

PSYC460 – Behavioural Neuroendocrinology

When: Tuesdays/ Thursdays 2pm – 3:20pm
Where: Chem c126

Instructor: Wansu Qiu, Ph.D. Candidate, Program: Neuroscience
Centre for Brain Health
Department of Psychology

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COVID19 information:

COVID-19 Safety: According to the provincial mandate, masks are required in all indoor public spaces including lobbies, hallways, stairwells, elevators, classrooms and labs. Thus, **you are required to wear a non-medical mask** during our class meetings, for your own protection and the safety and comfort of everyone else in the class.

Course description and learning objectives:

Brain + endocrinology and how it affects behaviour. Focus heavily on sex differences, sex as a biological factor in brain health.

It is your responsibility to ensure that you have met all prerequisites listed in the UBC Calendar for this course. If you lack any prerequisites for this course, the Department may cancel your registration at any time.

The course is created just as an introduction, so everything taught isn't necessarily the whole story but just to give you a basis of understanding for behavioural neuroendocrinology. That being said, the purpose of this course how to read, understand, critique, and discuss scientific research in a meaningful manner. Moreover, hopefully, what we will discuss during this class will give you a glimpse of how researchers conduct scientific research, all of which just specifically in regards to behavioural neuroendocrinology. So ideally, any of those skills learned can be applied to any academic field of your liking. Be respectful of others. I want to create a space for open discussion from anyone and everyone without judgement from others.

Textbook:

An Introduction of Behavioral Endocrinology by Randy Nelson, Fifth/Fourth Edition. **Not required but recommended for support (Chapter 1-4).**

Other readings (**again just recommended**) will be listed and given on Canvas.

Course breakdown:

- Midterm – 20% - October 19, 2021
- Critiques – 30%- Sept 30, Oct 28, Nov 25
 - 10% each critique
- Student talks – 30% (Oct-Dec)
- Quizzes – 15% (Oct-Dec)
 - After each student presentation lecture date, a quiz will be given regarding the student talks presented that day
- Participation – 5%
 - 2% - Submit 2 questions regarding the special lecture on Oct 14
 - 2% - Submit 2 questions with answers regarding your own student talk that you would like your fellow students to be quizzed on
 - 1% - Submit 1 comment at the end of year about anything new you've learned during this course

Course timeline – Subject to change with notice

Week	Date	Lecture topic	Readings (optional)	Comments
Week 1	Sept 9	Introduction to the importance of sex differences in research	Textbook chapter 1	
Week 2	Sept 14	The endocrine system	Textbook chapter 2	
	Sept 16	Sex determination/differentiation	Textbook chapter 3	
Week 3	Sept 21	Sex differences	Textbook chapter 4	
	Sept 23	Stress, HPA, and health impacts – Part 1	Bangasser and Valentino, 2014; Bale and Epperson, 2015	
Week 4	Sept 28	Stress, HPA, and health impacts – Part 2		NO CLASS Sept 30
Week 5	Oct 5	Sex hormones on cognition (guest lecturer Bonnie Lee)	TBD	
	Oct 7	Puberty and adolescence (Guest lecturer Dr. Travis Hodges)	TBD	
Week 6	Oct 12	Neuroimmune system in relations to hormones	N/A	
	Oct 14	Maternal behaviour & Special lecture on postpartum depression	For maternal behaviour: Bridges, 2015	
Week 7	Oct 19	Midterm	N/A	
Week 7 and onward	Oct 21 to Dec 7	Student presentations		NO CLASS On Nov 11

Significant dates:

- Student talks topic and presentation time sign-up – Opens Sept 28
- Midterm – October 19
- Critiques – Sept 30, Oct 28, Nov 25

Critique papers:

Tuscher JJ, Szinte JS, Starrett JR, Krentzel AA, Fortress AM, Remage-Healey L, Frick KM. Inhibition of local estrogen synthesis in the hippocampus impairs hippocampal memory consolidation in ovariectomized female mice. *Horm Behav.* 2016 Jul;83:60-67. doi: 10.1016/j.yhbeh.2016.05.001. Epub 2016 May 10. PMID: 27178577; PMCID: PMC4915975

Sabihi S, Durosko NE, Dong SM, Leuner B. Oxytocin in the prelimbic medial prefrontal cortex reduces anxiety-like behavior in female and male rats. *Psychoneuroendocrinology.* 2014 Jul;45:31-42. doi: 10.1016/j.psyneuen.2014.03.009. Epub 2014 Mar 29. PMID: 24845174; PMCID: PMC4067951.

