

Psychology 301-002

Brain Dysfunction & Recovery

University of British Columbia; Sept 4, 2024 – Dec 6, 2024; **3 credits**
Monday, Wednesday, Friday 1:00-1:50 pm; SWING 122

Course Description

The human brain is an amazingly complex and intricate network of neurons and glia. Consider the complex array of approximately 90 billion neurons, the estimated 100 trillion connections among them, and the almost infinite number of paths that neural signals can follow through those connections.

This course is about what happens when the complex network that is our brain becomes dysfunctional, 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.

This course is designed to be ideal for students with an interest in medicine, clinical neuropsychology, neuroscience, occupational therapy, and speech-language pathology, to name a few.

Acknowledgment

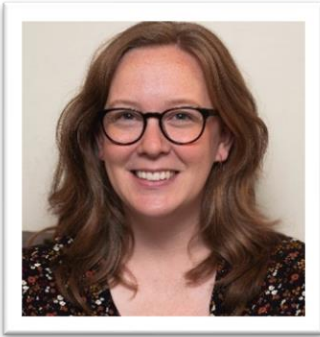
Psyc 301 is held on the traditional, ancestral, and unceded territory of the xwməθkwəyəm (Musqueam) People. The land it is situated on has always been a place of learning for Indigenous Peoples who for millennia have passed on their culture, history, and traditions from one generation to the next on this site. Practices in Psychology and Neuroscience have sometimes significantly harmed Indigenous people, as well as other marginalized groups, and these harms still continue today. We will discuss our course material in this context and consider together our discipline's path forward.

Learning Goals

By the end of this course, you should be able to:

- employ the fundamental **vocabulary** of neuroscience and neuroanatomy,
- navigate the neurological and neuropsychological research **literatures**,
- describe the link between certain neuroanatomical and neurophysiological processes and **behaviour and/or cognition**,
- explain **techniques** that can be used to investigate the relationship between neuroanatomy and behavioural and cognitive processes,
- understand how a range of **tools** from the cognitive neurosciences (e.g., fMRI, PET) can be employed to characterize a patient's impairments and functioning,
- analyze **theories and evidence** related to brain dysfunction and recovery,
- explain the range of physiological and **psychosocial effects** of brain dysfunction, and
- appreciate the highly **integrative nature** of neural and cognitive processes in functional and dysfunctional states.

Teaching Team



Dr. Jill Dosso (she/her)

Course Instructor

What shall I call you? Jill or Dr. Dosso (“Daws-oh”)

Email: jill.dosso@ubc.ca

Office: Kenny 1007

Office hours: You may drop-in 10-11 am on Fridays [via Zoom](#) or email to set up an in-person visit



Shayden Schofield-Lewis (he/him)

Teaching Assistant

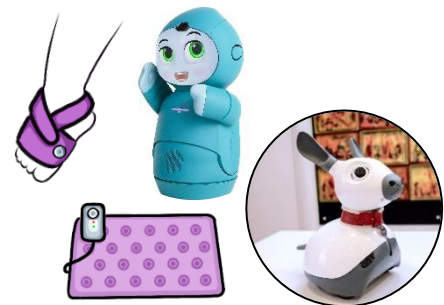
What shall I call you? Shayden or Mr. Schofield-Lewis

Email: ssl@psych.ubc.ca

Office hours: To book Zoom office hours, visit shayden.youcanbookme.com

Welcome to Psyc 301!

I am a Lecturer (member of the teaching faculty) in the Psychology department and hold a PhD in Neuroscience. Related to the topics covered in this course, I recently completed a postdoctoral fellowship in the division of Neurology at UBC. There, I explored the perspectives of older adults and people with lived experiences of dementia towards ethically complex emerging technologies such as social robotics and health wearables. Earlier in my career, I also worked with animal models of stroke and Parkinson’s disease. I look forward to getting to know you this term! –*Jill*



Course Calendar Information

- Strongly recommended: PSYC 101, 102, and one of PSYC 216, 217, or 277.
- Equivalency: NSCI 302. Credit will be granted for only one of PSYC 301 or NSCI 302.
- Restricted to students with Year 2 standing or higher.

