PSYCHOLOGY 365: Spring 2025
Cognitive Neuroscience (3 credits)
University of British Columbia, Vancouver
Pre-reqs: NSCI 201, PSYC 260, PSYC 270, or COGS 200
January-April 2024; Tuesdays & Thursdays 3:30-5:00pm; MATH 100

Instructor:
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Acknowledgment

UBC's Point Grey Campus is located on the traditional, ancestral, and occupied territory of the hən̓q̓əmin̓əm̓-speaking Musqueam peoples. The land it is situated on has been a place of intergenerational learning for the Musqueam people from time immemorial.

Equity, Diversity and Inclusion

We will work to create a learning environment that welcomes, listens to, and respects students of all identities, inclusive of race, gender, sexuality, age, or ability. Unfortunately, like much of psychology and academia, research on cognitive neuroscience is historically built on a small subset of privileged voices. I am always interested in hearing suggestions for ways in which the course readings can be made more diverse. Progress in this field will only be made by integrating a more diverse set of experiences, and I would be grateful to receive any input you may have.

I. Course description and goals

The two-fold goal of this course is to **introduce you to questions that drive research in cognitive neuroscience and the methods we have to answer them, while engaging you in active and critical discussion of current research in the field.** That is, the goal is to give you a taste of classic studies and late-breaking news in the neuroscience of human cognition, while giving you the skills to make your own decisions about what information means and what to do about it. Topics include the **cognitive neuroscience of perception, attention, learning, and memory.** After successful completion of this course, **you will have a better understanding of what we know and don't know about the mysterious workings of the human mind and brain** — and a glimpse of what the future may hold.

Summary of assessments

Neuroanatomy quizzes (by Jan. 23rd)	2%
Midterm exam 1 (Feb. 4th)	20% (if worst exam) or 30% (other)
Midterm exam 2 (Mar. 11th)	20% (if worst exam) or 30% (other)
Midterm exam 3 (Apr. 1st)	20% (if worst exam) or 30% (other)
Final projects (Apr. 3rd – 8th)	15%
Participation (various dates)	3%
Total	100%
Human Subject Pool (HSP) participation	+2%

II. Course materials

Classes

In-person class sessions. Classes will be in-person. There will be no live-streaming of classes.

Required Textbook. Richard Passingham (2016). ***Cognitive Neuroscience: A Very Short Introduction***. Oxford University Press. Available at the Bookstore. Also available as an ebook. ISBN: 9780198786221 and online at the UBC library for free! The inexpensive and very readable book will provide a general overview and some background for the experimental studies we will read and discuss in class.

Other readings. These include peer-reviewed experimental papers which will be posted on Canvas. Papers are also available through the UBC library. There will also be videos, media articles, and blog posts assigned.

Readings are meant to provide background (textbook) as well as details (papers) of scientific studies to be covered in each class and will be due before class. The lectures will not simply recapitulate the readings, but will build on, expand and clarify material in the readings as well as *provide additional information*. Therefore, it's important to make sure you do the readings before the relevant lecture so that you have the necessary background for the lecture material. The lectures will highlight the information from the papers that you will need for the exams, so that you can study what's important.

III. Course webpage

https://canvas.ubc.ca/ (location for important announcements, readings, lecture notes, discussion, and grades)

IV. Course requirements

The assignments in this course are designed to foster an understanding of current research in cognitive neuroscience that is informed by background knowledge of how thinking has developed in each research area. Readings, lectures, and exams will be geared towards this goal.

Academic concessions

For course policies regarding in-term academic concessions, please refer to the relevant **UBC calendar entry**.

Exams

Exams will cover all lecture and reading material indicated in the syllabus. Note that lectures add to and elaborate on reading materials and will contain information that is not in the readings. **Course policy is that we do not give make-up exams. If you are excused from one of the midterms we will distribute that proportion of your grade across the other exams.**

Neuroanatomy quizzes (2%). Students in this class have a wide range of backgrounds. Some of you have a huge and sophisticated understanding of neuroanatomy and some have no familiarity with it at all. To make sure everyone has some familiarity with very basic human neuroanatomy, you must review the neuroanatomy module and complete two short Canvas quizzes based on the material.