McClure RE, Barha CK, Galea LA. 17 β -Estradiol, but not estrone, increases the survival and activation of new neurons in the hippocampus in response to spatial memory in adult female rats. *Horm Behav.* 2013 Jan;63(1):144-57. doi: 10.1016/j.yhbeh.2012.09.011. Epub 2012 Oct 12. PMID: 23063473.

MUST submit to both Canvas and Turnitin in PDF format.

Turnitin class ID: 31435825

Enrolment key: 0805

Format for journal article critique:

2 pages maximum, single spaced. All text should be in 12pt Times New Roman font and margins must be set at 1". Your name and student ID must appear outside the set margins of the page, for example in the header.

- **Introduction/Outline – 10pts**
 - **Description of methods/Experiments – 5pts**
 - **Results – 10pts**
 - **Discussion – 10pts**
 - **Strengths and limitations – 15pts**
 - **Future directions – 10pts**
1. Journal Article Information
 - a. Full citation
 2. Introduction and outline
 - a. Background and purpose (~150 words)
 - i. What problem was the experimenter trying to solve?
 - ii. Why the authors wanted to conduct this experiment?
 - b. Overarching Hypothesis (~100 words)
 3. Methodology (~150-200 words)
 - a. What were some key methodologies/technique(s)?
 - b. Examine the relationships between the independent and dependent variables

- c. How are the hypotheses tested?
4. Results (~150-200 words)
 - a. What are the key findings?
 - b. What do the data show?
5. Evaluation of the Research (~500 words)
 - a. Do the experiments fully address the hypotheses?
 - b. Do the method produce data that will answer the research question? What makes this method feasible/appropriate?
 - c. Strengths and limitations.
 - i. Confounds
 - d. Are the results conclusive or are there other alternative interpretations?
6. Future directions
 - a. Based on the results, what experiment would you do next?
 - b. What are some logical next steps?
 - c. What more can be done to answer the research question fully?

Student talks:

- **Introduction/Outline – 10pts**
- **Materials presented – 10pts**
- **Rationale/Discussion on topics – 15pts**
- **Answering questions – 5pts**
- **Take home message/what you thought of the topic – 10pts**
- **Slides (aesthetics) – 5pts**
- **Flow/Presentation Clarity – 5pts**

Based on the topics assigned, design a 10min student lecture to teach the class and me about your topic. You have full creative control but should at least satisfy the criteria given above. Make sure you introduce the topic and provide sufficient background information and just teach us something that hadn't been discussed in class previously. Please include a take home message at the end and be prepared to answer some questions regarding the topic.

Topics and presentation sign-up form will open on Sept 28 and closes at 5pm the next day on Sept 29 so please be prepared to select your topic and time for presentation before then. Method for assigning topics will be based on a first-come-first serve basis.

The sign-up form will ask students to submit their first 3 choices for topics, first 2 choices for presentation times. And preferred timeslot during class for presentations. Hopefully, we will have 6 presentations per class. For topics, see end of syllabus. Each topic will have max 2 student presenters, until full, then 3 is allowed. IF you do not submit a response for the topic and time sign-up sheet, a topic and a presentation time will be assigned for you.

Topics and presentation times will hopefully with ready for you by Oct 1. You are asked to submit your PowerPoint presentation the night prior to your presentation date, which you **MUST** do to Canvas only. You are asked to also submit 2 questions with answers regarding your own student talk that you would like your fellow students to be quizzed on (i.e. you're the lecturer for your topic and you will be quizzing your fellow students on what you have taught to the class), this is just for participation so you don't really have to do this, but if you want the points, then you should do this. Submitted quiz questions can be in any of the following form: multiple choice, multiple answers, fill in the blank, short answers. Quiz questions submitted to Canvas only.

For quizzes: see below

Quizzes:

You will be quizzed on material presented by students via the student talks. You will be quizzed based on questions submitted by your fellow students who presented that day. And each quiz will open after class, and you will have a week to do the quiz. IF in the case the student presenter did not submit questions prior to their presentation, I will be making questions. Each student talk will have 2 questions per talk. Thus, if 6 students presented per lecture then you will have 12 questions. Quiz questions can be in any of the following form: multiple choice, multiple answers, fill in the blank, short answers.

UBC's values and 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 and cultural 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 here (<https://senate.ubc.ca/policiesresources-support-student-success>)

UBC and Psychology department's policy on grade distribution and scaling

In order to reduce grade inflation and maintain equity across multiple course sections, all psychology classes are required to comply with departmental norms regarding grade distributions. **However, in the spirit of flexibility and compassion in light of COVID-19 and the associated pivoting to online teaching, those departmental norms have been adjusted upwards by 5%.** 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 transcript. Further details on UBC's grading practices are available at <https://students.ubc.ca/enrolment/courses/grades>.

