PSY 411W- Hormones and Behavior

Fall, 2019

Description: This is an advanced seminar-style course in behavioral neuroscience, with an emphasis on the fascinating interactions among hormones, the brain, and behavior. Most of what's known about this topic is from non-human animal research, but relevant information about humans will be included whenever possible. Please be aware that this course deals with a lot of the **biology** underlying how hormones influence behavior. If you don't like biology very much, this is probably not the course for you. Students need to already have a strong background in physiological psychology and/or neurobiology (PSY 209, NEU 301 or 302, ZOL/IBIO 402 or 405) as well as a good understanding of statistics and experimental design (PSY 295, STT 201, 231 or 421). This course fulfills MSU's Tier II writing requirement. In addition to obtaining a solid understanding of how hormones influence the brain and behavior, it is expected that students will leave the course with stronger writing skills, the ability to think critically about science, and confidence in their ability to express their thoughts about the scientific topics covered in the course.

***Where and When*:** Giltner Hall, room 346; Tuesdays and Thursdays, 10:20-11:40 am.

Instructor: Prof. J. Lonstein
Office - 219 Giltner Hall
Phone - 353-8675
E-mail - lonstein@msu.edu
Office Hours - Thursdays 12:00-1:00 pm or by appointment

Textbook: An Introduction to Behavioral Endocrinology, 5th edition (2017), R.J. Nelson & L.J. Kriegsfeld

Grading*:*

1. Of the 200 points to obtain toward your grade this semester, 18% of your grade will be based on you reading and commenting/reflecting on the weekly reading assignments (12 points), frequency of participation in class discussions throughout the semester (12 points), and your attendance at lectures during the last part of the semester (12 points).

The course will run like this: For each topic in the course I will present background material for 2-3 class periods. You will then read three scientific articles on the topic that will be discussed during the very next class period. All articles are uploaded into D2L so you can easily access them. This syllabus also gives the citation information for every article assigned, so you could also get them from the MSU library (from the library website or get the physical copies of the journals and photocopy the articles). To ensure you read the articles before coming to each class discussion day, before you arrive to class those days you will write a relatively short commentary/reflection about each of the articles assigned (that is, you will prepare three commentaries/reflections each time, with one commentary/reflection for each article assigned) and hand them in at the beginning of that class discussion day. You must hand in these commentaries/reflections in person at the beginning of class - you cannot hand them in through a classmate, by email, or in my mailbox. Each one of that day's three commentaries/reflections should be about 1/3-page of single-spaced text using 12-pt Times New Roman font, directly pertain to the topic and content of the article, and be about something in each article you thought was particularly interesting, some specific aspects of the article you would have liked the authors to have explained better (and state why), or how something about the article connected with something specific you've learned in another course. This portion of your grade will be based on your handing these in, as well as whether the commentaries/reflections show that you read and thought about the articles before coming to class. I will grade these each of the six times using a 3-point system: 0 = you didn't hand anything in, 1 = unsatisfactory (comments were superficial, jotted down on the way to class), or 2 = satisfactory (you clearly spent some time reading and thinking about the set of articles). You can hand in a set of commentaries/reflections without attending class that day only if you have a documented medical,

religious, or legal excuse and in those cases it must be handed in within one week of when the original due date.

Everyone must read the articles before coming to the class discussion days because on those days I will split the students into small groups to talk about each article. For 10-15 minutes, each group will discuss four things about one of the assigned articles: (1) what the experiments intended to investigate and what the authors' hypotheses were, (2) how the experiments were performed, (3) what the major findings were, and (4) what the authors' major conclusions were. If you still have time after covering these four details about the article, you can also share with your group what you wrote in your commentaries/reflections. I will then randomly choose one member of each group to take ~10 minutes to verbally present the highlights of that article to the rest of the class. The whole class will then discuss the article. You will not know before class which article your group will discuss or present. All students will present over the course of the semester. If you contribute even one time to the larger group discussion about the articles, you will receive the two discussion points available for that discussion day (6 discussion days x 2 points each = 12 points). Becoming comfortable discussing the scientific material you read for class is a critical objective of this course. Therefore, **even if you regularly show up to class, if you never participate in class discussions you will receive a zero for this portion of your grade**.

