
PSYC/NEUR 478		Behavioural Neuroscience		Winter 2021
Instructor:	Dr. Simon Spanswick	Lecture Location:	Online	
Phone:	403-220-4948	Lecture Days/Time:	MWF 9:00-9:50	
Email:	scspansw@ucalgary.ca	Lab 01:	W 13:00-15:45	
		Lab 02:	F 13:00-15:45	
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Course Description

The principle function of the nervous system is to produce behaviour. Thus, the goal of most behavioural work with laboratory animals in neuroscience is to understand how the nervous system produces behaviour and how experience changes the functioning of the nervous system. Understanding brain-behaviour relationships also offers a way to find treatments for dysfunctions of behaviour.

This course has multiple objectives that include, but are not limited to, the following;

- 1) Introduce students to the field of behavioural neuroscience.
- 2) Describe the organization and complexity of rodent behaviour.
- 3) Familiarize students with multiple behavioural apparatus and behavioural tests.
- 4) Relate behaviours to localized regions of the brain.
- 5) Provide students with hands on experiential learning opportunities with rodents.

Most students do find that taking the course is a worthwhile experience but there is no doubt that it requires real work. The course is considered as, and taught as, a senior-level course.

The laboratory component of this course involves the compassionate use of animals (rats). Most students find this hands-on learning experience valuable and exciting. The work is approved by the Life and Environmental Sciences Animal Care Committee and adheres to the guidelines laid down by the Canadian Council on Animal Care. **Intentional abuse and mistreatment of animals will not be tolerated.** Such abuse constitutes Academic Misconduct, and will result in a failing grade in the course. Students who are uncomfortable or nervous about handling animals should discuss their concerns with the instructor or TA.

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

<https://live-arts.ucalgary.ca/psychology/about#program-learning-outcomes>), and the expected level of achievement.

Course Learning Outcomes	Assessment Methods	PLO(s)	Level(s)
Compare the history and philosophy of behavioural neuroscience.	Short answer exams	1,2	C
Assess the organization and complexity of rodent behaviour.	Lab reports, written assignments, presentation, exams	1,5	A
Implement multiple behavioural tests using a variety of behavioural apparatuses.	Lab reports, written assignments, presentation	3,6,7	C
Relate behaviours to localized regions of the brain.	Lab reports, written assignments, exams	1,3,4	A
Perform hands-on experiments with rodents.	Lab reports, written assignments	3,4,6,7	C

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 in a diverse world, 7 = apply psychological knowledge and skills, 8 = Demonstrate multicultural competence and awareness of issues related to equity, diversity,* and inclusion. Level of PLO achievement facilitated by this course: I = introductory, C = competency, A = advanced.

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.

Course Format

This course will use a hybrid format. Some lectures will be taught live via Zoom during each scheduled class as marked by asterisks in the course schedule below. Other class materials will be posted to the course D2L page by the day/time of each scheduled class as per the course schedule.

Prerequisites

Psyc 312 – Principles of Psychology or PSYC 300 and 301 – Research Methods and Data Analysis in Psychology I and II

Psyc 375 – Brain and Behaviour

Admission to the major or honours program

Recommended Text

The Behaviour of the Laboratory Rat: A handbook with tests. Edited by Ian Q. Whishaw and Bryan Kolb, Oxford University Press, 2005. Available for free online using the link below:

<http://www.oxfordscholarship.com.ezproxy.lib.ucalgary.ca/oso/public/content/neuroscience/9780195162851/toc.html>

Assessment Methods

Exams

Midterm #1 (Lectures 1-11; February 5 th):	20%
Midterm #2 (Lectures 12-21; March 10 th):	20%
Final Exam (Lectures 22-35; TBA; 2 hours)	20%

Exams will consist of short answer questions 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.

Each exam will be made available on D2L for 24 hours to access. Exams will be designed to be completed within 50 min but students will allotted 50% additional time in case of technical issues, etc. (75 minutes to complete a 50 minute exam). Without instructor approval, exams must be completed within the time window specified.

Exams in this course are open book. For this course, an open book exam means that the use of class notes and the textbook is permitted. The use of online resources and calculators is prohibited. Students may not communicate with others about course material or the exam either in person or electronically during exams.

Brief Assignments

There are three brief (approx. 2 page) assignments for this course. Each assignment will involve a question regarding the lab in which they are assigned. Specific details will be posted on D2L prior to the lab they pertain to. Brief assignments are due by 11:59pm on the day of your lab and should be submitted via Dropbox on D2L. Without instructor approval, late assignments will not be accepted. Due dates and weights are listed below:

1. Animal Handling (due Jan 27, 29)	3.33%
2. Maternal Behaviour (due Feb 24, 26)	3.33%
3. Fear and Anxiety (due Apr 7, 9)	3.33%

Lab Reports

There are three full-length lab reports for this course. Lab reports should be approximately 15 pages in length (double spaced), and will be based on prior laboratory and lecture material. Assignments should be prepared according to the style of the Journal of Neuroscience, details can be found at <http://www.jneurosci.org/content/preparing-manuscript#organization>. Lab reports are due by 11:59pm on the day of your lab and should be submitted via Dropbox on D2L. Without instructor approval late assignments will not be accepted. The due dates and weighting for the lab reports are as follows:

1. Adult Behaviour (due Mar 3, 5)	10%
2. Stroke (due Mar 24, 26)	10%
3. Learning and Memory (due Apr 16)	10%

Students must achieve a passing grade on both the class and lab components to pass this course.

University of Calgary Academic Integrity Policy

Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity.

Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional code of conduct and promote academic integrity in upholding the University of Calgary's reputation of excellence. It is your responsibility to ensure that you have read and are familiar with the student academic misconduct policy:

<https://www.ucalgary.ca/policies/files/policies/student-academic-misconduct-policy.pdf>.

