Course Description

Fall, 3 credits. Letter grades only.
Prerequisites: junior or senior standing; any one of the following: PSYCH 2230, BIONB 2210, BIONB 2220, or two semesters of non-AP biology for majors plus a psychology course.
Co-meets with PSYCH 7220.
Two lectures plus a section in which students read and discuss original papers in the field, give an oral presentation, and write a term paper in the form of a research proposal.

Comparative and evolutionary approaches to the study of the relationship between reproductive hormones and sexual behavior. Also hormonal contributions to other social behavior (parental behavior, aggression, mating systems, social organization), biological rhythms, stress, learning and memory.

Learning Goals

• Mastery of the basic principles and concepts of the field.
• Understanding of the scientific process as it is used to advance knowledge in the field, especially experimental methods.
• Ability to read closely and think critically about recent primary (empirical, data-based) journal articles in the field.
• Ability to communicate clearly and effectively about the science of the field, both orally and in writing.

Contact Information

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TA: McKenna Kelly
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Office hours: Mondays 10 to 11:15 AM
Office: W347 Mudd Hall
**Required Readings**


Plus journal articles for section (see section information below).

For the textbook assignments, you are not responsible for details. Focus on topics that are the subject of an entire section, box, figure, or table, including topics that are not covered in class.

**Exams and Course Grading**

There are three exams (see schedule below) based on material in the lectures and in the Nelson textbook. Each exam is worth 50 points and consists of short essay questions. There are no prescheduled makeup exam times, and a makeup exam is only possible for a genuine emergency (not a scheduling difficulty). Each exam is 20% of your final grade. The other 40% of the final grade will be based on performance in the Friday section, including the term paper (see section information below). Grading is not "on a curve." Your grade does not depend on the grades of others, only on your own performance. If everyone does really well, everyone gets a high grade!

Here are some tips for doing well in this or any other course:
- Always come to class.
- Take good notes. Research shows that handwritten notes are better than typed notes.
- Review your notes as soon as possible after class.
- Keep up with assigned reading.
- If there’s anything you don’t understand, come to office hours to discuss it.
- Get to know the TA and instructor. Take advantage of office hours.

**Students with Disabilities**

Please give the instructor your Student Disability Services (SDS) accommodation letter early in the semester so there is adequate time to arrange your approved academic modifications. You can do that during office hours to ensure confidentiality. If you need an immediate accommodation for equal access, please speak with the instructor after class or send an email to the instructor and/or SDS at sds_cu@cornell.edu. If the need arises for additional accommodations during the semester, please contact SDS.

**Academic Integrity**

Each student in this course is expected to know and abide by the Cornell University Code of Academic Integrity. The code can be found at http://www.cuinfo.cornell.edu/Academic/AIC.html. Any work submitted for academic credit must be your own work and prepared for this course only. Plagiarism will not be tolerated, and ignorance is not an excuse.
**Lecture Schedule and Textbook Reading Assignments**

