

# LEARNING & MEMORY

Class Times: Tu/Th 11:50-1:10pm in HEG 102 | Office Hours: W 4:30-5:30pm/Thu 3-4pm/by appointment

## Instructor

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(preferred contact)

## Course Materials

Perusall



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[bardcollege.brightspace.com](http://bardcollege.brightspace.com)

## Prerequisites

Introduction to Psychological Science (PSY 141), Introduction to Neurobiology (BIO 162), or permission of the instructor

## Assessment

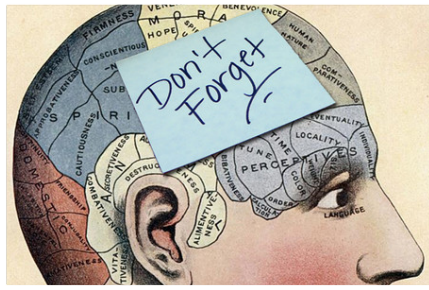
- Midterms (2x20%): **40%**
- Perusall annotations: **20%\***
- Make-your-own final: **10%**
- Controversy paper: **15%**
- Article poster: **10%**
- Final reflection: **5%**

*\*I'll drop your lowest 2 scores*



## Course Overview

Memory is fundamental to all aspects of learning and behavior. It helps remind us to pick up dinner and where we left our keys; it acts as a repository for driving skills and the meaning of a stop sign; it also can incite flashbacks to an earlier car crash. How does the brain—in humans and non-humans alike—support mnemonic processes that give rise to such adaptive functions? How do these capacities develop across the lifespan, what problems arise, and what can we do to improve our memories? To begin to answer these questions, we will evaluate theories and evidence from behavioral experiments, brain-imaging methods, and studies of patients with memory disorders. Along the way, we will consider ongoing debates in the field, such as the role of memory suppression and the malleability of our memories.



## Learning Objectives

Coming out of this course, you should have:

- Developed an appreciation for the central role memory plays in our lives, as well as the multiple forms memory can take.
- The ability to talk competently about the cognitive processes and neural underpinnings of memory development, encoding, retrieval, modification, and forgetting.
- The knowledge and skills necessary to develop an effective, comprehensive memory test of learning and a more adaptive memory system.
- Practice presenting research and applying core lessons from the field to real-world problems.
- The capacity to critically evaluate research methods, data, visual displays of quantitative information, and theories in order to reach sound scientific conclusions.

## Joint Responsibilities

Achieving the broad aims of this course requires commitments from instructor and students alike. Below you will find an outline of some of those responsibilities. Did I leave something out? Let me know—we can discuss additional responsibilities/group norms as a class.

- Your instructor agrees to...

- a) Make himself available outside of class during posted office hours (and by appointment, as necessary) to answer questions, provide extra help, and discuss matters related to the course of study.
- b) Respond in a timely fashion (typically by the end of the next school day) to email queries. In the event that more time is required to fully address the student query, the instructor will acknowledge receipt of the email and provide the student with an estimated response time or suggest meeting in person.
- c) Facilitate a thoughtful, considerate, and engaging learning environment.
- d) Make available on Brightspace a skeleton of lecture slides, suitable for downloading/printing prior to class. Note that these skeletons are intended to supplement note-taking (e.g., by providing important/complicated figures) but are not a replacement for attending class, as they will lack critical information presented only in class.
- e) Provide adequate time to complete assignments, minimize changes to the published schedule/ assignments, and immediately notify students about any such changes.
- f) Provide comprehensive and fair assessments of materials presented or assigned. Assignments, with a level of feedback commensurate with the nature and aims of the task, will be returned to students in a timely fashion.
- g) Create and welcome opportunities for students to provide feedback on the course/teaching



## Best Practices

To make the most of office hours, it is recommended that you:

- Avoid waiting until the last minute (before an exam/due date) to attend. Seeking help well in advance of deadlines will leave you plenty of time to act on advice discussed.
- Email the instructor in advance or bring with you a concise list of topics/questions you wish to discuss, if possible. Itemizing in this way helps ensure all your questions are addressed and saves you time in the long run. That said, *dropping by for a spontaneous, broader chat is also most welcome*. Tea and/or coffee will be available (pandemic permitting).

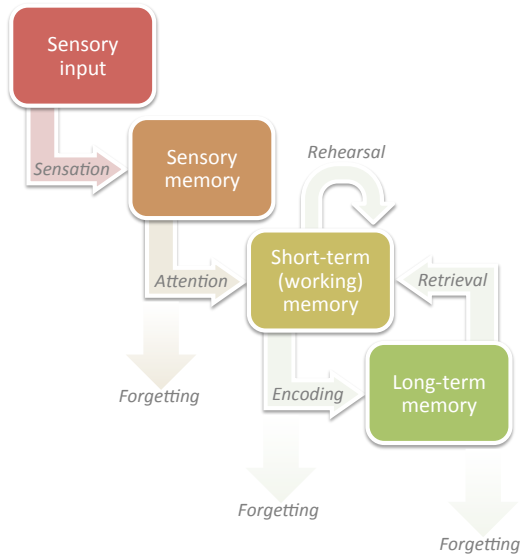
When emailing the instructor, keep in mind that:

- Taking time to draft a concise message with proper spelling/punctuation is expected and will be met with a similarly considered reply.

Writing/other academic help is available through [Bard Learning Commons](https://bardscholarshipcommons.org/) ([lc@bard.edu](mailto:lc@bard.edu)).

throughout the semester.

- **You are responsible for...**
  - a) Showing up to class regularly, on time, and prepared. Your attendance is critical to your learning (and course grade), as the in-class demonstrations, activities, movie clips, and other outside materials won't necessarily be covered in your readings or the posted lecture slides. Formal attendance will not be taken; however, you are responsible for any and all material covered in classes missed. Note also that any and all material contained in the assigned readings would be considered fair game on exams (even if it had not been covered directly in class). Your outside readings are intended to provide a solid foundation for class discussions, activities, and advanced lectures. For that reason, it is critical you keep up with the readings and ask (your peers and/or your instructor) if something from the readings is unclear. Review guides will be offered before exams to help focus your studying.
  - b) Giving your participation, readings, and assignments the time and effort they deserve. As the required text is now completely digital, you can access the material on your computer or smart device from anywhere with an internet connection. But keep in mind that there is no substitute for a deep and focused consideration of the material, spaced out over time and considered actively.
  - c) Checking your **Bard email** and **Brightspace** regularly for important announcements about the course. Adapting to the pandemic has made keeping in regular contact more important than ever. By clicking "Announcements" and then "Notifications" on the Brightspace landing page, you can request text and/or email alerts to be sent to you for a variety of course-related happenings.
  - d) Substantively participating in class discussions (in class and/or online via Brightspace). This could, for



instance, involve asking/answering questions related to the offered course materials. Note that a top-notch level of participation does not necessitate responding to every question raised in class or online; active or passive efforts to welcome contributions from everyone in the class are also looked upon favorably. Though you are welcome to challenge your fellow students' or your instructor's thoughts and conclusions, please do so in a fashion that is respectful. Challenge ideas, not the person raising them.

