ask, and improve your averages. So using the texts is encouraged. But searching for the answers without actually ever doing the reading will not serve you in the long run.

You \*may not\* discuss the quizzes with one another, or get help from one another. There are multiple versions of every question, but more importantly, you should behave ethically. We genuinely are not giving these quizzes to make your life difficult, and as you can see, we have worked very hard to administer them in the least stressful and most educational way possible. For these reasons, any revelation of cheating will result in an immediate failing grade and a referral to the appropriate administrative bodies, with no exceptions. It is also likely that if we suspect cheating we will quickly revert to in-class, closed book quizzes for everyone.

You \*may not\* take the quizzes in class. Seriously. Blackboard time stamps your submissions. Don't do it.

You may only take each quiz once, but there is no time limit. Blackboard will allow you to access a quiz and return to it multiple times until you finally click 'submit' (and don't forget to do that!). Feel free to look at the questions and then look up the answers in your text, but here's some advice: don't cut corners by searching the PDFs for question-relevant terms or looking up answers online instead of doing the readings. We will ask other questions about the readings on exams, and not necessarily just on things reviewed in class. My hope is that you will first actually do the readings from beginning to end. Then use the text to look up answers or confirm them if the questions feel tricky. If you do the work in this way, I think that you will not need to redo the readings before exams.

**Although quizzes are administered after the class for which a reading is assigned, I want you to do the readings in advance of class.**

*'Blog post' assignment.* Please see the document titled, "The Blog Post Assignment" for more information on this writing assignment (available on Blackboard). In short, the assignment is to write a 500-1500 word essay describing, to a lay audience, a recent cognitive psychology journal article of your choosing. Your essay must be submitted to me via email (flombaum@jhu.edu) no later than 5PM on 5/5/17 (the last day of classes). After that day, papers will be penalized 10% per day late, and **we simply will not accept papers after 5/12/17 without a dean's excuse.** Your essay will count for 15% of your final grade.

*Extra Credit.* Students may earn a maximum of 10 hours of extra credit by participating in psychology experiments via Sona Systems. Each hour of participation will count as .5% points

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on your final average. Doing 10 hours of credits adds up to 5% points total. E.g. if your average at the end is an 85, 10 hours of experimental participation will bump you up to a 90.

Three very important notes on extra credit: (1) It really is EXTRA credit and is not required or expected. It is a safety net for you if you are missing quizzes or just having a little more trouble with the course than you expected. (2) Students who are ineligible for experimental participation, or simply feel uncomfortable about it, can arrange to observe experiments and write about them instead. Please discuss this option with the professor if you are interested. (3) Extra credit MAY NOT be used to change a failing grade to a passing grade, or to change an A to an A+. **In general, A+'s are reserved for truly outstanding performance and awarded at the discretion of the professor.**

### **Slides and Lecture Audio**

My slides for each lecture will almost always be posted on Blackboard before class, and certainly, they will always be posted by the time a lecture has been delivered.

I will also make an audio recording of each lecture as I deliver it, and those recordings will be posted on Blackboard as promptly as possible after a lecture is delivered.

### **Some important comments about lecture recordings:**

1. Do not listen to posted lecture audio in lieu of coming to class. Trust me. And if I am slow posting audio, or forget to hit record, or there is a malfunction, I will not be sympathetic with your disappointment. The lecture recordings are an aid, not an entitlement.
2. If you come to class regularly, do all the readings, take notes etc. (you know who you are), **\*DO NOT\*** re-listen to all the lecture audio before each exam. This practice seems to be a potential collateral and negative consequence of posting the audio. It takes too long and it wastes time that could otherwise be spent actually studying. If you come to class regularly and do the reading, then only refer to the audio when there is something specific that you do not understand, and you want to go back to hear what I said about it.

### **Academic Ethics:**

Below is a segment from the JHU Ethics Policy Statement. But first, let me say something clearly. I have caught students cheating on papers in the past. And I have caught students cheating on quizzes and exams too. So to be 100% clear: Nothing upsets me more than cheating. There is no guarantee that I will catch you. But if I do, I will do nothing short of forwarding your case to the appropriate academic bodies, and I will give you an 'F' in the class with no opportunity for redemption. I am a very reasonable person and I don't want this class to bring undue stress or anxiety into your life. I love cognitive psychology, but it does not need to be the most important thing in the world to everybody. **If you are stressed, if you have last minute problems with a paper, even if you simply find yourself unexpectedly lost, contact me, and we can always work something out. If you find yourself contemplating cheating because of anxiety, that's probably a sign that you should come talk to me about the class. But if you turn something in that you did not write, or you cheat in any other way and I catch you I will not make an exception after the fact.**

From the University Statement on Academic Ethics:

"The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition.

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In this course, paper summaries in-class quizzes and exams are to be done without discussion or collaborations. If you have questions, you should always ask your professor or teaching assistant.