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Topic and Reading Assignments</th>
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<tbody>
<tr>
<td>Aug. 27</td>
<td>W</td>
<td>Introduction to the course, history and current status; chapter 1 pp. 1-15</td>
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<tr>
<td>Aug. 29</td>
<td>F</td>
<td>Myths and realities; chapter 1 pp. 15-18</td>
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<tr>
<td>Sept. 1</td>
<td>M</td>
<td>No class (Labor Day)</td>
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<tr>
<td>Sept. 3</td>
<td>W</td>
<td>Evolution and hormones; chapter 2 pp. 42-50, 56-57, 63</td>
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<tr>
<td>Sept. 5</td>
<td>F</td>
<td>How to read a primary research paper; chapter 1 pp. 19-22</td>
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<td>Sept. 8</td>
<td>M</td>
<td>Sexual differentiation; chapters 3 and 4</td>
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<tr>
<td>Sept. 10</td>
<td>W</td>
<td>Sexual differentiation; chapters 3 and 4</td>
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<tr>
<td>Sept. 12</td>
<td>F</td>
<td>Go to your assigned section on Fridays beginning today</td>
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<tr>
<td>Sept. 15</td>
<td>M</td>
<td>Sexual differentiation; chapters 3 and 4</td>
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<tr>
<td>Sept. 17</td>
<td>W</td>
<td>Sexual differentiation; chapters 3 and 4</td>
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<tr>
<td>Sept. 22</td>
<td>M</td>
<td><strong>Exam 1</strong> on lectures and Nelson readings through Sept. 17</td>
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<tr>
<td>Sept. 24</td>
<td>W</td>
<td>Sexual behavior; chapters 5 and 6</td>
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<td>Sept. 29</td>
<td>M</td>
<td>Sexual behavior; chapters 5 and 6</td>
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<tr>
<td>Oct. 1</td>
<td>W</td>
<td>Sexual behavior; chapters 5 and 6</td>
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<tr>
<td>Oct. 6</td>
<td>M</td>
<td>Chemical communication; chapters 5 and 6</td>
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<tr>
<td>Oct. 8</td>
<td>W</td>
<td>Puberty and aging</td>
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<tr>
<td>Oct. 13</td>
<td>M</td>
<td>No class (fall break)</td>
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<tr>
<td>Oct. 15</td>
<td>W</td>
<td>Parental behavior; chapter 7</td>
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<tr>
<td>Oct. 20</td>
<td>M</td>
<td>Parental behavior; chapter 7</td>
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<tr>
<td>Oct. 22</td>
<td>W</td>
<td>Parental behavior; chapter 7</td>
</tr>
<tr>
<td>Oct. 27</td>
<td>M</td>
<td>Social behavior and social organization; chapter 8</td>
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<tr>
<td>Oct. 29</td>
<td>W</td>
<td><strong>Exam 2</strong> on lectures and Nelson readings of Sept. 24 through Oct. 22</td>
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<tr>
<td>Nov. 3</td>
<td>M</td>
<td>Social behavior and social organization; chapter 8</td>
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<tr>
<td>Nov. 5</td>
<td>W</td>
<td>Energy and feeding; chapter 9</td>
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<tr>
<td>Nov. 10</td>
<td>M</td>
<td>Daily and circadian rhythms; chapter 10</td>
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<tr>
<td>Nov. 12</td>
<td>W</td>
<td>Annual rhythms and photoperiodism; chapter 10</td>
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<tr>
<td>Nov. 17</td>
<td>M</td>
<td>Annual rhythms and photoperiodism; chapter 10</td>
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<tr>
<td>Nov. 19</td>
<td>W</td>
<td>Stress; chapter 11</td>
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<tr>
<td>Nov. 24</td>
<td>M</td>
<td>Stress; chapter 11</td>
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<tr>
<td>Nov. 26</td>
<td>W</td>
<td>No class (Thanksgiving break)</td>
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<tr>
<td>Dec. 1</td>
<td>M</td>
<td>Learning and memory; chapter 12</td>
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<tr>
<td>Dec. 3</td>
<td>W</td>
<td>Learning and memory; chapter 12</td>
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**Date and time to be announced:** Exam 3 (final exam) on lectures and Nelson chapters of Oct. 27 through Dec. 3.
General Information about the Friday Sections

Friday sections begin meeting September 12. (Prior to that, come to the regular classroom on Fridays.) Sections 1 and 2 meet at 11:15 AM and Section 3 meets at 1:25 PM. Section rooms will be announced. Assignment to one of the sections will be done prior to the first section meeting and you will be notified of your assignment. Attendance at all section meetings is required.

The sections have three goals. First, they allow you to explore one topic in greater depth. Second, they allow you to become familiar with the process of reading and evaluating the primary literature. Third, they continue the development of your critical thinking and writing skills.

On Fridays please come prepared to contribute to an interesting, informed, and friendly discussion about the target article. This means you need to read it carefully and thoughtfully in advance and bring your completed thought piece with you.

The topic for this year’s sections is Sociality and Cooperation.

Thought Piece Writing Assignments

The thought piece (which is due the day it is assigned) should be no more than one or two pages long and inspired by a close reading of the target article. A close reading of any paper reporting an experiment means asking yourself the following questions as you read to gain understanding of the research:

Why was the experiment done?
What was the question asked?
What was the hypothesis?
What were the predicted results?
What was the independent variable? How was it manipulated?
What was the critical dependent variable? How was it measured?
What were the controls? Why were these particular controls needed? Were they adequate?
What was the main finding?
What was the answer to the question posed in the introduction?
Was the hypothesis confirmed?
How solid (conclusive) was the evidence?
What questions remain unanswered?
What new questions are raised by the research?
What would be an interesting and logical experiment to do next?

Your thought piece can be an informed critique of some scientific aspect of the article, an alternative interpretation of the results, an idea for an additional or different experiment, a discussion of a question raised by the research, or (if you feel you didn’t understand the paper) a coherent statement of what you didn’t understand. Your thought piece should (a) show that you read the article carefully, (b) demonstrate informed, analytical, clear and (whenever possible) creative thought and writing, and (c) be your best writing (proper grammar and spelling, no
typographical or word processing errors, etc.). You should not summarize the article (except perhaps in an opening sentence or two) or simply repeat its content. You do not need to limit yourself to the questions listed above. All information that is not your own should receive proper citations and references following the format in the Nelson text. See the paragraph below about referencing for additional instruction.

