RESEARCH METHODS IN MEMORY

PSYCH 390

Published

CLASS SCHEDULE

Section	Location	Time	Instructor(s)
PSYCH 390 002 *[SEM]*	PAS 1237	Tuesdays & Thursdays 10 a.m. - 11:20 a.m.	Myra Fernandes mafernan@uwaterloo.ca
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INSTRUCTOR / TA INFORMATION

Instructor - Dr. Myra Fernandes PAS 4054; mafernan@uwaterloo.ca;

Office Hour Tuesdays 11:20am-12:20pm in person or by video appointment on TEAMS

TA - Sophia Tran, MA PAS 4043; sophiahtran@uwaterloo.ca;

Office Hour Thursdays 11:20am-12:20pm in person or by video appointment on TEAMS

COURSE DESCRIPTION

> *Calendar Description for PSYCH 390*
>
> Topics explore natural science research methods in Psychology. Consult departmental listings for upcoming topics, which may include methods for studying psychophysiology, neuroanatomy, and/or cognitive processes (e.g., perception, attention, memory, information-processing, decision-making). Activities may include research proposals, group and/or individual projects (e.g., lab experience, data collection), research reports, critiques of published/proposed research, and student presentations. [Offered: W and/or S]
>
> Prereq: PSYCH 207, 211, 261; Level at least 3A Honours BA Psychology Research Intensive Specialization or Honours BSc Psychology or Make-Up Psychology. Coreq: PSYCH 391. Antireq: PSYCH 392, 394, 396, 398

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. 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 a lab component to this course. The goal is to introduce students to *E-Prime software*, which is often used to collect data for research studies. These labs will give you a "hands-on" approach to understanding the methods currently in use for much of the current research in memory.

LEARNING OUTCOMES

By the end of this course students should be able to:

communicate in written and oral format, learning and retention strategies based on psychological research
compare and contrast current theories of how memory works and factors affecting it
be familiar with E-prime software, used to design and create experiments
program basic experiments involving stimulus presentation and response collection from participants
prepare and deliver oral presentations, highlighting your ability to communicate science
apply your knowledge of memory theory to develop and outline in written format, an avenue for future investigation
provide constructive feedback to peers

TENTATIVE COURSE SCHEDULE

Topic	Readings and Assignments	Date
Syllabus Introduction to Memory Research Methods of studying the brain	Syllabus Examples of memory in the real world Baddeley et al., Chapter 1	January 10th
Perceiving	Baddeley et al., Chapter 1	January 12th
Remembering	Baddeley et al., Chapter 2	January 17th
Kinds of memory	Baddeley et al., Chapter 3	January 19th
Working Memory	Baddeley et al., Chapter 4	January 24th
Working Memory	Baddeley et al., Chapter 4	January 26th
Neuroimaging of working memory / Learning	Baddeley et al., Chapter 5	January 31st
Lab 1 - E-Prime: Introduction	**Lab 1 Course Notes**	**February 2nd**

Learning / Organization	Baddeley et al., Chapter 6	February 7th
Learning / Organization	Baddeley et al., Chapter 6	February 9th (lecture posted online)
Lab 2 - E-Prime: Creating a free recall experiment	**Lab 2 Course Notes**	**February 14th**
Retrieval / Context effects	Baddeley et al., Chapter 8 **Mid-term review Assignment DUE by 11:59pm**	February 16th
No Class Reading Week	No Class Reading Week	February 21st and 23rd
Retrieval / Context effects	Baddeley et al., Chapter 8	Feb 28th
Memory, Aging, & Dementia	Baddeley et al., Chapter 15	March 2nd
Mid-Term Test	**Mid-Term Test in class**	**March 7th**
Lab 3 - E-Prime: Creating a recognition experiment	**Lab 3 Course Notes**	**March 9th**
Lab 4 - E-Prime: Making modifications to experiment	**Lab 4 Course Notes**	**March 14th**
Lab 5 – E-Prime: Troubleshooting and debugging experiments	**Lab 5 Course Notes** **(note that Lab 6 is omitted from the course)**	**March 16th**
Lab 7 – E-Prime: Create a theoretically-driven experiment & collect data	**Lab 7 Course Notes**	**March 21st**