You can also receive up to 12 points for coming to lectures during the end of the semester after the midterm exam (8 lectures x 1.5 points = 12 points). Because there are no exams after the midterm exam, I do this to encourage attendance and participation until the course is completed.

2) 40% of your course grade will come from the midterm exam (80 points). You will take the exam in class and it will be closed-book and in all essay format. It will cover material presented through the class period before the exam. The exam will cover material from both the lectures and the assigned readings. Some information you are responsible for will only be discussed in class, and will not be found in the textbook or the readings, so you will have to come to class to get all of the information. I may give you the pool of essay questions in advance of the exam, and you do not have permission to work together to create responses to them before the exam (that is, your studying and answers must be generated independently). After the exam is graded and handed back, any questions about how your essays were graded must be sent to me by email within one week after I return your exam, after which you and I will meet within a week to discuss it. I will not reconsider exam grades any later in the semester than that. A make-up exam will be granted only the case of a documented medical, religious, or legal excuse and must be completed within 7 days of the original exam date. It may or may not be the same exam that was taken by the other students in the class.

3) The last 43% of your grade (85 points) will be from preparing and handing in a final term paper. Your paper will be an in-depth review of the scientific research done on the biological factors involved in a small subfield of your choice that is highly related one of the topics covered in class. The paper must review a topic related to hormones, a behavior or mental process (e.g., emotion, cognition), and the relevant underlying biology. This term paper will be no fewer than 10 full, double-spaced typed pages of meaningful text. These 10 pages do not include the title page or references. If your final term paper has fewer than 10 pages of meaningful and relevant text, each page short will involve a 10% loss of your term paper grade. You must use 12-point Times Roman font and 1-inch margins. Do not include a running header at the top of the pages or use subheadings within the text. Do not include any additional spaces between paragraphs. Please do include page numbers on the bottom of each page. A list of references used in the paper must be included at the end of the main text of the paper and follow the American Psychological Association (APA) formatting style for references. Footnotes are not acceptable. The paper cannot use more than ½ page as a general introduction to your topic and cannot use more than ½ page for summary or conclusions at the end.

To obtain the necessary information for your term paper you should exclusively use primary scientific articles similar to the ones we read in class. Textbooks, articles from popular magazines, health-related websites, and class lecture notes are not appropriate sources for this paper and I will ask you to remove them. The three essential places to find abstracts of the articles you should use for your paper are:

www.pubmed.com, Google Scholar, and the PsychInfo database accessible from the MSU Library webpage. When on these websites, type in the keywords most relevant for your paper topic. Once you find the abstracts of the article you're interested in, you can either download the full articles from the links provided on the webpages, or go to the Main Library to photocopy the full articles if they are not available as PDFs. Again, sources found outside these three databases or the MSU Library probably aren't appropriate for this paper.

To receive full credit for the term paper, you must turn in on the assigned dates specified below: (1) A 1-page double-spaced description of the topic you would like to write about and a brief discussion of why you think it's an important/interesting topic. I'll then email with you to discuss and help you refine the topic. (2) A detailed outline of your paper. This outline must include the major topics you expect to have in your paper, some detailed subheadings placed under those major topics, and references placed at appropriate places within the outline to at least 10 scientific articles you found on Medline, PsychInfo or elsewhere from the MSU library that could be used as a start to the factual support for your subtopics. The number of sources of factual support necessary for your completed 10-page term paper is difficult to estimate (depends on the topic), but in the past most term papers for this course have needed at least 25 cited sources. I'll look at your outlines and then email or make an appointment with you to discuss your outline and may ask you to revise it. (3) MS Word file containing your final paper and a paper copy of it. **When you hand in the paper copy of your term paper, you also must hand in copies of the first three pages of every source you cited in your text,** which helps me when grading paper to find those articles if I need to and verify that the information you cited related to each article is accurate. Throughout the semester, we'll take considerable class time to talk about the content and structure of the term paper, and tips to think about when writing a review of a small scientific literature. I'll also be happy to read one partial draft of your paper, to let you know if you're on the right track, as long as I receive them at least four days before the final version of the paper is due. Do not wait until the last week of school or finals week to complete this paper. If you do, you will not have enough time to do a good job on this assignment. This paper should take at least 3 weeks to put together appropriately. **You cannot pass the course without satisfactorily completing all components of this term paper (one-page summary, outline and meeting/emailing with me, full final paper)**, even if you could have enough points to pass the course without handing in parts of this assignment. You are also required to submit the final draft of your paper to analysis by Turn-It-In on our D2L site under the "Assignments" tab to verify that the content is original (see below for details).

