PSY 372S Human Memory
Summer 2022

Instructor   Dr. Meg Schlichting
                  meg.schlichting@utoronto.ca*
                  Questions? Ask on Quercus, or make an appointment: calendly.com/schlichting/10-minute-meeting-office-hours

TA   Nick Hoang

* Email is ONLY to be used for genuine emergencies (e.g., illness). Please raise questions on course content or logistics through one of the other mechanisms described below.

Course Description

This course aims to provide a comprehensive research-oriented overview of the history, methodology, theories and contentious issues in the study of human memory. The course draws on a core textbook, scientific articles, in-class lectures, interactive discussions, and student writing to discuss and critique current research related to the investigation of human memory.

Learning Objectives: In taking this course, you should:
1) Gain new knowledge about the scientific study of human memory, from both historical and current perspectives.
2) Become an informed consumer of research in psychological science by learning to translate between data and theory while considering the limitations to any approach.
3) Practice your critical thinking and writing skills.

Note about prerequisites: It is your responsibility to ensure that you have met **all** prerequisites listed in the Psychology section of the A&S Calendar for this course. If you lack any prerequisites you WILL BE REMOVED. No waivers will be granted.

Marking Scheme

Assignment	Weight	Due Date
Lecture Quizzes	14% (2% per quiz; lowest grade dropped)	1-2 per week
Paper Discussions [PD]	2 @ 8% each	July 15, July 29
Tests	2 @ 20% each	July 21-22; August 11-12
Thought Paper	30%	August 5

Provisional Course Overview
[+] see Required Readings for full article citations

Wk #	Lec #	Lecture Topics	Lecture Quiz	Readings	Other HW	Due
1 A&B	1	Course Overview Overview & History of Memory Research Neuroscience of Memory	Practice (optional)	Chapters 1-2; QALMRI; Syllabus	None	July 8
	2	Methods in Memory Research Short-term and Working Memory	✔	Chapters 3-5; Karpicke & Roediger, 2008		
2 A&B	3	Episodic Long-term Memory Forgetting	✔	Chapters 7-8	Paper Discussion 1 (Karpicke & Roediger, 2008)	July 15
	4	Nondeclarative Memory Semantic Memory	✔	Chapter 6; Chapter 9; Robin et al., 2019		
3	5	Autobiographical Memory Forms of Amnesia Tips for Effective Scientific Writing	✔	Chapter 12; Chapter 18; Gopen & Swan, 1990	None; prepare for Test 1	July 22
					Optional: Thought paper article approval	
		Test 1 on Lectures 1-5 (July 21-22)				
4	6	Formal Models of Memory; Memory for Space & Time	✔	Chapters 10-11	Paper Discussion 2 (Robin et al., 2019)	July 29
		Only one lecture topic this week. Use the extra time to work on your Thought Paper due next week.				
5 A&B	7	New Directions in Memory Research	✔	[+]*see Required Readings*	Thought Paper	August 5
	8	Memory Across the Lifespan: Development & Aging	✔	Chapters 16-17		
6	9	Memory and Reality Memory and the Law Metamemory	✔	Chapters 14-15	None; prepare for Test 2	August 12
		Test 2 on Lectures 6-9 (August 11-12)				

Required Readings

Textbook: Radvansky, G.A. (2017). Human Memory, 3rd Edition. Taylor & Francis: Routledge.

Assigned Articles (on Quercus):
[PD1] Episodic Long-term Memory:
   Karpicke, J.D., & Roediger, H.L. (2008). The critical importance of retrieval for learning. *Science*, 319(5865), 966-968.

[PD2] Autobiographical Memory:
   Robin, J., Garzon, L., & Moscovitch, M. (2019) Spontaneous memory retrieval varies based on familiarity with a spatial context. *Cognition*. 190, 81–92.

Assigned Article for "Tips for effective scientific writing" lecture (on course website):
   Gopen, G.D., & Swan, J.A. (1990). The science of scientific writing. *American Scientist*, 78(6), 550-558.

Assigned Articles for "New Directions in Memory Research" lecture (on course website):
   Gilboa, A., & Marlatte, H. (2017). Neurobiology of Schemas and Schema-Mediated Memory. *Trends in Cognitive Sciences*, 21(8), 618–631.