3 Midterms (30% for the two exams you do better on **and 20%** for the exam you do worst on).
These will draw on both lectures and the readings.

To succeed on the exams: you must have a clear understanding of both. There are three midterms so that you can digest the material in smaller chunks, which should allow you to master it better. Having three midterms also gives you the chance to keep bringing up your game, as well as giving you some insurance if one of the exam days is just a bad day. Because there is no final exam, **the midterms will be cumulative**. **The focus will be on new material but some high-level retention of material from earlier lectures/readings will also be required.**

Final Project (15% of total course grade). At the end of term, you will be required to present a final project based on a recently published paper of your choice. This can be a presentation with slides, a video, a poster/piece of visual art, a podcast, slam poetry, a theatrical performance... Let your imagination/creativity loose! The content will be a cognitive neuroscience paper of the presenters' choice (published since 2015). This is where you deploy the paper-reading muscles you've been building over the term. You will need to present the main questions, methods, results, and critique the conclusions in plain, accessible, and entertaining form. Creativity is encouraged. Beyond the required content, the format is up to you. You will form your own groups of 2-3 students. If you do not wish to present as part of a group, presenting solo is also an option. For live and recorded material a 5-minute time limit will be strictly enforced.

Participation (3% of total course grade). Participation grades will be based on submitting one discussion question (1%) prior to one of the discussion-based classes and two multiple-choice exam questions prior to two of the exams over the course of the term (2%). Full points will be given to submitting questions that have the potential to inspire extended class discussion, and some of them will be used to guide our optional class discussions. A bonus of writing a good exam question is that it may be used in one of the midterms!

Piazza for Discussions

We will be using Piazza for class discussion. The system is designed to provide fast and efficient help from classmates, the TAs, the peer tutors and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. If you have any problems or feedback for the developers, email team@piazza.com. You will be able to sign up on the class Q&A forum by clicking the Piazza link on Canvas. You will need to create a new password. After that you can view Piazza by clicking the Canvas link.

Extra Credit via the Human Subject Pool (HSP)
As part of this course, you are invited to earn **2% extra credit.** Most students will choose to earn these credits by spending **two hours participating in psychology studies (worth 1% point for each hour)** through the Department of Psychology's Human Subject Pool (HSP) system. You can locate, create an account, and sign up for studies by going to https://hsp.psych.ubc.ca. **Please register in the system by the end of the first month of classes to have the opportunity to earn your first ½ hour credit with a brief online survey that will increase your eligibility for more studies.**

Once registered in the system, you will be able to browse through and select which studies you wish to participate in, sign up for an available timeslot, and confirm your accumulated credits afterward. **At the end of the last day of class for the term, the subject pool is closed**. At that point, you will no longer be able to receive credits. I strongly urge you to participate in and confirm your credits long *before* the last week of class since **many studies will not offer timeslots near the end of the term and you may be locked out before allocating your credits to your desired course**. Further instruction on how to use the HSP online system can be found at https://psych.ubc.ca/undergraduate/opportunities/human-subject-pool/ in the document entitled "Subject Pool Information for Participants."

Alternative assignment:
The Library Option

As an alternative to participation in psychology subject pool experiments, you may complete a library-writing

project. Such projects consist of reading and summarizing 1) the research question, 2) the methods and 3) the results (in written form) of a research article from the peer reviewed journal *Psychological Science*. You will receive one (1) research participation credit for each article summary that meets the following requirements.

Requirements:

- The article must have been published in the journal titled "*Psychological Science*"
- The article must have a publication date from the year 2000 to present (i.e. papers from 2001 are acceptable; those from 1999 or earlier are not)
- The article must be a research article; it cannot be a review article, a news item, a notice, or a letter to the editor, for example
- The summary should be approximately 500 words in length
- You must include your name, student number, course, section, instructor and email address on each summary
- You must log on to the Human Subject Pool (HSP) system (http://hsp.psych.ubc.ca/) and create an account before submitting your article summaries. Your credit is assigned using the online system.

