

**PSYC/NEU 521**
**Cognitive & Clinical Neuroscience**
**Fall 2017**

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### Course Description

The course provides an overview of the latest research investigating brain mechanisms underlying some of the cutting-edge topics in cognitive neuroscience. At the outset, students will be introduced to basic concepts of cognitive neuroscience and the range of techniques used with both healthy subjects and clinical populations. In subsequent weeks, classes will consist of detailed introductions to specific topics, student presentations and class discussion of scientific literature. The goal is for students to acquire knowledge about cognitive and clinical neuroscience through selected topics and to develop critical thinking skills when evaluating scientific literature.

### 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.

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.

By the end of this course students will be able to ...	Teaching and Learning Activities	Assessment Methods	PLOs	Level
Analyze fundamental differences between cognitive science and cognitive neuroscience, as well as between neuropsychology and clinical neuroscience.	Lectures and class discussion	Quality of student's class contribution	1, 5	C
Differentiate the use of	Reading material	Grading on student's	1, 2,	C

neuroimaging techniques to investigate cognitive functioning and behaviour.	and class discussion	presentation and class contribution	5	
Evaluate the methodological approach of selected peer-reviewed scientific articles, and critique their overall contribution to the field of cognitive and clinical neuroscience.	Online questions, class presentations, and class discussion	Quality of student's online questions, and quality of class discussion.	2, 3, 6	C
Create scientific presentation aiming to disseminate knowledge in an engaging manner.	Student presentations	Quality of student's presentation.	4, 5	A
Formulate questions and raise issues in order to generate discussion among peers.	Online questions, class presentations, and class discussion	Quality of student's online questions, and quality of class discussion.	1, 2, 4, 5	C
Design a novel experiment by formulating a specific hypothesis, and write it in the format of a research proposal.	Written proposal	Written proposal.	1-5, 7	A
Predict the location of brain damages (or neural activity while acquiring fMRI scans) by observing and measuring cognitive processes.	Student presentations, and class discussion	Quality of class discussion.	1, 2, 7	C

### Prerequisites

Psyc 312 (Experimental Design & Quantitative Method) and Psyc 375 (Brain and Behaviour).

### Required Text

There are no required textbooks for this course. The course material consists of selected articles that will be made available to students throughout the course.

### Assessment Methods

Student evaluations will be based on two leading discussion assignment (20% of final grade each), prepared questions for class discussion (10% of final grade), and one term paper (40% of final grade); in addition, students' participation in class discussion throughout the course will account for 10% of the final grade. Missed or late assignments will receive 0% unless documented by an official University medical excuse. Important, at the end of the two leading discussion assignments, students will receive a comprehensive feedback and a percent grade.

During the first week of class, students will be asked to select two dates (and, accordingly, two topics as scheduled in the course outline) for their two leading discussion assignments. Students will perform their assignments individually or in groups depending on class size, and assigned at random if the number of dates and topics chosen voluntarily do not cover the entire course schedule. Students may be

asked to lead more than two discussions, in which case only the last two assignments will be graded, and the initial ones will be considered practice trials.

**A. Leading Discussion 1 (20% of final grade).** The format of the leading discussion is similar to a typical power-point presentation with the exception that there will be no slides to be presented to the class. Students will be asked to present and examine in detail a peer-reviewed journal article, which other students in the class would have read as well. The length of the assignment will be approximately 20-30 minutes but it may vary depending on the number of students attending the course, and the ability of the student presenting to generate discussion on the article and the topic. During the presentation of the article, students are not allowed to read extensive scripts.

The leading discussion assignment may occur individually or in groups depending on class size, and assigned at random if the number of dates and topics chosen voluntarily do not cover the entire course schedule. Evaluation is based on creativity and success in engaging students' participation in class discussion, clarity, accuracy and completeness of the presentation.

As a guideline, each leading discussion assignment should include: (1) a brief overview of the subject of the article, (2) the main question that the article aims to address, the relevance of it in the context of the topic of the week, and the authors' hypothesis, (3) a detailed description of the methods and procedure used, (4) the results of the study, (5) the authors' interpretation of the results, (6) the authors' general conclusion, (7) the student's observations about the study (including merits and/or limits of the experimental approach used), and (8) the student's suggestions for future studies given the findings provided in the article.

Students are encouraged to read additional research as needed and/or to prepare material (such as handouts or prepared questions) in order to engage the class and stimulate relevant discussion. In order to actively participate in the discussion, students attending are required to read the article presented as well as additional material related to that topic in advance of the class.

**B. Leading discussion 2 (20% of final grade).** The format of this second assignment is identical to the previous one. The only exception being an expected specific focus by the student on the issues identified in the first assignment by the instructor, and provided to the student during the previous feedback. Students are expected to improve on the critical issues identified in the previous assignment. In addition, as for the first assignment, evaluation will also be based on creativity and success in engaging colleagues' participation in class discussion, clarity, accuracy and completeness of the presentation.

**C. Questions (10% of final grade).** Students who will not be leading a discussion on a given class are required to select and read one of the articles that will be presented on that given class. Not later than 24 hours prior to the class, students are expected to post on the D2L online discussion forum one question related to the article that they have selected to read among the ones that will be discussed during the class on the next day. The questions are made available to everyone for discussion during the class. Evaluation is based on the quality of the questions submitted throughout the course.