*Lab 8 – E-Prime: Merge & analyze data; making conclusions Topic 1: Neuroscience of Memory	**Lab 8 Course Notes** ***Lab Due Date: March 28th** Select a recently published article from PsychInfo/PubMed/Google Scholar	**March 23rd**
Topic 2: Forgetting Topic 3: Motivated Forgetting Topic 4: Autobiographical memory	Baddeley et al., Chapter 9 Baddeley et al., Chapter 10 Baddeley et al., Chapter 11	March 28th
Topic 5: Eyewitness memory Topic 6: Prospective Memory Topic 7: Memory in childhood	Baddeley et al., Chapter 12 Baddeley et al., Chapter 13 Baddeley et al., Chapter 14	March 30th
Writing Communication Centre Workshop Careers in Psychology	Notes posted on Learn Course Perceptions: https://perceptions.uwaterloo.ca/ (https://perceptions.uwaterloo.ca/)	April 4th
Topic 8: When memory fails Topic 9: Improving your memory Topic 10: Semantic memory/ Stored knowledge	Baddeley et al., Chapter 16 Baddeley et al., Chapter 17 Baddeley et al., Chapter 7 Course Perceptions: https://perceptions.uwaterloo.ca/ (https://perceptions.uwaterloo.ca/)	April 6th
	Research Idea Paper: **DUE: Thursday April 13th by 11:59pm**	

TEXTS / MATERIALS

Title / Name	Notes / Comments	Required
Memory	Book Reference: Baddeley, A., Eysenck, M.W., & Anderson, M.C. (2020). Memory. 3rd edition. New York, NY, Psychology Press	Yes

Textbook reference: Baddeley, A., Eysenck, M.W., & Anderson, M.C. (2020). _Memory._ 3$^{\underline{rd}}$ _edition._ New York, NY, Psychology Press

https://uwaterloo-store.vitalsource.com/products/memory-alan-baddeley-michael-w-v9780429831294?term=9781138326095 (https://uwaterloo-store.vitalsource.com/products/memory-alan-baddeley-michael-w-v9780429831294?term=9781138326095)

STUDENT ASSESSMENT

Component	Value
Written assignment: Mid-term review Q&A	5%
Lab worksheets and activities: 6 X 4% and 1 X 6%	30%
In-Class Mid-term Test	30%
Oral Presentation: Topics in Memory	15%
Written assignment: Research Idea	15%
In-class oral Participation	3%
SONA credits	2%

Details on each Evaluation

Written assignment: Mid-term review Q&A

In order to help you and your classmates prepare for the upcoming mid-term test, you will prepare 5 Questions and either write out or draw a sketch of the Answers; these are to be based on a concept, definition, methodology, or experiment, discussed in Chapters 1, 2, 3, 4, 5, 6, 8, or 15. Each Q&A should be approximately ½ page in length, double-spaced, in 12-point font, with 2 cm margins all around. You must include Q&As that cover material from at least 3 different chapters.
Please label your submission file with your last name and chapter coverage (e.g. FernandesChapter2and3and6.pdf). *Do NOT include your Student ID number anywhere within your assignment, as all submissions will be posted on LEARN for all students to see. Please submit your assignment anytime before **FEBRUARY 16$^{\text{th}}$ by 11:59pm via the LEARN Dropbox. This assignment is worth 5% of your grade.** These files will each be posted on LEARN, and will serve as a study guide for you and your classmates.

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 materials are posted on LEARN. On scheduled lab dates there is no formal lecture. Instead, you will

come to PAS 1237, and use the Power point slides associated with each lab to help you to a) learn about the software and complete the required Worksheets for each lab and b) use E-Prime to create programs. Dr. Fernandes and a TA will be in the classroom to help you navigate through the content and requirements for each Lab, and can answer questions as you complete each Lab and Worksheet.

All Worksheets are administered via the Quiz function within LEARN, and must be completed and submitted by 11:59pm on the assigned lab date. The first six labs are worth 4% each, and the last one is worth 6% (**total = 30% of your grade**).