Canvas

All course materials will be available via Canvas: canvas.ubc.ca. This includes:

- Class slides, typically uploaded the day before class
- Video-recordings of class via Panopto link
- Announcements about the course
- Discussion threads which can be used to discuss and clarify material

I will sometimes make announcements about the class via Canvas (e.g., when exam marks are posted or if class is cancelled). Please configure your account to receive these notifications:

Account → Notifications → Announcements → Notify me right away

Assessment Breakdown

In recognition that everyone's circumstances and preferences are different, there are two different assessment options for this course. Option 1 relies only on exam marks and is the default option. Option 2 requires an additional written project, reducing the weight of the exams.

<i>Assessment</i>	<i>Default (%)</i>	<i>Optional Project (%)</i>
1. Midterm Exam 1	30	25
2. Midterm Exam 2	30	25
3. Final Exam	40	30
4. Optional: Project	0	20
5. Bonus: Research Experience	+3	+3
	<i>Total</i>	
	100 (+3)	100 (+3)

Exams

What is covered:

- All readings/videos, guest interviews, and lecture materials are examinable. You will be provided with a set of learning objectives outlining what is testable for each item.
- Exams will include multiple-choice and short-answer questions.
- Midterm Exam 2 and the Final Exam are cumulative with respect to lecture content, but the questions will test your ability to connect material from across the course. They will not retest small details from previous midterms.
- The final will only test readings/viewings after Midterm 2.
- The final exam will take place during final exam period (December 10-21), which is decided by the university and announced in late October. Do not make travel plans for the final exam period until the final exam is announced. Pre-booked travel will **not** be accepted as a valid excuse to miss the exam.

During exams:

- You will not be allowed to write an exam if (1) you are more than 30 minutes late, or (2) another student has already submitted their exam and left the exam room--whichever occurs first.
- The Teaching Team reserve the right to move you to a new seat without providing an explanation.

Reviewing exams:

- Exams will be available to review with your TA after they are graded. Most requests for grade adjustments can be settled directly with your TA. In cases of a dispute that cannot be satisfactorily resolved, Dr. Dosso will regrade the relevant portion of your exam – this can result in an increase *or* decrease in grade.
- Any grading disputes (other than calculation errors) must be brought to the Teaching Team within 2 weeks of exam grades being released.

Missing exams:

- Under UBC's academic concession policy, students may seek academic concession for any of three reasons: (1) conflicting responsibilities; (2) medical circumstances; and (3) compassionate grounds (e.g., family bereavement).
- *If you need to request accommodation for Midterm Exam 1 or Midterm Exam 2:* please contact Dr. Dosso as soon as possible (ideally before the exam and no later than 48 hours afterward). She will supply you with a Student Self Declaration Form so that your concession case can be evaluated. Being accommodated for missing a midterm exam is at my sole discretion, and she may send you to your faculty Academic Advising if I feel ill-equipped to judge the nature of your hardship. If you are accommodated for missing one midterm exam, we will exempt that mark from the overall grade calculation. The overall course grade will be calculated by re-weighting the future course components.
- *If you need to request accommodation for both midterms:* Arts students will need to fill out the Arts Advising's academic concession form and submit to Arts Advising (please cc Dr. Dosso), and they will evaluate your concession case. If you are a student in a different faculty, please consult your faculty's webpage on academic concessions, and then contact Dr. Dosso where appropriate. If you are accommodated for missing both midterm exams, you will be assigned a research project (i.e., a research paper and an associated presentation delivered to me and/or your TAs) to make up for the portion of the grade corresponding to both Midterms 1 and 2.
- *If you need to request accommodation for the optional project:* please contact Dr. Dosso as soon as possible (ideally before the deadline and no later than 48 hours afterward). If your request for accommodation is granted, we will agree upon a new deadline for your project together and any late penalties accrued prior to that date will be waived.
- *If you need to request academic concession for the Final exam:* you must apply for deferred standing (an academic concession) through Arts Academic Advising. Students who are granted deferred standing (SD) will write the final exam at a later date. This Final will differ from the version used for the rest of the class.

Optional Project

You may elect to do a project that is related to the course materials but represents your own, independent reading of research and synthesis of content. *More complete details on this project are given on Canvas.* In brief, there are three goals:

1. To explore a topic of your choice in greater depth than the lecture and readings can offer.
2. To assess your ability to think both critically and creatively.
3. To practice engaging in science communication across multiple media formats.