Report any violations you witness to the instructor. You may consult the associate dean of students and/or the chair of the Ethics Board beforehand. See the guide on "Academic Ethics for Undergraduates" and the Ethics Board Website (<http://ethics.jhu.edu>) for more information."

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### Tentative Reading and Lecture Schedule:

Below is a *tentative* schedule of readings and lectures for Introduction to Cognitive Psychology. That it is tentative means that things might change slightly. But you will be notified well in advance if that happens. (Note that the reading and lecture schedule is also available as an independent document called "Cog Psych Schedule" on Blackboard.)

### 1.31.17      ***Introduction: What's cognitive psychology, and who cares?***

No Reading

### 2.2.17      ***Foundations I: What's a mind?***

Read:

Pinker, S. (1997). *How The Mind Works*. New York, NY: W. W. Norton. (pp. 3-36)

Pylyshyn (1999), What's in your mind? In E. Leopore & Z. Pylyshyn (Eds.), *What is Cognitive Science?* (pp. 1-25). Oxford: Blackwell. (preprint version available on class website.)

### 2.7.17      ***Foundations II: A case of mistaken identity? The relationship between minds and brains***

Read:

Putnam, H. (1973). Reductionism and the nature of psychology. *Cognition*, 2, 131-146. Read pp. 131-136 (until 'Turing Machines'), the rest is recommended.

### 2.9.17      ***Foundations III: Pieces of mind: Representation & computation***

Read:

Gallistel & King (2011). Learning and the Computational Brain. Ch 4 pp.64-68.

Gallistel (1995). The replacement of general-purpose theories with adaptive specialization. Beginning to bottom of pp. 1259.

### 2.14.17      ***Review Session with TAs (Jon is out of town)***

No Reading

### 2.16.17      ***Catch Up***

### 2.21.17      ***Catch Up***

No Reading

### 2.23.17      ***Exam 1***

No Reading

### 3.2.17      ***Cognitive Neuropsychology: A Case Study in How to Measure Things***

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Read:

Caramazza, A., Chialant, D., Capasso, R., & Miceli, G. (2000). Separable processing of consonants and vowels. *Nature*, 403, 428-430.

Watch:

[http://www.ted.com/talks/vilayanur\\_ramachandran\\_on\\_your\\_mind.html](http://www.ted.com/talks/vilayanur_ramachandran_on_your_mind.html)

**3.7.17 Foundations IV: Evolution**

Read:

Sternly, K., & Griffiths, P. E. (1999). *Sex and Death*. Chicago, IL: The University of Chicago Press. (pp. 22-38; 324-332).

Darwin, C. (1859/1909). *On the Origin of the Species by Natural Selection* (11<sup>th</sup> edition). New York, NY: F. F. Collier & Son. (pp. 499-530).  
(Available as a PDF on the class website, and also via google.books.com)

**3.9.17 Evolution continued**

Read:

New, J. J., & Scholl, B. J. (2008). "Perceptual Scotomas" A functional account of motion-induced blindness. *Psychological Science*, 19, 653 - 659.

Watch:

<http://www.yale.edu/perception/Brian/demos/MIB-PercScotoma.html>

(These demos go with the paper by New & Scholl, above.)

**3.14.17 Evolution continued**

No Reading

**3.16.17 Lecture Evolution continued and/or start Brains**

No Reading

**3.28.17 Foundations V: Brains!**

Read:

Kandell, E. R., Schwartz, J. H., & Jessel, T. M. (1991). *Principles of Neural Science* (3<sup>rd</sup> Edition). Norwalk, CT: Appleton & Lange. (pp. 5-32).

Gray, N. (2010). The Psychology of 'The Neuroscience of...'.  
<http://networkedblogs.com/74HR6>

Watch:

Paul Smolensky at the annual meeting of Cognitive Science Society  
<http://thesciencenetwork.org/programs/cogsci-2010/hearts-and-minds>

**3.30.147 Vision I: Vision impossible**

Read:

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"The Itch." *The New Yorker* 6/30/2008. By Atul Gawande.

Watch:

[http://www.ted.com/talks/beau\\_lotto\\_optical\\_illusions\\_show\\_how\\_we\\_see.html](http://www.ted.com/talks/beau_lotto_optical_illusions_show_how_we_see.html)

(Warning: this gets a little weird at about minute 12.)

### **4.4.17      Catch up**

**No reading**

### **4.6.17      Vision II: The atoms of perception**

Read:

Quiroga, R. Q., Reddy, L., Kreiman, G., Koch, C., & Fried, I. (2005). Invariant visual representation by single neurons in the human brain. *Nature*, 435, 1102-1107.

"Face-Blind" *The New Yorker* 8/30/2010. By Oliver Sacks

Listen:

"Oliver Sacks on Living with Face-blindness" *The New Yorker Out Loud Podcast* 8/30/2010.