Mid-term Test

The test is worth **30% of your grade**, and will consist of multiple choice, short answer questions, and longer essay questions based on material covered in Lectures, and in Chapters 1, 2, 3, 4, 5, 6, 8, and 15 of your course Textbook. The test will take place **in person, in PAS 1237, on MARCH 7th**

Oral presentation: Choice of Topics

In MARCH and APRIL groups of students will be doing oral presentations. For each of the listed Topics/Date, groups (of 2 students each) will prepare 16-minute Power Point presentations. **Each student will be responsible for presenting for 8-minutes.** Each student must prepare their OWN 8-minute presentation, and communicate it in person to the class. **Please submit your power point slides to the Dropbox on LEARN** by 9am on the date of the scheduled presentation.

Specific requirements for the Oral presentation are as follows:

Read the relevant chapter. Each student should present on a separate Sub-Section (set of pages) within the assigned chapter. Each student must prepare their own 8-minute presentation using slides (e.g. Power Point). Presentations should a) review 2 concepts and associated methods of assessment/measurement, contained within their assigned chapter, and then b) review and explain how a related study, from recently published journal articles (published from 2015-present), extends the topic. Finally you must c) review the conclusions and take-home message of this area of memory and suggest an extension, either in terms of a future psychology experiment OR an application of a related concept to address a real-world issue. This presentation is worth **15% of your grade in the course.**

*Following each topic presentation, classmates can make suggestions for research extensions on the topic, OR note future real-world applications, OR offer presentation feedback, via the Participation/Feedback component. Students can earn **1% per contribution** (each contribution should be a minimum of 3 sentences), up to **a maximum of 3%.**

Research Idea paper

Prepare a detailed written "Introduction to a new Research Idea". You will be marked based on a) your communication and accuracy of the current state of knowledge relating to your topic, and b) your ability to clearly explain the relevance of past research to the rationale for your research idea. You are also required to c) highlight a possible neural or physiological basis of for your proposed memory concept/effect, based on past published research.

Introductions must be 4-pages, plus a reference page(s), double-spaced, in 12-point font, with 2 cm margins all around. **DUE APRIL 13th by 11:59pm via the LEARN Dropbox; worth 15% of your grade in the course.**

SONA Participation Credit

Experiential learning is considered an integral part of the undergraduate program in Psychology. Research participation is one example of this, article review is another. A number of undergraduate courses have been expanded to include opportunities for Psychology students to earn grades while gaining research experience. Since experiential learning is highly valued in the Department of Psychology, **students may earn up to 2% of their final mark** in this course through research experience (i.e., course work will make up 98% of the final mark and research experience

will make up the other 2% for a maximum grade of 100%). **Be sure to review the guidelines posted in the 'SONA Credit' document posted on LEARN for further details.**

The two options for earning research experience grades are a) participation in research through online remotely operated and In Lab studies, as well as b) article review. Students may complete any combination of these options to earn research experience grades. For Winter 2023, credits will be permitted to be earned with half from online, and the other half (1.0) from In-lab or Remote Access studies.

Policy for late submissions

It is the student's responsibility to hand in late assignments, worksheets, or papers directly to Dr. Fernandes via email (mafernan@uwaterloo.ca). These will be subject to a late penalty of –10% of the assigned grade, per day, including weekends.

Accommodation for Course Requirements

1. Students requesting accommodation for course requirements (assignments, midterm tests, final exams, etc.) due to illness should seek medical treatment as soon as possible, and also do the following:

Visit this link and follow the instructions: https://uwaterloo.ca/arts/undergraduate/student-support/accommodations-illness-or-extenuating-circumstances

2. 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 assignment deadline, midterm test, or quiz, the instructor will either: re-weight remaining term work as he/she deems fit according to circumstances and the goals of the course, or provide an extension to the Due Date.

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 (http://www.registrar.uwaterloo.ca/exams/ExamRegs.pdf).

Accommodation for Students with Disabilities

The AccessAbility Services (https://uwaterloo.ca/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 office at the beginning of each academic term.

