ANS 6767 – Advanced Endocrinology, 4 credits
Tuesday and Thursday periods 7 & 8 (2-4 pm), Room 102

INSTRUCTORS:
Dr. Corwin Nelson  
Larson Dairy Science Bldg. – 204F  
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352-392-1958 x266

Dr. John Bromfield  
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jbromfield@ufl.edu  
352-392-1981 x241

OFFICE HOURS: By appointment.

CATALOG DESCRIPTION: CREDIT: 4; PREREQ: BCH 5045; ANS 6932 (Animal Physiology), or Instructor consent.

Overview of mammalian endocrine systems and molecular basis of hormone action; Current topics on endocrine control of growth, development, reproduction and nutrition.

COURSE FORMAT:
This is a four credit course consisting of two lecture/discussion meetings held each week. An in depth review of endocrine topics of relevance to livestock production will be given each week followed by a discussion of current research articles. Students will lead the research presentations.

COURSE OBJECTIVES:

1. To provide graduate students with a comprehensive overview of mammalian endocrine systems as they relate to growth, development, reproduction and nutrition. Topics include neuroendocrine, thyroid, somatotropin, adrenal, reproductive, lactation and solute control (glucose, Na/K, and Ca/P) systems.

2. To develop an advanced understanding of concepts relating to hormone synthesis; secretion and transport; hormone-receptor interactions; mechanisms of signal transduction; and hormone initiated cellular and molecular responses.

3. To be able to read, interpret and discuss scientific journal articles in molecular endocrinology.

4. To develop independent thinking skills and oral communication abilities such as critical evaluation of data, development of hypotheses and oral presentation of endocrine research.

EXPECTED OUTCOMES:
Upon completing this course, graduate students are expected to:

1. Describe in detail the components and actions of the mammalian endocrine systems, including understanding of:
   a. environmental, nutritional and physiological signals regulating endocrine signals.
   b. interactions between endocrine systems (i.e. energy balance, growth, and
reproduction).

c. molecular mechanisms and signal transduction pathways of hormone action in mammals.
d. mechanisms regulating hormone synthesis and secretion.
e. steroid hormone metabolism.
f. techniques and assays used for studying endocrine mechanisms.

2. Understand how current developments in endocrinology affect animal physiology, growth, production and behavior.

3. Integrate cellular, molecular, and system level aspects of endocrinology with environmental, genetic and nutritional aspects of endocrinology.

REQUIRED TEXT: None, selected reviews and primary articles will be assigned.

Recommended textbooks:

**GRADING:**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percent of final grade</th>
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<tbody>
<tr>
<td>Exam 1</td>
<td>25%</td>
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<tr>
<td>Exam 2</td>
<td>25%</td>
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<tr>
<td>Exam 3</td>
<td>25%</td>
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<tr>
<td>Paper presentations and discussions</td>
<td>25%</td>
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</tbody>
</table>

**GRADING SCALE:**

<table>
<thead>
<tr>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D+</th>
<th>D</th>
<th>D-</th>
<th>&lt; 60</th>
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</thead>
<tbody>
<tr>
<td>100-</td>
<td>92-</td>
<td>89-</td>
<td>86-</td>
<td>82-</td>
<td>79-</td>
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<td>70</td>
<td>67</td>
<td>63</td>
<td>60</td>
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**Exams (75%)**

- Three exams will be given over the course of the semester as indicated in the course schedule below.
- Exams will be comprised of 8-10 short answer/essay questions.
- Exams will account for 75% of the final course grade (25% for each exam).

**Paper Discussions (25%)**

- Each student will be assigned to present and lead a class discussion on a scientific journal article.
- Student presenters will be expected to present and discuss the following aspects of the paper:
  - Brief background and objectives of the work
  - Explanation of specific studies (i.e. explaining individual figures and tables) which includes a discussion of the methods utilized
  - Interpretation of results
- General discussion of outcomes and future perspectives
- Papers to be presented should be selected from scientific journals published in the last year.
- Selected papers should be submitted to the instructor for distribution to the class at least one week prior to the scheduled paper discussion.
- Powerpoint presentations should be utilized for paper discussions.
- Each presentation will be graded on the following criteria (Specific rubric will be provided and feedback will be provided following the student presentation):
  1. Comprehension of scientific basis for research.
  2. Ability to describe and discuss the scientific methods utilized.
  3. Capacity to discuss and interpret results of experiments and their implications.
  4. Ability to lead class discussion.

OUTLINE OF COURSE TOPICS *schedule can change without notice.

