



# Psychology 398 Research in Memory Winter 2019



**Class Time:** Tuesdays & Thursdays 10:00am-11:20pm  
**Location:** PAS 3026 and PAS 1237

**Instructor:** Dr. Myra Fernandes  
**Office Hours:** Tuesdays 11:30-12:30pm

[mafernan@uwaterloo.ca](mailto:mafernan@uwaterloo.ca)  
**Office:** PAS 4054

**Teaching Assistant:** Ryan Yeung  
**Office Hours:** 1pm-2pm Wednesdays

**Office:** PAS 4227

## Required Course Text

Baddeley, A., Eysenck, M.W., & Anderson, M.C. (2015). *Memory*. 2<sup>nd</sup> edition. New York, NY, Psychology Press

## Course Description

Questions to be addressed include: How is information encoded and retrieved? What types of memory exist? How can we measure these? Why does forgetting occur? What biological changes accompany memory loss? Can memory impairments be rehabilitated?

There is also a lab and experiential component to this course. The goal of the lab component is to introduce students to *E-Prime software*, which is often used to collect data for research studies. The goal for these "labs" is to give you a "hands-on" approach to understanding the methods currently in use for much of the current research in memory. The experiential component is designed to develop your workplace skill set and to translate your academic knowledge to help real-world companies to refine delivery of their educational learning tools.

Several major themes in the area of memory research are explored in this course. Historically influential ideas, current theoretical debates, and the application of cognitive, social, neuro-imaging, and neuropsychological approaches to the study of memory are reviewed and discussed.

## Course Structure and Requirements

By the end of the course, you will have a detailed knowledge of a wide range of memory phenomena and a solid foundation from which to pursue more advanced study. The introduction to *E-Prime* will familiarize you with how experiments are set up, and the variables that can be manipulated. The Experiential learning will allow you to apply your knowledge to workplace settings. Attendance at lectures and in labs is essential. Group projects and presentations are designed to promote discussion of relevant ideas and concepts. The poster session is designed to introduce you to how research results are communicated at scientific conferences and meetings.

## Overview of Evaluation

Lab worksheets and activities	7 X 4% each =	28%
Experiential Learning assignments		22%
Mid-term Test	<b>Tues March 5<sup>th</sup></b>	25%
Group Presentations		15%
Poster	<b>Thurs April 4th</b>	10%

## Details on each Evaluation

### Lab Component

The goal of the lab component is to introduce you to E-Prime software, which is often used to collect data for research studies. All lab activities and worksheets are to be completed during the scheduled lab time, and are worth 4% each (**7 labs X 4% = 28% of your grade**). A copy of the “Lab Course notes” is available at the UW Bookstore.

### Mid-term Test

The test is worth **25% of your grade**, and will consist of multiple choice, short answer questions, and longer essay questions based on material covered in lectures, and in the relevant chapters in your course textbook. The test will be 1 hour and 20 minutes in length.

### Poster Assignment

You will prepare a scientific poster of a study that you yourself have conceived, and designed, showing hypotheses and predicted results, along with a discussion of implications. A poster is a 1-page summary of the Background, Methods, Results, and Conclusions. This is the format used to communicate research findings at scientific conferences and meetings. A poster serves as an “Executive Summary” of a study, allowing others to quickly understand the research question that was investigated, and the answers. A few sample posters, in Power Point format, can be found on the course website. You should use these as templates for your own poster.

Please print a copy of your poster on a plain white sheet of paper (8 ½ X 11), to facilitate presentation to your classmates. On APRIL 4<sup>th</sup> we will have a **POSTER DAY**, during which each person will tell classmates about their poster in a 4-5 minute oral presentation, and then answer any questions for 4-5 minutes. Please email your Poster to Dr. Fernandes **by 9am on APRIL 4<sup>th</sup>**. Be sure to acknowledge all sources of information, and avoid plagiarism (see note below). You will be marked on the written clarity of the content of the text in your poster, your ability to link your study to the literature, the appropriateness of your graphs and/or tables, and your ability to communicate the results and their implications & contribution to the study of memory (**value = 10%**).

