

PSYCHOLOGY 207-004: Educational Neuroscience

2022W2



WELCOME TO EDUCATIONAL NEUROSCIENCE

Educational Neuroscience (or Neuroeducation) is an emerging field, bridging neuroscience, psychology and education research to enhance the understanding and practice of teaching and learning.

This interactive course invites students to deepen their understanding of the human brain and the science of learning and development. The course will provide a broad overview of the neuroscience of learning and development. We will cover some of the most influential research findings in the field, and explore ways to utilize brain science to support (our own) learning, development and well-being.

We are very fortunate to be offering you this course from the Point Grey Campus of UBC, which is on the traditional, ancestral, and unceded territory of the Musqueam people. The land that the Point Grey campus is situated on has been a place of learning for the Musqueam people for millennia, where their culture, history, and traditions were passed from one generation to the next.

We would like to encourage you to join us in working toward a learning environment where everyone feels welcome and valued. Please refer to UBC Positive Space information here: equity.ubc.ca/resources. If at any time you feel there is a course issue that is presenting a barrier to your learning, please let one of us know. You can also contact the UBC ombudsperson for help: ombudsoffice.ubc.ca.

Your mental health and wellbeing can impact your academic performance, and everyone needs support sometimes. UBC is committed to providing student mental health and wellbeing resources that meet your needs and help you achieve your goals. Please visit students.ubc.ca/health for resources, strategies, and services to support your mental and physical health.

LEARNING OBJECTIVES

- Getting familiar with the human brain- Provide students with a strong foundation, and science-based intuition regarding brain development and learning.
- Befriend Your Brain - the content of this course is both academic and personal (it is about your brain!). We will intentionally work on integrating the scientific with the personal. The goal is to provide students the opportunity to explore the neuroscience of learning and how it relates to their own brain and learning styles.
- Action oriented, relevant and practical - Students will explore ways to mobilize their theoretical learning to practical uses in educational settings.
- Social, interactive learning - Create a safe and collaborative learning environment, in which we work together to deepen our understanding, expand our perspective, belonging and creativity.

COURSE STRUCTURE

PSYC 207 004 2022W2 is a **hybrid course**, that includes both face-to-face class time and asynchronous online activities and prerecorded lectures. The hybrid approach offers the benefits of both remote and in-person learning. The goal is to enjoy the social interaction and learning community of in-person learning, while keeping the flexibility (in time, commute and learning modalities) of the remote learning. Importantly, hybrid does NOT mean *either-or*, but *both-and*. This means that the online components are not instead of, but additive to the face-to-face class time. Accordingly, consistent attendance and participation in all course components is important for your learning and success in this course. Please note that the course structure may change during the semester, based on the provincial COVID19 safety guidelines.

COVID-19 Safety:

According to the provincial mandate, masks are required in all indoor public spaces including lobbies, hallways, stairwells, elevators, classrooms and labs. There may be students who have medical accommodations for not wearing a mask. Please maintain a respectful environment.

If you are sick, it is important that you stay home. Complete a self-assessment for COVID-19 symptoms here: <https://bc.thrive.health/covid19/en>.

In this class, the marking scheme is intended to provide flexibility so that **you can prioritize your health and still succeed**.

Resources and suggestions, in case you miss class because of illness:

- We will make every effort to record and post the in-person live sessions.
- Study groups/mates are a great way to learn and help each other by sharing notes. You are welcome to post on the Canvas discussion forum to connect with other students.
- If you are concerned that you will miss a key activity due to illness, contact the TAs to discuss. Zoom meetings are always possible.
- If we (the instructor or presenting TAs) feel unwell, we will not come to class. An announcement will be made on Canvas, and we will provide you an alternative learning activity.

WHO, WHEN, WHERE

Instructor: **Hagar Goldberg**
Office Hour: In-person/virtual meetings by appointment.
Email: hagar.goldberg@ubc.ca

Teaching Assistants: **Aaron Reiss**
Akosua Asare

Schedule: **Tuesdays & Thursdays, 11:00 - 12:30**
Tuesdays: Prerecorded lectures on Canvas or exams (in class)

Thursdays: face-to-face class at Buchanan building, room A201

Websites: canvas.ubc.ca
We will be using Canvas for the online, asynchronous learning activities (e.g., lectures, Q&A discussions), for the administration of exams, and for continuous communication and course updates.

EVALUATION

To accommodate different learning styles and needs, we offer the choice between two optional assessment methods:

Option 1: Exam-based assessment. The final grade will be based on three mini-exams (lowest grade worth 25% and two higher grades worth 37.5% each). Your lowest exam grade will have the smallest effect (only 25%) on your final grade.

Option 2: Exam & Project-based assessment. The final grade will be based on two best mini-exams, and a project (worth 33.3% each). Your lowest exam grade will have NO effect on your final grade.