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Instructor</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>9 &amp; 11 Jan</td>
<td>Nelson</td>
<td>Intro/Nuclear hormone receptors</td>
</tr>
<tr>
<td>2</td>
<td>16 &amp; 18 Jan</td>
<td>Nelson</td>
<td>Nuclear hormone receptors/Steroid hormone metabolism</td>
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<td>3</td>
<td>23 &amp; 25 Jan</td>
<td>Bromfield</td>
<td>Neuroendocrine anatomy and mechanisms</td>
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<td>4</td>
<td>30 &amp; 1 Feb</td>
<td>Bromfield</td>
<td>Signal transduction pathways</td>
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<td>5</td>
<td>6 &amp; 8 Feb</td>
<td>Bromfield</td>
<td>Prostaglandins</td>
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<tr>
<td>6</td>
<td>13 Feb</td>
<td>Nelson</td>
<td>Exam</td>
</tr>
<tr>
<td>6</td>
<td>15 Feb</td>
<td>Nelson</td>
<td>Hypothalamus/Pituitary/Thyroid axis</td>
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<tr>
<td>7</td>
<td>20 &amp; 22 Feb</td>
<td>Nelson</td>
<td>Hypothalamus/Pituitary/Adrenal axis</td>
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<td>8</td>
<td>27 &amp; 1 Mar</td>
<td>Nelson</td>
<td>Somatotropic axis and glucose control</td>
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<td>9</td>
<td>13 &amp; 15 Mar</td>
<td>Nelson</td>
<td>Endocrine control of body fluid/renal function</td>
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<td>10</td>
<td>20 Mar</td>
<td>Nelson</td>
<td>Exam</td>
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<tr>
<td>10</td>
<td>22 Mar</td>
<td>Nelson</td>
<td>Endocrine control of Ca, P, and bone</td>
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<tr>
<td>11</td>
<td>27 &amp; 29 Mar</td>
<td>Nelson</td>
<td>Endocrine control of Ca, P, and bone /</td>
</tr>
<tr>
<td>12</td>
<td>3 &amp; 5 Apr</td>
<td>Nelson</td>
<td>Endocrine control of growth and production</td>
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<tr>
<td>13</td>
<td>10 &amp; 12 Apr</td>
<td>Bromfield</td>
<td>Endocrine control of reproduction</td>
</tr>
<tr>
<td>14</td>
<td>17 &amp; 19 Apr</td>
<td>Nelson</td>
<td>Endocrine control of metabolism</td>
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GRADES AND GRADE POINTS
For information on current UF policies for assigning grade points, see
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

ABSENCES AND MAKE-UP WORK
Requirements for class attendance and make-up exams, assignments and other work
are consistent with university policies that can be found at:

It is expected students will attend all meeting periods and regularly check the course
content in Canvas (https://ufl.instructure.com) for announcements and discussions.
During the class meetings students are expected to refrain from activities, such as cell
phone use and internet use that distract from the lecture and discussion.

ACADEMIC HONESTY
As a student at the University of Florida, you have committed yourself to uphold the
Honor Code, which includes the following pledge: “We, the members of the University
of Florida community, pledge to hold ourselves and our peers to the highest standards
of honesty and integrity.” You are expected to exhibit behavior consistent with this
commitment to the UF academic community, and on all work submitted for credit at the
University of Florida, the following pledge is either required or implied: "On my honor, I
have neither given nor received unauthorized aid in doing this assignment."

It is assumed that you will complete all work independently in each course unless the
instructor provides explicit permission for you to collaborate on course tasks (e.g.
assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold
the Honor Code, you should report any condition that facilitates academic misconduct to
appropriate personnel. It is your individual responsibility to know and comply with all
university policies and procedures regarding academic integrity and the Student Honor
Code. Violations of the Honor Code at the University of Florida will not be tolerated.
Violations will be reported to the Dean of Students Office for consideration of
disciplinary action. For more information regarding the Student Honor Code, please see:

SOFTWARE USE:
All faculty, staff and students of the university are required and expected to obey the
laws and legal agreements governing software use. Failure to do so can lead to
monetary damages and/or criminal penalties for the individual violator. Because such
violations are also against university policies and rules, disciplinary action will be taken
as appropriate.
CAMPUS HELPING RESOURCES
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/
  Counseling Services
  Groups and Workshops
  Outreach and Consultation
  Self-Help Library
  Training Programs
  Community Provider Database

- Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/

SERVICES FOR STUDENTS WITH DISABILITIES
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/