The optional project has three deadlines:

Sept 27	3-5 sentence description of your project topic (marked as complete/incomplete)
Oct 23	Preliminary draft due (10%)
Nov 22	Final projects due (90%)

Please note that your project should be one that is done **for this course exclusively**; handing in work done for another course (past or present) is not acceptable.

Review Paper Option (default). If you write a review paper, you will read a minimum of 10 peer-reviewed journal articles as part of your research, and your paper should not be less than 2500 words in length (excluding the title page, abstract, and references). You are expected to use sources that are as up to date as possible. The audience for your paper is a person who has already taken this course. Your work will be screened with TurnItIn plagiarism software.

Alternative Format Option. Although the standard format for this project is a review paper, you are also encouraged to pursue other project formats. For example, you might consider creating a short video, a painting, a computer model, a musical composition, a dance sequence or a stop-motion animation. Based on your initial project description, Dr. Dosso will provide you with a grading scheme customized to your specific project. Grading criteria are tailored to specific project types, but are always 35% content, 35% critical thinking, and 30% “pizzazz” (organization, flow, creativity, lateral thinking, eloquence, etc.)

Preliminary Draft of Project. If you choose the review paper option, you must hand in: A title page, abstract, 1-2-page introduction, and a reference section. If you choose a project format other than the review paper, Dr. Dosso will provide you with instructions on what is due.

Late policy. Late submission of the optional project will result in a penalty of 10% per day.

Generative AI policy.

- You are permitted to use AI tools such as ChatGPT or CoPilot for formative work such as gathering information or brainstorming but **you may not use them to produce the text of the work you will be submitting for a grade.**
- Be warned that the output of these tools is error-prone! They are known to fabricate non-existent scientific articles, and their output can constitute academic misconduct if it recycles text from other sources without attribution. **You are accountable** to verify all information they provide.
- If you use these tools, you must also cite them appropriately (see <https://apastyle.apa.org/blog/how-to-cite-chatgpt>). Misrepresenting the output of these tools as though it is your own work (e.g., copy-pasting full sentences without citation) is likely to be considered as academic misconduct.

Bonus Research Participation

You may 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, or by completing library writing projects (please see the HSP website). If you plan to earn extra credit through research participation, please register in this online system as soon as possible, as the participation window closes (you can find more details at psych.ubc.ca/undergraduate/human-subject-pool).

Copyright and Recordings

All materials of this course (course handouts, lecture slides, assessments, course readings, etc.) are the intellectual property of the Teaching Team, for use in this course by students currently enrolled in PSYC 301. **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.

It is **unacceptable** to share any of these materials beyond our course, including by posting on file-sharing websites (e.g., CourseHero, Google Drive). It is **unacceptable** to copy and paste sentences from course materials (e.g., definitions) into for-profit software (e.g., Quizlet, ChatGPT) for use in studying. Respect the Teaching Team and the intellectual property of the authors of the set readings and follow copyright law.

Accessing Support

We want you to succeed in this course! Because the teaching team is supporting such a high volume of students, there are a number of systems and resources available to you.

Support needed: I need disability-related accommodations such as transcription or extra time on exams

- Please connect with the Centre for Accessibility, who will coordinate accommodations with the teaching team on your behalf: <https://students.ubc.ca/about-student-services/centre-for-accessibility>

Support needed: I need to miss a day of class

- You do not need to let anyone know. You should be able to catch up on that content from the video recordings. If you have questions, use the Discussion Threads on Canvas and/or attend office hours.

Support needed: I have questions about course content, even after reviewing my notes and the posted slides

- Everyone can benefit when we discuss course material together. Ask your question in class or post on the Canvas discussion boards for the course and seek support from your peers and the teaching team there.