For each course, you may obtain the same number of extra credits via the library option as specified in the course syllabus (i.e. the same number of credits available for students who participate in research).

Summaries must be submitted **no later than 10 days before the end of classes**.

You are to submit your article and your summary to turnitin.com. If you don't have a turnitin account already (from a previous course), you will need to create a user account in Turnitin. **For the library assignment the class ID is 46712531, class name is "HSP 2024-2025 W2" and password is "Research".** See www.turnitin.com, and click on the "Training" link at the top of the page for detailed instructions on how to submit papers to Turnitin. Any student who is suspected of plagiarism will, at a minimum, not be granted credit, and their course instructor will be notified. Further action may be taken at a departmental or university level.

HSP Online Study Credit Limit (NEW PILOT PROGRAM):
We will no longer have an online credit limit. Instead, students are free to receive their HSP bonus credits from any combination of "in-lab" and "online" studies. However, "in-lab" studies will offer a bonus 0.5 credits on top of the standard 0.5 credits per 30 minutes of participation (e.g., a 1 hour "in-lab" study will award 1.5 credits, while an equivalent "online" study will award 1 credit).

V. Course grading

In the Psychology Department, we aim to offer learning experiences that welcome and challenge all students to engage meaningfully in our discipline. We strive for grades that accurately reflect student learning and achievement of course learning objectives, rather than solely reflecting their performance relative to others.

In Psychology at UBC-V, we employ department-wide grading standards to promote equitable alignment, supporting students and course instructors as they learn and teach across many diverse courses and sections. For each Course Section, instructors should aim for a grade average in the following Target Ranges (before any bonus HSP points are added, but including any mandatory HSP points): B- (68-71%) in Introductory 100-level and 200-level courses; B (72-75%) in Intermediate 300-level courses; B+ (76-79%) for Advanced 400-level courses and Selective-Entry lower-level courses (e.g., PSYC 277, 278, 312, 370, 371, 349, 359, 365). Ranges are intended to provide some flexibility to instructors and account for differences that can occur between classes. Ranges increase across year levels to account for improvements in student learning, and students' ability to self-select into more specialized courses.

During the course, instructors may choose to adjust grades and/or difficulty of the assessments, to align with the Target Range. At the end of the course, if the average falls outside the Target Range (either direction), instructors will typically be expected to use a linear transformation to adjust final grades (i.e., add or subtract the same number of points to all students' marks, while ensuring no student fails the course due to this transformation). If a course mean falls in within one +/- letter grade band above the Target Range (e.g., in the B+ range for Intermediate courses), and the instructor believes these grades to be justified, the instructor may submit a justification request using the departmental approval final grades submission form, and the grades may stand. This Upper Range is intended to inspire further excellence in learning and teaching, and allow for the possibility that some classes select for higher performing students. Courses with means exceeding the Upper Range will be expected to provide justification as well as use a linear transformation to fall within the Upper Range.

Grades are not official until they appear on students' academic record. Students will receive both a percent and a letter grade for this course. At UBC, they convert according to the key below:

A+	90-100%	B+	76-79%	C+	64-67%	D	50-54%
A	85-89%	B	72-75%	C	60-63%	F	0-49%
A-	80-84%	B-	68-71%	C-	55-59%		

VI. Virus safety

If you're sick, it's important that you stay home – no matter what you think you may be sick with (e.g., cold, flu, other). If you think you might have COVID symptoms, test yourself. Do not come to class if you are sick, have COVID symptoms, or have recently tested positive for COVID. This precaution will keep everyone safer. In this class, the marking scheme is such that no part of the participation grade requires your in-person presence.

If you are sick on a midterm exam day don't come in. Let us know you were sick, and we will redistribute your grade between the other midterm and final, as per policy. You do NOT need a medical note.

If I (the instructor) am sick, I will not come to class. I will make an announcement on Canvas and post a recorded video of the lecture(s) for the days I am unable to lecture in person.