1. Mini - Exams:

There will be three mini-exams in this course.

Exam 1	Feb 8
Exam 2	Mar 15
Exam 3	Exam period

Notes on the Exams:

- Exams are not cumulative. However, you should be aware that topics build off of each other across the course (so it is highly recommended to not miss any course material).
- The mini-exams will take place on a Tuesday during class time (11:00 a.m. -12:00 p.m, Pacific time) in the course classroom. The Exam will be uploaded to Canvas and we encourage students to use their personal devices to write the exam if possible. Otherwise, and per specific request printed versions will be provided.
- There will be NO makeup exams or rewrites. Students that missed an exam, and received a concession from us, will shift to the Exam & Project-based assessment path. A student that originally signed to do a project, and missed one exam is not required to do any additional assignment (the two other exam marks, and the project will be counted for the final grade).
- There will be topics covered in lectures (live and pre-recorded) that are not in the text and topics in the text that are not covered in lectures. You will be responsible for both. That is, all readings and all lecture materials are examinable.
- Exams will include multiple-choice and a short-answer question.
- Once exams have been marked, grades will be posted on Canvas. You will receive an email notification when grades are posted (please ensure the University has your correct email address).
- Any grading disputes (other than calculation errors) must be handled within 2 weeks of exam grades being released.

2. Optional Project (up to 33.3%):

Instead of one exam, you may elect to do a presentation project on a topic of your choosing that is related to the course materials. If you do elect to do a project, it will be worth 33.3% of your final grade, and two mini-exams will be worth 66.6%. In case you have more than three grades (e.g., if you complete all three exams and a project) your best three grades will compose your final grade .

There are three purposes for this course project:

1. To offer you the opportunity to explore a topic of your choice in greater depth than the lecture and text can offer.
2. To leverage the power of social learning, and enrich this course with students' diverse perspectives and creativity.

3. To offer you a chance to explore other ways of expressing your knowledge and learning.

Your project can take any form as long as it is educational and has a presentable component (in 5 to 15 minutes). From a short academic presentation to any type of performance/visual art, all is welcome. You can choose to present in person or post an online academic presentation/art project.

You are expected to read a minimum of 4 peer-reviewed journal articles to inform the content and format of your project, noting that your work must be grounded in scientific evidence/theory. When your chosen topic is one that is the subject of ongoing research, you are expected to use sources that are as up to date as possible.

If you are curious about this option and have further questions, please consult with the instructor.

Project Due Dates.

Project registration	Feb 8
Final Project Submission	March 22

4. Research Participation (up to 3% bonus):

You have the opportunity to earn up to 3 extra percentage points on your overall final grade by participating in studies regularly conducted by the Psychology Department and coordinated through the human subject pool (HSP). This provides you with the opportunity to observe the research process directly and to contribute to ongoing research activities at UBC. The extra credits are obtained by signing up for the subject pool at ubc-psych.sona-systems.com. If you plan to earn extra credit through research participation, please register in this online system by the end of the first month of classes.

You can find detailed information about research participation guidelines at <https://psych.ubc.ca/undergraduate/opportunities/human-subject-pool/>. Please note that any inquiries about HSP credits should be directed to HSP and/or the experimenters that you worked with, not to us or your TAs.

As an alternative to participating in studies, you may choose to complete library writing projects, in which you read and summarize a research article; each article summary counts as one hour of research participation. More information about this option can be found at <https://psych.ubc.ca/undergraduate/opportunities/human-subject-pool/>.

All of your credits for study participation or the library option will be added to your final course grade, after any scaling that may have been applied.

Credits can be recorded and tracked via the HSP website. If you do not correctly assign your credits to this course, you will not receive credit, so please make sure you have done this correctly.

The last day to earn and assign HSP credits for each term is the final day of classes.

COURSE SCHEDULE

Jan 11	Course Introduction and Overview (recorded)
Jan 13	Introduction to Educational Neuroscience (in-person)
Jan 18	Neuroplasticity (recorded lecture)
Jan 20	Brain Development - Learning and Performing (in person)
Jan 25	The Executive Brain (recorded lecture)
Jan 27	The Executive Brain (in-person)
Feb 1	Language, Culture and cognition (recorded)
Feb 3	Learning and Memory (in-person)
Feb 8	Exam 1 (cognitive learning unit) and Registration for Projects
Feb 10	Emotional Processing and Learning (in-person)
Feb 15	The Surviving Brain vs the Learning Brain (recorded lecture)
Feb 17	The Surviving Brain vs the Learning Brain (in-person)
Feb 22,24	No Classes; Mid-Term Break
Mar 1	Learning in the Digital Era (recorded)
Mar 3	The Reward System and Motivation (in-person)
Mar 8	Learning Disabilities (recorded)
Mar 10	Neurodiversity, Universal Design of Learning (in-person)
Mar 15	Mini-Exam 2 (Emotion, diversity & learning unit)
Mar 17	The social brain and learning (in person)
Mar 22	The social brain and learning (recorded) Optional Project Submission
Mar 24	Metacognition and Integration (in person)
Mar 29	Recorded lecture (topic TBA)
Mar 31	The Story I Tell My Self – the Power of Narratives
Apr 5	Students Projects Presentations (recorded)
Apr 7	Students Projects Presentations and Course Closure (live)
(exam period)	Exam 3 (social learning, narratives, metacognition and students' projects)

Notes on the Schedule:

- Learning is dynamic and each group is different, therefore, the schedule might change during the semester. Students should check on Canvas for schedule updates.

WITHDRAWAL DATES

If you wish to withdraw from this course without any record of

the course on your transcript, you must do so on or before January 21. If you wish to withdraw with a "W" on your transcript, you must do so on or before March 4.

Credit/D/Fail Grading. This course is eligible for Credit/D/Fail grading. The last day to change between Credit/D/Fail and percentage grading is January 21.

COURSE READING

Course readings may be changed, or supplemented, so please check the course schedule on the course website and watch your email for notices to that effect. Most course readings are available on Canvas under 'Library Online Course Reserves.'

From time to time, this text may be supplemented by other readings or videos to facilitate your understanding of the course materials.

Week 1:

Course syllabus.

Introduction to educational neuroscience.

Sigman, Mariano, et al. "Neuroscience and education: prime time to build the bridge." *Nature neuroscience* 17.4 (2014): 497-502.

Week 2:

Thompson-Schill, Sharon L., Michael Ramscar, and Evangelia G. Chrysikou. "Cognition without control: When a little frontal lobe goes a long way." *Current directions in psychological science* 18.5 (2009): 259-263.

Week 3:

The cognitive brain.

Diamond, A. (2013). Executive functions. *Annual review of psychology*, 64, 135-168.

Week 4:

Roediger, H. L., & Karpicke, J. D. (2006). Test-Enhanced Learning: Taking Memory Tests Improves Long-Term Retention. *Psychological Science*, 17(3), 249–255.

Week 5-6:

Neuroplasticity, Nature, Nurture and epigenetics. Ellis, B., Boyce, W., Belsky, J., Bakermans-Kranenburg, M., & Van Ijzendoorn, M. (2011). Differential susceptibility to the environment: An evolutionary–neurodevelopmental theory. *Development and Psychopathology*, 23(1), 7-28.

Week 7 - (midterm break)

Week 8:

Arias-Carrión, O., Stamelou, M., Murillo-Rodríguez, E., Menéndez-González, M., & Pöppel, E. (2010). Dopaminergic reward system: a short integrative review. *International archives of medicine*, 3(1), 1-6.

Luciana, M., & Collins, P. F. (2012). Incentive motivation, cognitive control, and the adolescent brain: Is it time for a paradigm shift?. *Child development perspectives*, 6(4), 392-399.

Week 9:

Baron-Cohen, Simon. "Editorial Perspective: Neurodiversity—a revolutionary concept for autism and psychiatry." *Journal of Child Psychology and Psychiatry* 58.6 (2017): 744-747.

Week 10-11:

Lieberman, M. D. (2012). Education and the social brain. *Trends in Neuroscience and Education*, 1(1), 3-9.

Blakemore, S. J. (2010). The developing social brain: implications for education. *Neuron*, 65(6), 744-747.

Week 12:

Roebbers, C. M. (2017). Executive function and metacognition: Towards a unifying framework of cognitive self-regulation. *Developmental review*, 45, 31-51.

Week 13:

Immordino-Yang, M. H., Christodoulou, J. A., & Singh, V. (2012). Rest is not idleness: Implications of the brain's default mode for human development and education. *Perspectives on Psychological Science*, 7(4), 352-364.

LEARNING & WELLNESS RESOURCES

Wellness resources are available on the Canvas page for the course (click the header image for the course to be taken to a list of wellness resources). There are also wellness resources available here: <https://students.ubc.ca/health>.

If you or someone you know is in crisis: <https://students.ubc.ca/health/crisis-support>.

Learning resources are available on this UBC page: <https://students.ubc.ca/enrolment/academic-learning-resources>.

GRADING AND ATTENDANCE

Grading. Your grade for each exam (and your project components, if applicable) will be posted on Canvas. If you wish to inspect your exam, you may do so by meeting with your TA.

In order to reduce grade inflation and maintain equity across course sections, all psychology courses are required to comply with departmental norms for grade distributions. According to departmental norms (during the pandemic only), the mean grade in a 300-level class is 75 for a good class, 73 for an average class, and 71 for a weak class (with a standard deviation of 13). Scaling may be used in order to comply with these norms; grades may be scaled up or down as necessary by us or the department. Grades are not official until they appear on your

transcript. You will receive both a percent and a letter grade for this course. At UBC, your course percentage is converted to a letter grade according to the following key:

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

Because you are earning a degree at a highly reputable post-secondary institution, the criteria for success are high. The Faculty of Arts offers the following guidelines that broadly characterize the kind of work that is generally associated with the particular grade ranges. These characteristics help put the Psychology Department grading policies into perspective. Please note that adequate performance is in the C range.

A Range: Exceptional Performance. Strong evidence of original thinking; good organization in written work; capacity to analyze (i.e., break ideas down) and to synthesize (i.e., bring different ideas together in a coherent way); superior grasp of subject matter with sound critical evaluations; evidence of extensive knowledge base.

B Range: Competent Performance. Evidence of grasp of subject matter; some evidence of critical capacity and analytic ability; reasonable understanding of relevant issues; evidence of familiarity with the literature.

C-D Range: Adequate Performance. Understanding of the subject matter; ability to develop solutions to simple problems in the material; acceptable but uninspired work; not seriously faulty but lacking style and vigor.

F Range: Inadequate Performance. Little or no evidence of understanding of the subject matter; weakness in critical and analytical skills; limited or irrelevant use of the literature.

Attendance. In this course, material that is taught in lectures may be different from or supplement the text material. Moreover, lecture slides are designed to provide a framework for the lecture and any discussions--thus, not everything in the lecture is in the slides.

During your time in this course, if you encounter medical, emotional, or other personal problems that affect your attendance or academic performance, please notify us as soon as possible, as well as your Faculty Academic Advising Office. Please refer to the UBC Calendar for a discussion of academic concession.

The University accommodates students with disabilities who have registered with the Centre for Accessibility (see below). The University also accommodates students whose religious obligations conflict with attendance or scheduled exams. Please let us know in advance, preferably in the first few weeks of class, if you will require any accommodation on these grounds. Other absences (e.g., varsity athletics, family obligations or similar) are not part of University policy and you

should not assume they will be accommodated. Please discuss this with me before the withdrawal dates (see above).

Centre for Accessibility. 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 the website for the Centre for Accessibility (<https://students.ubc.ca/about-student-services/centre-for-accessibility>) to take the necessary steps to ensure that you have every opportunity that you deserve to excel in your studies.

Early Alert Program. We participate in the Early Alert program, which helps us support students who are facing difficulties that are interfering with their education, their wellness or both. For answers to frequently asked questions regarding the early alert program, please visit blog.students.ubc.ca/earlyalert/information-for-students/students-frequently-asked-questions/.

UNIVERSITY POLICIES

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](#).

OTHER COURSE POLICIES

Communication. The Canvas discussion board is an integral part of our learning process and an important tool to enhance inclusiveness, and equality, by sharing information, strengthening the social connection, and shedding light on new perspectives. We strongly encourage students to use the Canvas discussion board for any content-related question (e.g., textbook content, prerecorded lecture content, study strategies, and even psychology and neuroscience more generally).

If you have an urgent or a private issue you would like to discuss with us, you are welcome to contact us (by email) and schedule a private (in-person/zoom) meeting.

For issues related to your exams and grads, please contact one of the TAs.

For personal issues related to your performance and progress in the course, or your academic path in general, please contact your instructor.

Classroom Conduct. Our classroom is a place where you should feel safe and respected. It should also be a place that is conducive to learning and intellectual inquiry. Any behaviour on your part that compromises that environment will not be tolerated and you will be asked to leave.

Copyright. All materials of this course (handouts, lecture slides, assessments, readings, etc.) are the intellectual property of the course instructors or licensed to be used in this course 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.

POINTS TO REMEMBER

- Productive classroom discussion and debate are encouraged.
- Lectures will typically focus on particularly important and/or interesting ideas. You are responsible for all text and lecture materials.
- Please be aware that the first quarter of the course can be especially challenging to those without some background in biology.
- It is worth devoting extra time to the materials in chapters 2-5 of the textbook, as they are foundational to the rest of the course.

ACADEMIC MISCONDUCT

Cheating, plagiarism, and other forms of academic misconduct are very serious concerns of the University and the Department of Psychology. 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 or plagiarism 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 the student's transcript.

All graded work in this course, unless otherwise specified, is to be original work done independently by individuals. If you have any questions as to whether what you are doing is even a borderline case of academic misconduct, please consult with me. For details on pertinent University policies and procedures, please see Chapter 5 in the UBC Calendar (students.ubc.ca/calendar) and read the University's Policy 69 (available at universitycounsel.ubc.ca/policies/policy69.html).

