

**GOVERNORS STATE UNIVERSITY  
COLLEGE OF ARTS AND SCIENCES  
DIVISION OF SCIENCE**

**COURSE SYLLABUS**

**INDEX NUMBER:** BIOL 851  
**COURSE TITLE:** Environmental Physiology Laboratory  
**CREDIT HOURS:** 1 credit lab  
**PROFESSOR:** Phyllis M. Klingensmith, Ph.D.  
office #: F1647  
laboratory #: F1640  
phone/voice mail: (708) 534-4538  
e-mail: p-klingensmith@govst.edu  
**TRIMESTER OFFERED:** Winter

**CATALOG DESCRIPTION:** Covers laboratory experiments and demonstrations associated with BIOL 850.

**PREREQUISITE:** BIOL 850.

**RATIONALE:**

BIOL 851 is a core laboratory course requirement that satisfies the following two Degree Objectives and Expected Outcomes as delineated in the current Outcomes Assessment Plan for Environmental Biology majors:

1. ENBI graduates will demonstrate improved critical thinking skills.
2. ENBI graduates will be able to interpret and critique relevant scientific literature, apply appropriate methodology to the solution of new problems, communicate scientific ideas and technical information in a coherent and logically organized manner, and work independently to carry out research in the discipline.

**INTENDED AUDIENCE:** Core requirement for Environmental Biology majors.

**EXPECTED STUDENT OUTCOMES:**

Upon completion of this course, students are expected to be able to:

1. Effectively design, implement, and analyze data obtained from experiments designed to study specific aspects of comparative environmental physiology.
2. Use written and oral communication and computer applications to express scientific ideas in a clear and logically organized manner appropriate to the discipline.
3. Compare the manner in which homeostasis and regulation of physiological processes are achieved by animals in variable and varying environments.
4. Apply the principles of allometry and biophysical models to the quantitative study of comparative physiology.
5. Apply an evolutionary, adaptational, and/or environmental approach to investigate specific aspects of comparative environmental physiology.

**TEXTBOOKS:**

1. Hill, R.W., G.A. Wyse, and M. Anderson, 2008. Animal Physiology. Sinauer Associates.
2. Lab manual and collection of journal articles listed under Reading Assignment.
3. Lutterschmidt, W.I. and D.I. Lutterschmidt, 2009. Laboratory Exercises in Human Physiology: A Clinical and Experimental Approach. McGraw-Hill. (handout)

**EVALUATION:**

1. **Grades**
  - a) Final grades will be based on participation (50%), written and/or oral presentation of lab reports (~25%) and team projects/presentations as assigned (~25%).
  - b) The following grading scale will be employed: 100 - 90% = A; 89 - 80% = B; 79 - 70% = C; 69 - 60% = D; 59 - 0% = F.

## 2. Lab Reports and Presentations

- a) Lab report suggestions:
  - i) narrowly defined **objective and hypothesis statements**
  - ii) **results** including tabulated data, graphs, calculations, and statistical analyses if needed
  - iii) **discussion**
    - a) Answer the major questions posed in the lab manual and supplement with a general discussion of the results. Be sure to reference your discussion.
    - b) Identify one or more specific problems encountered, how it was solved, or a potential solution to consider if you repeated the experiment.
    - c) Develop a specific hypothesis for your next experiment that allows you to investigate a related phenomenon using the principles and techniques learned from this experiment. The objective is to promote thinking about “the next experiment” as a logical progression from a previous one and to promote thinking about “experimental design”.
- b) Some data analyses and discussions will occur in lab. Students are expected to come prepared to discuss their calculations and results.

## 3. Current Literature Project

- a) During the latter half of the trimester, students will develop and present research proposals (see BIOL 850 syllabus) and review, critique, and present topics from current literature. A significant number of articles will be provided to facilitate this project, that will be evaluated on content, organization, style, clarity, and completeness.