VII. University policies

Academic integrity
Academic honesty is essential to the continued functioning of the University of British Columbia as an institution of higher learning and research. All UBC students are expected to behave as honest and responsible members of an academic community. Breach of those expectations or failure to follow the appropriate policies, principles, rules, and guidelines of the University with respect to academic honesty may result in disciplinary action.
We will adhere to the UBC Respectful Environment policy https://hr.ubc.ca/sites/default/files/wp-content/blogs.dir/14/files/UBC-Statement-on-Respectful-Environment-2014.pdf.

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access, including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and

students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available on the UBC Senate website.

VIII. Course policies

Readings
The readings will be current experimental papers featuring cutting edge studies in cognitive neuroscience, supplemented by short chapters from the Passingham textbook. Note these papers are demanding! I will walk you through how to read these papers and point you to what material is important to know for exams and quizzes and what methodological details are unnecessary for our understanding of the papers.

E-mail policy
Please direct any questions where the answers will be of interest to other class members to Piazza! For other matters, in most cases, e-mails will be answered within 48 hours of receipt (not including weekends). If you send the instructor or teaching assistants an email, the email subject should include the course and nature of the inquiry. Please send questions about grading/assessment to the TAs and about the course content to Brandon. Please note that last-minute emails about test questions may very well not be answered the day before an exam so please plan accordingly.

You are strongly encouraged to use Piazza and to join live discussions during the scheduled course time.

Syllabus changes
There may be minor changes to the syllabus during the term. You will be notified of these changes ASAP and no changes will be instituted that dramatically affect your ability to properly prepare for an examination.

Office hours
You can make an appointment office hours if you have questions or concerns about any of the material that you wish to discuss live/in-person. You may also make office hour appointments to ask about graduate school, research or other related questions. If we cannot answer your question(s) about topics beyond the course, we'll direct you to someone who can.

You will need to contact TAs for sessions provided to review your exams if you so choose. If you have any outstanding questions, you can fill out a request form and talk to Brandon. Any grading disputes other than calculation errors for the midterms must be handled with Brandon within three weeks of when the scores were released.

Classroom conduct
Our classroom is a place where you should always feel safe and respected. It is also a place that is conducive to learning and intellectual curiosity. Any behaviors compromising this environment will not be tolerated and the student(s) and/or individual(s) will be asked to leave.

Access and Diversity
UBC is committed to equal opportunity in education for all students including those with documented physical or learning disabilities. If you believe you fall in this category, please visit this website to take the necessary steps to ensure that you have every opportunity that you deserve to excel here at UBC.

Grade bumps
When computing final grades, the instructor carefully analyzes every single student to determine whether a grade bump is deserved. Bumps may be awarded for consistent performance at a major grade boundary or for marked improvement from the midterm to the final (i.e., 10%+). Bumps are not guaranteed and are *not* awarded for non-

academic reasons (i.e., student is graduating and/or involved in sports or other extracurricular activities). **DO NOT send the instructor an email asking for a grade bump.**

Academic Misconduct
Cheating, plagiarism, and other forms of academic misconduct are very serious concerns of the University, and the Department of Psychology has taken steps to alleviate them. For what how to avoid plagiarism on writing assignments see UBC guidelines for plagiarism:
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,959

In all cases of suspected academic misconduct, the parties involved will be pursued to the fullest extent dictated by the guidelines of the University. Strong evidence of cheating may result in a zero credit for the work in question. According to the University Act (section 61), the President of UBC has the right to impose harsher penalties including (but not limited to) a failing grade for the course, suspension from the University, cancellation of scholarships, or a notation added to a student's transcript.

Do note that during exams, the instructor and invigilators reserve the right to move students in their seating arrangement with no explanation provided.