   Tse, D., Langston, R.F., Kakeyama, M., Bethus, I., Spooner, P.A., Wood, E.R., … Morris, R.G.M. (2007). Schemas and Memory Consolidation. *Science*, *316*, 76–82.

   Zeithamova, D., Dominick, A.L., & Preston, A.R. (2012). Hippocampal and ventral medial prefrontal activation during retrieval-mediated learning supports novel inference. *Neuron*, *75*(1), 168–179.

Insights from single-cell recording:
   Ekstrom, A.D., Kahana, M.J., Caplan, J.B., Fields, T.A., Isham, E.A., Newman, E.L., et al. (2003). Cellular networks underlying human spatial navigation. *Nature*, 425(6954), 184-188.

   Quiroga, R.Q., Reddy, L., Kreiman, G., Koch, C., & Fried, I. (2005). Invariant visual representation by single neurons in the human brain. *Nature*, 435(7045), 1102-1107.

Episodic-like memory in animals:
   Eacott, M.J., & Norman, G. (2004). Integrated memory for object, place, and context in rats: a possible model of episodic-like memory? *J Neurosci*, 24(8), 1948-1953.

   Templer, V.L., & Hampton, R.R. (2013). Episodic memory in nonhuman animals. *Current Biology*, 23, R801-R806.

Evaluation Details

Term Tests: Although the emphasis will be on material covered during lectures, the term tests may contain any material from the class lectures, textbook, or the assigned articles. As the lectures will always cover some information not contained in the texts (and vice versa), it is important that you both attend the lectures and do the readings. The term tests are non-cumulative. That is, the questions are grounded in the material covered in the preceding three lectures. However, some questions will require integration of material covered across the course, so don't forget what you've

learned! Term tests will be completed on Quercus. Tests will be timed (i.e., you will have 2.5 hours to complete them) but you will have flexibility as to when during a 48-hour period you will begin them. This flexibility is in order to accommodate students in a variety of different time zones.

Lecture Quizzes: Quizzes will consist of a few questions that are based on the recorded video lectures for that week. You may reference the readings, recordings, and/or your notes during the quiz, but Quizzes will be timed. For this reason, quizzes will be *much* easier for those students who have watched the lecture recordings and read the assigned material before beginning. Your lowest quiz grade will be dropped, which means you may skip up to one quiz for any reason without an impact on your mark. There are sample quizzes (optional; does not count toward your grade) for the first lecture; see associated Quercus module.

Paper Discussions: Twice throughout the term you will read an article and prepare short written answers to several questions. You will be assigned a small group and you are encouraged, though not required, to work as a group to discuss and refine your answers. You may decide to discuss the paper using an asynchronous discussion board, or you may meet up over Zoom or similar to discuss your responses. The content of your assignments across group members may be similar, but you must write your own (individual) responses. In addition, your responses do not *have* to reflect the thoughts of your group members (e.g., if your group did not reach consensus or you have a different opinion). This assignment will be marked for both quality of content and writing style; this is a formal writing (though short) assignment and you should use complete sentences.

Thought paper: The thought paper is designed to improve your ability to critically evaluate empirical research. The thought paper will be based on the topic of memory schema (see "New Directions" articles for an introduction to the topic). You should focus on a recent *empirical* article (i.e., not a review paper, chapter, or book) that was published in the *last three years*. The primary article *must* be from a journal that is indexed on PubMed. You may select a study that was conducted in either humans or non-human animals. You should choose one article as the focus of your paper, but you should cite a *minimum of four* additional articles to back up any claims you make. These supporting articles are not limited to the past three years. For full marks, references will go beyond articles assigned for class. The thought paper should include:

1. A <u>summary</u> of the primary article and how it relates to assigned topic. This should include a *brief and concise* description of the article. When describing a study, you should focus on its rationale and aims, methods, results, and a discussion of the conclusions. No more than one full page is recommended.
2. A <u>commentary or critique</u> of the article should express *your critical evaluation* on the topic, not just a regurgitation of a given study's findings. This section is more open-ended and may involve relating the findings to other research articles or a "real-life" situation (and discussion of the scientific implications for the real world), describing what you found particularly interesting about the topic, stating whether you were convinced by the results, describing any limitations of the studies, or suggesting ideas for future research. It does not have to be a negative commentary: you may discuss strengths and/or weaknesses of the study. The evaluation of this section of the thought paper will be based on your understanding of the issues covered in the article, your ability to articulate your thoughts on the article, your ability to synthesize the findings with other information (e.g., other material covered in the course), and the depth at which you evaluate the article. Prior to the thought paper deadline, there will be a lecture that includes a discussion of effective scientific writing.

