

**PSYC 474**
**Neurobiology of Learning and Memory**
**Fall 2019**

<b>Instructor:</b>	Dr. Simon Spanswick	<b>Lecture Location:</b>	ST 128
<b>Phone:</b>	403-220-4948	<b>Lecture Days/Time:</b>	MWF 11:00 – 11:50
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<b>Office:</b>	AD 032		
<b>Office Hours:</b>	Email me to arrange a convenient time		

### Course Description

An examination of learning and memory from a neuroscience perspective. Molecular, cellular, systems-level, and behavioural approaches will be applied to themes such as consolidation, amnesia, and pathological processes.

### Course Learning Outcomes

The Department of Psychology is committed to student knowledge and skill development. The table below lists the key learning outcomes for this course, the program-learning outcomes they facilitate (see [psyc.ucalgary.ca/undergraduate/program-learning-outcomes](http://psyc.ucalgary.ca/undergraduate/program-learning-outcomes)), and the expected level of achievement.

Course Learning Outcomes	Assessment Methods	PLO(s)	Level(s)
Describe the different memory systems in the brain	Exams, thought papers, term project	1,4,5,7	C,A,C,A
Explain the neural substrates of learning and memory	Exams, thought papers, term project	1,4,5,7	C,A,C,A
Effectively communicate research findings in the field of learning and memory	Exams, thought papers, term project	1,2,4,5,7	C,A,A,C,A
Assess the portrayal of memory pathologies in the media	Term project	1,4,5,7	C,A,C,A
Critically analyze the primary literature in the learning and memory field	Thought papers, term project	1,2,4,5,7	C,A,A,C,A

Notes. PLOs = Program-Learning Outcomes: 1 = demonstrate knowledge of psychological sciences, 2 = think critically and solve problems, 3 = conduct research and analyze data, 4 = communicate effectively, 5 = demonstrate information literacy, 6 = understand and implement ethical principles, 7 = apply psychological knowledge and skills. Level of PLO achievement facilitated by this course: I = introductory, C = competency, A = advanced.

### Prerequisites

Psychology 312 OR 300/301, and 375 as well as admission to the Psychology major or Honours program.

### Required Text

There is no required textbook for this course. References to required readings from the primary literature will be provided.

## Assessment Methods

### Exams

Midterm #1 (Lectures 1-13; Oct 11 <sup>th</sup> ):	23.33%
Midterm #2 (Lectures 14-24; Nov 6 <sup>th</sup> ):	23.33%
Final exam (Lectures 25-34; TBA):	23.33%

Exams will be short answer and cover lecture and reading material up to the exam date. **The midterms and final exam will not be cumulative.** Short answer questions will be graded such that half marks will be given if it is clear you know the general answer but have omitted specific details. Full marks will be given to those that include specifics, and employ the correct terminology and concepts. **No books, notes, computers, calculators, or cellular phones will be allowed during exams.**

### Written Assignments

Thought papers (3 total):	15%
Memory in the movies (due Nov 25 <sup>th</sup> ):	15%

There will be three thought papers due throughout the semester; each will be worth 5% of your final grade. Thought papers should be written in 12-point font with 1-inch margins, and will require a maximum of 3 double-spaced pages (not including references or title page). Due dates are listed in the lecture schedule component of the outline as well as on D2L. Each paper will require you to reflect on a topic related to learning and memory, and provide you with an opportunity to relate the material we discuss in class to real-world issues. Papers will be graded according to the analysis/insight into the topic in question, as well as the strength of writing (organization, etc.) and mechanics of the paper. More details regarding the thought papers can be found on D2L.

The “Memory in the movies” paper is due on November 25<sup>th</sup> via Dropbox at 11:00pm and is worth 15% of your final grade. Your job is to write a neuroscientific review of a Hollywood movie that relates to the topic of memory (e.g. 50 first dates, Memento, Eternal Sunshine of the Spotless Mind, etc.). You should discuss in detail the scientific principles of memory we have covered in class as they relate to the movie you have chosen. Include in your discussion what the movie got right, and what the movie got wrong. Your analysis of the movie should be supported by the scientific literature. The paper should be written in 12-point font with 1-inch margins and should be 8-10 pages in length (not including references or title page). Papers will be graded according to your description and integration of concepts into the assignment, as well as the strength of your writing, in addition to the mechanics and formatting of the paper. Further details regarding this assignment will be provided in class and posted on D2L. **All assignments are to be handed in via Dropbox. Late assignments will not be accepted without appropriate documentation.**

### **Department of Psychology Criteria for Letter Grades**

Psychology professors use the following criteria when assigning letter grades:

A+ grade: *Exceptional Performance*. An A+ grade indicates near perfect performance on multiple choice and short answer exams. For research papers/essays/course projects/presentations, an A+ grade is awarded for exceptional work deserving of special recognition and is therefore not a common grade.

