

Psychology 461 – Neuroplasticity and Behaviour

ACKNOWLEDGEMENT: UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site. In 1908, UBC was built upon this land without consent from, or compensation to, the Musqueam people. I invite us all to re-examine and renew our commitments to truth and reconciliation.

WHO:



Instructor: Dr Alyssa Ash

PhD, Neuroscience- UBC '23 (Snyder Lab)

Office Hours: Thurs 10am-11am via Zoom (link on Canvas homepage)

Email: alyssa.ash@psych.ubc.ca

*Note: I do not use the Canvas inbox at all, please email (and expect 24-48 hours reply; see notes on emailing below)

TA: Sophie Wagle

MA Psychology Student

Office Hours: By appointment over email

Email: swagle@mail.ubc.ca

WHERE: MacLoed 2018

WHEN: Tuesdays and Thursdays, 12:30-1:50PM

HOW: Assigned readings can be found on Canvas. No textbook needed, save your \$ for overpriced coffee and treats

WHY: This course is designed to introduce students to the field of neuroplasticity. The lectures will focus on the hippocampus, arguably the structure of the brain that shows the most dramatic plasticity across the lifespan. Most of the course will be devoted to neurogenesis within the hippocampus but also will include topics such as changes in dendritic morphology, volume changes, with an emphasis on how sex hormones, drugs, stress, aging, and disease can alter plasticity of the hippocampus and how this may be related to behaviour. We will discuss the implications of neuroplasticity on behaviour and the therapeutic applications of enhancing neuroplasticity and neurogenesis.

Quick notes on emailing and office hours:

If you are emailing either of us, please make sure to use your UBC email. Instructors/psych UBC emails often have overactive spam filters, so your Gmail message may end up in junk, delaying a response from us.

Please state course title in your email and bear in mind that we instructors get a lot of email and, if possible, would prefer to spend all our preparation time on making the lectures as useful, relevant, up-to-date, fun, and interesting to you as possible. Thus, please keep emails to administrative concerns (e.g. problems with the course website) if you can. For course-related content, please ask

during in-class lectures, or during the pre-exam review session, or post it in the discussion forum on our Canvas.

Note: whom should you book office hours with?

Please book office hours with your awesome TA Sophie if:

- You would like to review your exam. When reviewing your exam, you are not allowed to take notes on, or photos of, the exam.
- You would like to discuss how to succeed at the research proposal and gain feedback on proposal topic
- You would like to discuss psychology and neuroscience more generally.

Please book office hours with your instructor Alyssa if:

- You have an issue with course performance or progress
- You would like to discuss your research proposal topic or presentation
- You have an outstanding course content question that needs clarifying outside of lecture*
- You would like to discuss psychology and neuroscience more generally and research/grad school

****Please note that questions about lecture content should be handled during lectures or immediately after lecture, not email/office hours unless absolutely needed**

COURSE OUTLINE

Details for all assignments are listed in the course calendar on page 4

Midterm 100 points (25%)

The midterm is currently scheduled in person on Feb 29. Material from both the lectures and the papers will be on the exam. You will be responsible for reading the materials in the articles in the order shown on the schedule that follows. The midterm will consist of short and long answer questions.

Talk 100 points (25%)

This is an 8-minute presentation on a (relevant, course-related) topic of your choice. Suggested common topics are available on page 5 of this document, but feel free to come up with your own. ALL topics must be approved by the TA or instructor. We will draw for names/topics/due date during the second/third week of classes. The talks will begin after the midterm and be given live during class. Think of this talk as an opportunity to present background information on your "Research Proposal" (see below) topic. Grading outline/criteria/a sample are available on Canvas.

Research Proposal152+8 points (40%)

Proposal.....152 points (38%)

Think of this as a grant proposal. You are writing to a funding agency to convince them of the merits of spending \$\$\$ on your topic of interest (that must be the same as your "Talk" topic). Grading outline/criteria/a sample are available on Canvas, but broadly, your proposal should include a literature review, 2 objectives with accompanying hypotheses, a brief experimental outline, and finally, a significance statement/conclusion. To be submitted on Canvas by April 18.