- e) Submitting assignments and annotations on time, digitally via Brightspace and Perusall. To promote equity and acknowledge life's challenging circumstances, I am granting everyone in the class an automatic **"S#!t Happens" extension** for one assignment (see below section on Extra Credit for more) and dropping your two lowest Perusall scores (see Perusall Annotations section below). Otherwise, any late assignment will immediately be subject to a 10% penalty, with an additional 10% penalty leveled against that assignment's score for every 24 hours it remains late. Make-up exams will be considered *only* for documented cases of medical or family emergency. Students requiring alternative testing or other accommodations (e.g., due to disability) should provide the relevant accommodation letter as soon as possible after the first class meeting.
- f) Maintaining connectivity. There are many benefits to taking handwritten notes (Mueller & Oppenheimer, 2014). However, some activities will require access to an internet-connected device during and between class meetings. As such, it is strongly recommended that you bring a fully charged laptop or tablet with you to class. Smartphones are another option, though some features may be limited on such a tiny device. You will have to be diligent in avoiding potential distractions that these devices invite (e.g.,



surfing the web or checking social media) for yourself and those around you. Please only use devices in class for expressly course-related activities.

- g) Upholding academic integrity. Plagiarism (e.g., copying other's words or ideas without proper citation) will not be tolerated. You are expected to work independently on each graded assignment, unless explicitly instructed otherwise. When in doubt as to what constitutes plagiarism within the confines of this course, you are encouraged both to consult the student handbook (<http://www.bard.edu/dosa/handbook/index.php?aid=1201&sid=705>) and to contact the instructor for further guidance. There is absolutely no penalty for asking for clarification; however, failing to abide by Bard's standards for academic integrity can result in failing the course.

## Assessment Details

- **Midterm Exams** (*two exams, each accounting for 20% of your course grade*)
  - These mid-semester exams may involve a combination of multiple-choice, matching, fill-in-the-blank, and short-answer/essay questions. Not only will you be responsible for remembering core terminology and concepts introduced during class and the readings, you will be asked to apply this learning to draw sound conclusions from (and highlight limitations of) sample experiments and example results. The two midterms will be held in class and will be closed book/notes. While the exams are non-cumulative in the traditional sense, the material introduced after the second exam will still depend on foundational content from before the first exam, so you can't simply forget all that you had previously learned.
- **Perusall Annotations** (*20% of course grade*)
  - I've heard a shocking rumor: Many college students regularly don't read the assigned materials or give them more than a quick skim! The reasons for this are likely manifold. The materials may be too costly, too dry, too plentiful, or too heavy to lug around in the form of a physical textbook. As an instructor, I attempt to balance these legitimate criticisms with the imperative to expose students to the necessary background material to spark insight and discussion. To this end, I have decided to adopt Perusall. Throughout the semester, you will be required to read and annotate certain course materials using this collaborative e-reader with sophisticated data analytics.

- Perusall helps you learn faster by collaboratively annotating the readings and communicating with your classmates. Collaboration gets you help whenever you need it, makes learning more fun, enables you to help others (which research shows is also a great way for you to learn), and helps me make class better by emphasizing information that you need. Perusall also can read the assigned materials aloud and allow you to take notes (just for yourself—though you can easily share them with other students)!
- If you have a question or information to share about a passage in the readings, highlight the text and type in a comment as an annotation. You can also respond to a classmate's annotation in threads in real time or upvote questions you find helpful. Simply click the question mark to indicate "I have the same question" or the green checkmark to indicate "this answer helped my understanding." Good annotations contribute to the class by stimulating discussion, explaining your thought processes, helping others, and drawing attention to good points. If a particular classmate's point is relevant, you can explicitly "mention" them and they will be immediately notified, even if not presently signed on. I'd encourage everyone to check in on the Perusall discussion again after doing a first pass on a reading and respond to comments and questions or possibly add new commentary based on newfound understanding. Remember that annotations will be visible to other students, as well as to me (though I will not annotate directly—it is your space).
- Research shows that the following behaviors on Perusall predict higher end-of-semester grades and long term mastery of the subject. Accordingly, I will consider these factors in calculating your Perusall score:
  - Contributing thoughtful questions and comments to the class discussion, spread throughout the entire reading (some examples: <https://perusall.com/downloads/scoring-examples.pdf>)
  - Aiming to contribute a minimum of 4 questions/comments per Perusall assignment—but keep in mind that the quality of the annotations is key (e.g., 100 annotations that do little to add to the conversation would be worth less than 4 that prompt critical engagement)
  - Starting the reading early
  - Breaking the reading into chunks (instead of trying to do it all at once)
  - Reading all the way to the end of the assigned reading (*including* any end-of-chapter review sections or references)
  - Posing thoughtful questions and comments that elicit responses from classmates
  - Answering questions from others
  - Upvoting thoughtful questions and helpful answers
- In some cases, we will use Perusall during our class time together. Other annotated reading assignments will be done outside of our synchronous meetings. Students'



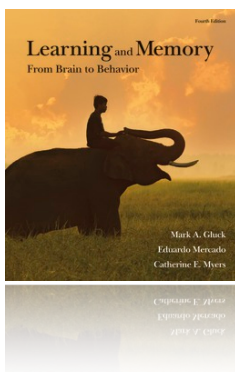
reactions to the course readings prior to class will be used to guide the use of our class time. Thus, it is important that you complete these annotated reading assignments by the deadline given. That will give me the necessary time to prepare accordingly in time for our next class together. The deadlines can be found in the below schedule, as well as on Perusall and Brightspace.