Thought pieces will be graded for both content and writing on a 3-point scale: 3 = well done; 2 = acceptable; 1= disappointing (and of course 0 = not turned in).

**Term Paper, Prospectus, and Class Presentation (NOTE DUE DATES FOR THESE IN SECTION SCHEDULES BELOW)**

The term paper should be in the form of a research proposal that describes one experiment designed by you that has not, to your knowledge, already been published. The experiment should be designed to answer a specific question or test a specific hypothesis. The question or hypothesis can be related to any topic in hormones and behavior, not just topics covered in the course. It can use any species, including humans, that is appropriate for the question or hypothesis. You should propose a real experiment (one with random assignment to experimental and control groups), not a descriptive or correlational study. The proposal should contain the following sections in order.

- **Cover page with title of paper and your name**

- **Specific Aim**

  In one short paragraph (like an abstract of a paper), state clearly and concisely the goal of the experiment and the approach to be taken. What question will it answer? What hypothesis will be tested? What problem or discrepancy in the published research will be solved? How do you propose to answer the question (test the hypothesis, solve the problem)?

- **Background**

  This should be in the form of a selective literature review that focuses on prior published research relevant to your experiment. Use the databases PubMed and Web of Science to find the relevant literature (but give proper references in your paper, not urls). It should be clear from this section what has already been done on the subject, what was found, and how your question or hypothesis is related to prior work. It should also be clear why your choice of species is appropriate. Prior work does not need to be described in detail; each study can simply be summarized in a sentence or two. Use your own words; do not quote from the literature. This section should be organized so that it progresses in a logical manner toward your question or hypothesis and toward your chosen species.

- **Methods**
As precisely as possible, describe the experiment so that the following information is included. What species will be used? What age, sex, etc? What are the independent and dependent variables? What will be done to the subjects (what will the manipulations be)? What will be the measures obtained? What form will the data take?

Predicted Results

Give your prediction for the outcome of the experiment, assuming that your hypothesis is correct or your question answerable. What is expected to happen and why?

Future directions

Assume that you will be going on to do further experiments. In one paragraph, say what the next experiment should or could be if the results are positive and if they are negative.

References

Information that is not your own must receive proper citation in the text, and the full reference must be given in a separate References section at the end of the paper. See your Nelson textbook for the format for text citations and references. Do not include or cite anything that you have not read. Cite only published literature from scientific journals and books. With rare exceptions, web sites are not acceptable.

The term papers will be graded for scientific content, organization and logic of presentation, creativity of ideas, soundness of experimental design, and writing.

The prospectus (which is for your own benefit and is not graded) is a one-paragraph statement of your idea for your term paper so that you can be given quick and early feedback before you have invested significant time. It should include your question or hypothesis, why you have chosen your topic, and one or two sentences describing your proposed experiment. Think of it as a rough draft of what will become the specific aims paragraph of your research proposal. Your prospectus will be returned with suggestions for key references to the published research on the subject and other tips. If the experiment has already been done, or is not appropriate (for example, is not a manipulation experiment or has no behavioral component), we will say so and help guide you toward a different experiment. You can turn in the prospectus as early as you want.

The class presentation will be a five-minute summary of your research-proposal-in-progress, so that your ideas are shared with the other people in your section and they can provide feedback.

Section Grading

The section grade (which is 40% of the overall course grade) will be determined as follows:

10% for attendance (10 points total, one point off for each absence)
30% for class participation (30 points total)
30% for the thought pieces (30 points total = 3 points per piece, late papers get 1 point off per day late)
30% for the term paper (research proposal) (30 points total, late papers get 3 points off per day late)

Friday section schedule and reading assignments

Sept. 12     Discussion and thought piece for journal article 1
Sept. 19     Discussion and thought piece for journal article 2
Sept. 26     Discussion and thought piece for journal article 3
Oct. 3       Discussion and thought piece for journal article 4
Oct. 10      Discussion and thought piece for journal article 5
Oct. 17      Discussion and thought piece for journal article 6
Oct. 31      Discussion and thought piece for journal article 8
Nov. 7       Discussion and thought piece for journal article 9
Nov. 14      Oral presentations
Nov. 21      Oral presentations
Nov. 28      No class (Thanksgiving break)
Dec. 5       Discussion and thought piece for journal article 10. Term paper due.
Section journal articles: Sociality and Cooperation

All articles can be accessed, downloaded as .pdf files and printed (if you wish) through the CU Library website gateway (click on "E-journal Titles" and enter the exact name of the journal) or, if you’re linked to the Cornell network, by searching with PubMed or Google (regular or scholar).

Article number:


