

HORMONES AND BEHAVIOR

PSY 411-001

Fall 2025

Monday and Wednesday 3:00 – 4:20 PM
A148 Plant & Soil Science Bldg

Instructor: Alexandra Castillo-Ruiz, Assistant Professor
Department of Psychology and Neuroscience Program
Office: 4009 ISTB
Office hours: 10:00 am – 11:00 am via Zoom (or by appointment)
Link: <https://msu.zoom.us/j/95558617937>
Meeting ID: 955 5861 7937
e-mail: castil71@msu.edu
preferred communication method, emails will be answered within 1-2 business days
Phone: 517 353 6694

Textbook (recommended):

“An Introduction to Behavioral Endocrinology”, 5th Edition, 2016, RJ Nelson and LJ Kriegsfeld, Sinauer Associates, Inc.

Course description:

This course will focus on the hormonal bases of behavior from molecular, cellular, physiological, developmental, and evolutionary perspectives. The course will start with a description of hormones, hormone production, and actions on target tissues. Methods used for the study on Behavioral Endocrinology will also be introduced. Then, we will continue with the analysis of how hormones regulate a variety of behaviors, including reproductive, parental, aggressive, and feeding behaviors, among others. Non-human animal models will be part of our lectures and discussions since they have been invaluable in the understanding of endocrine mechanisms of behavior. Relevant information on human research will also be presented.

This course does not have an Honors option.

Course learning objectives:

This course has five learning objectives, which will be achieved through assignments and exams. At the completion of this course, you should be able to:

1. Recognize what hormones are, how and where they are produced, and what their actions are on target tissues.
2. Understand how hormones interact with the nervous system to regulate diverse behaviors.
3. Apply the concepts learned in class to understand what happens when normal function of the neuroendocrine system is disrupted.
4. Articulate orally and in writing the materials learned in class.
5. Evaluate scientific research more critically.

Grades:

Grades will be assigned according the following scale:

| | | |
|----------------|----------------|----------------|
| 90-100% = 4.0 | 75-79.9% = 2.5 | 60-64.9% = 1.0 |
| 85-89.9% = 3.5 | 70-74.9% = 2.0 | < 59.9% = 0 |
| 80-84.9% = 3.0 | 65-69.9% = 1.5 | |

Overall grade:

There will be 500 points possible:

| | |
|-----|------------------------------------|
| 100 | The midterm with the highest score |
| 100 | Presentations |
| 75 | Term paper |
| 100 | Assignments |
| 125 | Final exam |

Midterm exams:

Midterm exams will cover material presented in lectures, assignments, student presentations, and assigned readings. A study guide will be handed out to you the week before each exam. Each exam will consist of a mixture of multiple-choice, fill in the blanks, and short essay questions. Grades will be posted on D2L within a business week after the exam. I will keep the multiple-choice part of the exam and I will return to you the written portion. Please come during office hours (or set an appointment) to review/check your answers for the multiple-choice part. Please bring to my attention any grading issues no later than a week after grades are posted. The midterm exam with the lowest score will be dropped from the calculations for the final grade (**note: this does not include the final exam**).

Final exam:

Approximately 30% of the final exam will be cumulative, thus covering the key points discussed during the entire semester. The rest of the final will cover the material covered after the second midterm exam. A study guide will be handed out to you the week before the final exam. The final exam will consist of a mixture of multiple choice, fill in the blanks and short essay questions. Final exam grades will be posted on D2L 3-4 days after the exam. Deadline to review your final exam is Friday, December 12th (please set an appointment by email).

Presentations:

Three-four students will work together to develop each presentation on a peer-reviewed article (list of readings will be posted on D2L by September 3rd). Assignment notifications will be posted on D2L by September 5th. Groups will give a brief introduction to the paper, explain the most relevant figures or tables provided in the paper, and provide a brief explanation on the study's significance. In addition, each group will pose 2 discussion questions in relation to the article. Presentations should last 10-12 minutes, with 3-5 additional minutes for questions/discussion. Two days prior to the presentation, every group will submit 2 discussion questions for approval (late submissions will detract points from your grade). No later than two days after the presentation, students must submit grades for their groupmates. Failure to do so will affect the group's grade (points will be detracted). In addition, no later than two days after the presentation, student groups will submit a lay language press release of the article (1-2 pages, one-inch margins, double-spaced, 12-point font) per group. **Detailed presentation guidelines and a rubric will be provided during the second week of class.** All students must participate equally in the execution of the assignment. Presentation creativeness is highly encouraged!

Assignments:

Students are expected to read ALL peer-reviewed articles selected for ALL group presentations. Assignments related to the articles will include submitting 1-2 questions that you would like to see addressed in class discussion, answering questions sent to you in advance, or providing a summary on the article. Other assignments may involve readings, watch documentaries and videoclips, listen to podcasts, among other possible formats. All assignments will be due at the beginning of class time and must be handed in person. In addition, we will have some assignments that are to be completed during the class period and will have oral and/or written formats. No make-ups will be offered if you miss an assignment. However, there will be 2 extra assignments that can be used to replace missing ones or the two lowest scores. Assignments may be typed or hand-written. If you opt for the latter please make sure your handwriting is legible, and if you are using a spiral notebook sheet please make sure to remove the ripped edge. Points may be deducted if you fail to do so. The grading system for assignments will be completion or points. A record of assignments will be updated on D2L weekly.

Term paper:

For this assignment, select what you see as an interesting topic related to an issue covered or to be covered in class. Then, contact me for approval by sending me as an email attachment a brief explanation (1 page, one-inch margins, double-spaced, 12-point font) of your topic selection and why you think is important. Include in your explanation 2 references (peer-reviewed articles) to support your topic choice. The deadline for approvals is September 24th. Then, by October 22nd, send me a draft of your paper in outline format as an email attachment (1-2 pages, one-inch margins, double-spaced, 12-point font), highlighting the key points you want to make in your paper within the following sections: 1) background information, (2) significance, (3) future directions (*i.e.*, what you think can be done to further progress the current state of knowledge), (4) conclusions. If possible, include citations with a reference section (use only peer-reviewed references). I will send you comments within the following week. The final stage of this assignment entails submitting the finalized draft of your paper (6-8 pages, one-inch margins, double-spaced, 12-point font; does not include references). Submit your finalized paper to D2L no later than November 24th at 5 pm. Detailed guidelines and a rubric for this assignment will be provided to you by September 24th. Note: try not to miss deadlines; late submissions will detract points from your grade.

Bonus points:

You can earn up to 15 extra credit points by participating in 3 unannounced quizzes (15 points: 5 points/ quiz). Quizzes will cover material from the previous lecture. The format will be varied and will include questions asking you to fill in the blanks, define a term, or draw a graph, among other possible formats. No make-up quizzes will be offered.

Course policies:

A general comment:

I am here to help you understand the material. I will be very happy to discuss with you material covered in class or in the textbook. So, please come to office hours or talk to me before or after class. If none of these times work for you, please make an appointment.

Missed exams:

Please be on time. You will only have the time allotted for class to take the exams. Also, my policy is to stop allowing students to take an exam after the first student has completed the exam and exited. There will be no make-up midterms, except due to religious observance (see related section below). Instead, I will automatically drop the midterm exam that has the lowest score (note: this does not apply to the FINAL exam). If you miss two midterm exams, then I will give you an opportunity to make up for one of them, but only when you provide evidence of extreme circumstances (e.g., illness, jury duty, death in the immediate family, traffic accident) within 24 hours of missing the exam.

Study guides and review sessions:

A study guide will be available to you the week before each exam. In addition, I will hold review sessions before each exam. The times and dates for those will be announced a week before each exam. Note that the review session for the final will be held during the last day of class.

Lectures:

Class slides will be posted generally before each lecture. Note that the posted materials won't include or match exactly all the information presented in class.

Class materials:

Please note that class materials: lectures, study guides, in-class assignments, etc., are meant to be for PERSONAL USE ONLY. You don't have my permission to reproduce, distribute, or post class materials publicly.

Attendance:

I expect that you will attend class. This is for your own benefit. Assigned readings are intended to supplement and clarify material presented in lecture, not to substitute for material presented in lectures, nor to replace your attendance at lectures. If for any reason you must miss lecture, I expect you to make arrangements to obtain notes. In addition, I expect you to be on time and stay until class is done. If you either have to arrive late or leave early I expect you to sit close to the door to minimize disruptions.

Observing Religious Holidays:

By the end of the second week of classes, you are expected to provide me with notice of the dates of religious holidays on which you plan to be absent during the semester. This has the goal of providing you with the opportunity to make up for missed work. Failure to do so will result in a score of zero for missed assignments, and no opportunity for a make-up will be provided.

Request for special opportunities:

Please be mindful that it is against MSU policy for a professor to give any one student a special opportunity that is not provided to all students. These include requests for extra credit, extra points, or special opportunities to make up exams.

Respect:

I expect you to refrain from the following activities during class: (1) having cell-phones on (if you must have your cell-phone on due to other responsibilities, please change the ringer to vibrate and exit the class to answer your call), (2) talking to neighbors when I or another person is speaking, (3) using electronic devices for purposes other than those related to class such as taking notes or in-class activities, (4) sleeping, (5) preparing to leave when I am still lecturing, and (6) mimicking, embarrassing or intimidating your classmates.

Email etiquette:

The overall goal of this requirement is to help you with your professional development. I expect your emails to be written in a professional way. That is, your emails must contain: 1) a subject line, 2) a proper greeting, 3) the reason why you are emailing, and 4) a formal acknowledgment at the end. I won't respond to emails that don't follow these instructions. Please, proof read your emails before sending. This should help you avoid typos.

Academic honesty:

The Spartan Code of Honor states:

“As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice honesty in my work, foster honesty in my peers, and take pride in knowing that honor is worth more than grades. I will carry these values beyond my time as a student at MSU continuing the endeavor to build personal integrity in all that I do.”

Therefore, unless authorized by me, you are expected to complete all course assignments and exams, without assistance from anyone (peers, AI, etc.). Any violations of the academic honesty policy will result in a score of zero in any given assignment. In addition, an academic dishonesty charge may be filed against you.

Accommodations for Disabilities:

Students with disabilities should contact the Resource Center for Persons with Disabilities (RCPD) to establish clear and reasonable accommodations. For an appointment with a counselor, call 353-9642 (voice) or 355-1293 (TTY). If you require testing accommodations as specified from RCPD, contact your me with the appropriate paperwork at least 10 days prior to the exam date.

Lecture topics and assigned readings

| Date | Topic | Book reading |
|-----------------|--|--------------|
| 08/25/25 | Introduction/overview | Chapter 1 |
| 08/27/25 | Reviewing key concepts: Brain and Behavior | |
| 09/01/25 | NO CLASS – LABOR DAY | |
| 09/03/25 | The Study of Behavioral Endocrinology | Chapter 1 |
| 09/08/25 | Introduction to the Endocrine System | Chapter 2 |
| 09/10/25 | Introduction to the Endocrine System/†† Class reading discussion 1 | Chapter 2 |
| 09/15/25 | Sex differences in Behavior | Chapter 3 |
| 09/17/25 | Sex differences in Behavior/†† Class reading discussion 2 | Chapter 4 |
| 09/22/25 | MIDTERM 1 | |
| 09/24/25 | Male Reproductive Behavior <i>Deadline for paper topic approval</i> | Chapter 5 |
| 09/29/25 | Male Reproductive Behavior/** Group presentation 1 | Chapter 5 |
| 10/01/25 | Female Reproductive Behavior | Chapter 6 |
| 10/06/25 | Female Reproductive Behavior/** Group presentation 2 | Chapter 6 |
| 10/08/25 | Parental Behavior | Chapter 7 |
| 10/13/25 | Parental Behavior/** Group presentation 3 | Chapter 7 |
| 10/15/25 | Social Behavior/** Group presentation 4 | Chapter 8 |
| 10/20/25 | NO CLASS – Fall break | |
| 10/22/25 | Social Behavior/** Group presentation 5 <i>Deadline to submit paper draft</i> | Chapter 8 |
| 10/27/25 | MIDTERM 2 | |
| 10/29/25 | Hormones and Homeostasis | Chapter 9 |
| 11/03/25 | Hormones and Homeostasis/** Group presentation 6 | Chapter 9 |
| 11/05/25 | Biological Rhythms | Chapter 10 |
| 11/10/25 | Biological Rhythms/** Group presentation 7 | Chapter 10 |
| 11/12/25 | Endocrine control of stress | Chapter 11 |
| 11/17/25 | Endocrine control of stress/** Group presentation 8 | Chapter 11 |
| 11/19/25 | Hormones and Learning | Chapter 12 |
| 11/24/25 | Hormones and Learning/** Group presentation 9 <i>Deadline to submit paper</i> | Chapter 12 |
| 11/26/25 | NO CLASS – Thanksgiving break | |
| 12/01/25 | Hormones and Mood | Chapter 13 |
| 12/03/25 | TBD | |
| 12/08/25 | FINAL EXAM 3:00 – 5:00 PM (same room as lecture) | |

Readings for class discussions:

†† Class reading discussion 1: Holekamp K, & Sherman, P (1989). Why Male Ground Squirrels Disperse: A multilevel analysis explains why only males leave home. *American Scientist*, 77(3), 232-239.

†† Class reading discussion 2: 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.

** Group presentation readings will be posted on D2L by September 3rd.