- Based on the overall body of your annotations, you will receive a score for each assignment that generally follows the benchmarks listed in the rubric below. Note that a score of 2 does *NOT* mean that you earn the equivalent 67% on that assignment (regardless of what Brightspace's grade book says)—so don't get frightened. The scores are holistic. A score of 2 is pretty solid and typically translates to a very high B+ for an assignment. So, keep track of the holistic grades on Perusall, and, if you're getting a mix of 2s and 3s on your Perusall assignments throughout the semester, then you on track to get something around an A for the Perusall component of your course grade.

Score	Characteristics
3	Your contributions demonstrate <i>exceptionally</i> thoughtful and thorough reading of the assignment; you provided exceedingly helpful answers and/or insightful commentary. It is likely that this high score will be rarely given.
2	Your contributions meet expectations by demonstrating thoughtful and thorough reading of the assignment. You asked good questions, provided helpful answers, and/or otherwise interacted with your fellow students in a helpful way. You should aim for at least this score. Learn from your past scores to improve the quality of your future annotations.
1	Your contributions fell below expectations, demonstrating only superficial reading or limited coverage.
0	You did not make the required contributions by the deadline or they demonstrated reading of only part of the assignment that was merely superficial.

- To get started with Perusall:

- Log on to [Brightspace](#) and navigate to our course.
- Navigate to the "Course Introduction" module.
- Click "Perusall Account Setup" at the top of the page to link the accounts.
- Because the accounts are now linked, *use the links to the assigned readings under the weekly course content modules in Brightspace whenever you want to use Perusall for this course* (e.g., to complete an assignment) rather than trying to sign in to Perusall's website directly.
- You will have to purchase the required textbook through Perusall to access the



reading assignments. Do *not* attempt to purchase the book in some other manner (e.g., a printed copy or some other edition), as you won't be prepared to do the assignments. Instead, wait until the first time you click on the book or a reading assignment from the textbook in Perusall. At that point, you will be prompted to purchase the required textbook.

- A 180-day Perusall e-rental for our textbook "Learning and Memory: From Brain to Behavior" by Gluck, Mercado, and Myers (4th edition) is currently is priced at \$63.99 through Perusall.
- I will *drop your your two lowest Perusall assignment scores*. This way, if you happen to miss one (or two) assignments or were still trying to grasp what makes for high-quality annotations, your grade won't suffer.
- The help feature in Perusall can be quite, well, helpful in answering your questions. You can also find a Perusall FAQ here or submit a support request here: <https://support.perusall.com/hc/en-us/categories/360002173133-Students>.
- **Make-Your-Own Final Exam** (*cumulative and accounting for 10% of your course grade*) allows you to demonstrate your ability to (1) identify the core concepts, themes, and interconnections within the domain of learning & memory; (2) apply learned techniques for designing reliable, valid, and informative tests of declarative memory; (3) demonstrate your mastery of the course material by establishing an answer key/rubric, just as a professor would. Some class time will be devoted to going over the specifics of the assignment.
  - In short, each student will create from scratch a cumulative final exam, structured like the midterms from this course and covering the entire range of material assigned throughout the semester. The exam development process will be open book and completed outside of class. The quality of *your exam (along with the required corresponding answer key/grading rubric)* will be evaluated by the instructor based on comprehensiveness, depth, appropriate prioritization of the most relevant information (as defined by what was emphasized in the readings, during class discussions, and on previous study guides, assignments, as well as the midterms), understandability and accuracy of the exam materials (including the answer key/rubric), creativity, and adherence to the principles discussed in class/the readings related to developing tests that *promote lasting learning* and the *most reliable/valid assessment* of material covered. You are welcome to develop interactive exams.
  - *Re-using questions from existing midterms, or textbook/related materials (including those offered on the publisher's website) is strictly prohibited.* However, the concepts/





information at the root of previous test questions are most certainly fair game for inclusion on exam you design. Your task is to come up with new, creative ways to test information from a slightly different angle (a quality that promotes generalization, as you'll learn). In so doing, it is expected that you will compare your homemade exam questions to those from all exams administered to the class this semester in order to ensure there is no direct overlap. Shortcuts like swapping out/around a few words from an existing question do NOT demonstrate a comprehensive grasp of the material and will be scored accordingly (i.e., penalized). If you are unsure as to whether the overlap is too strong, you are encouraged to ask the instructor during office hours or via email. The instructor will consider any reasonable argument for phrasing a Make-Your-Own Exam question but *only prior to the due date*.

- **Controversy Paper** (15% of course grade) provides you with an opportunity to weigh in on a topical controversy in the field of learning and memory. There is no need to wait until the last minute to submit this paper. Plan in advance, taking into consideration your other obligations for this and other classes (and whatever else it is you may be doing outside of class). To get started, you first need to choose a controversy from a menu of options and then write a paper (5-8 double-spaced pages, excluding title page and references) that:
  - Summarizes the basic controversy, providing background information that is generally accepted by both sides of the debate, using appropriate citations. This should be motivated with a consideration of why the issue is relevant to basic research and/or real-world, applied issues.
  - Presents a fair summary of both sides of the controversy, using results/conclusions drawn from *at least three empirical articles on each side*. While review/perspective/theory articles may be used to supplement these summaries (provided you cite them) and/or point you to relevant sources, they do NOT count toward the three required empirical articles (original, peer-reviewed research articles based on observation/data, rather than logic). If you need help tracking down articles or have any question as to what "counts" or not, please email your instructor early, leaving yourself enough time to obtain and digest the articles.
  - Argues your perspective, based on the available evidence. Which side seems to have the most support? Or, perhaps the controversy is ill-framed. If so, you could suggest another way of viewing the issue, entirely. In any case, it is important to acknowledge what remains to be determined, pointing to future steps that may further clarify the situation.
  - Follows APA style, complete with a title page, reference section, and page numbers, uses a 10- or 12-point font with reasonable margins, and is carefully checked for proper spelling and grammar. If you don't have an APA Style manual, you can find a lot of useful



tips online, such as from the Purdue Online Writing Lab (OWL): [https://owl.purdue.edu/owl/research\\_and\\_citation/apa\\_style/apa\\_formatting\\_and\\_style\\_guide/general\\_format.html](https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/general_format.html). I posted some additional reference materials inside the “APA Style/Scientific Paper Writing Tips” folder in the “Course Introduction” module on Brightspace.