Topics and aims..... 8 points (2%)

Please submit a ¼ page assignment clearly stating your chosen topic, why it is interesting, a

couple of sentences about what is currently known about your chosen topic, what isn't, and clearly state the knowledge gap you're interested in filling in. To be submitted on Canvas by Mar 7.

Quizzes.....20 points (5%)

Quizzes will be uploaded on canvas and are based on the weekly reading assignments (WRAs). There will be one quiz due each week, and one quiz can cover multiple WRAs. Please refer to the calendar at the end of this document for detailed due dates. There are 6 scheduled quizzes, the quiz with the lowest score will be dropped automatically (you do not need to write to us). Therefore, 5 quizzes will be counted towards your grade, and each quiz is worth 4 points (1%) and should not take more than 10 minutes to complete. Due by 11:59PM on date set below.

Participation.....20 points (5%)

This class is a discussion seminar format, please do your best to come prepared to discuss the lecture content (with questions or ideas) or issues in the readings (assigned for the first half of the course). The second half of the term involves student presentations, and your participation grade will include peer evaluations of talks. This will be done via in person questions, or questions posted in Canvas discussion boards (questions must be posted within 24h of the talk to count).

Extra credit.....8 points (2%)

You can earn up to 2% extra credit by attending Neuroscience Colloquia (Fridays at 11AM) ([click here](#)) or Women's Health Research Seminar Series (Mondays at 12pm) ([Click here](#)) respectively on Zoom. Each lecture is worth 0.5%, you have to submit a ¼ page write up on Canvas. These are free, but you may have to register

Total.....400 points (100%)

CLASS POLICIES

1. Please use only your UBC email to communicate with Alyssa or Sophie (not Gmail/Hotmail etc). This is to ensure we are aligned with UBC confidentiality policies, and to avoid overactive spam filters keeping your emails from us.
2. The research proposal will be deducted at 10% per day if the deadline is missed
3. You cannot make up for a missed quiz (but one is dropped automatically)
4. Once you select/accept a date for your talk, you must make every effort to make this date. It is your responsibility to present on your chosen date, if you absolutely cannot, you may reach out to another student and ask them to switch dates with you. Once both of you agree, you can reach out to me to check that it is okay. You may not swap presentation dates with another student without approval from me.
5. We do not recommend you use generative AI (ChatGPT or Bard etc.) for any assignment in this course. Not only is it easy to detect, but these programs also often generate uncited and possibly incorrect information. It is considered an external editor, and thus plagiarizing content. You may not submit any output from generative technology in this course as your own work, and doing so will be considered a violation of UBC academic integrity policy. That being said, feel free to use AI as a study tool/guide and assist you but do not miss out on learning CRITICAL THINKING skills by defaulting to AI to think for you.

SUGGESTIONS FOR SUCCESS

1. I cannot stress this enough: be mentally and physically present! The vast majority of what you need to know for the exam will be covered in class and will be easily consolidated if you attend and engage each week.
2. Please practice your talks ahead of time (more than once!) as this is essential for determining how long your talk is, but better yet is an important factor in creating a good talk. Practice transitioning between slides over everything else, don't make your slides text heavy. Know your material, a surface level talk can be spotted at once.
3. Show up to office hours and/or chat with me after class! I am here to answer your questions and understand complex material, please do not hesitate to come talk about anything. That said, please don't wait until the day before the midterm to get all your questions answered, keep up with the material as you go.

'For course policies regarding in-term academic concessions, please refer to the relevant UBC calendar entry: <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,329,0,0>.'

COURSE OUTLINE

DAY	DATE	AGENDA/TOPIC	DUE ON THIS DATE
Tuesday	Jan 9	Syllabus review and Intro	
Thursday	Jan 11	Good vs bad science, Behaviour (L1)	
Tuesday	Jan 15	Intro to HPC (L2)	Quiz 1
Thursday	Jan 17	What is plasticity, volume (L3)	
Tuesday	Jan 23	Grey matter changes in HPC (L4)	Quiz 2
Thursday	Jan 25	Dendritic morphology, spines (L5)	
Tuesday	Jan 30	Spines, techniques, imaging (L6)	Quiz 3
Thursday	Feb 1	Talk topics, Assignment Q&A	
Tuesday	Feb 6	Paper Critique (L8)	Quiz 4
Thursday	Feb 8	Neurogenesis (NG) in the HPC: what (L9)	
Tuesday	Feb 13	NG in HPC: where, how, when (L10)	Quiz 5
Thursday	Feb 15	NG in HPC: aging (L11)	
Tuesday	Feb 20	READING WEEK (No class)	
Thursday	Feb 22	READING WEEK	
Tuesday	Feb 27	NG in HPC: disease (L12)+ Review	Quiz 6
Thursday	Feb 29	Midterm	Midterm
Tuesday	Mar 5	Student Talks	
Thursday	Mar 7	Student Talks	Topics and Aims Due
Tuesday	Mar 12	Student Talks	
Thursday	Mar 14	Student Talks	
Tuesday	Mar 19	Student Talks	
Thursday	Mar 21	Student Talks	
Tuesday	Mar 26	Student Talks	

Thursday	Mar 28	Student Talks	
Tuesday	Apr 2	Student Talks	
Thursday	Apr 4	Student Talks	
Tuesday	Apr 9	Student Talks	Extra credit assignments due
Thursday	Apr 11	Student Talks (final lecture)	
WEDS	Apr 18		Final Research Proposal Due

****course syllabus and lectures are subject to change and I will announce any updates if that occurs**

SUGGESTED TOPICS FOR STUDENT TALKS

Neurogenesis in other regions

Olfactory neurogenesis

Cocaine

Cannabinoids

Alcohol and Neurogenesis

Endocannabinoids and neuroplasticity

Pregnancy

Postpartum

Postpartum Depression

Social behaviour and Neurogenesis

Sexual behaviour and Neurogenesis

Early life adversity

Androgens

Estrogens

Aging

Cognitive training (Luminosity?)

Alzheimer's Disease

Mild Cognitive Impairment

Depression

Circadian Rhythms

Bipolar Disorder

Sex changing fish

Schizophrenia

Obsessive compulsive disorder

LTP and learning

LTD and learning

Paired pulse inhibition

Autism

Epigenetics and plasticity

Adolescent stress and plasticity

Microbiome

Exercise and plasticity

Elite sports and brain morphology

Musicians and plasticity

Video games and plasticity

Gambling

Stroke

Glia and plasticity

Inflammation

Multiple Sclerosis

Chronic Pain

Microglia

Sleep

Obesity

Diabetes

Cell adhesion molecules

Chemotherapy

Oxytocin

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](#).

Statement on equity, diversity, and inclusion

Adapted from materials supplied by Psychology's Equity, Diversity, and Inclusion committee:

Similar to the broader UBC community, the Psychology Department—and this class— seeks to build a community where students feel included and are treated equitably. This class aims to be inclusive of gender identity, gender expression, sex, race, ethnicity, socioeconomic background, sexual orientation, political affiliation, religious affiliation, ability, health, and age (this is not an exhaustive list!).

As is the nature of psychology courses, the lecture materials, textbook, instructor, or other students may sometimes raise sensitive and/or controversial topics. In these circumstances, we must keep discussion respectful and productive. 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. If you encounter any issues with the inclusivity of our class, please get in touch with either myself or the TA.

You can also learn more about our diversity initiatives in the Department of Psychology by visiting <https://psych.ubc.ca/about/equity-inclusion/>.

PSYCHOLOGY DEPARTMENT'S POSITION ON 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. In the first place, the Department has implemented software that can reliably detect cheating on multiple-choice exams by analyzing the patterns of students' responses. In addition, the Department subscribes to *TurnItIn*--a service designed to detect and deter plagiarism. All materials (term papers, lab reports, etc.) that students submit for grading will be scanned and compared to over 5 billion pages of content located on the Internet or in TurnItIn's own proprietary databases. The results of these comparisons are compiled into customized "Originality Reports" containing several, sensitive measures of plagiarism; instructors receive copies of these reports for every student in their class.

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 a student's transcript.