Department of Psychology Criteria for Letter Grades

Psychology course instructors 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	Topic/Activity
M Jan 04	<i>Winter term begins (block week January 4-8)</i>
M Jan 11*	Introduction to the course
W Jan 13	History/Philosophy
F Jan 15	History/Philosophy
M Jan 18*	History/Philosophy
W Jan 20	General Behaviour (movement)
R Jan 21	<i>Last day to drop Winter Term half-courses.</i>
F Jan 22	<i>Last day to add or swap a course.</i> General Behaviour (movement)
M Jan 25*	General Behaviour (movement)
W Jan 27	General Behaviour (vision)
F Jan 29	<i>Fee payment deadline for Winter Term fees.</i> General Behaviour (vision/foraging)
M Feb 1*	Skilled Behaviour
W Feb 3	Skilled Behaviour
F Feb 5	Midterm #1 (Lectures 1-11)
M Feb 8*	Sex
W Feb 10	Sex
F Feb 12	Sex/Maternal Behaviour
M Feb 15	Alberta Family Day
Feb 14-20	Term Break, No Classes (University if Open, Except on Alberta Family Day)
M Feb 22*	Maternal Behaviour/Development
W Feb 24	Development
F Feb 26	Development
M Mar 1*	Bloodflow and Stroke
W Mar 3	Stroke
F Mar 5	Lesion
M Mar 8*	Lesion
W Mar 10	Midterm #2 (Lectures 12-21)
F Mar 12	Fear/Anxiety/Depression
M Mar 15*	Fear/Anxiety/Depression

W Mar 17	Fear/Anxiety/Depression
F Mar 19	Fear/Anxiety/Depression
M Mar 22*	Learning and Memory
W Mar 24	Learning and Memory (spatial learning)
F Mar 26	Learning and Memory (spatial learning)
M Mar 29*	Learning and Memory (spatial learning)
W Mar 31	Learning and Memory (object recognition)
F Apr 2	Good Friday, University Closed
M Apr 6	Easter Monday, University Closed
W Apr 7	Learning and Memory (object recognition)
F Apr 9	Learning and Memory (object recognition)
M Apr 12*	Putting it all together...
W Apr 14	
R Apr 15	<i>Last day of classes, last day to withdraw from winter courses</i>
Apr. 19-29	Final Exam Period
R Apr 30	<i>End of Term</i>

Week	Lab	Assignment due
Jan 11-15	No labs	
Jan 18-22	1. Animal Handling	
Jan 25-29	2. General behaviour	Brief assignment #1
Feb 1-5	3. Skilled behaviour	
Feb 8-12	4. Maternal behaviour	
Feb 15-19	Reading Week. No Labs	
Feb 22-26	5. Development	Brief assignment #2
Mar 1-5	6. Surgery demonstration (TBA)	Lab report #1
Mar 8-12	7. Post stroke motor behaviour	
Mar 15-19	8. Fear and anxiety	
Mar 22-26	9. Spatial learning	Lab report #2
Mar 29- Apr 2	Good Friday. No labs	
Apr 5-9	10. Object recognition	Brief assignment #3
Apr 16	Assignment uploaded via Dropbox on D2L	Lab report #3

Labs will be run IN PERSON on campus according to the following guidelines.

- University reentry protocols must be followed:
 - <https://ucalgary.ca/risk/sites/default/files/2020-05/UCalgary.COVID19.ReEntryProtocols.pdf>
- Students in each lab section (Wed or Fri) will be assigned to an early (13:00) or late (14:30) timeslot, allowing for ½ capacity attendance in each lab section
 - The early (13:00) group will enter into room AD51

- The late (14:30) group will enter into room AD53
- Facemasks, gloves, and lab coats will be required. Masks will be provided, although feel free to bring your own. Gloves will be provided
- Maintain 2m separation when possible
- Do not attend lab if you are feeling unwell, or have any of the following symptoms:
 - Cough, fever, shortness of breath, runny nose or sore throat, or any of the other symptoms identified by Alberta Health Services (<https://www.alberta.ca/covid-19-testing-in-alberta.aspx>)
 - Missing a lab for these reasons will not affect your grade or performance in the course
 - Please let the TA know if you will be missing the lab

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

Absence From A Test/Exam

Makeup tests/exams are **NOT** an option without the approval of the instructor. 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 on a day/time scheduled by the instructor. 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).**

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

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

Academic Accommodations

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors.

For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/. Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their Instructor. The full policy on Student Accommodations is available at <http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy.pdf>.

Academic Misconduct

For information on academic misconduct and its consequences, please see the University of Calgary Calendar at <http://www.ucalgary.ca/pubs/calendar/current/k.html>

Instructor Intellectual Property

Course materials created by professor(s) (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the professor(s). These materials may NOT be reproduced, redistributed or copied without the explicit consent of the professor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing.

Copyright Legislation

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright.pdf) and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorized sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

Freedom OF Information and Protection of Privacy

Student information will be collected in accordance with typical (or usual) classroom practice. Students' assignments will be accessible only by the authorized course faculty. Private information related to the individual student is treated with the utmost regard by the faculty at the University of Calgary

Student Support and Resources

<https://www.ucalgary.ca/registrar/registration/course-outlines>

Important Dates

The last day to drop this course with no "W" notation and **still receive a tuition fee refund** is **Thursday, January 21, 2021**. Last day add/swap a course is **Friday, January 22, 2021**. The last day to withdraw from this course is **Thursday, April 15, 2021** <https://www.ucalgary.ca/pubs/calendar/current/academic-schedule.html>