- I have also posted a chapter from Scott Slotnick’s Controversies in Cognitive Neuroscience to that introductory Brightspace module on the topic of long-term memory and the medial temporal lobe. While this chapter is longer and contains far more citations/details than would be expected in your much shorter assignment, it does provide a general model for you to follow in structuring your paper.
- You may choose from the following controversies (or get *written approval* for another controversy not listed here by emailing me well in advance of the submission deadline):
  - **Recovered memory debate**
    - Is it possible to completely repress a traumatic memory for years, only to recovered it, in full, later?
    - Some keywords to help get your literature search started:
      - Memory wars
      - Recovered memories
      - Inhibition, repression, and suppression
  - **Proscribed or prescribed forgetting**
    - Is it possible/appropriate to provide a drug (or other intervention) to help individuals forget after experiencing a trauma?
    - Some keywords to help get your literature search started:
      - Propranolol
      - Neuroethics
      - Reconsolidation
      - Behavioral vaccines
      - Post-traumatic stress disorder
  - **The promise of brain-training**
    - Is it possible to train working memory such that it leads to generalizable real-world improvements?
    - Some keywords to help get your literature search started:
      - Brain-training, cognitive training
      - Near- and far-transfer
      - Neuroplasticity
  - **Cannibalizing memories**
    - Does cannabis use lead to lasting impairments in memory?
  - **Multiple trace theory of memory vs. standard model of consolidation**

- Is the hippocampus necessarily involved in the storage and retrieval of episodic information, even if the memories are very old/well established?
- Some keywords to help get your literature search started:
  - Hippocampus
  - Memory consolidation
  - Multiple memory trace (MMT)
  - Retrograde amnesia
  - Temporal gradient
- **Article Poster** (10% of course grade) provides a way to practice consolidating the information from a many-paged, text-heavy empirical article and transforming it into an eye-catching, efficient, and informative visual display of its main background, method, results, discussion, and future directions. You have, no doubt, seen some examples of research posters as you traveled through the halls of RKC and Preston. You will have the opportunity to design a poster of your own, based on an empirical peer-reviewed journal article of your choosing from a selection of relevant learning and memory articles
  - Identify a peer-reviewed, empirical journal article that is related to a topic of interest related to the course. You may select from the articles contained in a submodule on Brightspace's "Course Introduction" module called "Articles for Poster." Before committing yourself to a selection, be sure to actually read the article. Note that in order to unpack the article sufficiently enough to summarize it in poster format and present it to the class, you may need to supplement your reading with the textbook and other peer-reviewed articles (e.g., those cited by or that cite your chosen article or those you find through a literature search).
  - This course, part of the "Cluster C" requirement for Psychology majors at Bard, emphasizes the effective display of quantitative information (amongst other things). As such, you must *recreate* (from scratch) at least one of the graphs from the original article. You may use whichever electronic graphing program you prefer—Excel, R, etc., though you are required to generate it on a computer, rather than drawing it by hand. If the original article used a table, then you could make it into a graph (should that serve the purpose of effective data display), for instance. Or you could take an existing graph and recreate it in a way that somehow improves upon it (e.g., getting rid of "chart junk," more clearly emphasizing the relevant comparisons, etc.).



- Need some inspiration or further guidance? Check out the “Tips for Making Posters” section in the “Course Introduction” module of Brightspace. Remember that research posters represent a concentrated version of a larger project. Details from the original article that are not critical to understanding the “big picture” should not be included in the poster. Figuring out just what should/should not be included takes practice. That’s precisely why we’re practicing it!
- You will submit a rough version of your poster to Brightspace by 3/8 at 11pm. This should be a complete, presentation-ready poster—albeit one that you will have a chance to improve upon for final submission. In fact, at a subsequent class meeting, you will present the rough draft of your poster to your peers and the instructor. You should practice providing a three-minute verbal overview of your poster draft prior to this in-class poster session. While the rough draft or your presentation of it won’t receive a separate grade, it is your opportunity to get valuable feedback that will improve the quality of your final poster submission. Failure to turn in a rough draft will, however, negatively impact the grade on your final poster, which is due by 4/5 at 11pm.
- **Final Reflection** (5% of course grade) provides a thoughtful account of what you learned in this course. Your reflection should be organized, go beyond simply parroting back course material verbatim, and include how some of the big lessons from this course could be applied to your education, personal life, and/or career going forward. While your submission should be a polished product, having been fine-tuned through careful editing, you are welcome to adopt a format that reflects your own preferred style. You could, of course, format this as a standard written term paper, but you could instead produce a video, animation, comic book, podcast, website, or interpretive dance... OK, maybe not an interpretive dance. But you do have pretty wide latitude here. If you’re unsure as to whether your plan is appropriate, check with me. To give you a general guideline, your submission should be roughly equivalent to a 3-to-4-page (double-spaced, 11-or 12-point font) paper with reasonable margins. It is OK to submit a link to your reflection (if, e.g., you posted a video to Youtube or created a website); however, you should not continue to edit the material after the deadline (at least until I’ve had a chance to grade it).
- **Extra Credit**
  - Over the course of the semester, there will be a number of **psychology-sponsored colloquium talks** (see <http://psychology.bard.edu>, the monthly Psychology Newsletter, and postings around campus for dates and locations). Attending these talks is a great way to hear from interesting people in the field of psychology (and mingle over some snacks afterwards, health restrictions permitting). It is also a way of earning up to *4 extra percentage points to be added to your second midterm exam score*. To receive credit, attend a talk and submit one original question you would have for the speaker (it can’t be a question someone else in the audience asked) to Brightspace *within 48 hours of*

*the talk* (see the “Extra Credit: Attend Psych Colloquium & Submit Question” assignment in the “Course Introduction” module of our Brightspace site). Attendance at any one talk and question submission will earn you a total of 2 extra percentage points added to your second midterm’s exam score for each talk up to the maximum (since the midterm exams are equally weighted, you can think of these points as going toward either midterm grade). You may *not* receive extra credit in two different courses for attending the same talk.

