

# Psychology 3312

## Memory and Cognition

Course Syllabus, Spring 2017

<b>Course:</b>	PSYCH 3312
<b>Call number:</b>	22854 (morning) and 22855 (afternoon section)
<b>Credits:</b>	3
<b>Dates:</b>	January 02 – May 01, 2017
<b>Times:</b>	Tuesdays & Thursdays 9:35–10:55 a.m. (morning section, 22854) Tuesdays & Thursdays 2:20–3:40 p.m. (afternoon section, 22855)
<b>Room:</b>	Hitchcock Hall, Room 031 (morning section, 22854) Lazenby Hall, Room 021 (LZ021, afternoon section, 22855)
<b>Prerequisites:</b>	Introductory Psychology (Psych1100, 1100H, 100, or 100H).
<b>Websites:</b>	<a href="https://carmen.osu.edu">https://carmen.osu.edu</a> and <a href="http://alexpetrov.com/teach/lmc/">http://alexpetrov.com/teach/lmc/</a>
<b>Textbook:</b>	Robert W. Weisberg & Laretta M. Reeves (2013). <i>Cognition: From Memory to Creativity</i> . Hoboken, NJ: Wiley. ISBN 978-0-470-22628-5.
<b>Instructor:</b>	<b>Course Assistant:</b>
Dr. Alexander Petrov	Xiaoli Zhang
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200B Lazenby Hall	M211 Lazenby Hall
Office hours: Tue, Thu 10:55–11:30 a.m., 3:40–4:15 p.m., and by appointment	

### Course Overview

This course surveys selected topics in modern cognitive psychology with an emphasis on memory, categorization, thinking, and problem solving. It is intended for undergraduate students with basic knowledge of psychology (prerequisite Psych 1100). Some questions we will consider are: What is cognitive psychology and how does it fit into the broader framework of cognitive science? What methods do scientists use to study memory and high-level cognition? What behavioral regularities characterize human and animal memory? What kinds of memory are there? Where does memory reside in the brain? What are some important theories and models of memory? What are their strengths and weaknesses? How does one evaluate a scientific theory? Can memory research help us study and remember better? Are the testimonies of honest eyewitnesses always reliable? How do people classify things into categories? How are concepts represented and organized in semantic memory? Are humans fundamentally rational or irrational? What tools allow us to construct, and to understand, a reasoned argument? What tools allow us to recognize a fallacious or fraudulent argument? What is the distinction between deductive and inductive reasoning? How do people solve problems? What is the role of insight in problem solving? Can the creative process be studied scientifically and, if so, how? How can fluid intelligence and creativity be measured? Can they be improved?

## Course Objectives

Upon successful completion of the course the students should be able to:

- Summarize a representative sample of empirical and theoretical results in the scientific study of memory, categorization, and high-level cognition, as illustrated by the questions in the *Course Overview* above.
- Describe the methods that psychologists use to study learning and memory.
- Describe the biological bases of how we remember, think, decide, and create.
- Make connections from psychological research to daily life and public policy. This includes the ability to be a competent consumer of scientific research.
- Demonstrate critical thinking and job skills relevant to a wide variety of careers.

## APA Learning Goals and Lesson Objectives

The American Psychological Association (APA) *Guidelines for the Undergraduate Psychology Major* describes a set of learning goals and outcomes for psychology majors at the completion of the baccalaureate degree. The content and organization of this course is designed to help you meet these goals by learning and demonstrating the following abilities at the **(B)**accalaureate or **(F)**oundational level, as denoted below:

*Goal 1. Knowledge Base in Psychology*

- **(B)** K1. Describe key concepts, principles, and overarching themes in psychology
- **(B)** K2. Develop working knowledge of psychology's content domains
- **(F)** K3. Describe applications of psychology

*Goal 2. Scientific Inquiry and Critical Thinking*

- **(B)** S1. Use scientific reasoning to interpret psychological phenomena
- **(B)** S2. Demonstrate psychology information literacy
- **(F)** S3. Engage in innovative and integrative thinking and problem solving
- **(F)** S4. Interpret, design, and conduct basic psychological research
- **(F)** S5. Incorporate sociocultural factors in scientific inquiry

*Goal 3. Ethical and Social Responsibility in a Diverse World*

- **(F)** E1. Apply ethical standards to evaluate psychological science and practice

*Goal 4. Communication*

- **(F)** C1. Demonstrate effective writing for different purposes

*Goal 5. Professional Development*

- **(F)** P5. Develop meaningful professional direction for life after graduation

## Course Materials

The main textbook is *Cognition: From Memory to Creativity* by Robert W. Weisberg and Laretta M. Reeves (2013). Hoboken, NJ: John Wiley & Sons. ISBN 978-0-470-22628-5.

