JOHNS HOPKINS UNIVERSITY
DEPARTMENT OF PSYCHOLOGICAL AND BRAIN SCIENCES

Episodic Memory in Human and Nonhuman Animals
AS.200.367 Fall 2014

Days/Times: Mon, Wed 12:00pm-1:15pm (3 credits)
Location: Krieger Hall, Room #110

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Registration Course Description:
This course examines episodic, or autobiographical, memory—the *what*, *where*, and *when* of our past experiences—and if nonhuman animals are capable of this supposedly unique type of memory.

Detailed Course Description:
Episodic memory, or autobiographical memory, has been said to be a capacity that is uniquely human. Consisting of the *what*, *when*, and *where* components of our experiences, episodic memory is what makes each of us who we are. This course will explore each of these components individually—the psychology and neural underpinnings—before discussing them in combination. Additionally, we will visit one of the greatest ongoing debates in the memory literature: whether or not this ability is truly "uniquely human" or if our nonhuman animal counterparts also have this capacity. Throughout the course, we will draw on empirical evidence from a variety of species including rodents, primates, and birds.

Learning Objectives:
Students will obtain a good working knowledge in the following areas:
1) Evaluation and interpretation of scientific, professional empirical papers
2) Behavioral, psychological, and neural basis of the components and integration of episodic memory
3) Similarities and differences between human and nonhuman animal scientific study and memory

Website:
The lecture slides and other pertinent materials will be placed on the Blackboard website. All assigned readings are available now via hyperlink. Lecture slides will be posted *after* each class as well as any additional materials used during lecture.

Grading Guidelines:
An assignment is considered late if it is submitted after 12noon on the due date. The late penalty is a loss of 5% from the assignment's grade for each 24 hours that it is late. There are no make-up assignments. There is no curve and there is no extra credit available.

Requirements:

The course grade (there is no curve) will be determined based on the following requirements.

Quizzes	35%
Oral Debates	10%
Debate Preparation	10%
Scientific Presentation	20%
Final Exam	25%

1) **Quizzes (35%):** There will be short quizzes (10-15 questions) interspersed throughout the semester (7 quizzes, 5% each), testing material from the previous lecture(s) and corresponding readings. You will be given 10-15 minutes at the beginning of the class for the quiz. You must be punctual or risk having less time (or no time at all) to take the quiz. Make-up quizzes are immediately before or after the next class session and will consist of an oral discussion of the relevant material. Answers to quizzes will be verbally discussed in class but neither the quiz questions nor answers will be posted on Blackboard.

2) **Oral Debates (10%):** There are two in-class debates (5% each). Specific details will be provided during the semester. Your score for these debates is based on attendance, participation, and relevance/coherence of contribution. You will submit a preparation response (see below) as well.

3) **Debate Preparation (10%):** To be prepared for the verbal in-class debates, write a scientific and professional response for each debate (5% each). Introduce the "big picture" issue and its relevance, concisely summarize the assigned reading(s) and lecture material, supplement the summary with an additional article, and extend the topic with your own opinion/logic (2-3 double-spaced pages, not including References). The additional article should be relevant and recent (i.e. 2010-2014). A rubric (but not a sample) is uploaded on Blackboard to help guide your writing. Prior to the debate, you will submit a rough draft (~2 double-spaced pages) for peer review and provide feedback for another member of the class.

4) **Scientific Presentation (20%):** With a partner, present a 20min talk on a topic of interest that has been approved by the instructor. Your topic must be related to factors/variables that affect episodic memory and underlying circuitry (i.e. caffeine, sleep, alcohol, marijuana, exercise, etc). Your talk will consist of a 12-15min presentation, followed by 5-8min for audience questions. You must introduce the "big picture" issue as well as adequately explain supporting data and the subsequent conclusion drawn from those data. An initial suggestion (but *not* an actual assignment) is to formulate a short (800-1000 words) scientific journal article based on your topic of interest (see the Science section of the New York Times for guidance) and design the presentation to be an illustration of that article.

5) **Final Exam (25%):** The final exam is cumulative and will consist of ~100 multiple choice questions (~20%) and ~2 essay questions (~2.5% each).

Policies and Support Services:
This course is governed by the policies set forth in The Johns Hopkins University Undergraduate Student Handbook, which contains information on a wide variety of topics, such as support services and policies relating to student rights and responsibilities.

Some JHU student support services that you may find useful include:

Service	Location	Contact
Library E-Reserves	Website	410-516-8377 reserves@jhu.edu
Summer & Intersession Programs	3505 N. Charles Street, Suite 101 Website	410-516-4548 intersession@jhu.edu
Office of Student Disability Services	385 Garland Hall Website	410-516-4720 studentdisabilityservices@jhu.edu

Statement of Diversity and Inclusion:
The Johns Hopkins University is a community committed to sharing values of diversity and inclusion in order to achieve and sustain excellence. We believe excellence is best promoted by being a diverse group of students, faculty, and staff who are committed to creating a climate of mutual respect that is supportive of one another's success. Through its curricula and clinical experiences, we purposefully support the university's goal of diversity, and in particular, work toward an ultimate outcome of best serving the needs of students. Faculty and candidates are expected to demonstrate an understanding of diversity as it relates to planning, instruction, management, and assessment.

A Word on 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. Report any violations you witness to the instructor. Ethical violations will result in failure of the course and disciplinary action.

Schedule of Classes

The following schedule is subject to change. For each day, articles are listed in the recommended reading order. All citations are hyperlinks to an online version (access may be limited to Johns Hopkins University). Any assigned articles are to be skimmed *before* the lecture.

Week 1	Topic	Readings
Mon, Sept 1	*Labor Day* (no class)	
Wed, Sept 3	Introduction to Neuroscience	See Blackboard for the syllabus and other resources.

Week 2	Topic	Readings
Mon, Sept 8	Experimental Design	Kosslyn (Chapter 2) – see Blackboard for access
Wed, Sept 10	Methods of Study	Various Methods (2012) website, Lashley (1950)

Week 3	Topic	Readings
Mon, Sept 15	Quiz #1 Higher-Order Cognitive Processes	Sherry & Schacter (1987), Squire (2004), Nadel et al. (2012)
Wed, Sept 17	Memory: Multiple Layers and Systems	Scoville & Milner (1957), Gabrieli et al. (1995), Squire et al. (2004), Squire & Wixted (2011)

Week 4	Topic	Readings
Mon, Sept 22	Quiz #2 Remembering and Recognition	Brown & Aggleton (2001), Fortin et al. (2004), Wais et al. (2006), Eichenbaum et al. (2007)
Wed, Sept 24	Forgetting and False Memories Provide a cartoon or video clip illustrating a type of forgetting (Schacter, 1999).	Schacter (1999), Wixted (2005), Roediger & McDermott (1995), Loftus (2005)

Week 5	Topic	Readings
Mon, Sept 29	Quiz #3 What and Where: Perirhinal vs. Parahippocampal	Gold et al. (2006), Davachi (2006), Bachevalier & Nemanic (2008), Staresina et al. (2011)
Wed, Oct 1	What and Where: Dorsal vs. Ventral Streams	Goodale et al. (1991), Ungerleider & Haxby (1994), Creem & Proffitt (2001), Goodale (2014)

Week 6	Topic	Readings
Mon, Oct 6	Quiz #4 Spatial Learning	Tolman (1948), McDonald & White (1994)
Wed, Oct 8	Contextual Learning Assigned debate position.	Rudy & Sutherland (1995), Holland & Bouton (1999), Bouton (2014)

Week 7	Topic	Readings
Mon, Oct 13	*Guest Lecturer* Hippocampal Neural Coding and Network Dynamics	Marozzi & Jeffery (2012), Yassa & Stark (2011) Supplements: Moser et al. (2008), Leutgeb & Leutgeb (2007), Buzsaki (2005)
Wed, Oct 15	Quiz #5 What does the Hippocampus Do? Peer Review of Debate #1 Outline	Cohen et al. (1999), Konkel & Cohen (2009) Supplements: Giovanello et al. (2004), Kumaran & Maguire (2005), Preston et al. (2004)
Thurs, Oct 16	**Meets according to Mon schedule** What does the Hippocampus Do?	Eichenbaum (1999), Zeithamova et al. (2012) review Supplements: Heckers et al. (2004), Shohamy & Wagner (2008), Zeithamova et al. (2012)

Week 8	Topic	Readings
Mon, Oct 20	Quiz #6 Peer Review of Debate #1 Preparation	
Wed, Oct 22	Debate: What does the hippocampus do?	

Week 9	Topic	Readings
Mon, Oct 27	Circadian Clocks and Cells	MacDonald et al. (2011), Mankin et al. (2012), Fortin et al. (2002)
Wed, Oct 29	Order and Sequences Assigned debate position.	Clayton & Dickinson (1998), Eichenbaum & Fortin (2003), Eichenbaum (2013)

Week 10	Topic	Readings
Mon, Nov 3	Do Nonhuman Animals know "Themselves"? Peer Review of Debate #2 Outline	Raby et al. (2007), Dally et al. (2006), Seyfarth & Cheney (2012) Supplements: Tulving (1985), Corballis (2013)
Wed, Nov 5	Do Nonhuman Animals form Episodic Memories? Sign-up for presentation topic/date.	Tulving (2001), Eichenbaum et al. (2005) Supplements: Clayton et al. (2001), Babb & Crystal (2005), Roberts (2006) commentary, Clayton & Russell (2009)

Week 11	Topic	Readings
Mon, Nov 10	Quiz #7 Peer Review of Debate #2 Preparation	
Wed, Nov 12	Debate: Do nonhuman animals form episodic memories?	

Week 12	Topic	Readings
Mon, Nov 17	*Society for Neuroscience* (no class)	
Wed, Nov 19	*Society for Neuroscience* (no class)	

Week 13	Topic	Readings
Mon, Nov 24	*Thanksgiving Break* (no class)	
Wed, Nov 26	*Thanksgiving Break* (no class)	

Week 14	Topic	Readings
Mon, Dec 1	Student Presentations (3 groups) All printed slides are due.	
Wed, Dec 3	Student Presentations (3 groups)	

Week 15	Topic	Readings
Mon, Dec 8	*Reading Period* (Review Session)	12noon – 1:15pm in Krieger Hall, Room #110
Wed, Dec 10	*Reading Period* (no class)	

Weeks 16	Topic	Readings
Mon, Dec 15	*Reading Period* (no class)	
Wed, Dec 17	Final Exam	9am – 12noon in Krieger Hall, Room #110