- Not giving a s#!t about the class is a recipe for falling behind. But ***not using your “S#!t Happens” token*** this semester will be met with *an extra 5 percentage points added to your second midterm exam score*. Look, I get it. Life sometimes gets in the way of deadlines. Pets do sometimes eat homework. Emergencies happen (pandemic related or otherwise). And, as much as we try to avoid it, we occasionally might plain forget a deadline. In an effort to be flexible and fair to all students, I am offering everyone one “S#!T Happens” token. Think of it like a “get-out-of-a-deadline” free card. Just email me saying that you would like to use your S#!T Happens token on a particular class assignment (the token may *NOT* be used for exams), and I will grant what together we determine to be a reasonable extension, *no questions asked*. You don’t have to explain why you are using the token. Just tell me that you are using it, so that we can set an extension (without any late penalty). While it is completely reasonable to use your token during the semester and there should be absolutely no shame in doing so, if you happen to be lucky enough not to need to use it, I will grant extra credit points. Of course, if you realize that something may prevent you from completing your contribution to a pending group assignment, please give your group members (and me) as much advanced warning as possible so that everyone can adjust accordingly.

## Additional Resources

There are treasure troves of information about psychology sprinkled around the internet—much of it can be accessed for free. If you find yourself struggling to understand a concept, I’d encourage you to search around, carefully evaluate the quality of the sources, and share useful finds with the rest of the class (email it or, even better, post it to Brightspace—there’s a discussion forum for this). Below are some resources I have identified:

- Baddeley, Eysenck & Anderson’s Memory (3rd Edition)
  - I highly recommend this text as a supplemental reading. Even if you don’t get a copy, the publishers offer some really useful, free online resources. They include:
    - Practice questions, web links/videos, and biographies: <https://routledgetextbooks.com/textbooks/9781138326095/student.php>
    - Simulations of memory experiments: <https://routledgetextbooks.com/textbooks/9781138326095/simulation-experiments.php>

- Glossary of memory terms: <https://routledgetextbooks.com/textbooks/9781138326095/glossary.php>
- APA formatting
  - Purdue Online Writing Lab (OWL): [https://owl.purdue.edu/owl/research\\_and\\_citation/apa\\_style/apa\\_formatting\\_and\\_style\\_guide/general\\_format.html](https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/general_format.html)
    - I posted some additional reference materials inside the "APA Style/Scientific Paper Writing Tips" submodule found under Brightspace's "Course Introduction" module
  - Middlebury Library: <https://middlebury.libguides.com/citation/apa7>
  - ECU Library: <https://libguides.ecu.edu/c.php?g=982594&p=7463742>
  - Video tutorials: <https://apastyle.apa.org/instructional-aids/tutorials-webinars>
- General reference:
  - APA Dictionary of Psychology: <https://dictionary.apa.org>
  - The Human Memory: <https://human-memory.net>
- Searchable article databases (and tutorials):
  - Library: <https://www.bard.edu/library/databases.php?searchtype=sub&subject=psyc>
  - APA Database Tutorials: <https://www.apa.org/pubs/databases/training/tutorials>
  - Google Scholar: <https://scholar.google.com>
- Searchable databases:
  - Library: <https://www.bard.edu/library/databases.php?searchtype=sub&subject=psyc>
  - Google Scholar: <https://scholar.google.com>
- Memory/neuroscience activities (some designed for younger audiences):
  - Society for Neuroscience: <https://www.sfn.org/sitecore/content/home/brainfacts2/for-educators>
  - APA High School: <https://www.apa.org/ed/precollege/topss/lessons/memory.pdf>
  - Neuroscience for Kids: <https://faculty.washington.edu/chudler/chmemory.html>
- Free textbooks & related resources:
  - Cognitive Psychology:
    - College of the Canyons: [https://www.canyons.edu/\\_resources/documents/academics/onlineeducation/Psych126TextbookFinalV1\\_2.pdf](https://www.canyons.edu/_resources/documents/academics/onlineeducation/Psych126TextbookFinalV1_2.pdf)
    - Cognitive Foundations (Pilegard): <https://drive.google.com/file/d/16wQz6JBsX8oAMk5r1zc00tguGMI-UqXn/view>
    - Cognition Laboratory Experiments (Krantz): <https://psych.hanover.edu/JavaTest/CLE/Cognition/Cognition.html>
    - WikiBooks: [https://en.wikibooks.org/wiki/Cognitive\\_Psychology\\_and\\_Cognitive\\_Neuroscience](https://en.wikibooks.org/wiki/Cognitive_Psychology_and_Cognitive_Neuroscience)
    - Cognitive Technologies (Crump et al.): <https://www.crumplab.com/cognitivetechnologies/book/>



- Online study resources from Cognitive Psychology: A Student's Handbook (Eysenck & Keane): <https://routledgetextbooks.com/textbooks/9781138482234/students.php>
- Research Methods:
  - Crump et al.: <https://crumplab.github.io/ResearchMethods/index.html>
  - Cuttler et al.: <https://open.umn.edu/opentextbooks/textbooks/75>
  - Saylor: <https://legacy.saylor.org/psych202a/Intro/>
  - University of Minnesota: <https://open.lib.umn.edu/psychologyresearchmethods/>
  - Bhattacharjee: [https://scholarcommons.usf.edu/oa\\_textbooks/3/](https://scholarcommons.usf.edu/oa_textbooks/3/)
- Statistics:
  - De Anza: <https://openstax.org/details/introductory-statistics>
  - Saylor: <https://open.bccampus.ca/browse-our-collection/find-open-textbooks/?uuid=929d4a8d-30b2-4ced-8b50-c39447dc0b74>
  - Brown University Statistics Visualizations: <https://seeing-theory.brown.edu>
  - VassarStats: <http://vassarstats.net>
  - Effect Size Calculator: [https://katherinemwood.shinyapps.io/lakens\\_effect\\_sizes/](https://katherinemwood.shinyapps.io/lakens_effect_sizes/)
  - Jamovi Open Stats: <https://www.jamovi.org>
  - Power analysis guide using G\*Power: <http://www.mormonsandscience.com/gpower-guide.html>
  - Effect size calculator: [https://katherinemwood.shinyapps.io/lakens\\_effect\\_sizes/](https://katherinemwood.shinyapps.io/lakens_effect_sizes/)
  - Help choosing an appropriate statistical test:
    - <http://www.statsflowchart.co.uk>
    - <https://stats.idre.ucla.edu/other/mult-pkg/whatstat/>
    - <https://www.statstutor.ac.uk/resources/uploaded/tutorsquickguidetostatistics.pdf>
    - [http://abacus.bates.edu/~ganderso/biology/resources/stats\\_flow\\_chart\\_v2014.pdf](http://abacus.bates.edu/~ganderso/biology/resources/stats_flow_chart_v2014.pdf)
- General:
  - Open Textbook Library: <https://libguides.humboldt.edu/openedu/psyc>
  - NOBA Project: <http://noba.to/d95jpvm7>
  - Simply Psychology: <https://www.simplypsychology.org>
  - Project Gutenberg: [https://www.gutenberg.org/wiki/Psychology\\_\(Bookshelf\)](https://www.gutenberg.org/wiki/Psychology_(Bookshelf))
  - MERLOT Project: <https://www.merlot.org/merlot/Psychology.htm> (or to search more widely <https://www.merlot.org/merlot/searchMaterials.htm>)
  - DevPsy Directory: [http://www.devpsy.org/links/open\\_source\\_textbooks](http://www.devpsy.org/links/open_source_textbooks)
  - Neuroscience Online: <https://nba.uth.tmc.edu/neuroscience/toc.htm>
  - Neuroscience Open Text: <http://neuroscience.openetext.utoronto.ca>
  - Computational Cog Neuro: <https://github.com/CompCogNeuro/ed4>