<u>Formatting:</u> Your paper should be ~6-8 pages in length (please do not exceed 8 pages). Please use 12-point font, double spacing, and 1 inch margins. Include a minimum of 5 references. All references should be listed using APA style.

<u>Paper Submission Method:</u> The thought paper must be uploaded to Quercus before the deadline. You must upload your document in PDF format. This includes a Turnitin.com Review (see Course Policies).

Course Policies

University's Plagiarism Detection Tool (Ouriginal): Normally, students will be required to submit their course essays to the University's plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the tool's reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of this tool are described on the Centre for Teaching Support & Innovation web site (https://uoft.me/pdt-faq).

Quercus Information, including expectations for students to check: This course uses the University's learning management system, Quercus, to post information about the course. This includes posting readings and other materials required to complete class activities and course assignments, as well as sharing important announcements and updates. The site is dynamic and new information and resources will be posted regularly as we move through the term, so please make it a habit to log in to the site on a regular, even daily, basis. To access the course website, go to the U of T Quercus log-in page at https://q.utoronto.ca. Once you have logged in to Quercus using your UTORid and password, you should see the link or 'card' for PSY372 Human Memory. You may need to scroll through other cards to find this. Click on the PSY372 Human Memory link to open our course area, view the latest announcements and access your course resources. There are Quercus help guides for students that you can access by clicking on the '?' icon in the left side column. SPECIAL NOTE ABOUT GRADES POSTED ONLINE: Please also note that any grades posted are for your information only, so you can view and track your progress through the course. No grades are considered official, including any posted in Quercus at any point in the term, until they have been formally approved and posted on ROSI at the end of the course. Please contact me as soon as possible if you think there is an error in any grade posted on Quercus.

Lecture Slides & Recordings: Lecture slides and recordings will be posted for asynchronous viewing. Please consider the environment before printing your lecture slides. You might opt to take notes digitally instead of on print-outs or print double-sided.

Notice of video recording and sharing. Course videos and materials belong to your instructor, the University, and/or other sources depending on the specific facts of each situation, and are protected by copyright. Do not download, copy, or share any course or student materials or videos without the explicit permission of the instructor. For questions about recording and use of videos in which you appear please contact your instructor.

Online Communication: Emails to the instructor and/or TA are *ONLY* for genuine emergencies (e.g., illness). <u>Please do *not* use the build-in communication tool on Quercus, called "Inbox," for this purpose.</u> Please ask any content-related or logistical questions on the Discussion boards; in the weekly survey; or by scheduling an individual appointment to meet with the instructor at the following website: https://calendly.com/schlichting/10-minute-meeting-office-hours. Neither the instructor not teaching assistant will be able to respond to emails regarding course content. You must use your utoronto email address for all course-related communication, and it is expected that you will check your utoronto email account regularly.

Missed tests: All tests will be online and will be available for 48 hours. Tests will be timed, but students may begin the test at a time that is convenient for them within the specified window. I

expect students to make every effort to take required tests. *There will be no make-up tests.* If you are unable to write a test and you have a legitimate excuse, your marking scheme will be reweighted entirely at the instructor's discretion. Contact me as soon as you are aware of the conflict and (ideally) before the day of the test to determine the best course of action. I must receive any documentation within one calendar week of the test. An unexcused missed test will receive a mark of zero.

Late assignments: See the table above for assignment due dates. Except in the case of a documented emergency (see above), late assignments will be marked down 10% of the assignment grade per day.

FAS grading guidelines (http://www.writing.utoronto.ca/advice/general/grading-policy):
- **A+** Outstanding performance, exceeding even the A described below.
- **A** Exceptional performance: strong evidence of original thinking; good organization, capacity to analyze and synthesize; superior grasp of subject matter with sound critical evaluations; evidence of extensive knowledge base.
- **B** Good performance: evidence of grasp of subject matter; some evidence of critical capacity and analytic ability; reasonable understanding of relevant issues; evidence of familiarity with the literature.
- **C** Intellectually adequate performance: student who is profiting from her or his university experience; understanding of the subject matter and ability to develop solutions to simple problems in the material.
- **D** Minimally acceptable performance: some evidence of familiarity with subject matter and some evidence that critical and analytic skills have been developed.
- **F** Inadequate performance: little evidence of even superficial understanding of the subject matter; weakness in critical and analytic skills; with limited or irrelevant use of literature.

Drop Deadline: August 1, 2022. Last day to drop course from academic record and GPA. After this deadline a mark is recorded for each course—whether the course work is completed or not (zero points are earned for incomplete work)—and calculated into the GPA.

Religious Accommodations: As a student at the University of Toronto, you are part of a diverse community that welcomes and includes students and faculty from a wide range of backgrounds, cultural traditions, and spiritual beliefs. For my part, I will make every reasonable effort to avoid scheduling tests, examinations, or other compulsory activities on religious holy days not captured by statutory holidays. Further to University Policy, if you anticipate being absent from class or missing a major course activity due to a religious observance, please let me know as early in the course as possible, and with sufficient notice (at least two to three weeks), so that we can work together to make alternate arrangements.

Students with Disabilities or Accommodation Requirements: Students with diverse learning styles and needs are welcome in this course. If you have an acute or ongoing disability issue or accommodation need, you should register with Accessibility Services (AS) at the beginning of the academic year by visiting http://www.studentlife.utoronto.ca/as/new-registration. Without registration, you will not be able to verify your situation with your instructors, and instructors will not be advised about your accommodation needs. AS will assess your situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. Remember that the process of accommodation is private: AS will not share details of your needs or condition with any instructor, and your instructors will not reveal that you are registered with AS.

Specific Medical Circumstances: If you become ill and it affects your ability to do your academic work, consult me right away. Normally, I will ask you for medical documentation in support of your specific medical circumstances. The University's Verification of Student Illness or Injury (VOI) form is recommended because it indicates the impact and severity of the illness, while protecting your privacy about the details of the nature of the illness. You can submit a different form (like a letter from a doctor), as long as it is an original document, and it contains the same information as the VOI. For more information, please see http://www.illnessverification.utoronto.ca. If you get a concussion, break your hand, or suffer some other acute injury, you should register with Accessibility Services as soon as possible.

Accommodation for Personal Reasons: There may be times when you are unable to complete course work on time due to non-medical reasons. If you have concerns, speak to me. It is also a very good idea to speak with an advisor in your College Registrar's office; they can support you in requesting extensions or accommodations, and importantly, connect you with other resources on campus for help with your situation.

Harassment and Discrimination: The University of Toronto is a richly diverse community and as such is committed to providing an environment free of any form of harassment, misconduct, or discrimination. In this course, I seek to foster a civil, respectful, and open-minded climate in which we can all work together to develop a better understanding of key questions and debates through meaningful dialogue. As such, I expect all involved with this course to refrain from actions or behaviours that intimidate, humiliate, or demean persons or groups or that undermine their security or self-esteem based on traits related to race, religion, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, sexual orientation, gender identity, gender expression, age, marital status, family status, disability, receipt of public assistance or record of offences.

