

Spring 2-1-2018

BIOB 468.01: Endocrinology

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Recommended Citation

Breuner, Creagh W., "BIOB 468.01: Endocrinology" (2018). *Syllabi*. 7511.
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ENDOCRINOLOGY
BioB 468; Spring Semester, 2018

Time and location: MWF 11:00-12:00, JRH 205

Instructor: Creagh Breuner, creagh.breuner@umontana.edu,

Office: NSA 104B

Phone: 243-5585

Office hours: Friday 10-11, and by appointment

Exams:

- I Friday, Feb 16th
- II Friday, March 23rd
- III Monday, April 30th

Course Grading:

Exam I	20%	
Exam II	20%	
Exam III	25%	
Research Report	20%	(15% oral report, 5% participation during presentations) see project description from website
Class Participation	15%	(attendance and general participation in class and during paper discussions)

Exam Policy: No late exams will be given. If you must miss an exam, let me know well in advance and I will set up an exam for you to take before the scheduled date. Any exam missed for illness will be done orally.

Class Schedule:

Section 1: Overview of Hormone systems

Hormone structure, function, anatomy, receptors, and methods in endocrinology

Section 2: Physiological Systems

Osmoregulation, metabolism, Thyroid, calcium regulation, growth, stress

Section 3: Reproductive Systems

Female reproductive physiology: ovarian cycle, infertility, pregnancy, parturition, lactation, menopause; Male reproductive physiology; Sexual differentiation and development

Behavioral Endocrinology

Presentations: (attendance required) : May 2nd and 4th (in class) and May 10th (finals week, 10-12)

Course Outcomes:

By the end of the course students will:

1. know the major hormone systems, understanding control of function from secretion through cellular action and organismal effects.
2. Understand how receptor specificity and capacity can mediate hormone-mediated outcomes.
3. Be familiar with common disease states associated with each hormonal system, and understand what deficit in the pathway leads to that disease.

Paper Discussions:

~5 lectures throughout the semester (depending on time) will be paper or data discussions. In these sections we will discuss more current issues within endocrinology, focusing our discussions around newspaper and journal articles, while also becoming familiar with primary literature in the field. Your participation in these discussions is important, and paramount to the success of this part of the class. Materials for these discussions are in your class packet. Please have all the material read, any assignment done and be ready to contribute during the discussion section.

Text: There is no required text for this class. Exams will be based on lecture material. However, many students like to have a secondary place to get the information. There are three texts available on reserve in the library.

1. Endocrinology, 6th edition by Mac E. Hadley, Prentice Hall, 2008
2. An Introduction to Behavioral Endocrinology, 3rd edition by Randy J. Nelson, Sinauer Press, 2005
3. Vertebrate Endocrinology, 4th edition by David Norris, Academic Press, 1997

Hadley is very human/medical/pathophysiology oriented. It's a bit dry but good for the disease stuff we cover. Many of the lectures are based on the chapters in Hadley's endocrinology.

Nelson's book is not as detailed as Hadley, but is very helpful when learning about more organismal actions of hormones. It is well-written, easy to read, and full of good examples from across vertebrate classes (it's great for the osmoregulation lecture).

Norris' book covers the other vertebrate classes quite well, but contains a bit more cellular detail than I will cover in class.

None of these texts are required reading, but if you are having difficulty with a certain concept, it can be very helpful to learn about it from more than one perspective.

Class Notes

To help with taking notes in class, I have put the complex figures from lecture into a class packet. You can take notes directly onto these sheets. I will not post any other lecture notes.

ADA: The University of Montana provides upon request appropriate academic adjustments for qualified students with disabilities. For more information, contact the Disability Services for Students at 243-2243 (<http://www.umt.edu/dss/about/default.htm>).

Research Project:

This is a group project, done in pairs. For this project, I want you to choose a detailed topic within endocrinology (such as Graves disease, new methods for birth control, hormonal contributions to post-traumatic stress disorder). You will research this topic both at a popular society level (finding magazine and newspaper articles dealing with the topic), and a more detailed research level (finding primary research papers from scientific journals that investigate more discrete aspects of the topic). In your research report on this subject, you will present both general views of the public and scientific findings on the subject. There are many objectives to this project (gaining experience presenting and discussing science, finding and using primary literature), but I would also like you to get a feel for 1) how the public sees a scientific/health issue, and 2) how research can approach and answer questions bearing on that issue. You will find that the public sees issues in a very general way, whereas scientific research deals with very specific points of the issue. For your report, I expect you to have 1-3 newspaper or magazine articles, and 2-5 primary literature articles (primary literature means that they did the experiments themselves; they are not just discussing work done by other people).

Each pair will give an oral presentation covering your work. Oral presentations will be given at the end of the semester (see schedule). Each presentation will last 12 minutes with 2-3 minutes afterwards for questions from the class. Your presentation should be created in powerpoint (you will be graded on content and organization and preparation, not on technological savvy). For the oral presentations I want you to discuss the general issue presented in the magazine articles, explaining any background information that is necessary. Then, I want you to introduce the experimental data produced in the primary literature. Tell us how the experiment was done, show us and explain to us the data, and discuss how the findings bear on the more general issue.

At the end of your presentation you will hand in a detailed reference list to me of the sources you used, including electronic copies of each paper and magazine article.

I expect both members of the pair to work on the background research, and the oral report will be given tag-team (one person speaks for 6 minutes, then the next for 6 minutes, splitting the information between you). You are to work on the preparation of the subject matter as a pair: discuss ideas together, help each other find web resources, read the papers together, etc.

Grading: your report will be graded on clarity, content (accuracy), organization, and level of preparation. **Participation grade for presentation days:** $\frac{1}{4}$ of your grade for this presentation (5% of your total grade) will be based on your presence in class during the presentations.