- Videos:
  - Khan Academy: <https://www.youtube.com/playlist?list=PLbKSbFnKYVY12bUrpa3aclz-fTlkeVRhv>
  - JoVE Peer-Reviewed Scientific Videos: <https://www.jove.com>
- Stimuli/stimulus selection for experiments:
  - Tarr Lab: <https://www.cmu.edu/dietrich/psychology/tarrlab/stimuli/index.html>
  - Kahana Lab: [http://memory.psych.upenn.edu/Word\\_Pools](http://memory.psych.upenn.edu/Word_Pools)
  - Latent Semantic Analysis (LSA): <http://lsa.colorado.edu>
  - MRC Psycholinguistic Database: [https://websites.psychology.uwa.edu.au/school/mrcdatabase/uwa\\_mrc.htm](https://websites.psychology.uwa.edu.au/school/mrcdatabase/uwa_mrc.htm)
  - University of South Florida Free Association Norms: <http://w3.usf.edu/FreeAssociation/>
- Cognitive neuroscience methods:
  - Functional Neuroimaging: <https://imaging.mrc-cbu.cam.ac.uk/imaging/CbuiImaging>
  - Event-Related Potentials: <https://erpinfo.org>
- Experiment software/code:
  - PsychoPy: <https://www.psychopy.org> (while this is free, in order to run a web-based experiment, you would need to host it somewhere, which does come at a cost)
  - PsyToolkit: <https://www.pytoolkit.org> (this is free, including for online data collection)
  - Programming for Psychologists (Crump reference book): <https://www.crumplab.com/programmingforpsych/>
- Survey platforms:
  - Qualtrics: <https://www.qualtrics.com> (the Psychology Program has a license for this, so that you may collect data online at no additional cost to you...ask me about it)
  - Google Forms: <https://forms.google.com>
- Experiment design tools:
  - Balanced Latin square generator: [https://cs.uwaterloo.ca/~dmasson/tools/latin\\_square/](https://cs.uwaterloo.ca/~dmasson/tools/latin_square/)
  - Randomizer: <https://www.randomizer.org>
- Open Science:
  - Center for Open Science: <https://www.cos.io/services/research>
  - Open Science Framework (OSF): <https://osf.io>
- Use as an entry point for further research (with caution):
  - Wikipedia: <https://www.wikipedia.org>
  - Youtube: <https://www.youtube.com>
- Participate in online experiments (or get ideas for what is possible, with suggested resources):
  - Bard Psychology: <https://bardresearch.sona-systems.com>
  - Social Psychology: <https://www.socialpsychology.org/expts.htm>

## Diversity and Access

Students at Bard come from a variety of backgrounds and viewpoints. It is very exciting to be able to benefit from these differences, and I anticipate a learning environment in which all approaches and backgrounds are respected and challenged in a way that promotes personal growth. To this end, I expect all members of the class to foster a climate of intellectual curiosity and enthusiasm by: (1) actively engaging in our activities and discussions; (2) being prepared to recognize the impact of bias, privilege, and histories of inequity; and (3) voicing opinions in a way that respects others. As a rule of thumb to encourage more voices to be heard, after you've contributed to a conversation in class, wait for three other people to speak before sharing more. You may notice that I pause between asking a question and accepting responses from the class. This is for a similar purpose.

You may also notice that assigned readings have been selected to highlight not only critical topics in the field but also the important work of historically underrepresented and marginalized scholars in the field.

Bard College is committed to providing equal access to all students. If you anticipate issues related to the format or requirements of this course, please schedule a meeting with me, as I would like us to discuss ways to ensure your full participation in the course. Together, we can plan how best to support your learning and coordinate your accommodations.

Have a learning difference or disability—including mental health, medical, or physical impairment—and are not yet registered? Please complete the Disability Registration Form found on the Student Disability Access Services website at <https://www.bard.edu/accessibility/students/> and provide disability documentation to [disabilityservices@bard.edu](mailto:disabilityservices@bard.edu). The Director of Disability Resources and Accessibility, Erin Braselmann, or a member of her staff will confidentially discuss with you the process to establish reasonable accommodations. Please note that accommodations are *not* retroactive and require advance notice to implement (you should allow 2-3 business days for a response after completing the online Disability Registration Form and will then need to arrange a meeting with Disability Access Services to discuss potential accommodations). If you are already registered and have an existing accommodation plan with Disability and Access Services, you must additionally request that the office forward your accommodation letter to the appropriate faculty members (in this case, me) using the Accommodation Letter Request Form (this must be done each semester, for each faculty member you wish to notify): <https://forms.gle/2whjHHvHnKW2sEnj6>.

The Bard College Accessibility Converter (<https://www.sensusaccess.com/web3/bard/>) can be used to easily convert documents to a more accessible format. While not all assignments will be equally conducive to non-written submission formats, certain accommodations can be made for audio/video submissions as necessary. Simply contact me with a concrete plan for how the novel format still captures the assignment's learning objectives.

Whether course material brings up challenging issues or you are facing another type of challenge, the Bard Counseling Service may be able to help. For more information, see: <https://www.bard.edu/counseling/>.

## COVID-19 Adaptations

Community responsibility will continue to be especially critical to our daily lives. We all have a role to play in helping to keep others as safe as possible. Of course, no choices are risk free, but we can make choices that reduce risk for ourselves and others. Please heed federal, state, local, College, and classroom health and safety policies, realizing that they may change during the semester based on new evidence/circumstances.

