

**SYLLABUS  
BIOL 321  
SPRING 2016  
GENERAL AND COMPARATIVE PHYSIOLOGY**



Instructor: Lou Burnett, Professor of Biology  
 Lecture: 12:15 to 1:30 p.m. Tues. & Thurs., SSMB 138  
 Lab: SSMB Room 145 - 2:00 – 5:00 p.m. Wed. or 1:40-4:40 p.m. Thurs.  
 Office: Hollings Marine Laboratory H212H, 725-4824 or 762-8755 (laboratory at HML)  
 SSMB 148 (downtown office)  
 Email: [BurnettL@cofc.edu](mailto:BurnettL@cofc.edu)  
 Office Hours: 11:00 a.m. to noon on Thursday or by appointment  
 Text: Animal Physiology: From Genes to Organisms by Sherwood, Klandorf, Yancey, 2<sup>nd</sup> edition

Web Page: <http://burnettl.people.cofc.edu>

Course Goals: This course is designed to acquaint the student with the principles governing form and function in animals. The course builds on the introductory background all students have in the areas of cellular and molecular biology and the form and function of organisms and integrates this information with other disciplines of biology. The laboratory will provide students with skills and approaches necessary to understand, to address, and to solve larger problems in experimental biology.

Date	Week	Topic	Readings	
Jan	7	1	Introduction. Concepts of regulation and feedback.	Ch. 1, 2
	12	2	The universe of the molecule. Consequences of molecular motion; driving forces for mechanisms at the molecular, cellular, tissue, and organismal levels.	Ch. 2, 3
	14	2	Consequences of molecular motion.	Ch. 2, 3
	19	3	Scaling at the cellular level; random walks.	Ch. 3
	21	3	Communication Across, Between and Within Cells: Mechanisms of membrane permeation.	Ch. 3
	26	4	Communication across, between and within cells: Equilibrium potentials, membrane potentials, nerves.	Ch. 4
	28	4	<b>Lecture Exam #1</b>	
Feb	2	5	Communication across, between and within cells: nerves.	Ch. 4, 5
	4	5	Sensory physiology	Ch. 6
	9	6	Sensory physiology	Ch. 6
	11	6	Endocrine systems	Ch. 9
	16	7	Endocrine systems	Ch. 9
	18	7	Muscle physiology	Ch. 8
	23	8	<b>Lecture Exam #2</b>	
	25	8	Muscle physiology	Ch. 8
Mar	1	9	Muscle physiology	Ch. 8
	3	9	Muscle physiology	Ch. 8
	8	10	<b>Spring Break</b>	
	10	10	<b>Spring Break</b>	
	15	11	Ion regulation	Ch. 12
	17	11	Ion regulation	Ch. 12
	22	12	Ion regulation	Ch. 12
	24	12	Kidney physiology	Ch. 12
	29	13	<b>Lecture Exam #3</b>	
	31	13	Circulatory systems	Ch. 9
Apr	5	14	Circulatory systems	Ch. 9
	7	14	Respiratory systems	Ch. 11
	12	15	Respiratory systems	Ch. 11
	14	15	Acid-base balance	Ch. 11
	19	16	Acid-base balance	Ch. 11
Apr	28	<b>FINAL EXAM, 4 -7 p.m., Thursday</b>		

**Grading policy:**

There will be three hour exams and a cumulative final examination. Approximately one half of the final will count as the fourth hour exam and the remainder will cover the entire course. Since the final exam covers material representing the breadth of the course, an excellent performance on the final can boost a student's grade higher than the raw score would dictate. On the other hand, an excessively poor performance on the final exam could cause a student's final grade to be lower than the raw score would dictate. The grades will be weighted as shown below.

The grading scale will be approximately as follows.

- A = 85 - 100 %
- B = 75 - 84%
- C = 65 - 74%
- D = 60 - 64%
- F = <60%

Grade Distribution		Percent
Lecture	10% lowest lecture exam grade 15% middle lecture exam grade 22% highest lecture exam grade 23% final exam (cumulative)	70
Class Presentation		10
Laboratory		20
TOTAL		100

**Make-up exams and class attendance (please read carefully):**

Students are required to attend each laboratory session and are expected to be in class each day. Students who miss a laboratory or an examination for a **valid** and **documented** reason must report to Dr. Burnett **as soon as possible**. **All medical or family emergencies must be documented in writing and approved by the Dean of Undergraduate Studies**. Make-up exams must be taken as soon as possible and will be scheduled by Dr. Burnett. The possession of a ticket for airfare that is nonrefundable or unchangeable on or before an exam date is **not** a valid reason for missing an examination, no matter who purchased the ticket. It is suggested that you notify your parents of this policy as soon as possible. Students who do not comply with this policy will receive a grade of zero percent on the missed exam.

**Learning Outcomes:**

1. Students will be able to recognize specific physiological terms and put them into the context of the functioning of cells, tissues, organs, and organisms.
2. Students will be able to solve quantitative problems associated with different physiological systems and relate the solutions to the different environmental or organ-system situations posed.
3. Students will be able to write a scientific paper in a clear and organized manner in formats used in the primary literature.
4. Student will be able to orally present a topic to an audience on a physiological subject in a clear and understandable manner.
5. Students will be able to analyze a particular situation and suggest ways a cell, a tissue, an organ, or an organism might respond.

<b>Laboratory Schedule</b>	
<b>Week and Laboratory</b>	<b>Assignment</b>
1. No lab	1. none
2. Ammonia Excretion in Marine Organisms	2. record value of "unknown" in notebook
3. Ammonia Excretion in Marine Organisms	3. share data on spreadsheet
4. Ammonia Excretion in Marine Organisms	4. share data; Write a paper
5. Osmoregulation 1	5. share data
6. Osmoregulation 2	6. share data; plot data
7. Writing Workshop	7. none
8. Oxygen Uptake 1	8. share data
9. Oxygen Uptake 2	9. share data; write paper
10. SPRING BREAK – NO LAB	10. none
11. Presentation Workshop	11. make brief presentation
12. Hemocyanin Function 1	12. share data
13. Hemocyanin Function 2	13. share data; complete assignment
14. Class Presentations	14. make presentation
15. Class Presentations	15. make presentation

## Laboratory Safety

Laboratory safety is a serious issue. A comprehensive chemical hygiene plan for the College of Charleston campus is available at <http://ehs.cofc.edu/laboratory-and-research-safety/chemical-safety/chemical-hygiene-plan.php> and a copy of the plan at <http://ehs.cofc.edu/laboratory-and-research-safety/chemical-safety/chp.pdf>.

## Students with Disabilities

If there is a student in this class who has a documented disability and has been approved to receive accommodations through SNAP Services, please feel free to come and discuss this with me at any time.

## College of Charleston Honor Code and Academic Integrity

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the student may petition for the X to be expunged. The F is permanent. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others' exams, fabricating data, and giving unauthorized assistance.

Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor.

Students can find the complete Honor Code and all related processes in the *Student Handbook* at <http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php>.