Biology 629. Advanced Animal Behavior
Spring 2009

Instructor: Alexander (Sasha) Kitaysky 413 Irving I ☑ 474-5179
e-mail: ffask@uaf.edu
office hours: by appointment.

Wednesdays – Lecture/seminar, 12:00p.m.—3:00p.m., room - 204 Reichardt Bldg.
(TBD on individual basis) – Laboratory section 110 Irving I (Kitaysky’s Lab)
Final Examination Period: April 29, 12-3:00p.m.

General philosophy: in this class you should aid the learning of others. Also, I would appreciate everyone’s help from time to time in a mundane task as needed, e.g. copying of materials for reserve readings, logistic support of the research project.

General Course Goals: The assigned readings, field research project and hands-on hormonal analyses are intended to introduce graduate students to the field of mechanistic approaches (specifically, the field endocrinology approach) in studying animal behavior. The emphases are on hormonal regulation of vertebrates (birds and mammals) behavior. The course is organized into three parts:

1. General principles of behavioral endocrinology (i.e. functions of the endocrine system, hormone structure, secretion, action, and basic analytical techniques) will be surveyed.
2. Physiology of behavior, environmental, evolutionary and comparative aspects.
3. Research project using field endocrinology approach, collection of field samples and use of radio-immunoassay for hormonal analyses.

RECOMMENDED BOOKS

RECOMMENDED JOURNALS
General journals that frequently publish articles in behavioral endocrinology:

Note: If you would like to request academic accommodations due to a disability, please contact Disabled Student Services, (2nd fl. Whitaker) fydso@uaf.edu, 474-7043. If you have a letter from Disabled Student Services indicating you have a disability that requires academic accommodations, please present the letter to us so we can discuss the accommodations you might need for class.
GRADING

Participation in discussions (30% of grade).
Before each class period you should read all of the required materials and write down several questions and comments. I expect you to make sure that those questions and comments are covered during the class period. At the end of each class period I will collect the question and comment pages. Generally, I’ll return the pages without comment, but I will provide some suggestions if I feel you should be participating more in class.

Leading discussions (20%).
For each meeting, you will be designated as the discussion leader, either alone or with another classmate, of one of the readings and will be the leader of the discussion of that reading. Note: I still expect you to read the other readings and to arrive at class with questions and comments about those readings as well as being ready to lead the discussion of the reading assigned to you.

Field/Lab Research project (30%). A project directly related to your graduate study is highly recommended.
1. Write a short (~5 pp of text and 5-10 references) proposal on behavioral endocrinology project you will conduct in this class. First draft is due on February 4, 10 min presentation of the project is due on February 18, and a final draft is due on March 4.
2. IACUC approval – consult me if you might need an approval of your project by the UAF Animal Care Committee. If this is the case, apply for IACUC approval by March 4.
3. Conduct project (March), collect/locate samples (March) start hormonal assays by April 1.
4. In the time block assigned for the final examination you will make a 12 minute presentation of your research project, allowing 3 minutes for questions from the class. This session will follow the format of a session at a professional meeting.

RIA analyses (20%).
This class is designed as a seminar AND hands-on analytical techniques venture. You will be trained in basic radio-immunoassay of steroid hormones (March) and analyze blood samples you collected as part of your project (April).
**Tentative course outline (subject to change).** Readings are assigned for each meeting (see below). During the course, a discussion group with student oral presentations of recent papers in the field of behavioral endocrinology will follow a cycle of field research project and hormonal assays. Copies of papers will be available in Sasha Kitaysky's office for students to sign out, copy themselves and return.

<table>
<thead>
<tr>
<th>Class Events</th>
<th>Tentative Dates</th>
<th>Topic (3-4 papers for each meeting)</th>
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<tbody>
<tr>
<td></td>
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<td><strong>Observations – mechanisms – physiological - evolutionary</strong></td>
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<tr>
<td>1</td>
<td>January 28</td>
<td>Introduction to course – goals and schedule</td>
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| 2 1st draft of Ind. Project proposal(IP ) | February 4 | **GENERAL PRINCIPLES**  
- Physiology – life history nexus  
- Conservation/Ecological physiology  
- The concept of allostasis in biology |
| 3            | February 11     | **ENVIRONMENT-PHENOTYPE interactions:**  
- Types of hormones  
- Activational and Organizational effects of hormones |
| 4            | February 18     | **ENVIRONMENT-PHENOTEYPENPHENOTYPE interactions:**  
- Organizational effects of hormones - Maternal effects in birds |
| 5            | February 25     | **ENVIRONMENT-PHENOTYPE interactions:**  
- Early developmental conditions – long-term effects |
| 6            | March 4         | **ENVIRONMENT-PHENOTYPE interactions:**  
- Genes - Personality – fitness |
| 7            | March 11        | Spring break |
| 8            | March 18        | **ENVIRONMENT-PHENOTYPE interactions:**  
- Age-dependent performance |
| 9            | March 25        | **RESOURCE AVAILABILITY – REPRODUCTION**  
- Foraging – physiological/behavioral aspects |
| 10           | April 1         | **Radio-immunooassay analysis of hormones:**  
- Review of general Methodology, laboratory protocols and start actual analytical analyses |
| 11           | April 8         | **Costs and Benefits of physiological/behavioral responses to environmental variability** |
| 12           | April 15        | **Alternative behavioral strategies** |
| 13           | April 22        | Discussion of your RIA – analytical perspective; CV on intra- inter-assay variability, quality controls, standard curve |
| 14           | April 29        | Student Presentations of individual projects |