Support needed: I would like support on how to study / I would like to review an exam / I would like to discuss a grading decision / I would like to talk to someone about career paths in Psychology / I have a question about course content that is too complex for Canvas

- Email your very knowledgeable TA or visit their office hours. They will direct you on to Dr. Dosso when appropriate

Support needed: I am experiencing some personal hardships or challenges and would like to develop a plan with someone one-on-one

- Please visit Dr. Dosso during office hours or send her an email (jill.dosso@ubc.ca). If you would like to meet outside of scheduled office hours, please offer a few possible times you are available in your initial email

We aim to reply to all emails within 48 hours on weekdays. Please use your UBC email account and use "PSYC 301" in the subject line so we don't miss your message.

Classroom Conduct

Our classroom is a place where you should feel safe and respected. Productive classroom discussion, debate, and intellectual engagement are encouraged. Any behaviour on your part that compromises this environment will **not** be tolerated and you will be asked to leave.

Laptops and similar devices can be effective learning tools and are welcome in class. However, if you are using them for non-class-related activities it can be distracting for others. So, if you plan to use devices for any non-class-related activities, please sit towards the back of the room.

In this course, we will occasionally host guest experts who will discuss their experiences with brain dysfunction and recovery, either professionally or personally. You are expected to behave with **the utmost respect** in recognition of their generosity in sharing with us or you will be asked to leave. You must also respect any private or sensitive information that they share with us.

Grading Standards

Note: this policy is set for the entire Psychology department.

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%	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%		

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 4.5 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. 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>) and read the University's Policy 69 (available at <http://www.universitycounsel.ubc.ca/policies/policy69.html>).

Acknowledgment

This course has been developed with reference to materials from a number of colleagues, particularly Drs. Steven Barnes, Noah Silverberg, Jay Hosking, and Alan Kingstone.

Wellness Resources

This is a list of resources you may want to use in support of your learning and mental health as a student.

Academic and Learning Resources

Academic Advising, Peer Coaches and Tutors, Study Spaces, etc.

<https://students.ubc.ca/enrolment/academic-learning-resources>

Chapmans Learning Commons

Find where to borrow equipment, tutoring advice, writing advice, assignment calculators, events and workshops, even meditation spaces!

<https://learningcommons.ubc.ca/>

Writing Consultants

You can get help with your writing here. They also provide workshops and seminars on writing.

<https://writing.library.ubc.ca/>

WriteAway

eTutoring service that provides writing assistance (for free!)

<https://writeaway.ca/university-british-columbia-learning-support-services>

Policies and Resources to Support Study Success

Site with a lot of links from senate policy, to information on crisis support, religious observances, etc.

<https://senate.ubc.ca/vancouver/policies-resources-support-student-success/>

The Kaleidoscope

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.

<https://the-kaleidoscope.com/>

Counselling Services

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 counseling, or to document an illness if you should require academic concession.

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

Phone: 604-822-3811

SpeakEasy

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.

www.ams.ubc.ca/services/speakeasy/

Phone: 604-822-9246

SHARE

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.

www.vivreshare.org

UBC Wellness Centre

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

www.students.ubc.ca/livewell/services/wellness-centre

Phone: 604-822-8450

Centre for Accessibility

The Centre for Accessibility provides accommodations for students living with physical or mental disabilities across their classes

<https://students.ubc.ca/about-student-services/centre-for-accessibility>

Phone: 604-822-5844

Student Health Services

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

Mood Disorders Clinic UBC

A psychiatric program designed specifically to treat individuals living with depression or bipolar disorder. www.ubc-mooddisorders.vch.ca/

Mental Health Awareness Club

A club that offers opportunities to speak about mental health with others and strives to promote mental health awareness throughout the UBC community. www.ubcmhac.sites.olt.ubc.ca/

Pacific Spirit Addiction Services

A free and confidential service for young adults up to the age of 24. Services include counseling, access to an addiction physician - including usage of a methadone maintenance program - and a drug education series.
3rd Floor, 2110 West 43rd Ave Vancouver
Phone: 604-267-3970

AMS 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. www.ams.ubc.ca/services/food-bank/

UBC Psychology Clinic

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

BC Crisis Center

Non-profit, volunteer-driven organization that provides emotional support to youth, adults, and seniors in crisis in BC. Crisis line available 24/7. www.crisiscentre.bc.ca
Phone: 604-872-3311

Distress Line

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

Empower Me

Empower Me offers mental health counselling in person, by telephone, by video-counselling, or by e-counselling. This support is available 24/7 and is free of charge for students who are members of the AMS/GSS Student Health Plan.
Phone: 1-884-741-6389