Grading Scale:

- Commentaries/Reflections = 12 points (2 points each)
- Class Discussion = 12 points (2 points for each article discussion day you contribute)
- Lecture Attendance After Midterm = 12 points (1.5 points each time you are there for the entire class)
- Midterm Exam = 80 points
- Final Term Paper = 85 points (summary = 5 pts, outline = 15 pts, paper = 65 pts)

TOTAL = 200 points

>180 points = 4.0
170-179 points = 3.5
160-169 points = 3.0
150-159 points = 2.5
140-149 points = 2.0
130-139 points = 1.5
120-129 points = 1.0
<120 points = 0.0

Academic Honesty and Integrity:

MSU has strict guidelines regarding academic honesty and integrity. These rules will be followed in this class and no student is exempt for any reason. Refer to your Student Handbook to see details of these guidelines. Academic Honesty Article 2.3.3 of the Academic Freedom Report states, "The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards." In addition, the Psychology Department adheres to the policies on academic honesty specified in General Student Regulation 1.0 - Protection of Scholarship and Grades (http://splife.studentlife.msu.edu/regulations/general-student-regulations), the University Policy on Integrity of Scholarship & Grades http://splife.studentlife.msu.edu/regulations/student-group-regulations-administrative-rulings-all-university-policies-and-selected-ordinances/integrity-of-scholarship-and-grades), and Ordinance 17.00 - Examinations (https://www.msu.edu/~ombud/academic-integrity/index.html#ordinance). Therefore, unless authorized by me, you are expected to complete all course assignments without assistance from each other or any other source. You are not authorized to use the www.Koofers.com or similar web sites to complete any work in this course. Students who violate MSU rules may receive a penalty grade, including but not limited to a failing grade on the assignment or for the entire course. If you have any questions or concerns about whether any particular activity is permitted in carrying out the work for this course are urged to see the very useful web site prepared by the University Ombudsperson at www.msu.edu/unit/ombud, especially the section on Academic Honesty. The Ombudsperson has some very specific information about the kinds of activities that are or are not appropriate. Also, please do not hesitate to discuss concerns or questions about these issues with me.

Furthermore, consistent with MSU's efforts to enhance student learning, foster honesty, and maintain integrity in our academic processes, Professor Lonstein will use a tool called TurnItIn to compare a student's work with multiple sources. The tool compares each student's work with an extensive database of prior publications and papers, providing links to possible matches and a 'similarity score'. The tool does not determine whether plagiarism has occurred or not. Instead, Professor Lonstein must make a complete assessment and judge the originality of the student's work. All submissions to this course might be checked using this tool. Your terms papers will be checked. Students should submit papers to the TurnItIn Dropbox on D2L without identifying information included in the paper (e.g. name or student number), because although the system will automatically show this information to Professor Lonstein when viewing the submission, the information will not be retained by Turnitin. Student submissions will be retained in the global TurnItIn repository.

Limits to Confidentiality:

Please be aware that class materials are generally considered confidential pursuant to the University's student record policies. However, all University employees, including instructors, cannot maintain confidentiality when it conflicts with their responsibility to report certain issues based on external legal obligations or health and safety considerations of MSU community members and others. As the instructor, Professor Lonstein must report the following information to other University offices if you share it with him:

- Suspected child abuse/neglect, even if this maltreatment happened when you were a child
- Allegations of sexual assault or sexual harassment when they involve MSU students, faculty, or staff
- Credible threats of harm to oneself or to others

These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In almost all cases, it will be your decision whether you wish to speak with that individual or not. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the MSU Counseling Center (http://www.counseling.msu.edu/students).

***Accommodations for Students with Disabilities*:**

Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at rcpd.msu.edu. Once your eligibility for an accommodation has been determined, you will be issued a Verified Individual Services Accommodation ("VISA") form. Please present this form to Professor Lonstein at the start of the term and/or ***two weeks prior to the accommodation date*** (exam, other assignments). Requests received after this date may not be honored. If you require testing accommodations (additional time, less disruptive room, etc.) you must contact Professor Lonstein and present your VISA ***at least two weeks before the exam date*** to schedule an alternative exam. Typically, he will schedule for you to take the exam during a special exam session arranged by him or offered by the Psychology Department every Wednesday at 3:00 pm and Friday at 9:00 am in Giltner Hall room 346. If you are unable to make any of those times, or the options do not meet your VISA accommodations, you may be able to schedule to take your exam at the RCPD office. In any case, the exam must be scheduled well in advance, so you need to adhere to the two week prior notification requirement.

Date	Topic	Textbook Reading
Th Aug. 29	Introduction to Behavioral Endocrinology	Nelson ch. 1
Tu/Th Sep. 3, 5	The Endocrine System	Nelson ch. 2
Tu/Th Sep. 10, 12	Sex Determination and Differentiation	Nelson ch. 3
Tu/Th/Tu Sep. 17, 19, 24	Sex Differences in Behavior	Nelson ch. 4
Th Sep. 26	*Articles and Discussion Day*	
Tu/Th Oct. 1, 3	Male Reproductive Behavior	Nelson ch. 5
Tu Oct. 8	*Articles and Discussion Day*	
Th/Tu/Th Oct. 10, 15, 17	Female Reproductive Behavior	Nelson ch. 6
Tu Oct. 22	*Articles and Discussion Day*	
Th Oct. 24	**MIDTERM EXAM**	
Tu/Th Oct. 29, 31*	Parental Behavior	Nelson ch. 7
Tu Nov. 5	*Articles and Discussion Day*	
Th/Tu/Th Nov. 7, 12, 14	Aggression & Bonding	Nelson ch. 8
Tu Nov. 19	*Articles and Discussion Day*	
Th/Tu Nov. 21*, 26	Stress	Nelson ch. 11
Th Nov 28	**NO CLASS - THANKSGIVING**	
Tu Dec. 3	Hormones and Affective Disorders	Nelson ch. 13
Th Dec. 5	*Articles and Discussion Day*	
Th Dec. 12*	**FINAL PAPERS DUE**	

***Important Dates to Remember:**

Th, Oct. 31 - Term paper one-page proposed topic due in class

Tu, Nov. 21 - Outline of your term paper due in class

Th, Dec. 2 - This is Thursday of finals week. Paper copies of your final papers and the first three pages of each reference are due in my office by 3 pm; electronic copies of your final papers in an MS Word file must also be sent via your MSU email address to lonstein@msu.edu by same deadline.

Articles to Read for Discussion Days (can find PDFs on D2L)

Thursday, Sep. 26 - Sexual Differentiation/Sex Differences in Behavior

Phoenix CH, Goy RW, Gerrall AA, Young WC (1959). Organizing action of prenatally administered testosterone propionate on the tissues mediating mating behavior in the female guinea pig. *Endocrinology*, 65, 369-382.

Gorski RA, Gordon, JH, Shryne JE, Southam AM (1978). Evidence for a morphological sex difference within the medial preoptic area of the rat brain. *Brain Research*, 148, 333-346.

Pasterski V, Zucker KJ, Hindmarsh PC, Hughes IA, Acerini C, Spencer D, Neufeld S, Hines M (2015). Increased cross-gender identification independent of gender role behavior in girls with congenital adrenal hyperplasia. *Archives of Sexual Behavior,* 44, 1363-1375.

Tuesday, Oct. 8 - Male Reproductive Behavior

Davidson, JM (1966). Characteristics of sex behaviour in male rats following castration. *Animal Behaviour*, 14, 266-272.

Harding SM, McGinnis MY (2003). Effects of testosterone in the VMN on copulation, partner preference, and vocalizations in male rats. *Hormones and Behavior*, 43, 327-335.

Eberhard J, Ståhl O, Cohn-Cedermark G, Cavallin-Ståhl E, Giwercman Y, Rylander L, Eberhard-Gran M, Kvist U, Fugl-Meyer KS, Giwercman A. (2009) Sexual function in men treated for testicular cancer. *The Journal of Sexual Medicine,* 6, 1979-1989.

Tuesday, Oct. 22 - Female Reproductive Behavior

Gangestad SW, Thornhill R, Garver CE. (2002). Changes in women's sexual interests and their partner's mate–retention tactics across the menstrual cycle: evidence for shifting conflicts of interest. *Proceedings of the Royal Society of London,* 269, 975-982.

Zehr JL, Maestripieri D, Wallen K. (1998). Estradiol increases female sexual initiation independent of male responsiveness in rhesus monkeys. *Hormones and Behavior,* 33, 95-103.

Rubin BS, Barfield RJ (1983). Induction of estrous behavior in ovariectomized rats by sequential replacement of estrogen and progesterone to the ventromedial hypothalamus. *Neuroendocrinology*, 37, 218-224.

Tuesday, Nov. 5 - Parental Behavior

Numan M, Rosenblatt JS, Komisaruk BR (1977). Medial preoptic area and onset of maternal behavior in the rat. *Journal of Comparative and Physiological Psychology*, 91, 146-164.

Glynn LM, Davis EP, Sandman CA, Goldberg WA. (2016). Gestational hormone profiles predict human maternal behavior at 1-year postpartum. *Hormones and Behavior,* 85, 19-25.

Macbeth AH, Stepp JE, Lee HJ, Young WS, Caldwell HK. (2010). Normal maternal behavior, but increased pup mortality, in conditional oxytocin receptor knockout females. *Behavioral Neuroscience,* 124, 677-685.

Tuesday, Nov. 19 - Aggression and Bonding

Mayer AD, Rosenblatt JS. (1987). Hormonal factors influence the onset of maternal aggression in laboratory rats. *Hormones & Behavior*, 21, 253-67.

Carré JM, Geniole SN, Ortiz TL, Bird BM, Videto A, Bonin PL. (2017). Exogenous testosterone rapidly increases aggressive behavior in dominant and impulsive men. *Biological Psychiatry*, 82, 249-256

DeVries AC, DeVries MB, Taymans S, Carter CS (1995). Modulation of pair bonding in female prairie voles (*Microtus ochrogaster*) by corticosterone. *Proceedings of the National Academy of Sciences*, USA, 92, 7744-7748.

Thursday, Dec. 5 - Stress, Hormones, & Affective Disorders

Petersen N, Patihis L, Nielsen SE. (2015). Decreased susceptibility to false memories from misinformation in hormonal contraception users. *Memory*, 23, 1029-38.

Schmidt PJ, Martinez PE, Nieman LK, Koziol DE, Thompson KD, Schenkel L, Wakim PG, Rubinow DR. (2017). Premenstrual dysphoric disorder symptoms following ovarian suppression: Triggered by change in ovarian steroid levels but not continuous stable levels. *American Journal of Psychiatry*, 174, 980-989.

Pope HG, Amiaz R, Brennan BP, Orr G, Weiser M, Kelly JF, Kanayama G, Siegel A, Hudson JI, Seidman SN. (2010). Parallel-group placebo-controlled trial of testosterone gel in men with major depressive disorder displaying an incomplete response to standard antidepressant treatment. *Journal of Clinical Psychopharmacology*, 30, 126-134.