A, A- Range: *Excellent Performance*. Superior understanding of course material. Written work is very strong in terms of critical and original thinking, content, organization, and the expression of ideas, and demonstrates student's thorough knowledge of subject matter.

B Range: *Good Performance*. Above average understanding of course material. Written work shows evidence of critical thinking and attention to organization and editing but could be improved in form and/or content.

C Range: *Satisfactory Performance*. Adequate understanding of course material. Knowledge of basic concepts and terminology is demonstrated. Written work is satisfactory and meets essential requirements but could be improved significantly in form and content. Note: All prerequisites for courses offered by the Faculty of Arts must be met with a minimum grade of C-.

D range: *Marginally meets standards*. Minimal understanding of subject matter. Written work is marginally acceptable and meets basic requirements but requires substantial improvements in form and content. Student has not mastered course material at a level sufficient for advancement into more senior courses in the same or related subjects.

F grade: *Course standards not met*. Inadequate understanding of subject matter. Written work does not meet basic requirements. Student has not demonstrated knowledge of course material at a level sufficient for course credit.

#### Grading Scale

A+	96-100%	B+	80-84%	C+	67-71%	D+	54-58%
A	90-95%	B	76-79%	C	63-66%	D	50-53%
A-	85-89%	B-	72-75%	C-	59-62%	F	0-49%

As stated in the University Calendar, it is at the instructor's discretion to round off either upward or downward to determine a final grade when the average of term work and final examinations is between two letter grades. To determine final letter grades, final percentage grades will be rounded up or down to the nearest whole percentage (e.g., 89.5% will be rounded up to 90% = A but 89.4% will be rounded down to 89% = A-).

#### Tentative Lecture Schedule

Date	Lecture/Due Date	Topic
F Sep 6	<i>University Lectures begin.</i> Lecture 1 (Introduction to the course)	<b>Course Introduction</b>
M Sep 9	Lecture 2	<b>Defining Memory</b>
W Sep 11	Lecture 3	
R Sep 12	<i>Last day to drop a class without a penalty</i>	
F Sep 13	<i>Last day to add or swap a course</i> Lecture 4	
M Sep 16	Lecture 5	

W Sep 18	Lecture 6	
F Sep 20	<i>Fee payment deadline for Fall Term full and half courses.</i> Lecture 7	
M Sep 23	Lecture 8	<b>Multiple Memory Systems in the Brain</b>
W Sep 25	Lecture 9	
F Sep 27	Lecture 10	
M Sep 30	Lecture 11	
W Oct 2	Lecture 12	
F Oct 4	<b>Thought paper #1 due.</b> Lecture 13	
M Oct 7	Lecture 14	<b>Episodic Memory</b>
W Oct 9	Lecture 15	
F Oct 11	<b>Midterm #1 (Lectures 1-13 + reading material)</b>	
M Oct 14	Thanksgiving Day, University closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.	
W Oct 16	Lecture 16	<b>Episodic Memory</b>
F Oct 18	Lecture 17	
M Oct 21	Lecture 18	
W Oct 23	Lecture 19	<b>In search of the engram</b>
F Oct 25	Lecture 20	
M Oct 28	Lecture 21	
W Oct 30	Lecture 22	
F Nov 1	<b>Thought paper #2 due.</b> Lecture 23	
M Nov 4	Lecture 24	
W Nov 6	<b>Midterm #2 (Lectures 14-24 + reading material)</b>	
F Nov 8	Lecture 25	<b>Modulating memory systems</b>
Nov 10-16	Term Break No Classes	
M Nov 11	Remembrance Day (Observed). University Closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.	
M Nov 18	Lecture 26	<b>Modulating memory systems</b>
W Nov 20	Lecture 27	
F Nov 22	Lecture 28	
M Nov 25	<b>Memory in the movies assignment due.</b> Lecture 29	<b>Fear Memory</b>
W Nov 27	Lecture 30	
F Nov 29	Lecture 31	
M Dec 2	Lecture 32	
W Dec 4	Lecture 33	<b>Actions and Habits</b>
F Dec 6	<i>Fall Term Lectures End.</i> <i>Last day to withdraw with permission from Fall Term half courses.</i> <b>Thought paper #3 due.</b> Lecture 34	
Dec 9-19	<b>Fall Final Exam Period (Lectures 25-34 + reading material)</b>	

