

PSYCHOLOGY 301-101: BRAIN DYSFUNCTION & RECOVERY

2021 Winter Term 2

ABOUT PSYC 301

The human brain is an amazingly complex and intricate network of ~90 billion neurons and glia forming a complex array with approximately 100 trillion connections among them, and almost infinite number of paths that neural signals can follow through those connections. The complexity of the human brain supports amazing phenomena and capabilities such as creating art, a space station and the experience of consciousness. This course is about what happens when the complex network that is our brain becomes dysfunctional.

We will take a cognitive-neuroscientific view to explore:

1. What is the meaning of 'dysfunctional' with regard to the human brain, and what is the difference between dysfunctional and different?
2. The various forms that brain dysfunction can take; and how the brain repairs itself – if and when it does – after its networks and their functions have been compromised.

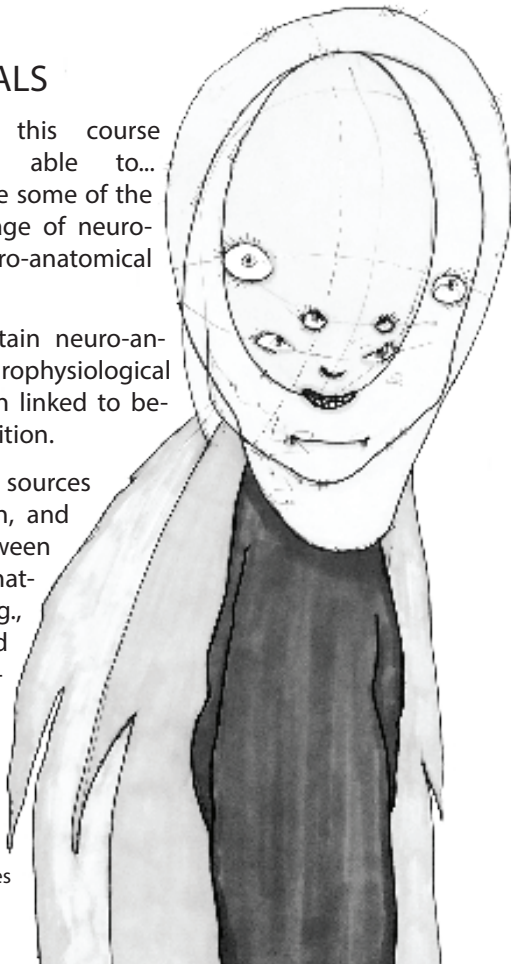
Though researchers have learned much about brain dysfunction, there is still much to discover about how the brain repairs itself. The study of human brain dysfunction and recovery serves two important purposes: (1) it increases our understanding of the healthy brain; and (2) it serves as a basis for the development of new treatments.

LEARNING GOALS

By the end of this course you should be able to...

- *Understand* and use some of the fundamental language of neuroscience (e.g., neuro-anatomical terms).
- *Describe* how certain neuro-anatomical and neurophysiological processes have been linked to behaviour and/or cognition.
- *Identify* multiple sources of brain dysfunction, and the difference between dysfunction and natural variation.(e.g., traumatic/acquired brain injury, vs. developmental brain deficiency vs. neuro-diversity).

All Art by Dr. Steven Barnes



- *Appreciate* the vast potential as well as the limitations of brain plasticity, compensation and recovery.
- *Synthesize* what you've learned to better appreciate the highly integrative nature of neural and cognitive processes, and what future treatments may aim to target.
- *Navigate* the literature on brain dysfunction and recovery with greater confidence.

WHO, WHEN, WHERE

Instructor: **Dr. Hagar Goldberg**
email: hagar.goldberg@ubc.ca
website: <https://www.hagargoldberg-seen.com/>
Office Hours: By appointment.
Please contact Hagar for lecture-related, administrative questions and/or academic concessions.

Teaching Assistants: TBA

Please contact TAs for content and course reading related questions, and for exams and grades related questions

Class Schedule: In-person sessions will take place **every Tuesday @ 3:30 - 5:00 p.m.** at West Mall Swing Space (SWNG) room 222.

Asynchronous module/s (e.g., recorded lectures) will be published weekly on canvas

Websites: canvas.ubc.ca

We will be using Canvas for most of our communication and course materials; Course syllabus, lecture schedule, lecture slides, instructional videos, resources and links (including the required reading), Q & A, and posting grades. It is the students' responsibility to check the Canvas website for updated information about required readings, schedule changes, etc. You are also welcome to use the discussion forums; however, note that only the Q&A discussion will be monitored by the instructor or the TAs.

Important Notes Regarding Communication

1. Office hours might change; please check the course website for updates.

2. In most cases, emails will be answered within 48 hours on weekdays (not on weekends) during normal working hours.
3. When you send us an email, the subject line should include the course number and the nature of the inquiry (i.e., "PSYC 301 –Question about complex partial seizures"); you should also include your full name and student number in the email.
4. Content related questions should be posted in the Q&A discussion section on canvas.

PREREQUISITES

There are two prerequisites for this course:

1. You have completed either (a) PSYC 100 or (b) two of PSYC 101, 102, 205, 207, 208, 216, 217 or 277
2. You are passionate about the human brain :)

EVALUATION

Four mini-exams

*Final grade= averaged 3 top grades

Mini-Exam 1	Feb 1st	Mini-Exam 4	Exam pe- riod
Mini-Exam 2	Mar 1st		
Mini-Exam 3	Mar 22		

There will be four "mini-exams" during the term (roughly every 3 weeks). These one-hour long mini-exams will be composed of 24 multiple choice questions and one short answered question. The final grade will be based on your averaged score on the 3 exams. In case you take all 4 exams your lowest exam grade will be dropped from your final grade. Each mini-exam will therefore be counted for 33.3% of your final grade.

Notes on the Mini-Exams:

- All of the exams are non-cumulative. (once we have finished with material on one exam, you will not be retested on that material on the next exam).
- The first three mini-exams will take place on a Tuesday during class time (9:30 - 10:30 am, 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, we will provide a printed version of the exam for students to fill out.
- The purpose of considering only 3 out of 4 mini-exams, is to allow students higher flexibility, choice and lower the stakes of each testing. It is the student choice whether to take all four mini-exams or skip one of them. It is the student's responsibility to make sure they can attend, **at least** 3 mini-exams. Importantly, there will be no makeup exams, unless a student can not attend 3 exams do to unavoidable hardship, and present the instructor evidence within 48 hours of missing the exam.
- You will not be allowed to write an exam if you are more than 10 minutes late.

- There will be topics covered in class that are not in the readings, and materials in the readings that are not covered in class. You will be responsible for both. That is, all readings and all lecture materials are examinable.
- 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.

COURSE SCHEDULE

<i>Week 1</i> (Jan 11):	Course Introduction and Overview; Basics of neuroanatomy, and brain function.
<i>Week 2</i> (Jan 18):	Neuroplasticity; Nature, Nurture and epigenetics.
<i>Week 3</i> (Jan 25):	Neurodysfunction or Neurodiversity? Causes of Brain Dysfunction;
<i>Week 4</i> (Feb 1):	Mini-Exam #1: (weeks 1-3) Brain Dysfunction Affecting Visual Perception
<i>Week 5</i> (Feb 8):	Brain Dysfunction Affecting Sensorimotor Function. Brain Dysfunction Affecting Attention
<i>Week 6</i> (Feb 15):	Brain Dysfunction Affecting Memory. *guest speaker
<i>Week 7</i> (Feb 22):	No Class Mid-Term Break
<i>Week 8</i> (Mar 1):	Mini-Exam #2, (weeks 4-6) Brain Trauma, and Consciousness (minimally conscious state, vegetative, locked-in).
<i>Week 9</i> (Mar 8):	Brain Dysfunction Associated with Psychiatric Disorders.
<i>Week 10</i> (Mar 15):	Brain Dysfunction Associated with Psychiatric Disorders. *guest speaker.
<i>Week 11</i> (Mar 22)	Mini-Exam #3, (weeks 8-10) Brain Dysfunction Affecting Language
<i>Week 12</i> (Mar 29):	Students' choice of a special topic
<i>Week 13</i> (Apr 5):	Neuroplasticity Following (acute or chronic) Trauma Factors Influencing Recovery of Function Fol- lowing Brain Dysfunction;
Exam period	Mini-Exam #4, (weeks 11-13)

COURSE READINGS

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'

Week 1:

Course syllabus.

Week 2:

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.

Week3:

Neurodysfunction or Neurodiversity?

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

Causes of Brain Dysfunction

Pinel and Barnes., Chapter 10, Biopsychology.

Week 4: Brain Dysfunction Affecting Visual Perception

Haqee, Sameen MBBS, MMed; Vaphiades, Michael S. DO; Lueck, Christian J. PhD, FRACP, FRCP(UK), FAAN The Visual Agnosias and Related Disorders, *Journal of Neuro-Ophthalmology*: September 2018 - Volume 38 - Issue 3

Week 5:

Brain Dysfunction Affecting Perception, Sensorimotor Function.

Brain Dysfunction Affecting Attention.

Vallar G, Calzolari E. Unilateral spatial neglect after posterior parietal damage. *Handb Clin Neurol*. 2018;151:287-312. doi: 10.1016/B978-0-444-63622-5.00014-0. PMID: 29519463.

Week 6: Brain Dysfunction Affecting Memory.

Rosenbaum, R. S., Köhler, S., Schacter, D. L., Moscovitch, M., Westmacott, R., Black, S. E., Gao, F., & Tulving, E. (2005). The case of K.C.: Contributions of a memory-impaired person to memory theory. *Neuropsychologia*, 43, 989-1021.

Week 8: Brain Trauma, and Consciousness

Owen, A. M. (2014). Is anybody in there? *Scientific American*, 310, 52-57.

Schiff, N. D. (2010). Recovery of consciousness after brain injury: a mesocircuit hypothesis. *Trends in neurosciences*, 33(1), 1-9.

Week 9-10: Brain Dysfunction Associated with Psychiatric Disorders.

Insel, T. R., & Cuthbert, B. N. (2015). Brain disorders? precisely. *Science*, 348(6234), 499-500.

Duman, R. S. (2009). Neuronal damage and protection in the pathophysiology and treatment of psychiatric illness: stress and depression. *Dialogues in clinical neuroscience*, 11(3), 239.

Kays, J. L., Hurley, R. A., & Taber, K. H. (2012). The dynamic brain: neuroplasticity and mental health. *The Journal of neuropsychiatry and clinical neurosciences*, 24(2), 118-124.

Week 11: Brain Dysfunction Affecting Language

Dronkers NF, Ivanova MV, Baldo JV. (2017). What do language disorders reveal about brain–language relationships? from classic models to network approaches. *Journal of the International Neuropsychological Society: JINS*, Oct;23(9-10):741.

Week 12: Students Choice of a Topic

Week 13: Neuroplasticity & Recovery Following Brain Injury

Kerr AL, Cheng SY, Jones TA. Experience-dependent neural plasticity in the adult damaged brain. *J Commun Disord*. 2011 Sep-Oct;44(5):538-48.

Barman, A., Chatterjee, A., & Bhide, R. (2016). Cognitive Impairment and Rehabilitation Strategies After Traumatic Brain Injury. *Indian journal of psychological medicine*, 38(3), 172–181.

Holland, J. N., & Schmidt, A. T. (2015). Static and dynamic factors promoting resilience following traumatic brain injury: a brief review. *Neural plasticity*, 2015.

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 multiple-section courses, all psychology classes are required to comply with departmental norms regarding grade distributions. Scaling may be used in order to comply with these norms; grades may be scaled up or down as necessary by myself or the department. Grades are not official until they appear on your academic record. 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 ana-

lyze (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. The live sessions are designed for interactive, social learning, and lecture slides are designed to provide a framework for the lecture and any discussions--thus, not everything in the lecture is in the slides. Moreover, material that is taught in class will often be different from or supplement the readings. It is, therefore, essential that you both attend class and read ahead. If you do have to miss a class, you are responsible for watching the recorded session in your own time.