## 4. Participation, Teamwork, Group Discussion

- a) One general objective of this course is to promote organization, careful observation and data collection. To maximize work efficiency and to minimize the number of animals used, different students may be responsible for completing different aspects of an experiment. Since class data will be shared, it is imperative that each student be extremely responsible with the work and record keeping so that the entire class will benefit.
- b) Another general objective is to facilitate team work and professional behavior. For some individuals, team work may be more difficult than doing all of the work alone perhaps because of the inconvenience of the selected meeting. For others, team work may be viewed as a way of getting out of work. Do not allow yourself to fall into these traps, and do not allow any team member to take advantage of you or others in the group by not participating fully. It is the team’s responsibility to make this work in a fair and equitable way that optimizes and recognizes the efforts that each individual puts forth. Remain friendly and try to resolve any conflicts. The trimester is too short a time period to allow a minor disagreement to escalate into a major frustration. So be a responsible, professional team player and perform your work to the best of your abilities and in a timely manner. We are all counting on you. If minor conflicts or inequities can not be resolved expeditiously, inform me so that I may intervene. Realize that my solutions may not appeal to anyone in the group.

## 5. How to Avoid Plagiarism – Refer to BIOL 850 syllabus.

### GENERAL COURSE POLICIES:

- You are expected to attend lab and to arrive promptly!
- As always the major responsibility for learning is in your hands. You do not have the luxury of time to procrastinate in this course. Be an active learner rather than a passive one. Be assured that your attitude, preparation, participation, and promptness will have an impact on your final grade.
- Please address any questions or concerns you may have about grades, attendance, or course policies to the instructor. Although I have set office hours, please do not hesitate to leave an e-mail message if you need help or would like to talk.
- GSU is committed to providing all students equal access to all university programs and facilities. Students who have a documented physical, psychological, or learning disability and need academic accommodations, must register with Access Services for Students with Disabilities (ASSD). Please contact the Coordinator of ASSD in Room B1201 in person; by email, [assd@govst.edu](mailto:assd@govst.edu); or by calling 708.235.3968. If you are already registered, please contact your instructor privately regarding your academic accommodations.

<b>Week</b>	<b>Date</b>	<b>Experiment / Activities</b>
1.	1/8	<b>Scientific Investigation and Statistical Concepts:</b> Lutterschmidt and Lutterschmidt, 2009 – Laboratory 1 Handout
2.	1/15	<b>Endocrine System Physiology:</b> PhysioEx 8.0 Exercise 4 - Experiment 11 in Lab Manual
3.	1/22	<b>Endocrine Physiology:</b> Lutterschmidt and Lutterschmidt, 2009 – Laboratory 10 Handout
4.	1/29	<b>Metabolic Rate:</b> Lutterschmidt and Lutterschmidt, 2009 – Laboratory 15 with Ph.i.L.S. 3.0 Handout <b>Insect Hormones Video</b>
5.	2/5	<b>Investigating Metabolism by Generating the Mouse to Elephant Curve:</b> Experiment 5 in Lab Manual
6.	2/12	<b>UNIVERSITY CLOSED - HOLIDAY</b>
7.	2/19	<b>Data Analysis and Lab Prep</b>
8.	2/26	<b>Effect of Temperature on Oxygen Consumption in Aquatic Animals:</b> Experiment 7 in Lab Manual
9.	3/5	<b>Volume Regulation in Polychaete Worms:</b> Experiment 2 in Lab Manual
10.	3/12	<b>Amphibian Osmoregulation and Arginine Vasotocin:</b> Experiment 3 in Lab Manual
11.	3/19	High Altitude Responses Among Vertebrates: <b>Experiment 6 in Lab Manual</b> <b>Mammals in Water and Respiratory Mechanics Videos</b> <b>Data Analysis</b>
12.	3/26	<b>RESEARCH PROPOSALS AND PRESENTATIONS</b>
13.	4/2	<b>RESEARCH PROPOSALS AND PRESENTATIONS</b>
14.	4/9	<b>RESEARCH PROPOSALS AND PRESENTATIONS</b>
15.	4/16	<b>RESEARCH PROPOSALS AND PRESENTATIONS</b>