Note for BNS-core course and upper level small-enrollment seminars (ie, PSYC 270, 277, 278, 312, 370, 371, 349, 449, 359, 417, 427, 460, 461, 462, 472):

The convention pre-Covid has been that BNS and upper-level low-enrollment seminars (<50 students) were allowed slightly higher grades, with means in the 75-76 range. The explanation is that students in these classes tend to have higher average grades already. **The teaching committee has therefore applied the same +5% scaling rule for Covid times to allow means in the 80-81% range for these select courses.** Standard deviations should be retained in the 8-12% range, to maintain relative class standing statements.

Special accommodations:

UBC is committed to providing access to all students, while maintaining academic standards. The office of Access and Diversity (A&D, <https://students.ubc.ca/about-student-services/centre-for-accessibility>) is the lead on campus for assisting students on issues of accessibility and accommodation.

Faculty members are encouraged to assist with reasonable requests from students with disabilities. Students will present you with an Academic Accommodation letter from A&D that lists academic accommodations the student is eligible for based on the student's documented requirements. Accommodations include support services, such as notetaking and interpreting, which are arranged by Access & Diversity. Other accommodations may be academic, such as extended exam sitting times.

Please note that a disability is treated differently than an illness such as the flu or a cold. In cases of illness, students are expected to speak with you or with a faculty advisor to determine what documentation is required for academic concessions related to their illness. In case of disability, eligibility and accommodations are arranged directly through Access & Diversity.

For more information, visit: <https://students.ubc.ca/enrolment/academic-supports/academic-accommodations-disabilities>.

For a list of possible academic accommodations, visit: <https://students.ubc.ca/academic-success/academic-supports/academic-accommodations-disabilities/types-academic-accommodations>

Departmental policy on missed tests and extensions:

For any missed due dates/assignments and exams. It is up to you to let me know if you cannot under circumstances meet the due dates and/or need to miss the midterm. For make-up midterm exams. For first occurrences of an acute illness likely to be quickly resolved without seeing a health professional, a self-declaration will suffice. Health professionals are not able to provide meaningful reports for students who have not been under their care prior to the illness. All medical excuses must be personally presented to the professor as soon as you are able to return to class for a make up to be scheduled. ***Make-up exams will consist of an oral exam to be conducted in the presence of the professor and the teaching assistant.***

In the interest of fairness to your classmates, quizzes will not have extensions or make-up quizzes. You will be allowed a 3-day grace period for ONE critique, but you MUST first notify either me to or TA before the due date, so choose wisely. In the case where you cannot meet the due date for a second critique, a 10% late deduction will be implemented for each 24hr late period.

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.com – a service designed to detect plagiarism. All materials (term papers, lab reports) 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>).

Exam review:

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.

Additional information:

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/>.

Student talk topics:

1. Transition M to F, F to M – implications for brain and behaviour
2. Sexual orientation – relations to brain and hormones
3. Alternative sexual differentiation: Sex-changing fish
4. Gender identifications: Are hormones involved
5. The male sex drive: Viagra
6. The female sex drive
7. Aphrodisiacs
8. Hormonal fetal programming
9. Environmental hormones – BPA and why it's bad
10. Other endocrine disruptors
11. Gonadal hormones and athletic performance
12. Hormones and food intake
13. Eating disorders – relations to brain and hormones
14. Obesity and how it affects brain and hormones
15. Treatments of obesity and how it affects brain and hormones
16. Neurobiology of love and attachment
17. PMDD – relations to brain and hormones
18. PTSD – relations to brain and hormones
19. Alzheimer Disease
20. Epilepsy, seizures, and hormones

21. Schizophrenia and hormones
22. Parkinson's Disease – relations to brain and hormones
23. Hormonal treatments for depression in humans
24. Hormones and cancer
25. Estrous cycle and behaviour – Implications for menstrual cycles
26. Menopause and hormone replacement therapy
27. Andropause
28. Hormonal control of pain
29. Hormones and aggression
30. Addiction and sex differences
31. Addiction and stress
32. Hormones and cell death
33. Hormones and neurogenesis
34. How do hormones affect electrophysiology: LTP/LTD
35. Neuroprotection and hormones
36. Beyond SRY – genes and sexual differentiation
37. Anabolic steroid use – good or bad? Yes or no?
38. Examples in behaviour neuroendocrinology of why just studying males is not enough