### Group Presentation

You will be placed in groups of 2 (or 3) students. Presentations consist of two parts:

#### **Task A**

Read the relevant chapter. **The Group must prepare a 12-minute (or 18-minute) presentation** using slides (e.g. Power Point). **Each student must speak for equal time.** The presentation should a) review the key points, and methods, presented in the assigned chapter, and then b) review and highlight how a related study from recently published journal articles (published from 2014-present), extends the topic. Finally the Group must c) review the conclusions and take-home message of this area of memory and suggest 1 or 2 extensions, either in terms of psychology experiments or applications to address a real-world issue. This presentation is worth **10% of your grade (each person will be graded independently)**. A copy of your presentation slides must be emailed to the TA and Dr. Fernandes **by 11:59pm on the day before your presentation**, so that it can be brought to class and loaded on the computer, by the instructor, prior to the beginning of class the next day.

#### **Task B**

Following your group's presentation, you will lead a **Panel Discussion for 10 minutes**. During this time your group must pose 2 to 3 Thought-Provoking Questions to your classmates relating to your topic. Your classmates will attempt to answer the questions. Your job during the Panel Discussion is to a) guide students, b) bring up relevant experiments, and c) jump in with an expert's opinion on the topic, with highlights and reference to related publication from the field. You can bring in extra materials (newspaper clippings) or prepare 'demos' related to your prepared Questions. These will help engage your classmates in the Panel Discussion. Your ability to lead the Panel Discussion will form **5% of your grade, and is graded as a group**.

*Hint 1:* make your "Panel Questions" provocative, to invite discussion from your classmates, or come prepared to defend your particular Answers to your Questions, if many different Answers are possible.

*Hint 2:* the class will be more fun if you find a way of engaging your fellow classmates in the Discussion (e.g. frame your questions such that students have to pick one side of a debate, and defend it, or have students provide examples from everyday life to support their answers)

### Experiential Learning

**Value = 22%**; Students work in groups of 2-3 students. Grading will be by the instructor, for the entire group, taking into account written feedback from company.

#### **Milestones to be completed by each group**

##### **Determining Project Scope** (value = 6%)

Due Date Part 1: Tuesday January 29<sup>th</sup> 2019 List of Questions DUE

Due Date Part 2: Tuesday February 5<sup>th</sup> 2019 'Meet & Greet' with Company

Due Date Part 3: Tuesday February 12<sup>th</sup> 2019 Project Scope DUE

Each Group must

- Create a Group listing all members on the Riipen website
- Logon to each company's website and determine which company the Group will work with; brainstorm potential topic areas/options for project focus

Part 1: Prepare a list of questions designed to determine the company's product, target audience, and needs

Part 2: Conduct a Meeting (over Skype, in-person, or tele-conference) between your Group and selected company, to determine: company's product, target audience, and needs

Part 3: Submit a 2-page written Project Scope document that a) summarizes the outcomes learned from the Meet & Greet session, and b) outlines a sketch or overview of the topic area selected for either Option A or B below

##### **Slide Deck Submission** (value = 8%)

Due Date: Tuesday March 19<sup>th</sup>, 2019

Each Group must

- Choose Option A or B below
- Present and Submit via Riipen, a 10-slide deck in Power Point (allow 6-7 minutes for presentation and 1-2 minutes for questions)

##### Option A

Student Groups will create a 6-7-minute "pitch" of a new idea, to enhance product delivery and/or create new products. The 10-slide-deck will be created to highlight Who (target audience for the product), What (the new idea), When (projected time to implement), Where (new course? new module within existing course? new extension for testing retention?), How (outline methodology) and Why (link new idea to a principle of learning & memory learned in this course)

## Option B

Students will create and then conduct a survey in a minimum of 5 new users to determine the hardest aspects of learning in a given current online course. Students must then identify and compare the pros and cons of 2 different methods of learning in use on the company's website. Students will then suggest 1 new method of learning or assessment that can be included in a course.

The goal is to help the company to enhance development/delivery of course content that is based in current research in the field of cognition and cognitive neuroscience.

### **Written Report Submission** (value = 8%)

Due Date: Tuesday March 26<sup>th</sup>, 2019

Each Group must

- submit a 4-page written report (in Word, 12-point font, 1cm margins all around, plus a title page, plus a references page) via Riipen to the Company for review
- Written reports will consist of a set of recommendations and diagrams regarding best presentation strategies for the company's materials, learning modules and/or test formats, that would enhance memory for, and retention of, the company's products. These recommendations must each be explicitly linked to a theory or strategy based in cognition, memory, or cognitive neuroscience.

For example, best visual content layout for learning, pros/cons of auditory/visual/tactile delivery, options for practice tests, and evaluations of knowledge, best learning schedules to maximize retention.

### **Who can I see if I have questions about the course material?**

See your teaching assistant, if you have questions about material covered in the textbook or in the labs. See Dr. Fernandes for questions about material covered in the lectures.

### **Course Web page / What is Desire2Learn?**

Desire2Learn is a web-based course management system that enables instructors to manage course materials and interact easily and efficiently with their students. Here, **I will post lecture notes online**, along with the course syllabus. Course announcements, and answers to Frequently Asked Questions will also be posted. Log on using your Quest/UWdir userid and password.

### **Policy for late lab assignments, and late posters**

*It is the student's responsibility to hand in late assignments or posters directly to the course T.A. or instructor **in person**, or via **email**. These will be subject to a **late penalty of -5% of the assigned grade, per day**, including weekends.*

### **Academic Integrity**

**Academic Integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility. See the [UWaterloo Academic Integrity webpage](#) and the [Arts Academic Integrity webpage](#) for more information.

**Discipline:** A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to [Policy 71 - Student Discipline](#). For typical penalties check [Guidelines for the Assessment of Penalties](#).

### **Concerns About a Course Policy or Decision**

**Informal Stage.** We in the Psychology Department take great pride in the high quality of our program and our instructors. Though infrequent, we know that students occasionally find themselves in situations of conflict with their

instructors over course policies or grade assessments. If such a conflict arises, the Associate Chair for Undergraduate Affairs (Richard Eibach) is available for consultation and to mediate a resolution between the student and instructor: Email: [reibach@uwaterloo.ca](mailto:reibach@uwaterloo.ca); Ph 519-888-4567 ext. 38790

**Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70 - Student Petitions and Grievances](#), Section 4. When in doubt, please be certain to contact Richard Eibach, the Associate Chair for Undergraduate Affairs who will provide further assistance; [reibach@uwaterloo.ca](mailto:reibach@uwaterloo.ca).

**Appeals:** A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 - Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to [Policy 72 - Student Appeals](#).

### Accommodation for Students with Disabilities

**Note for students with disabilities:** The [AccessAbility Services](#) office, located on the first floor of the Needles Hall extension (1401), collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AS office at the beginning of each academic term.

### Accommodation for course requirements

Students requesting accommodation for course requirements (assignments, midterm tests, final exams, etc.) due to illness should do the following:

Consult the University's [examination regulations](#) for information about procedures and policies for requesting accommodations

seek medical treatment as soon as possible

obtain documentation of the illness with a completed uWaterloo [Verification of Illness Form](#)

submit that form to the instructor within 48 hours. Students in Centre for Extended Learning (CEL) courses must submit their confirmation of the illness to CEL.

(if possible) inform the instructor by the due date for the course requirement that you will be unable to meet the deadline and that documentation will be forthcoming.

- In the case of a missed final exam, the instructor and student will negotiate an extension for the final exam, which will typically be written as soon as possible, but no later than the next offering of the course.
- In the case of a missed assignment deadline, midterm test, or quiz, the instructor will either:
  - waive the course component and re-weight remaining term work as he/she deems fit according to circumstances and the goals of the course, or
  - provide an extension.
- In the case of bereavement, the instructor will provide similar accommodations to those for illness. Appropriate documentation to support the request will be required.
- Students who are experiencing extenuating circumstances should also inform their academic advisors regarding their personal difficulties.
- Elective arrangements such as travel plans are not acceptable grounds for granting accommodations to course requirements per the [uWaterloo Examination Regulations and Related Matters](#).

### Official version of the course outline

If there is a discrepancy between the hard copy outline (i.e., if students were provided with a hard copy at the first class) and the outline posted on LEARN, the outline on LEARN will be deemed the official version. Outlines on LEARN may change as instructors develop a course, but they become final as of the first class meeting for the term.

Topic	Readings and Assignments	Date
Syllabus LEARN Introduction to Memory Research	Meet partners for “Experiential Learning project” and Select “Group presentation” topic	Tuesday Jan 8 <sup>th</sup>
Methods of studying the brain	Baddeley et al., Chapters 1	Thursday Jan 10 <sup>th</sup>
Perceiving and Remembering	Baddeley et al., Chapter 1, 2	Tuesday Jan 15 <sup>th</sup>
Kinds of memory	Baddeley et al., Chapter 3	Thursday Jan 17 <sup>th</sup>
<b>Lab 1 - E-Prime</b>	<b>Lab 1 Course Notes</b>	<b>Tuesday Jan 22<sup>nd</sup></b>
Working Memory	Baddeley et al., Chapter 4	Thursday Jan 24 <sup>th</sup>
<b>Lab 2 - E-Prime</b>	<b>Lab 2 Course Notes</b> <b>Experiential Learning</b> <b>Questions DUE</b>	<b>Tuesday Jan 29<sup>th</sup></b>
Neuroimaging of working memory / Learning	Baddeley et al., Chapter 5	Thursday Jan 31 <sup>st</sup>
<b>Experiential Learning</b>	<b>Experiential Learning</b> <b>Meetings with Company</b>	<b>Tuesday Feb 5<sup>th</sup></b>
Learning / Organization	Baddeley et al., Chapter 6	Thursday Feb 7 <sup>th</sup>
<b>Lab 3 - E-Prime</b>	<b>Lab 3 Course Notes</b> <b>Experiential Learning</b> <b>Project Scope DUE</b>	<b>Tuesday Feb 12<sup>th</sup></b>
Retrieval / Context effects	Baddeley et al., Chapter 8	Thursday Feb 14 <sup>th</sup>



<b>Topic</b>	<b>Readings and Assignments</b>	<b>Date</b>
Reading Week	Reading Week - No Class	Tuesday Feb 19 <sup>th</sup>
Reading Week	Reading Week - No Class	Thursday Feb 21 <sup>st</sup>
<b>Lab 4 - E-Prime</b>	<b>Lab 4 Course Notes</b>	<b>Tuesday Feb 26<sup>th</sup></b>
Memory, Aging, & Dementia	Baddeley et al., Chapter 15	Thursday Feb 28 <sup>th</sup>
<b>Mid-Term</b>	<b>Mid-term</b>	<b>Tuesday March 5<sup>th</sup></b>
Careers in Cognitive Neuroscience Tips for In-Class Presentation	Preparation for In-Class Presentations Group work on Experiential Project	Thursday March 7 <sup>th</sup>
<b>Lab 5 - E-Prime</b>	<b>Lab 5 Course Notes</b>	<b>Tuesday March 12<sup>th</sup></b>
Group 1: Semantic memory Group 2: Incidental Forgetting Group 3: Motivated Forgetting	Baddeley et al., Chapter 7 Baddeley et al., Chapter 9 Baddeley et al., Chapter 10	Thursday March 14 <sup>th</sup>
<b>Experiential Learning Project Presentations</b>	<b>Experiential Project Presentations</b>	<b>Tuesday March 19<sup>th</sup></b>

Topics	Readings and Assignments	Dates
<p>Group 4: Autobiographical memory</p> <p>Group 5: Eyewitness memory</p> <p>Group 6: Prospective Memory</p>	<p>Baddeley et al., Chapter 11</p> <p>Baddeley et al., Chapter 12</p> <p>Baddeley et al., Chapter 13</p>	<p>Thursday March 21<sup>st</sup></p>
<p><b>Lab 7 – E-Prime</b></p>	<p><b>Lab 7 Course Notes</b></p> <p><b>Experiential Project Written Report Due</b></p>	<p><b>Tuesday March 26<sup>th</sup></b></p>
<p>Group 7: Memory in childhood</p> <p>Group 8: When memory fails</p> <p>Group 9: Improving your memory</p>	<p>Baddeley et al., Chapter 14</p> <p>Baddeley et al., Chapter 16</p> <p>Baddeley et al., Chapter 17</p>	<p>Thursday March 28<sup>th</sup></p>
<p><b>Lab 8 – E-Prime</b></p> <p>Group 10: Current Directions in memory research</p>	<p><b>Lab 8 Course Notes</b></p> <p>Suggested journals: TICS, Nature Neuroscience, Psychological Science</p>	<p><b>Tuesday April 2<sup>nd</sup></b></p>
<p><b>Poster Day</b></p>	<p><b>Present your research proposal, results, &amp; discussion to the class!</b></p> <p>Course Perceptions</p>	<p><b>Thursday April 4<sup>th</sup></b></p>