IX. Learning analytics

Learning analytics includes the collection and analysis of data about learners to improve teaching and learning. This course will be using the following learning technologies: Canvas & Piazza. Many of these tools capture data about your activity and provide information that can be used to improve the quality of teaching and learning. In this course, I plan to use analytics data to:
- View overall class progress
- Review statistics on course content being accessed to support improvements in the course
- Track participation in discussion forums

X. Copyright

All materials of this course (course handouts, lecture slides, assessments, course readings, etc.) are the intellectual property of the Course Instructor or licensed for use by the copyright owner. Redistribution of these materials by any means without permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline.
Students are permitted to record lectures.

XI. Useful links

Helpful student information
UBC Academic Calendar: http://www.calendar.ubc.ca/vancouver/academicyear.cfm
UBC Centre for Accessibility: https://students.ubc.ca/about-student-services/centre-for-accessibility

Wellness resources
Below you will find links to a wide range of resources you may want to use if you are struggling in any way to manage your responsibilities while in school or the stresses of life in general.

Crisis Services: If you or someone you know are in an emergency, please contact 911, Crisis Centre BC 1 800 784 2433, or Crisis Services Canada 1 833 456 4566. More information here: https://students.ubc.ca/health/accessing-crisis-support-services.

Campus Lightbox: One website with links to ALL the mental health resources and more: https://campuslightbox.com Start here!

For 24/7 mental health support as covered by UBC:
https://students.ubc.ca/health/ubc-student-assistance-program-sap
https://here2talk.ca/main

For other UBC Health & Mental Health resources:
https://students.ubc.ca/health
https://students.ubc.ca/health/counselling-services

For a neutral third party (Ombudsperson): https://ombudsoffice.ubc.ca/

PSYCHOLOGY 365 2025: Class schedule

May be subject to minor revisions with advance notice from the instructor.

Lecture	Date	Day	Topic	Assignment (readings in parentheses are optional)
1	7-Jan	T	Introduction/Syllabus Module	Syllabus
2	9-Jan	Th	Cognitive Neuroscience: The Good, the Bad, and the Ugly	Passingham Chap 1; How to Read a Scientific Paper for Non-Scientists
3	14-Jan	T	**Quiz:** Cognitive Neuroscience methods	Neuroanatomy module; Poldrack & Farah, 2015
4	16-Jan	Th	fMRI: Workhorse of Cog Neuro	Dimsdale-Zucker et al., 2018, **section 1 only**
5	21-Jan	T	Recognizing objects Part 1	Passingham Chap. 2 to pg. 58 (Classifying Objects); Brain facts: How AI helps us understand human vision
6	23-Jan	Th	Recognizing Objects Part 2	Neural networks made easy; Bowers et al., 2023 (pgs. 1-19)
7	28-Jan	T	What is special about faces?	Harada et al., 2020; Cracking face code
8	30-Jan	Th	Review	
9	**4-Feb**	**T**	**Midterm 1**	
10	6-Feb	Th	Guest lecture (to be announced)	TBD
11	11-Feb	T	Classifying objects	Passingham Chap. 2 pg. 58 (Classifying Objects) on
12	13-Feb	Th	Predicting Perception	Egner, Monti, and Summerfield, 2009
	17-21 Feb		**NO CLASS – Reading Week**	
13	25-Feb	T	Selecting attention	Passingham Chap. 3; Videos
14	27-Feb	Th	Sustaining attention	Rosenberg et al., 2016
15	4-Mar	T	Emotion, motivation and attention	Inman et al., 2023
16	6-Mar	Th	Review	
17	**11-Mar**	**T**	**Midterm 2**	

18	13-Mar	Th	Reward and attention (& learning)	Anderson et al., 2016; 2 Dopamine blogs
19	18-Mar	T	The Hippocampus: From space travel to time travel	Passingham Chapter 4; Fernandez-Velasco & Spiers, 2024
20	20-Mar	Th	Episodic memory	How to See a Memory
21	25-Mar	T	Rehearsing and retrieving memories	Bird et al., 2015
22	27-Mar	Th	**Review**	
23	**1-Apr**	**T**	**Midterm 3**	
24	3-Apr	Th	Final projects	
25	8-Apr	T	Final projects	