Website: <http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470226285.html>

The book is available for purchase from the university bookstore. Electronic copies can be accessed through the OSU library: <http://library.ohio-state.edu/record=b7269751~S7>  
We will supplement the textbook with additional required readings. A complete reading list appears at the end of this syllabus. The Carmen website (<http://carmen.osu.edu>) is an indispensable resource. All additional readings are available for download from Carmen in PDF format, together with PowerPoint slides, videos, and various other materials.

## Evaluation

Your final grade in this course will be determined on the basis of three in-class exams, the final exam, and pop quizzes given throughout the semester. The maximum number of points for the course is 330, which are converted to a letter grade according to the following cut-off ranges:

Grade	Min	Max	Grade	Cut	Points
A	286	330	C+	231	241
A-	275	285	C	220	230
B+	264	274	C-	209	219
B	253	263	D+	198	208
B-	242	252	D	180	197

The instructor and the course assistant make every effort to ensure that the grades are accurate, fair, and consistent. Nobody is immune to mistakes, however. If you believe that your test and/or pop-quiz results are in error, please let us know no later than one week after the results are announced. Such notifications must be made in writing and emailed to [psych312@cogmod.osu.edu](mailto:psych312@cogmod.osu.edu). We will review your complaint carefully and answer by email or invite you to a personal meeting with Dr. Petrov to discuss the issue. **Complaints about test results, pop-quiz results, or anything else that affects your grade will not be considered or discussed unless a written statement was emailed to [psych312@cogmod.osu.edu](mailto:psych312@cogmod.osu.edu) in advance. Messages sent to any other email account will be ignored.** There are no exceptions to these rules.

## Tests, Pop Quizzes, Extra Credit, and Attendance Policy

As we will learn in the course, people remember much better when they study on a regular basis rather than cramming for a final exam. The organization of this course capitalizes on this important property of memory. There will be three in-class exams, a final exam, and pop quizzes throughout the semester. All exams are closed-book multiple-choice tests. If you miss an exam, it will be graded with zero points. Makeup exams will only be given in cases of documented emergency or when **prior approval** has been given to miss the exam. Note that if you are not sick enough to go to the doctor, you are not sick enough to miss the exam. If you are late for the test, you will be allowed to take it but you must submit your answer sheet by the closing time like everybody else. Please bring a photo ID, a #2 pencil, and an eraser to the test room. Once the test begins, no questions about any test item are allowed. Please do not leave your seat until you are ready to turn your answer sheet in. After you turn it in, leave the test room immediately. The tests are based on material from the lectures, the textbook, the additional required readings, and on certain videos that are clearly marked in the lecture slides and linked on Carmen. The three in-class exams are non-cumulative, whereas the final exam covers the material from the entire semester. **Each exam is worth 100 points.** Everyone can have a bad day. That is why your worst test score will be dropped from the evaluation. In other words, **only the three best scores of the four tests will count toward your grade. The total number of points that can be earned for the exams is 300.** As you probably already figured out, this technically means that if you are happy with your scores on the three in-class exams, you can skip the final.

The remaining 10% of your grade will be determined on the basis of very short **pop quizzes** given at the end of class on randomly chosen dates throughout the semester. Each pop quiz is worth 3 points and typically consists of two short-answer questions about the previous lecture. You can earn 0, 1, 2 or 3 points per quiz depending on the quality of your answers, which are graded by the course assistant and the results are posted on Carmen. Illegible handwriting will be graded with 0 pts. Mathematically, 10 quizzes are sufficient to earn a perfect overall score for the course: **300 test points + 30 quiz points = 330 total points. However, to encourage attendance and to provide opportunity for extra credit, 5 more quizzes will be given.** If you attend class regularly and review the previously covered material in preparation for each class, you will be rewarded with more than 30 quiz points and ultimately a higher letter grade. No other opportunities for extra credit will be provided. Attendance is strongly encouraged but not required, except on test dates.