What Helps What Hurts

Know someone who is depressed, anxious, or suffering from a mood / anxiety disorder but not quite sure how to help them? This website provides resources for you to know what hurts and what helps. <https://whathelpswhathurts.com/>

Course Schedule

Date	Day	Material	Reading and Viewing
04-Sep	W	Welcome	
06-Sep	F	Structural Anatomy	Pinel, J. P., & Barnes, S. (2017). Biopsychology. Hoboken, New Jersey: Pearson Higher Education. (Chapter 3 only)
09-Sep	M		
11-Sep	W		
13-Sep	F	Neurological Assessment	Video: Neurology: General Screening Exam https://www.youtube.com/watch?v=_iCdCL4pwMs
16-Sep	M		
18-Sep	W	Neuroimaging	
20-Sep	F		
23-Sep	M	Causes of brain dysfunction	Azad et al. (2016). Junior Seau: An illustrative case of chronic traumatic encephalopathy and update on chronic sports-related head injury. World Neurosurgery, 86, 515.E11-515.E16.
25-Sep	W		
27-Sep	F		
Sept 27: Optional project pitches due			
30-Sep	M	NATIONAL DAY FOR TRUTH AND RECONCILIATION - NO CLASS	
02-Oct	W	Recovery factors	
04-Oct	F	Catch up & review	
07-Oct	M	MIDTERM 1	
09-Oct	W	Disorders of consciousness	Owen, A. M. (2014). Is anybody in there? Scientific American, 310, 52-57.
11-Oct	F	Dysfunction of attention & memory	Gazzaniga, M. S. (1998). The split brain revisited. Scientific American, 279(1), 50-55.
14-Oct	M		
16-Oct	W		
18-Oct	F		
21-Oct	M	Aging & Neurodegeneration	Oct 23: Optional project drafts due
23-Oct	W		
25-Oct	F	Dysfunction of perception & sensorimotor function	Danckert, J., & Goodale, M. A. (2000). Blindsight: A conscious route to unconscious vision. Current Biology, 10, R64-R67.
28-Oct	M		
30-Oct	W	Catch up & review	
01-Nov	F	MIDTERM 2	
04-Nov	M	Guest expert: Brain dysfunction and social technologies <i>Dr. Julie Robillard, PhD, Associate Professor of Neurology</i>	
06-Nov	W	Dysfunction associated with psychiatric disorders	Ahad et al. (2023). Understanding and addressing mental health stigma across cultures for improving psychiatric care: a narrative review. <i>Cureus</i> , 15(5).
08-Nov	F	Guest expert: SB, who lives with bipolar disorder	
11-Nov	M	REMEMBRANCE DAY - NO CLASS	
13-Nov	W	TERM BREAK	
15-Nov	F	Dysfunction associated with psychiatric disorders contd.	

18-Nov	M	Guest expert: Shayden Schofield-Lewis, PhD candidate, Psychology	
20-Nov	W	Neuroplasticity and rehabilitation	Kolb et al. (2010). Factors influencing cerebral plasticity in the normal and injured brain. <i>Frontiers in human neuroscience</i> , 4, 204.
22-Nov	F	Guest expert: Brain dysfunction and recovery in palliative care <i>Melissa De Boer, RN, MSN, Palliative Care Nurse Clinician</i>	
Nov 22: Optional projects due			
25-Nov	M	Social determinants of health & patient experience research	Flash Forward Podcast (listen or read transcript): https://www.flashforwardpod.com/2022/11/07/vanguard-estates-living-with-dementia/
27-Nov	W		
29-Nov	F		
<i>Possible guest expert: to be confirmed</i>			
02-Dec	M	New frontiers:	Kögel et al. (2020). What is it like to use a BCI? Insights from an interview study with brain-computer interface users. <i>BMC Medical Ethics</i> , 21(1), 1-14.
04-Dec	W	Artificial intelligence & brain-computer interfaces	
06-Dec	F	Catch up & review	
10-Dec to 21-Dec	Tu to Sat	FINAL EXAM PERIOD	

This schedule may be subject to changes. These will be announced on Canvas if necessary.