ASSIGNMENT SCREENING

No assignment screening will be used in this course.

ADMINISTRATIVE POLICY

Territorial Acknowledgement: The University of Waterloo acknowledges that much of our work takes place on the traditional territory of the Neutral, Anishinaabeg and Haudenosaunee peoples. Our main campus is situated on the Haldimand Tract, the land granted to the Six Nations that includes six miles on each side of the Grand River. Our active work toward reconciliation takes place across our campuses through research, learning, teaching, and community building, and is centralized within the Office of Indigenous Relations (https://uwaterloo.ca/indigenous)

INTELLECTUAL PROPERTY

Students should be aware that this course contains the intellectual property of their instructor, TA, and/or the University of Waterloo.

Intellectual property includes items such as:

- Lecture content, spoken and written (and any audio/video recording thereof);
- Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides);
- Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and
- Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).

Course materials and the intellectual property contained therein, are used to enhance a student's educational experience. However, sharing this intellectual property without the intellectual property owner's permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository).

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).

MENTAL HEALTH SUPPORT

All of us need a support system. The faculty and staff in Arts encourage students to seek out mental health support if they are needed.

On Campus

Due to COVID-19 and campus closures, services are available only online or by phone.

- Counselling Services: counselling.services@uwaterloo.ca (mailto:counselling.services@uwaterloo.ca) / 519-888-4567 ext. 32655
- MATES (https://wusa.ca/services/uw-mates) : one-to-one peer support program offered by the Waterloo Undergraduate Student Association (WUSA) and Counselling Services

Off campus, 24/7

- Good2Talk (https://good2talk.ca/) : Free confidential help line for post-secondary students. Phone: 1-866-925-5454

- Grand River Hospital: Emergency care for mental health crisis. Phone: 519-749-4300 ext. 6880
- Here 24/7 (https://here247.ca/) : Mental Health and Crisis Service Team. Phone: 1-844-437-3247
- OK2BME (https://ok2bme.ca/) : set of support services for lesbian, gay, bisexual, transgender or questioning teens in Waterloo. Phone: 519-884-0000 extension 213

Full details can be found online on the Faculty of Arts website (https://uwaterloo.ca/arts/get-mental-health-support-when-you-need-it)

Download UWaterloo and regional mental health resources (PDF) (https://uwaterloo.ca/arts/sites/ca.arts/files/uploads/files/counselling_services_overview_002.pdf)

Download the WatSafe app (https://uwaterloo.ca/watsafe/) to your phone to quickly access mental health support information.

UNIVERSITY POLICY

Academic integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check the Office of Academic Integrity (https://uwaterloo.ca/academic-integrity/) for more information.]

Grievance: A student who believes that a decision affecting some aspect of their university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4 (https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70) . When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for their actions. [Check the Office of Academic Integrity (https://uwaterloo.ca/academic-integrity/) for more information.] 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 instructor, academic advisor, or the undergraduate associate dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline (https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71) . For typical penalties, check Guidelines for the Assessment of Penalties (https://uwaterloo.ca/secretariat/guidelines/guidelines-assessment-penalties) .

Appeals: A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70) (other than a petition) or Policy 71, Student Discipline (https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71) may be appealed if there is a ground. A student who believes they have a ground for an appeal should refer to Policy 72, Student Appeals (https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-72) .

Note for students with disabilities: AccessAbility Services (https://uwaterloo.ca/disability-services/) , located in Needles Hall, Room 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 AccessAbility Services at the beginning of each academic term.

Turnitin.com: Text matching software (Turnitin®) may be used to screen assignments in this course. Turnitin® is used to verify that all materials and sources in assignments are documented. Students' submissions are stored on a U.S. server, therefore students must be given an alternative (e.g., scaffolded assignment or annotated bibliography), if they are concerned about their privacy and/or security. Students will be given due notice, in the first week of the term

and/or at the time assignment details are provided, about arrangements and alternatives for the use of Turnitin in this course.

It is the responsibility of the student to notify the instructor if they, in the first week of term or at the time assignment details are provided, wish to submit alternate assignment.