### **Academic Misconduct**

All students enrolled in OSU courses are bound by the *Code of Student Conduct* (<http://studentconduct.osu.edu/>). The instructor and course assistants are committed to maintaining a fair assessment of student performance in this course. Suspected violations of the *Code* will be dealt with according to the procedures detailed in the *Code*. Specifically, any alleged cases of misconduct will be referred to the Committee on Academic Misconduct. It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the *Code*.

All exams are closed book. No notes may be used during the examinations and you may not confer with other students or look at other exams for answers during the test. Before exams, you are encouraged to study in small groups. However, once you enter the exam room, you must work alone. Please silence your cell phones during all lectures and tests.

### **Official Announcements**

Official announcements will be made primarily through Carmen. The syllabus is subject to revision. If you are not in attendance when revision announcements are made, it is your responsibility to find out about them by checking the Carmen site or asking classmates. Email announcements may be sent to the class list or to individual students. All of these messages are addressed to your official OSU account (with the “dot number”). This is the only account known to Carmen. Therefore, **please make sure to check your official OSU account regularly.** Failure to check the official email account is not a valid excuse for missing a requirement.

## Course Calendar

1. T 1/10 – Introduction and orientation. Brief history. [Chapter 1]
2. R 1/12 – The “cognitive revolution”. Cognitive science. [Chapter 1]
3. T 1/17 – Memory systems. Atkinson & Shiffrin’s multi-store model. [Chapter 2]
4. R 1/19 – Baddeley’s working memory model. The central executive. [Chapter 2 + additional reading: Gluck, Mercado, Myers, 2011]
5. T 1/24 – Brain substrate of working memory. Maintained activation in the prefrontal cortex. [Chapter 2 + additional reading: Gluck, Mercado, Myers, 2011]
6. R 1/26 – Amnesia. Double dissociations. Modularity. [Chapter 2 + videos + additional reading: Eichenbaum, 2002]
7. T 1/31 – Episodic memory. Practice, interference, forgetting. [Chapters 3 & 4]
8. R 2/02 – Levels of processing. Retrieval factors. Context dependence. [Chapter 3]
9. T 2/07 – Autobiographical memory. Permastore. Mnemonics. Education. [Ch. 4] (The first in-class exam covers the above material, lectures 1 through 9.)
10. R 2/09 – Review of neurophysiology. Synaptic plasticity. Neural-network models. [Additional reading: McLeod et al., 1998; Textbook Ch. 1, pp. 23-25]
11. **T 2/14 – In-class exam #1. Bring photo ID.** Covers lectures 1–9 but not 10.
12. R 2/16 – Input-output mapping task. Pattern associator. Hebbian learning. Superposition of memory traces. [Additional reading: McLeod et al., 1998]
13. T 2/21 – Basic concepts of memory. Auto-associator. Content-addressable memory. Pattern completion. [Additional reading: McLeod et al., 1998]
14. R 2/23 – Schemas & scripts. Reconstructive memory. Self deception. Cognitive triad of depression. [Chapter 3, pp. 101-107, pp. 12-13 + additional reading: Baumeister & Bushman, 2008; Nevid et al, 2014]
15. T 2/28 – Memory distortions. Eyewitness testimony. [Chapter 4 + three YouTube videos (listed in the lecture slides) + additional reading: Loftus, 2003]
16. R 3/02 – Concepts and categories. Rule- and prototype-based theories [Chapter 8]
17. T 3/07 – Exemplar-based categorization. Semantic networks. Basic level. [Ch. 8]
18. R 3/09 – Psychological essentialism. Theory theory. Conceptual development. Ad-hoc concepts. Semantic deficits after brain damage. [Chapter 8 + p.190, 405]
- 3/14, 3/16 – Spring break. No classes
19. **T 3/21 – In-class exam #2. Bring photo ID.** Covers lectures 10–18.
20. R 3/23 – Rationality. Traditional analysis of knowledge. Critical thinking. Peer review. Rhetorical fallacies. [Chapter 11 + additional reading: Sagan, 1996]
21. T 3/28 – Introduction to logic. Material conditional (*if p then q*). Content effects in deductive reasoning. Theories of deductive reasoning. [Chapter 11]
22. R 3/30 – Decision making. Prospect theory. Heuristics and biases. [Chapter 11]
23. T 4/04 – Probabilistic reasoning. Frequency trees for conditional probabilities. Problem solving, part 1. [Chapters 11 and 12]
24. R 4/06 – Problem solving 2. Weak and strong methods. Analogy. [Chapter 12]
25. T 4/11 – Insight in prob. solving: special processing or business as usual? [Ch. 12]
26. R 4/13 – Creativity: definitions. Unconscious incubation? Psychometrics. [Ch. 13]
27. T 4/18 – Creativity: case studies, theories, and models. Talent and the 10-year rule. Genius and bipolar disorder. Course finale. [Ch. 13]
28. **R 4/20 – In-class exam #3. Bring photo ID.** Covers lectures 20–27.