All graded work in this course, unless otherwise specified, is to be original work done independently by individuals. **Do** use **PubMed** (first choice) on the Library's website at <http://www.library.ubc.ca>. and try our guide specially designed for Psyc 460/461 <http://guides.library.ubc.ca/psyc460>

If you have any questions as to whether or not what you are doing is even a borderline case of academic misconduct, please consult your instructor. For details on pertinent University policies and procedures, please see Chapter 5 in the UBC Calendar (<http://students.ubc.ca/calendar>).

The University accommodates students with disabilities who have registered with the **Disability Resource Centre**. The University accommodates students whose religious obligations conflict with attendance, submitting assignments, or completing scheduled tests and examinations. Please let your instructor know in advance, preferably in the first week of class, if you will require any accommodation on these grounds. Students who plan to be absent for varsity athletics, family obligations, or other similar commitments, cannot assume they will be accommodated, and should discuss their commitments with the instructor before the drop date.

Students have the right to view their marked examinations with their TA, providing they apply to do so within a month of receiving their final grades. This review is for pedagogic purposes. The examination remains the property of the university.

Psychology Department's Policy on Grade Distributions and Scaling

To reduce grade inflation and maintain equity across multiple course sections, all psychology classes are required to comply with departmental norms regarding grade distributions. According to these adjusted norms, the average grade in 100- and 200-level Psychology classes will be 72 for an exceptionally strong class, 70 for an average class, and 68 for a weak class, with a standard deviation of 14. The corresponding figures for 300- and 400-level classes will be 75, 73, and 71, 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 an instructor or the department. Grades are not official until they appear on a student's academic record. You will receive both a percent and a letter grade for this course. At UBC, they convert according to the key below:

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

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Further information about academic regulations, course withdrawal dates and credits can be found in the University Calendar. You are encouraged to read this material. If you run into trouble and need information about studying, preparing for exams, note taking or time management, free workshops and advice are available from the Student Resources Centre, which can be reached through the School and College Liaison Office at 822-4319 and from Student Success, <http://www.students.ubc.ca/success/>.

An excerpt from Dr. Catherine Rawn with gratitude:

In the academic community—a community of which you are now a part—we deal in ideas. That’s our currency, our way of advancing knowledge. By representing our own and others’ contributions in an honest way, we are (1) respecting the rules of this academic community, and (2) showcasing how our own novel ideas are distinct from but relate to their ideas. But academic integrity goes well beyond formal citation. **Welcome to the academic community. You are expected to act honestly and ethically in all your academic activities, just like the rest of us.**

Make sure you understand UBC’s definitions of academic misconduct, consequences, and expectation that students must clarify how academic honesty applies for a given assignment. *Please ask if you’re not sure.* (While you’re checking out the calendar, you might want to check out the “Student Declaration and Responsibility” statement you agreed to when you registered.)

What does academic integrity look like in this course? *At any time: if you are unsure if a certain type of assistance is authorized, please ask. If you have a need that is unmet by existing course materials, course structure, and/or our learning community members, please ask.*

DO NOT share materials provided for you to use in this course. We are working hard to provide all the materials you need to succeed in this course. In return, please respect our work. All assignment instructions, quiz questions and answers, discussion questions, announcements, PowerPoint slides, audio/video recordings, Canvas modules, and any other materials provided to you by the Teaching Team or in the textbook are for use in this course by students currently enrolled in PSYC 461. It is *unacceptable* to share any of these materials beyond our course, including by posting on file-sharing websites (e.g., CourseHero, GoogleDocs). It is *unacceptable* to copy and paste sentences from the textbook (e.g., definitions) into for-profit software (e.g., Quizlet) for use in studying. Respect the Teaching Team and textbook authors’ intellectual property and follow copyright law.

DO acknowledge others’ ideas. Scholars build on the work of others and give credit accordingly—this is a quality of strong academic writing. In this course, you will learn and practice ways to acknowledge others’ work. Citing our sources in both formal and informal ways will be essential, and appropriate, depending on the assignment. For example, much of the way I think and write about academic integrity has been influenced by the work of Dr. Laurie McNeill, including her excellent wiki that curated many of the above links, as well as Dr. Sarah Elaine Eaton, including her webinar series.

DO learn to avoid unintentional plagiarism. Visit the Learning Commons’ guide to academic integrity to help you organize your writing as well as understand how to prevent unintentional plagiarism, which can be challenging when first learning to paraphrase. Visit <http://learningcommons.ubc.ca/resource-guides/avoiding-plagiarism/>. An example tip: Do not copy and paste text from other sources, including other people’s work, even in a draft. It’s easy to unintentionally misrepresent those words as your own in a later draft (which would still qualify as plagiarism)

RESOURCES

Also, in case you're interested in understanding sex and gender beyond what we cover in this course, the Positive Space course can be a good resource (<https://wpl.ubc.ca/browse/equity-and-inclusion/courses/wpl-eio-psfnd>). It is created by UBC's Equity & Inclusion Office and has some explanations about the intersections of sex, gender, and sexuality. The focus of this self-directed course is on understanding the diversity of gender and sexuality, and how to be a better ally.

Wellness Resources:

Below is a list 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.

The Kaleidoscope:

the-kaleidoscope.com

A confidential peer-run mental health support group that takes place on campus at least once a week. You may attend the group if you are experiencing any kind of mental health related challenges, or if you're just feeling stressed about school in general. Registration is not required to attend the group. See the website for meeting times and locations. Food and drink are provided.

Counselling Services:

students.ubc.ca/livewell/services/counselling-services

Phone number: 604-822-3811

Counselling services offers a variety of resources to help you maintain your mental health while in school. You may see a counsellor on an individual basis, attend group counselling, or to document an illness if you should require academic concession.

AMS Peer Support:

<https://www.ams.ubc.ca/support-services/student-services/peer-support/> Phone number: 604-822-9246

A student run service that offers free support for students experiencing crisis. Also a good resource for additional information and referrals within the UBC community.

UBC Wellness Centre:

<https://students.ubc.ca/health/wellness-centre> Phone number: 604-822-8450

Speak with other students about tips for managing stress, keeping healthy sleep and eating patterns, concerns about safe sex and more.

UBC Centre for Accessibility:

<https://students.ubc.ca/about-student-services/centre-for-accessibility> Phone number: 604-822-5844

The Centre for Accessibility provides accommodations for students living with physical or mental disabilities.

UBC Student Health Services:

students.ubc.ca/livewell/services/student-health-service Phone number: 604-822-7011

Student health provides students with a variety of healthcare related services to help you maintain your

health while studying. Access to doctors and registered nurses.

Mood Disorders Clinic UBC:

ubc-mooddisorders.vch.ca/

A psychiatric program designed specifically to treat individuals living with depression or bipolar disorder.

Mental Health Awareness Club:

<https://blogs.ubc.ca/ubcmhac/>

A club that offers opportunities to speak about mental health with others and strives to promote mental health awareness throughout the UBC community.

Pacific Spirit Addiction Services:

3rd Floor, 2110 West 43rd Ave Vancouver B.C. V6M 2E1 Phone number: 604-267-3970

A free and confidential service for youth and young adults up to the age of 24. Services include counselling, access to an addiction physician—including usage of a methadone maintenance program—and a drug education series.

AMS Food Bank:

<https://www.ams.ubc.ca/support-services/student-services/food-bank/>

If you are in a financial emergency AMS food bank can provide you with a food hamper. You are able to use the service up to 6 times each term.

UBC Psychology Clinic:

clinic.psych.ubc.ca

Professional psychological services provided to the community, including assessment & treatment for children, adults & families by clinical psychology trainees.

BC Crisis Center:

crisiscentre.bc.ca Phone number: 604-872-3311

Non-profit, volunteer-driven organization that provides emotional support to youth, adults, and seniors in crisis in BC. Crisis line available 24/7.

Distress Line:

Phone number: 1-800-Suicide (784-2433)

If you are in distress or are worried about someone in distress who may hurt themselves, call 1-800-SUICIDE 24 hours a day to connect to a BC crisis line, without a wait or busy signal.