Psychology 460 – Behavioural Neuroendocrinology

When: Tuesdays/ Thursdays 11-12:30
Where: Buchanan B315

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Textbook: An Introduction of Behavioral Endocrinology by Randy Nelson, Fourth Edition. It is recommended that you read Chapters 1-4. Required readings (journal articles) are available on Connect and are listed below.

Course outlines, lectures available on Connect: http://elearning.ubc.ca/connect/ - but be aware these lectures are always changing and thus at times some slides may be posted after classes. You can join us on Facebook : UBC Psyc 460 2016 – where you can post comments, questions, your presentations and/or interesting papers/news articles related to 460.
https://www.facebook.com/groups/1582053402090100/

Furthermore more resources are available for you at: http://guides.library.ubc.ca/psyc460
This website was created to help you find research on your topic for your presentation and critiques.

Course description:
As anyone who has gone through puberty, menopause, pregnancy or andropause knows, hormones play a large role in affecting both brain and body. This course is designed to introduce students to the field of behavioral neuroendocrinology, which is the study of how hormones affect behaviour and brain. Recent pressure has been placed on researchers, federal funding agencies and the FDA to include the use of sex as a biological variable and this course will explore the instances where sex matters to 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.

Departmental Policy on Missed Tests and Extensions:

Course policies: Classes of this size add certain constraints on the way in which I must teach the course. One such constraint is that there will be no (for emphasis let us repeat the word NO) make up exams in this course. This means that if you miss an exam you will simply lose the number of points associated with it. Your grade will therefore be computed as if that particular entry was a zero. The only exceptions to this are validated medical excuses. Such excuses must be in the form of a written note from your doctor or from student health, attesting to the fact that on the day of the exam you were too ill to be expected to function reasonably. Please note, that although the Student Health Service will provide such validations for December and Final exams, they will not provide these for midterms, hence in the event of a missed midterm your medical excuse must be obtained from a private physician. If you should have a personal or psychological trauma and miss an examination, a written letter of explanation from your psychiatrist, psychologist, or student counsellor must accompany such an excuse. A letter from the attending physician or clergyman must validate exams missed due to a death in the family. In the absence of such written verification you will not be excused. 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.
If you submit medical documentation make sure it contains the statement "*This student was unable to write the test (or submit term work by the last day of classes, if applicable) on (date) for medical reasons"*. If not then marks will be deducted or you will have an assigned mark of zero. You are advised to see your physician within one day of the missed test. Many physicians will not provide documentation retroactively.

Evaluation:

Midterm	30%	October 20, 2016
Participation	5%	
Talk	25%	Talks will be scheduled from Oct 25 -Dec 1
Critiques	30%	Sept. 29, Oct 29, Nov 29, @ 12 pm
Quizzes	10%	

Material from both the lectures and the readings will be on the exam. Readings are available through **Connect – Library Course Reserves**. You will be responsible for reading the materials in the articles in the order shown on the schedule that follows. This class is in a discussion seminar format particularly for the second half of the term. You must come to each class prepared to discuss the readings. The readings are assigned below from for the first half of the course.

Talk - Each student will be required to give a presentation (~10 mins – the time will ultimately be decided once the class list is finalised). A list of topics is tentatively listed on the next few pages, we will draw for names/topics in a random order during the second week of classes. The talks will begin after the midterm and run through to the end of classes. 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. There will be 4-5 talks per class.

Critiques: Instructions: 1. Begin by explaining the problem the paper is attacking, and why it is interesting and important. Summarize the background to the paper; cite previous research where relevant, explaining what questions the prior work left unanswered and why additional work was necessary. If a specific hypothesis is proposed by the authors state what it is, and explain the reasoning behind it. 2. Briefly describe the methods the authors used to do the research. 3. Briefly describe the main findings of the paper as they relate to the questions/hypotheses raised in section 4. Discuss the strengths and weaknesses of the paper as you see them. Were the techniques adequate? Are the results conclusive or are there other interpretations? Are there other experiments or controls that could or should have been done? 5. Are there other papers in the literature that report contradictory findings? If so, what factors do you think may explain the discrepancy? 6. Suggest what new experiments could be done, based on the paper's findings. Other general instructions: Number the sections as listed above (1-6), use 1 inch margins, and 12 point font. The word limit is strictly 1000 words for each critique (excluding references). The commentary articles (News and Views) published in Nature and Nature Neuroscience are a good style model for critiques as they are concise and addressed to a non-expert audience. However you should aim to be more critical in your comments than those articles usually are.

Quizzes will be conducted during the student talks, based on the content of the talks, and will be available via Connect. NB there is a limited time to do these quizzes as they will only be available for 24 h to complete but you will be notified of these dates (around Nov 6 and 20).

TENTATIVE **LECTURE TOPICS**

Week: **Topic**

1 Introduction – How to read science papers and why researching sex and sex hormones is important.

Readings:

Chpt 4 Bad Science: Quacks, Hacks, And Big Pharma Flacks, by Ben Goldacre McClelland & Stewart | July 5, 2011. – Chapter 4 (Homeopathy)

Cahill L. A half-truth is a whole lie: on the necessity of investigating sex influences on the brain. Endocrinology . 2012 Jun;153(6):2541-3. doi: 10.1210/en.2011-2167.

Clayton JA, Collins FS. Policy: NIH to balance sex in cell and animal studies Nature . 2014 May 15;509(7500):282-3.

Fields RD.NIH policy: mandate goes too far. Nature. 2014 Jun 19;510(7505):340. doi: 10.1038/510340a.

