

BIOLOGY 321 LECTURE & LAB Fall 2017
GENERAL AND COMPARATIVE PHYSIOLOGY
Lecture: Monday, Wednesday, Friday 9:00-9:50 am SSMB 215
Lab Wednesday 1:30-4:30 pm SSMB 145

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Office location: Off-campus (SCRA facility); office hours held in SSM 148

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Office hours: Wednesday 10:30-11:30 am or by appointment

1. Course prerequisites and Co-requisite(s) or Prerequisite(s)

Prerequisite: BIOL 111/BIOL 111L, BIOL 112/BIOL 112L, BIOL 211/BIOL211D, and BIOL 305; one year of chemistry. CHEM 232 can be substituted for BIOL 211 and BIOL 305.

Co-requisite(s) or Pre-requisite(s): MATH 250 or equivalent course in statistics

2. Course description

A study of the principles of the functional mechanisms that underlie the life processes of all organisms with emphasis on the ways in which diverse organisms perform similar functions. Lectures three hours per week; laboratory three hours per week.

3. Instructional objectives and student learning outcomes

- a. Students will be able to recognize specific physiological terms and put them into the context of the functioning of cells, tissues, organs, and organisms.
- b. Students will be able to write a scientific paper in a clear and organized manner in formats used in the primary literature.
- c. Students will be able to orally present a topic to an audience on a physiological subject in a clear and understandable manner.
- d. Students will be able to conduct biological experiments to collect and analyze raw data in the laboratory in the context of simple experimental questions.

4. Required text

Eckert Animal Physiology: Mechanisms and Adaptations, 5th ed, 2002,

David J. Randall, Warren Burggren and Kathleen French, W.H. Freeman and Co., New York

5. Course policies and procedures

The class will meet for 50 minutes, **three times** per week. Students are required to attend each laboratory session and are expected to attend all lectures. Students that do not attend regularly will not do well on exams. Class time will be used to present lectures, to give demonstrations, to show video clips, and to discuss material. Discussion in class will be designed to stimulate thought about the material we are covering. It will be important to read the material **BEFORE** it is covered in class. Additionally, it will be extremely difficult to keep up with the amount of information presented in this course if you do not attend class. **You are responsible for all material that is covered in the lectures and in the text.** If you cannot attend due to an illness or some other emergency, be certain to get a copy of the class notes from a reliable source.

During lectures, I will be making use of PowerPoint slides and the blackboard. Slides will be posted on WebCT *after* lecture. *Lecture notes will not be posted.*

6. Evaluation

Grades will be based on **four exams, a comprehensive final, a class presentation and your lab grade.** Exams will consist of a number of question formats that may include: multiple choice, fill-ins, matching, short answers, short essay and figure completions. Material will be drawn from lectures, class discussions, and the readings.

- > The exams will be given on the dates indicated below. Each student is responsible for knowing when the exams will be given as well as taking the exams on those dates.
- > **Each student is responsible for bringing one or two Number 2 pencils to each of the exams.**
- > If you are an athlete and know that you will be unable to attend an exam, please notify me **at least one week in advance**; I will make arrangements for you to take the exam.
- > If you are a student with special needs (i.e. a documented learning disability) and you require special arrangements for the exam, please see me as soon as possible so that I have additional time to accommodate your needs. **You must provide documentation of your special need in writing at the beginning of the semester.**

7. Grading

Grades will be assigned on the basis of the number of points that you earn at the completion of the course. The number of points and the approximate percentage of the grade are indicated below.

Source	Approx. % of Grade	Number of Points
Highest exam score	16%	160
2 nd highest exam score	14%	140
3 rd highest exam score	12%	120
Lowest exam score	10%	100
Final Exam (comprehensive)	18%	180
Class presentation	10%	100
Laboratory	20%	200
		1000

8. Grade assignment

The combined total for all of the above will be 1000 points. Your final grade in the course will be based on a percentage of points based on the College of Charleston grading scheme:

% of Total Points	Point Range	Grade Earned
93% and higher	930-1000	A
90-92.9%	900-929	A-
87-89.9%	870-899	B+
83-86.9%	830-869	B
80-82.9%	800-829	B-
77-79.9%	770-799	C+
73-76.9%	730-769	C
70-72.9%	700-729	C-
67-69.9%	670-699	D+
63-66.9%	630-669	D
60-62.9%	600-629	D-
<60%	<600	F

9. Exam policies

There will be no make-up exams.

Students must be present for all exams. You may petition to have an excused absence for an exam if:

1. A death in the immediate family.
2. An illness or emergency that results in a visit to a hospital emergency room or to a physician.

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 exam, no matter who purchased the ticket. It is suggested that you notify your parents of this policy as soon as possible. I expect to be notified by phone or e-mail immediately if it will affect your presence at an exam. This **must** be followed up by documentation in writing (i.e. you must provide an obituary or provide a letter from an Emergency Room physician).

In the event that I excuse your absence, your missing grade will be replaced by the average of your other exams.

If your absence is unexcused, you will receive a "0" for the exam.

10. Late policy

You are expected to turn in the writing assignment on time. Failure to do so is equivalent to failing to meet a deadline. If you fail to meet the assignment deadline, the highest grade you can earn is the lowest of the assignments turned in on time, minus one point. For example, if the lowest grade in the class was a 40 points on the assignment (out of 50 possible points), you would get 39 points if there was no reason for me to deduct any points. I will not accept an assignment after I have returned the graded assignments to the class. If you have a personal or family emergency, the same policy listed above for the exam applies.

11. Expectations of the students

Remember that you have a responsibility for your own education. I am here to facilitate you in this process. You accept this responsibility by being prepared, reading ahead, being attentive and participating in class, and reviewing materials prior to class. This course will cover a lot of material. If you are having difficulties with the material, seek help early. I can only help you if you come see me so that we can work together.

12. 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>.

13. 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 XXF 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 XX 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>

14. Accommodations for students with disabilities

The College of Charleston abides by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act. Any student eligible for and needing accommodations because of a disability is requested to speak with the professor during the first two weeks of class or as soon as the student has been approved for services so that reasonable accommodations can be arranged. Students should apply for services at the Center for Disability Services/SNAP (843-953-1431) located on the first floor of the Lightsey Center, Suite 104.

15. Center for Student Learning

I encourage you to utilize the Center for Student Learning's (CSL) academic support services for assistance in study strategies, speaking & writing skills, and course content. They offer tutoring, Supplemental Instruction, study skills appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at <http://csl.cofc.edu> or call (843)953-5635.

16. Lecture schedule

The following schedule represents a tentative plan for the course. *Topics and dates are subject to change.*

WEEK	DATE	LECTURE	TOPIC	Readings
1	8-23	1	Course introduction: What is animal physiology?	Ch. 1-2
	8-25	2	The study of animal physiology	
2	8-28	3	Chemical composition of animals	Ch. 3, 625-628, 663-680
	8-30	4	Energy metabolism	
	9-1	5	Energy metabolism	
3	9-4	6	Energy and Enzymes	Ch. 4
	9-6	7	Enzymes	
	9-8	8	Membranes, channels and transport	
4	9-11		*****EXAM I to cover Lectures 1-7*****	
	9-13	9	Membranes, channels and transport	
	9-15	10	Membranes, channels and transport	
5	9-18	11	Physiology of neurons	Ch. 5, 6, and 8
	9-20	12	Physiology of neurons	
	9-22	13	Physiology of neurons	
6	9-25	14	Physiology of neurons	
	9-27	15	Neural communication	
	9-29	16	Neural communication	
7	10-2	17	Neural communication	Ch. 7
	10-4	18	Sensory systems	
	10-6		*****EXAM II to cover Lectures 8-17*****	
8	10-9	19	Sensory systems	
	10-11	20	Sensory systems	
	10-13	21	Endocrine system	Ch. 9
9	10-16		No class – Fall Break	
	10-18	22	Endocrine system	Ch. 10
	10-20	23	Skeletal muscle	
10	10-23	24	Skeletal muscle	
	10-25	25	Skeletal muscle	
	10-27	26	Exercise metabolism	
11	10-30	27	Circulatory system	Ch. 12
	11-1	28	Circulatory system	
	11-3	29	Circulatory system	
12	11-6		*****EXAM III to cover Lectures 18-28*****	
	11-8	30	Circulatory system	
	11-10	31	Circulatory system	
13	11-13	32	Respiratory system	Ch. 13
	11-15	33	Respiratory system	
	11-17	34	Respiratory system	
14	11-20	35	Ionic and osmotic balance	Ch. 14
	11-22		No class – Thanksgiving	
	11-24		No class – Thanksgiving	
15	11-27	36	Ionic and osmotic balance	
	11-29	37	Ionic and osmotic balance	
	12-1	38	Ionic and osmotic balance	
16	12-6		*****EXAM IV to cover Lectures 29-38*****	
			FINAL EXAM: FRIDAY DECEMBER 13, 2017 8:00 – 11:00 AM	

17. Tentative laboratory schedule

WEEK	DATE	LABORATORY	ASSIGNMENT
1	8-23	No lab	None
2	8-30	Ammonia Excretion in Marine Organisms	Record value of "unknown" in notebook
3	9-6	Ammonia Excretion in Marine Organisms	Share data on spreadsheet
4	9-13	Ammonia Excretion in Marine Organisms	Share data; write a paper
5	9-20	Osmoregulation	Share data;
6	9-27	Writing workshop	Share data; plot data
7	10-4	Action Potentials in Earthworms	None
8	10-11	Sensory Physiology of Cockroach Legs	Share data, write a paper
9	10-18	Presentation workshop	Share data; write paper
10	10-25	Oxygen lab	Share data
11	11-1	Oxygen lab	Share data, complete an assignment
12	11-8	Class Presentations	Make presentation
13	11-15	Class Presentations	Make presentation
14	11-23	THANKSGIVING	Eat
15	11-30	No Lab	Study