[http://www.newyorker.com/online/2010/08/30/100830on\\_audio\\_sacks](http://www.newyorker.com/online/2010/08/30/100830on_audio_sacks)

Do:

<http://www.gocognitive.net/demo/visual-search>

### **4.11.17      NO CLASS – PASSOVER**

**Jon will post a video lecture for you to watch so we can catch up.**

### **4.13.17      Vision III: Failures of Perception**

Read:

Simons, D. J., & Levin, D. T. (1998). Failure to detect changes to people during real-world interaction. *Psychonomic Bulletin & Review*, 5, 644-649.

Do:

<http://www.gocognitive.net/demo/change-blindness>

### **4.18.14      Reasoning and decision making: Uncertainty, biases, and heuristics**

Read:

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211, 453-458.

Gilovich, T., Vallone, R., & Tversky, A. (1985). The hot hand in basketball: On the misperception of random sequences. *Cognitive Psychology*, 17, 295-314.

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Watch:

[http://www.ted.com/talks/daniel\\_kahneman\\_the\\_riddle\\_of\\_experience\\_vs\\_memory.html](http://www.ted.com/talks/daniel_kahneman_the_riddle_of_experience_vs_memory.html)

Recommended:

"The Captain of Crunch" *Slate* 6/8/2010. By Alan Siegel.

<http://www.slate.com/id/2255932/>

### **4.20.17 Reasoning and decision making: The paradox of choice**

Read:

Schwartz, B. (2004). *The Paradox of Choice: Why Less is More*. New York, NY: Harper Perennial. (pp. 48-75, 99-116).

Watch:

[http://www.ted.com/talks/barry\\_schwartz\\_on\\_the\\_paradox\\_of\\_choice.html](http://www.ted.com/talks/barry_schwartz_on_the_paradox_of_choice.html)

[http://www.ted.com/talks/dan\\_ariely\\_asks\\_are\\_we\\_in\\_control\\_of\\_our\\_own\\_decisions.html](http://www.ted.com/talks/dan_ariely_asks_are_we_in_control_of_our_own_decisions.html)

### **4.25.17 Moral cognition & Theory of Mind**

Read:

"The moral instinct," *The New York Times Magazine*, 1/13/2008. By Steven Pinker.

<http://www.nytimes.com/2008/01/13/magazine/13Psychology-t.html>

Watch:

[http://www.ted.com/talks/dan\\_ariely\\_on\\_our\\_buggy\\_moral\\_code.html](http://www.ted.com/talks/dan_ariely_on_our_buggy_moral_code.html)

### **4.27.17 Numerical cognition and math**

Read:

"Numbers guy," *The New Yorker*, 3/3/08. By Jim Holt.

[http://www.newyorker.com/reporting/2008/03/03/080303fa\\_fact\\_holt](http://www.newyorker.com/reporting/2008/03/03/080303fa_fact_holt)

Halberda, J., Mazocco, M. M., & Feigenson, L. (2008). Individual differences in non-verbal numerical acuity correlate with maths achievement. *Nature*, 455, 665-669.

"Gut instincts surprising role in math," *The New York Times*, 9/16/2008. By Natalie Angier.

<http://www.nytimes.com/2008/09/16/science/16angi.html>

Do:

<http://panamath.org/test/consent.php>

### **5.2.17 Episodic memory: How well do we know ourselves?**

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Read:

Loftus, E. F., & Palmer, J. C. (1974). Reconstruction of automobile destruction: An example of the interaction between language and memory. *Journal of Verbal Learning and Verbal Behavior*, 14, 585-589.

"The Memory Doctor" *Slate* 6/4/2010. By William Saletan  
<http://www.slate.com/id/2256089/>

Watch:

[http://www.ted.com/talks/dan\\_gilbert\\_asks\\_why\\_are\\_we\\_happy.html](http://www.ted.com/talks/dan_gilbert_asks_why_are_we_happy.html)

### **5.4.17      Who am I?**

"Brain Gain," *The New Yorker*, 4/27/2009. By Margaret Talbot.  
[http://www.newyorker.com/reporting/2009/04/27/090427fa\\_fact\\_talbot](http://www.newyorker.com/reporting/2009/04/27/090427fa_fact_talbot)

"Man uses chip to control robot with thoughts," *The New York Times*, 7/12/2006.  
By Andrew Pollack  
<http://www.nytimes.com/2006/07/12/science/12cnd-science.html>

Watch:

[http://www.ted.com/talks/lang/eng/steven\\_pinker\\_chalks\\_it\\_up\\_to\\_the\\_blank\\_slate.html](http://www.ted.com/talks/lang/eng/steven_pinker_chalks_it_up_to_the_blank_slate.html)

### **5.13.17 12PM      EXAM 3: Scheduled by the registrar**