McCullough LD, McCarthy MM, de Vries GJ. NIH policy: status quo is also costly. Nature. 2014 Jun 19;510(7505):340. doi: 10.1038/510340b.

2 The Endocrine System

Reading: Chapter 2 An Introduction of Behavioral Endocrinology by Randy Nelson, Fourth Edition

2 Sex determination and differentiation

Readings:

Readings: Gamble T, Zarkower D. Sex determination. Curr Biol. 2012 Apr 24;22(8):R257-62. doi: 10.1016/j.cub.2012.02.054.

(recommended not required) Öçal G.Current concepts in disorders of sexual development. J Clin Res Pediatr Endocrinol. 2011;3(3):105-14. doi: 10.4274/jcrpe.v3i3.22.

3 Sex Differences in Brain

Reading: (recommended not required) Ruigrok AN, Salimi-Khorshidi G, Lai MC, Baron-Cohen S, Lombardo MV, Tait RJ, Suckling J. A meta-analysis of sex differences in human brain structure. Neurosci Biobehav Rev. 2014 Feb;39:34-50. doi: 10.1016/j.neubiorev.2013.12.004.

4 Sex Differences in Stress and HPA axis

Reading (not the last section on monoamine neurotransmitters): Goel N, Workman JL, Lee TT, Innala L, Viau V.Sex differences in the HPA axis. Compr Physiol. 2014 Jul;4(3):1121-55. doi: 10.1002/cphy.c130054.

5 Sex Differences and Sex Hormone Contributions to Learning and Memory

Reading: Hamson DK+, Roes MM+, **Galea, L.A.M.** (2016). Sex Hormones and Cognition: Neuroendocrine influences on memory and learning. *Comprehensive Physiology.* 6: 1295-1337.

Oct 20 Midterm

Oct 25-Dec 1 – Student talks

November 15 & 29 – No CLASS

Critique papers:

Sept 29th 1. Prendergast BJ, Onishi KG, Zucker I. Female mice liberated for inclusion in neuroscience and biomedical research. Neurosci Biobehav Rev. 2014 Mar;40:1-5. doi: 10.1016/j.neubiorev.2014.01.001.

Oct 29th 2. Joel D, Berman Z, Tavor I, Wexler N, Gaber O, Stein Y, Shefi N, Pool J, Urchs S, Margulies DS, Liem F, Hänggi J, Jäncke L, Assaf Y. Sex beyond the genitalia: The human brain mosaic. Proc Natl Acad Sci U S A. 2015 Dec 15;112(50):15468-73. doi: 10.1073/pnas.1509654112. Epub 2015 Nov 30.

Nov 29th 3. COMPARE: Kirschbaum C, Kudielka BM, Gaab J, Schommer NC, Hellhammer DH. Impact of gender, menstrual cycle phase, and oral contraceptives on the activity of the hypothalamus-pituitary-adrenal axis. Psychosom Med. 1999 Mar-Apr;61(2):154-62.

VERSUS

Stephens MA, Mahon PB, McCaul ME, Wand GS. Hypothalamic-pituitary-adrenal axis response to acute psychosocial stress: Effects of biological sex and circulating sex hormones. Psychoneuroendocrinology. 2016 Apr;66:47-55. doi: 10.1016/j.psyneuen.2015.12.021. Epub 2015 Dec 24.

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) to research your topic. Furthermore we created more resources via the library that are available for you at: 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 Centr**e. 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.

Faculties, departments and schools reserve the right to scale grades in order to maintain equity among sections and conformity to university, faculty, department or school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department or school. Grades are not official until they appear on a student's academic record.

Psychology Department's Policy on Grade Distributions and Scaling

In order to reduce grade inflation and maintain equity across multiple course sections, all psychology courses are required to comply with departmental norms regarding grade distributions. According to departmental norms, the mean grade in a 300-level class is 70 for a good class, 68 for an average class, and 66 for a weak class, with a standard deviation of 13). The corresponding figures for 100- and 200-level Psychology courses are 67, 65, and 63, with a standard deviation of 14. **Scaling** is likely to be used in order to comply with these norms; grades may be scaled up or down as necessary by the professor or department.

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/.

TENTATIVE TOPICS FOR STUDENT LECTURES

Transition M to F, F to M
Sexual orientation - relation to brain and hormones
Alternative sexual differentiation: Sex-changing fish
Early influences of maternal behaviour
Fetal programming

Environmental hormones
Neurobiology of Love and Attachment
Andropause
PMDD – premenstrual disorder
Postpartum depression,
Post Traumatic Stress Disorder
Biological rhythms,
Menopause and Hormone replacement therapy and aging in women.
Hormones and food intake,
Alzheimer Disease
Effects of stress and cortisol on aging,
Eating disorders
The Male Sex Drive: Viagra
Aphrodisiacs, hormonal control of pain
Epilepsy, Seizures and Hormones
Hormones and Aggression,
Depression, Gender and Hormones
Schizophrenia and gender and hormones
Addiction and Gender
Addiction and Stress
Cognition and hormones
Female Sex Drive
Transsexuals -hormones and influence on brain
Plasticity of the bulbercavernous nucleus of the spinal cord and relation to sexual behaviour in the male rat
Genes and hormones: Epigenetics and hormones
Hormones and cell death
Hormones and neurogenesis
How do hormones affect electrophysiology: LTP/LTD
Parkinson's Disease
Neuroprotection
hormones and immune system
beyond SRY – genes and sexual differentiation