## Financial Support

The pandemic has further exposed and exacerbated existing inequalities. The Scale Project is a student-led organization committed to increasing equity and access for lower-income students at Bard. They have produced a document entitled, ["Being Not-Rich at Bard College"](#) that provides additional tips for navigating some of these challenges. The Scale Project and I both welcome additional suggestions and other feedback.

The Scale Project also maintains a Bookstore Rental Program to provide access to selected learning materials. Anyone can use this resource, but the Scale Project asks that you do not use the Rental Program unless purchasing course materials represents a true financial burden for you (as Scale's resources are also limited). Currently you may only request a rental for up to three books that are available at the Bard College Bookstore. While the textbook for our particular course is not available at the bookstore (and therefore not eligible for the Bookstore Rental Program), I wanted to provide the information about it so that you may consider it in your other course work. If relevant, follow the steps below:

1. Fill out the Google form: <https://docs.google.com/forms/d/e/1FAIpQLScL8TIMITUeuKIRVgd9MHnnn3-l2PR3Ff2zBNH7VXU-YDhdJA/viewform>
2. Your books should be ready for pickup at the Bard College Bookstore within 2-3 days. When at the Bookstore, ask for Merry Meyer and let her know you are picking up from the Scale Project's Book Rental Program.
3. Please note that when picking up your books, you will have to put a credit/debit card on file in case of a late-return fee.
4. The Scale Project will remind you to return your books at the end of the semester, but be mindful of late fees! This is a Barnes & Nobles policy, not a Scale Project policy.

In addition to the Scale Project's offerings, the Division of Science, Math, and Computing (of which the Psychology Program is a part) has a limited amount of funds to defray the cost of course materials (e.g., textbooks) for students who cannot afford them. Applicable courses include those listed under the Biology, Chemistry, Computer Science, Math, Physics, and Psychology, as well as SCI course designations. This includes our particular course. Funds are limited so we ask that students who can access materials through

their own means do not make requests through this mechanism. If this describes your situation, here's how to access this resource:

1. Fill out the Google form: <https://forms.gle/NsXQn8D9WYvxDzJt9>
2. Megan Karcher, the SM&C Division's administrative assistant ([karcher@bard.edu](mailto:karcher@bard.edu)) will check to see if there are funds remaining for this purpose. If so, she should be able to help you arrange for the purchase/loan/rental.
3. Note that this process allows students to request the funding without needing to inform the professor. Indeed, professors will not know which students make such requests.

### *Land Acknowledgment*

In the spirit of truth and equity, it is with gratitude and humility that we acknowledge that we are gathered on the sacred homelands of the Munsee and Muhheaconneok people, who are the original stewards of this land. Today, due to forced removal, the community resides in Northeast Wisconsin and is known as the Stockbridge-Munsee Community. We honor and pay respect to their ancestors past and present, as well as to Future generations and we recognize their continuing presence in their homelands. We understand that our acknowledgement requires those of us who are settlers to recognize our own place in and responsibilities towards addressing inequity, and that this ongoing and challenging work requires that we commit to real engagement with the Munsee and Mohican communities to build an inclusive and equitable space for all.

### *Course Planning*

Prospective memory involves remembering to carry out some intended action in the future. You know, like turning in an assignment or preparing for an exam. There's no reason you can't take steps now to improve your ability to carry out the appropriate actions on time, even before we cover the topic. So please, please, please take the time to review all the deadlines and scheduled exam dates below. Transfer them to your personal calendar immediately. Doing so will help you avoid scheduling conflicts (e.g., around Spring Break and other travel) and allow you to carve out the necessary time to perform your best. And, remember, you may also use your "S#!T Happens" token, no questions asked, for one deadline extension (details can be found under "Extra Credit," above).



## Tentative Course Schedule

Date (day)	#	Topic for Class   Assignments
2/1 (t)	1	<b>COURSE OVERVIEW</b> <ul style="list-style-type: none"> <li>▶ Getting-to-know-you survey (<a href="https://forms.gle/5KnT9hrG2V5cqM6S6">https://forms.gle/5KnT9hrG2V5cqM6S6</a>)</li> <li>▶ PSY 234 memory championships, round #1 (pen &amp; paper)</li> <li>➡ Homework (in the future, you'll have to look ahead for what is coming due): <ul style="list-style-type: none"> <li>- Read the syllabus carefully</li> <li>- Annotate Textbook Chapter 1 (PS)</li> </ul> </li> </ul>
2/3 (th)	2	<b>THEMES &amp; VARIATIONS IN HUMAN MEMORY</b> <ul style="list-style-type: none"> <li>▶ In class: Annotate Putnam, Sungkhasettee, &amp; Roediger (2016, PS) <ul style="list-style-type: none"> <li>- Optional reading, no annotations required: Pan &amp; Bjork (2020, PS)</li> </ul> </li> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Chapter 1 (PS)</li> </ul> </li> </ul>
2/8 (tu)	3	<b>STRUCTURAL PLASTICITY IN THE BRAIN</b> <ul style="list-style-type: none"> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Sections 2.1 &amp; 2.2 (PS)</li> <li>- Finish annotating Putnam et al. (2016, PS)</li> </ul> </li> </ul>
2/10 (th)	4	<b>FINDING &amp; MANIPULATING MEMORIES</b> <ul style="list-style-type: none"> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Section 2.3 (PS)</li> </ul> </li> </ul>
2/15 (tu)	5	<b>HABITUATION, SENSITIZATION, &amp; FAMILIARIZATION: BEHAVIORAL PROCESSES</b> <ul style="list-style-type: none"> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Section 3.1 (PS)</li> </ul> </li> </ul>
2/17 (th)	6	<b>HABITUATION, SENSITIZATION, &amp; FAMILIARIZATION: BRAIN SUBSTRATES</b> <ul style="list-style-type: none"> <li>▶ In class: Go over specifics of Poster assignment</li> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Sections 3.2 &amp; 3.3 (PS)</li> </ul> </li> </ul>
2/22 (tu)	7	<b>CLASSICAL CONDITIONING: BEHAVIORAL PROCESSES</b> <ul style="list-style-type: none"> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Section 4.1 (PS)</li> </ul> </li> </ul>
2/24 (th)	8	<b>CLASSICAL CONDITIONING: CLINICAL PERSPECTIVES</b> <ul style="list-style-type: none"> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Section 4.3 (PS)</li> </ul> </li> </ul>
3/1 (tu)	9	<b>OPERANT CONDITIONING: BEHAVIORAL PROCESSES</b> <ul style="list-style-type: none"> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Section 5.1 (PS)</li> </ul> </li> </ul>
3/3 (th)	10	<b>NO CLASS - JUSTIN ATTENDS EPA CONFERENCE</b> <ul style="list-style-type: none"> <li>▶ Independent work: Use this time to work on the rough draft of your Poster</li> <li>✓ <i>Study Guide for Exam #1 posted to Brightspace by the end of the week</i></li> </ul>