29. W 4/26 – **Final Exam: AFTERNOON SECTION (22855), 2:00–3:45 pm**  
(Note unusual hour!), same room (LZ 021). Bring a photo ID.  
M 5/01 – **Final Exam: MORNING SECTION (22854), 8:00–9:45 am**  
(Note unusual day and hour!) same room (HI 031). Bring photo ID

The course calendar is subject to change at the discretion of the instructor, depending on the rate of progress through the material, student interest in alternative topics, and/or scheduling constraints. The dates for the in-class and final exams are fixed.

### **Additional Readings (Required)**

In addition to the main textbook (Weisberg & Reeves, 2013), the following additional readings supplement and amplify some topics of particular importance. All additional readings are available on Carmen in PDF format (in the *Resources* section of the Content area). The list of readings is subject to change depending on the rate of progress through the material, interest in other topics, and/or scheduling constraints.

1. Baumeister, R. F. & Bushman, B. J. (2008). The self and information processing (pp. 90-100). Excerpt from Chapter 3 of the textbook *Social Psychology and Human Nature* (Brief version). Belmont, CA: Thomson.
2. Eichenbaum, Howard (2002). Amnesia: Learning about memory from memory loss – Chapter 4 of the textbook *The Cognitive Neuroscience of Memory: An Introduction*. Boston, MA: Oxford University Press.
3. Gluck, M. A., Mercado, E., & Myers, C. E. (2011). Brain substrates of working memory and the central executive (pp. 347-376). Excerpt from Chapter 9 of the textbook *Learning and Memory: From Brain to Behavior* (2/e). New York: Worth.
4. Loftus, Elizabeth (2003). Make-believe memories. *American Psychologist*, 58 (11), 864-873.
5. McLeod, P., Plunkett, K., & Rolls, E. T. (1998). Excerpts from Chapters 1-4 of the textbook *Introduction to Connectionist Modeling of Cognitive Processes* (pp. 9-21, 30-35, 48-64, 72-73). Oxford University Press.
6. Nevid, J. S., Rathus, S. A., & Greene, B. (2014). Cognitive theories and cognitive therapy of depression (pp. 262-266, 272-274). Excerpt from Chapter 7 of the textbook *Abnormal Psychology in a Changing World*. Upper Saddle River, NJ: Pearson.
7. Sagan, Carl (1996). The fine art of baloney detection – Chapter 12 of Sagan's book *The Demon-Haunted World: Science as a Candle in the Dark*. NY: Random House.

### **Disability Services**

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss

options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

**SLDS contact information:** slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

### **Sexual Misconduct / Relationship Violence**

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at [titleix@osu.edu](mailto:titleix@osu.edu).

Finally, welcome to the course. I hope that you will enjoy the class and learn valuable information and skills. I look forward to seeing you on January 10.

Alexander Petrov

syllabus3312-2017S1.docx, last updated 9 Jan 2017