### **Reappraisal of Graded Term Work** <http://www.ucalgary.ca/pubs/calendar/current/i-2.html>

A student who feels that a piece of graded term work (term paper, essay, test, etc.) has been unfairly graded, may have the work reappraised as follows. The student shall discuss the work with the instructor **within ten business days** of being notified about the mark or of the item's return to the class. If not satisfied, the student shall take the matter to the head of the department offering the course **within 2 business days of receiving the decision from the instructor**, who will arrange for a reappraisal of the work **within the next ten business days**. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. Students in faculties without a departmental structure should take the matter to the dean, or designate, of the faculty offering the course. The result of that reappraisal will be given to the student in writing along with information about appealing the reappraisal.

*The reappraisal of graded term work may cause the grade to be raised, lowered or to remain the same. There is no limit to the number of pieces of graded work that a student may request be reappraised, however a single piece of work may only be reappraised once.*

### **Reappraisal of Final Grade** <http://www.ucalgary.ca/pubs/calendar/current/i-3.html>

In the reappraisal of a final grade, the only element that will be considered is the grading of the final assessment that makes up the final mark (e.g., final examination, final project, final paper). An exception may occur when the Instructor of Record evaluates a piece of graded term work at the end of the term; that grade may also be considered in a reappraisal of final grade.

A student seeking a reappraisal of a final grade should first attempt to review the final assessment with the department or faculty offering the course. After which, the student shall obtain a Reappraisal of Final Grade form from [ucalgary.ca/registrar](http://ucalgary.ca/registrar) (under Student Forms). The student must indicate exactly what error was made in marking the final assessment and/or in computing the final grade. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected.

Students requesting a reappraisal of a final grade must submit their request by the following dates:

Fall Term – March 1

Winter Term – June 30

Spring Intersession – August 15

Summer Term – October 15

Supplemental Examinations: 30 calendar days from the date the examination was written

For information relating to Law, Veterinary Medicine and the Cumming School of Medicine (MD) courses, please refer to the faculty section.

The reappraisal form shall be submitted to Enrolment Services who will forward it to the department head or dean of the faculty offering the course. Reappraisals of final grades are dealt with by the head of the academic unit in consultation with members of academic staff. Normally, the department/faculty will respond to a reappraisal request within thirty calendar days of its initiation. After the reappraisal is

completed, the department shall return the form to the Registrar's Office who shall inform the student in writing of the decision.

Students should be aware that the grade being reappraised may be raised, lowered or remain the same. A student may request a reappraisal of final for a maximum of two courses in one academic year (September 1 – August 31).

### **Plagiarism and Other Academic Misconduct**

Intellectual honesty is the cornerstone of the development and acquisition of knowledge and requires that the contribution of others be acknowledged. Consequently, plagiarism or cheating on any assignment is regarded as an extremely serious academic offense. Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Students should examine sections of the University Calendar that present a Statement of Intellectual honesty and definitions and penalties associated with Plagiarism/Cheating/Other Academic Misconduct.

### **Academic Accommodations**

The student accommodation policy can be found at: [ucalgary.ca/access/accommodations/policy](http://ucalgary.ca/access/accommodations/policy). Students needing an Accommodation because of a Disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities [ucalgary.ca/policies/files/policies/student-accommodation-policy](http://ucalgary.ca/policies/files/policies/student-accommodation-policy). Students needing an Accommodation based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the instructor.

### **Seating During Exams**

Instructors and exam invigilators are free to ask students to move seats before an exam begins or even during an exam. Students must comply with this request and refusal to do so may warrant a charge of academic misconduct.