During your time in this course, if you encounter medical, emotional, or other personal problems that affect your attendance or academic performance, please notify the instructor 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 Access & Diversity office (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 us 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 me support students who are facing difficulties that are interfering with 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/.

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, 2022**.

OTHER COURSE POLICIES

Office Hours. In addition to their regularly scheduled office hours, your TA will offer additional time windows for the review of exams. If you would like to review your exam, you must plan to attend one of these sessions that will be polished on Canvas (under Announcements). When reviewing your exam, you are not allowed to take notes on, or photos of, the exam. You should also connect with your TAs if you would like to discuss content from the course readings and/or study strategies, or you would like to discuss psychology and neuroscience more generally.

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.

POINTS TO REMEMBER

- Productive classroom discussion and debate are encouraged.
- You are responsible for all readings and lecture materials.
- Lecture slides will be available on the course website. However, if you miss a lecture, don't expect to find all of what you missed in the slides.
- Lecture slides will be posted on the course website in the early morning before each lecture. This is done as a courtesy. Please be aware that I might make significant changes to the slides between that time and the lecture later in the day. Final versions of lecture slides will be posted no later than the Friday following a lecture, and will be marked as 'Final Version'.
- Please be aware that some of the content in this course can be challenging for those without some background in biology. Please connect with me or your TAs if you require additional learning resources to support your learning of the course materials.

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 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 or not what you are doing is even a borderline case of academic misconduct, please consult with us. 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).

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.

SpeakEasy:

ams.ubc.ca/services/speakeasy/

Phone number: 604-822-9246

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

SHARE:

www.vivreshare.org

Self Harm Anonymous Recovery and Education is a program

designed to promote self care and educate about self harm. SHARE support groups meet biweekly; times and locations can be found on their website.

UBC Wellness Centre:

students.ubc.ca/livewell/services/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.

Access and Diversity:

students.ubc.ca/about/access

604-822-5844

Access and Diversity provides accommodations for students living with physical or mental disabilities.

Student Health Services:

students.ubc.ca/livewell/services/student-health-service

604-822-7011

Student health provides students with a variety of health-care related services to help you maintain your health while studying. Access to doctors and registered nurses.

Mood Disorders Clinic UBC:

ubc-moooddisorders.vch.ca/

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

Live Well, Learn Well:

students.ubc.ca/livewelllearnwell

The Live Well, Learn Well initiative is a resource hub that provides students with information to help improve physical and mental wellbeing.

Mental Health Awareness Club:

ubcmhac.sites.olt.ubc.ca/

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

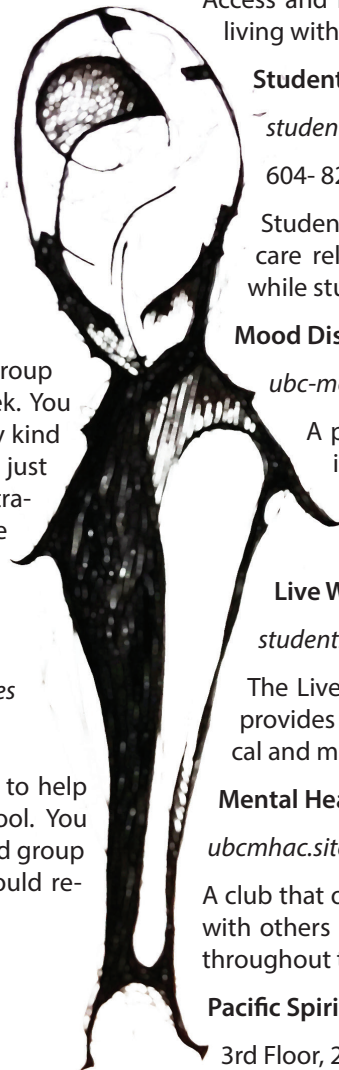
Pacific Spirit Addiction Services:

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:



ams.ubc.ca/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.

Last Modified: November 19th, 2021