Re-marking: All requests for re-marking must be submitted *in writing* within two calendar weeks of the first day the marked test or assignment is available for student viewing. Only requests that include adequate written justification of an oversight in the original grading will be considered. Be as specific as possible. A legitimate request will result in the entire test or assignment being re-graded. Note that in agreeing to resubmit your work for remarking, you are agreeing to a re-evaluation of the entirety of your work; your grade may go up, go down, or stay the same. If there has been an error in our arithmetic, please let us know and we will immediately recalculate your grade (no written request necessary). *Negotiations for extra marks once final grades are in will not be tolerated. Arbitrary requests for grade increases will not be entertained (e.g., "I need to get into grad school, so could you please change my grade from a B+ to an A-?"). If I did this for one person, I would need to do it for everyone in the class. Please do not ask for special treatment – it is unfair to your classmates.*

Course materials, including lecture recordings and notes: Course materials are provided for the exclusive use of enrolled students. Do not share them with others. I do not want to discover that a student has put any of my materials into the public domain, has sold my materials, or has given my materials to a person or company that is using them to earn money. The University will support me in asserting and pursuing my rights, and my copyrights, in such matters.

Additional Resources

Mental health and well-being: As a student, you may experience challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation, financial concerns, family worries and so forth. These factors may affect your academic performance and/or reduce your ability to participate fully

in daily activities. All of us benefit from support and guidance during times of struggle; there is no shame in needing help or in asking for help. There are many helpful resources available through your college Registrar or through Student Life (studentlife.utoronto.ca and studentlife.utoronto.ca/feeling-distressed). An important part of the University experience is learning how and when to ask for help. Please take the time to inform yourself of available resources and do not hesitate to seek assistance from your Teaching Assistant or from me to help learn what supports are available.

Academic Integrity: All students, faculty and staff are expected to follow the University's guidelines and policies on academic integrity. For students, this means following the standards of academic honesty when writing assignments and collaborating with fellow students. Ensure that all work you submit represents your own honest efforts. Plagiarism—representing someone else's work as your own or submitting work that you have previously submitted for marks in another class or program—is a serious offence that can result in sanctions. The following are *examples* of offences:

- Using someone else's ideas or words in one's own work without acknowledging in a citation that those ideas/words are not one's own.
- Including false, misleading or concocted citations in one's work.
- Obtaining unauthorized assistance on any assignment or to provide unauthorized assistance to another student.
- Using or possessing an unauthorized aid in any test or exam.
- Submitting work for credit in more than one course without permission of the instructor.
- Falsifying or altering any documentation required by the University (e.g., doctors' notes).

Speak to me for advice on anything that you find unclear. To learn more about how to cite and use source material appropriately and for other writing support, see the U of T writing support website at writing.utoronto.ca. Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and expectations. For more information, please see artsci.utoronto.ca/osai and academicintegrity.utoronto.ca.

Writing: As a student here at the University of Toronto, you are expected to write well. The university provides its students with a number of resources to help them improve their writing, including one-on-one appointments with writing instructors, free workshops, and English Language Support. For more information on campus writing centres and activities, please visit writing.utoronto.ca.

Wk #	Lec #	Lecture Topics	Lecture Quiz	Readings	Other HW	Due
1 A&B	1	Course Overview Overview & History of Memory Research Neuroscience of Memory	Practice (optional)	Chapters 1-2; QALMRI; Syllabus	None	Fridays by 11:59pm
	2	Methods in Memory Research Short-term and Working Memory	✓	Chapters 3-5; Karpicke & Roediger, 2008		
2 A&B	3	Episodic Long-term Memory Forgetting	✓	Chapters 7-8	Paper Discussion 1 (Karpicke & Roediger, 2008)	
	4	Nondeclarative Memory Semantic Memory	✓	Chapter 6; Chapter 9; Robin et al., 2019		
3	5	Autobiographical Memory Forms of Amnesia Tips for Effective Scientific Writing	✓	Chapter 12; Chapter 18; Gopen & Swan, 1990	None; prepare for Test 1	
					Optional: Thought paper article approval	
		Test 1 on Lectures 1-5				
4	6	Formal Models of Memory; Memory for Space & Time	✓	Chapters 10-11	Paper Discussion 2 (Robin et al., 2019)	
		Only one lecture topic this week. Use the extra time to work on your Thought Paper due next week.				
5 A&B	7	New Directions in Memory Research	✓	+*see Required Readings*	Thought Paper	
	8	Memory Across the Lifespan: Development & Aging	✓	Chapters 16-17		
6	9	Memory and Reality Memory and the Law Metamemory	✓	Chapters 14-15	None; prepare for Test 2	
		Test 2 on Lectures 6-9				