Date (day)	#	Topic for Class   Assignments
3/8 (tu)	11	<b>OPERANT CONDITIONING: CLINICAL PERSPECTIVES</b> <ul style="list-style-type: none"> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Section 5.3 (PS)</li> <li>- Rough draft of <u>Poster</u> uploaded to Brightspace by 11pm</li> </ul> </li> </ul>
3/10 (th)	12	<b>PRACTICE POSTER SESSION</b> <ul style="list-style-type: none"> <li>★ Due <i>before class</i> today: <ul style="list-style-type: none"> <li>- Have prepared to present the rough draft of your Poster to the class (aim for a 3-minute overview accessible to non-specialist psychology students)</li> </ul> </li> <li>▶ In class: Use this opportunity to practice presenting the rough draft of your Poster to the class; you will also receive feedback from peers/the instructor, which will you will need to address in your final poster submission</li> <li>▶ Post review questions to Brightspace's "Exam Review Forum" by 3/14 at noon</li> </ul>
3/15 (tu)	13	<b>CATCH-UP &amp; MIDTERM REVIEW</b> <ul style="list-style-type: none"> <li>▶ Use Brightspace's "Exam Review Forum" to post &amp; answer each other's questions</li> </ul>
3/17 (th)	14	<b>MIDTERM EXAM #1</b>
3/22 (tu)	--	NO CLASS - SPRING BREAK
3/24 (th)	--	NO CLASS - SPRING BREAK
3/29 (tu)	15	<b>SKILL MEMORY</b> <ul style="list-style-type: none"> <li>▶ In class: Reminders about the Controversy Paper</li> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Section 8.1 (PS)</li> </ul> </li> </ul>
3/31 (th)	16	<b>CASE CONFERENCE &amp; QALMRI</b> <ul style="list-style-type: none"> <li>★ Due <i>before class</i> today: <ul style="list-style-type: none"> <li>- Cohen &amp; Squire (1980, PS)</li> </ul> </li> <li>▶ In class: Course feedback survey (online, anonymous)</li> <li>▶ In class: QALMRI activity</li> <li>▶ Optional resource: <a href="https://www.crumplab.com/ResearchMethodsLab/qalmri.html">https://www.crumplab.com/ResearchMethodsLab/qalmri.html</a></li> </ul>
4/5 (tu)	17	<b>SKILL LEARNING IN ACTION W/ GRAPHING PRACTICE</b> <ul style="list-style-type: none"> <li>▶ In class: Review/plot course feedback</li> <li>▶ In class: Skill-building activity</li> <li>• Final <u>Poster</u> uploaded to Brightspace by 11pm</li> </ul>
4/7 (th)	18	<b>SEMANTIC &amp; EPISODIC MEMORY, PART 1: BEHAVIORAL PROCESSES</b> <ul style="list-style-type: none"> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Section 7.1, part 1 (PS)</li> </ul> </li> </ul>
4/12 (tu)	19	<b>SEMANTIC &amp; EPISODIC MEMORY, PART 2: MEMORY FAILURE</b> <ul style="list-style-type: none"> <li>★ Due by 11pm today: <ul style="list-style-type: none"> <li>- Textbook Section 7.1, part 2 (PS)</li> </ul> </li> </ul>

Date (day)	#	Topic for Class   Assignments
4/14 (th)	20	<b>CONSOLIDATION &amp; RECONSOLIDATION</b> ★ Due by 11pm today: – Textbook Sections 7.2 & 7.3 (PS)
4/19 (tu)	21	<b>WORKING MEMORY &amp; COGNITIVE CONTROL: BEHAVIORAL PROCESSES</b> ★ Due by 11pm today: – Textbook Section 9.1 (PS) – <a href="#">Controversy Paper</a> uploaded to Brightspace by 11pm ✓ <i>Study Guide for Exam #2 posted to Brightspace by Thursday</i>
4/21 (th)	22	<b>WORKING MEMORY &amp; COGNITIVE CONTROL: BRAIN SUBSTRATES</b> ★ Due <i>before class</i> today: – Vogel, McCollough & Machizawa (2005, PS) ★ Due by 11pm today: – Textbook Section 9.2 (PS) ▶ Post review questions to Brightspace’s “Exam Review Forum” by 4/25 at noon
4/26 (tu)	23	<b>CATCH-UP &amp; MIDTERM REVIEW</b> ▶ In class: Discuss Brewin, Andrews & Mickes (2020, PS)–no annotations required ▶ Use Brightspace’s “Exam Review Forum” to post & answer each other’s questions
4/28 (th)	24	<b>MIDTERM EXAM #2</b>
5/3 (tu)	--	NO CLASS - ADVISING DAY
5/5 (th)	25	<b>MEMORY &amp; AGING</b> ★ Due by 11pm today: – Textbook Section 12.1 (PS)
5/10 (tu)	26	<b>PROSPECTIVE MEMORY</b>
5/12 (th)	--	NO CLASS - PSYCHOLOGY BOARD DAYS
5/17 (tu)	--	NO CLASS - PSYCHOLOGY BOARD DAYS ▶ <a href="#">Final Reflection</a> uploaded to Brightspace by 11pm
5/19 (th)	27	<b>MEMORY IN THE DIGITAL AGE</b> ★ Due <i>before class</i> today: – Storm & Soares (2021; PS)
5/24 (tu)	--	NO CLASS - COMPLETION WEEK ▶ <a href="#">Make-Your-Own Final Exam</a> uploaded to Brightspace by 11pm

*Schedule is subject to change to improve pacing and/or accommodate unforeseen events (e.g., severe weather, pandemic, alien abduction). Check announcements on Brightspace/over email.*