### **Absence From A Test/Exam**

Makeup tests/exams are **NOT** an option without the approval of the instructor. A student may be asked to provide supporting documentation for an exemption/special request for a make-up exam <https://www.ucalgary.ca/pubs/calendar/current/n-1.html>. Students who miss a test/exam have up to **48 hours** to contact the instructor to ask for a makeup test/exam. It's the instructor's discretion if they will allow a make-up exam. **Students who do not schedule a makeup test/exam with the instructor within this 48-hour period forfeit the right to a makeup test/exam.** At the instructor's discretion, a makeup test/exam may differ significantly (in form and/or content) from a regularly scheduled test/exam. Once approved by the instructor a makeup test/exam must be written within 2 weeks of the missed test/exam during exam make-up hours provided by the department <http://psychology.ucalgary.ca/undergraduate/exam-and-course-information#mues>.

If a student cannot write their final exam on the date assigned by the Registrar's Office, they need to apply for a deferred exam <https://www.ucalgary.ca/registrar/exams/deferred-exams>.

### **Travel During Exams**

Consistent with University regulations, students are expected to be available to write scheduled exams at any time during the official December and April examination periods. Requests to write a make-up exam because of conflicting travel plans (e.g., flight bookings) will NOT be considered by the department. Students are advised to wait until the final examination schedule is posted before making any travel arrangements. **If a student cannot write their final exam on the date assigned by the Registrar's Office, they need to apply for a deferred exam <https://www.ucalgary.ca/registrar/exams/deferred-exams>. Students with an exceptional extenuating circumstance (e.g., a family emergency) should contact the Department of Psychology ([psyugrd@ucalgary.ca](mailto:psyugrd@ucalgary.ca)).**

### **Freedom of Information and Protection of Privacy (FOIP) Act**

The FOIP legislation disallows the practice of having student's retrieve tests and assignments from a public place. Therefore, tests and assignments may be returned to students during class/lab, or during office hours, or will be made available only for viewing during exam review sessions scheduled by the Department. Tests and assignments will be shredded after one year. Instructors should take care to not link students' names with their grades, UCIDs, or other FOIP-sensitive information.

### **Acknowledgments and Respect for Diversity**

Our classrooms view diversity of identity as a strength and resource. Your experiences and different perspectives are encouraged and add to a rich learning environment that fosters critical thought through respectful discussion and inclusion. The Department of Psychology would also like to acknowledge the traditional territories of the people of the Treaty 7 region in southern Alberta. The City of Calgary is also home to Métis Nation of Alberta, Region III.

### **Wellness and Mental Health Resources**

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the excellent mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services>) and the Campus Mental Health Strategy website (<http://www.ucalgary.ca/mentalhealth/>).

**Extra Research Participation Course Credit is Not Offered for this Course.**

### **Evacuation Assembly Point**

In case of an emergency evacuation during class, students must gather at the designated assembly point nearest to the classroom. The list of assembly points is found at

<http://www.ucalgary.ca/emergencyplan/assemblypoints>

Please check this website and note the nearest assembly point for this course.

### **Student Organizations**

Psychology students may wish to join the Psychology Undergraduate Students' Association (PSYCHS).

They are located in Administration 130 and may be contacted at 403-220-5567.

**Student Union VP Academic:** Phone: 403-220-3911 [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca)

**Student Union Faculty Rep.:** [arts1@su.ucalgary.ca](mailto:arts1@su.ucalgary.ca)

### **Student Ombudsman's Office**

The Office of the Student Ombudsmen provides independent, impartial and confidential support for students who require assistance and advice in addressing issues and concerns related to their academic careers. The office can be reached at 403-220-6420 or [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca)

(<http://www.ucalgary.ca/provost/students/ombuds>)

### **Safewalk**

The safewalk program provides volunteers to walk students safely to their destination anywhere on campus. This service is free and available 24 hrs/day, 365 days a year.

Call 403-220-5333.

### **Important Dates**

The last day to drop this course with no "W" notation and **still receive a tuition fee refund** is **Thursday, September 12, 2019**. Last day add/swap a course is **Friday, September 13, 2019**. The last day to withdraw from this course is **Friday, December 6, 2019**.