**D. Term paper (40% of final grade).** Each student will write a term paper consisting of a research proposal. The proposal must focus on a topic covered during the course. The topic chosen for the proposal can be the same as that chosen (or assigned) by the student for his/her leading discussion assignments. In the proposal, students are required to formulate one or two experiments that would make an original contribution to the literature/topic that the proposal focuses on. Importantly, the research proposal must include human studies and must have a neuro-component. Term papers will be submitted by email to the instructor in PDF format (not word).

The content of the paper must be organized into the following sub-headings: (1) Title and name of the student, (2) Abstract (150 words maximum), (3) Topic/literature overview, (4) Objective of the proposal, (5) Methods, (6) Expected results, (7) Implications and conclusions, (8) References (minimum 10). Title of the proposal, name of the student, and abstract will form the "Title page" of the proposal. The body of the paper (excluding title page and reference list) must not exceed five pages (double-spaced, 12 pt Times font). No figures or tables should be included in the paper. Evaluation is based on clarity, accuracy and completeness. Special consideration will be given to the originality of the proposal. Students who do not comply with the guidelines described above will have 5% deducted from the term paper's grade.

#### **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

Ideally in table format with date of class, topics to be covered, and chapters/readings to be read. Due dates for tests/exams and assignments should be included in this schedule as well.

Date	Topic/Activity/Readings/Due Date (revise and add columns & rows as necessary)
<b>R Sep 14</b>	<b>Introduction to the course.</b>
<b>R Sep 21</b>	<b>Methodology – Performing neuroimaging studies</b>
F Sep 22	Last day to drop full courses (Multi-term) and Fall Term half courses. No refunds for full courses (Multi-term) or Fall Term half courses after this date.
M Sep 25	Last day to add or swap full courses (Multi-term) and Fall Term half courses. Last day for change of registration from audit to credit or credit to audit.
<b>R Sep 28</b>	<b>Introduction to PubMed and research of articles for presentations/discussions</b>
F Sep 29	Fee payment deadline for Fall Term full and half courses.
<b>R Oct 5</b>	<b>Research presentation – guest speaker</b>
M Oct 9	Thanksgiving Day, University closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.
<b>R Oct 12</b>	<b>Topic 1 – Human Topographical Orientation</b>
<b>R Oct 19</b>	<b>Topic 1 – Human Topographical Disorientation</b>
<b>R Oct 26</b>	<b>Topic 2 – Face Processing in Healthy Individuals</b>
<b>R Nov 2</b>	<b>Topic 2 – Face Processing in Brain Damaged Patients</b>
<b>R Nov 9</b>	<b>Topic 3 – Neuroplasticity in healthy Individuals</b>
Nov 10-13	Remembrance Day (Observed). University Closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.
<b>R Nov 16</b>	<b>Topic 3 – Neuroplasticity in Brain Damaged Patients</b>
<b>R Nov 23</b>	<b>Topic 4 – Consciousness in Healthy Individuals</b>
<b>R Nov 30</b>	<b>Research Proposals review and discussion</b>
<b>R Dec 7</b>	<b>Topic 4 – Consciousness Disorders in Brain Damaged Patients</b>
F Dec 8	Fall Term Lectures End. Last day to withdraw with permission from Fall Term half

	courses.
<b>Sun Dec 10</b>	<b>TERM PAPER DUE TODAY</b>
Dec 11-21	Fall Term Exam Period.

### **Reappraisal of Grades**

A student who feels that a piece of graded term work (e.g., term paper, essay, test) has been unfairly graded, may have the work re-graded as follows. The student shall discuss the work with the instructor within 15 days of being notified about the mark or of the item's return to the class; no reappraisal of term work is permitted after the 15 days. If not satisfied, the student shall immediately take the matter to the Head of the department offering the course, who will arrange for a reassessment of the work within the next 15 days. The reappraisal of term work may cause the grade to be raised, lowered, or to remain the same. If the student is not satisfied with the decision and wishes to appeal, the student shall address a letter of appeal to the Dean of the faculty offering the course within 15 days of the unfavourable decision. In the letter, the student must clearly and fully state the decision being appealed, the grounds for appeal, and the remedies being sought, along with any special circumstances that warrant an appeal of the reappraisal. The student should include as much written documentation as possible.

### **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.

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

Makeup tests/exams are **NOT** an option without an official University medical excuse (see the University Calendar). A completed Physician/Counselor Statement will be required to confirm absence from a test/exam for health reasons; the student will be required to pay any cost associated with this Statement. Students who miss a test/exam have up to 48 hours to contact the instructor and to schedule a makeup test/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. Except in extenuating circumstances (documented by an official University medical excuse), a makeup test/exam must be written within 2 weeks of the missed test/exam.

### **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.

### **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.

### **Campus Mental Health Strategy**

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/>).

### **Course Credits for Research Participation (Max 2% of final grade)**

Students in most psychology courses are eligible to participate in Departmentally approved research and earn credits toward their final grades. **A maximum of two credits (2%) per course, including this course, may be applied to the student's final grade. Students earn 0.5% (0.5 credits) for each full 30 minutes of participation.** The demand for timeslots may exceed the supply in a given term. Thus, students are not guaranteed that there will be enough studies available to them to meet their credit requirements. Students should seek studies early in the term and should frequently check for open timeslots. Students

can create an account and participate in Departmentally approved research studies at <http://ucalgary.sona-systems.com>. The last day to participate in studies and to assign or reassign earned credits to courses is **Dec 8, 2017**.

### **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 **September 22, 2017**. Last day for registration/change of registration is **September 25, 2017**. The last day to withdraw from this course is **December 8, 2017**.