SYLLABUS – Revised Post-TS Irma
BIOL 600-01/EVSS 620-01
FALL 2017
PHYSIOLOGY AND CELL BIOLOGY OF MARINE ORGANISMS

Instructor: Lou Burnett
Lecture: Tues, Wed 9:35 am -10:50 am in GML 202
Lab: W 2-5 pm, R 2-5 pm in GML 113
Office: Hollings Marine Lab H-212-H, 843-725-4824 (HML) or 843-762-8755 (laboratory at HML)
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Course Goals: This core course is designed to acquaint the graduate student with the principles governing form and function in marine organisms. This course builds on the background all students have in the areas of cell biology and organismal physiology and integrates this information with other disciplines of marine biology. The laboratory will provide students with skills and approaches necessary to understand, to address, and to solve larger problems in marine biology.
Catalog: A study of the regulatory mechanisms found in marine organisms, especially as these relate to interactions between the organism and the environment. Mechanisms will be discussed at the organismal, organ-system, tissue, and cellular levels. Lectures three hours per week; laboratory three hours per week.

Date		**Week**	**Topic**
Aug	22	1	Introduction; Overview of the use of marine organisms to our understanding of basic biological phenomena.
	23	1	Consequences of molecular motion; driving forces for mechanisms at the molecular, cellular, tissue, and organismal levels.
	29	2	Consequences of molecular motion.
	30	2	Scaling at the cellular level; random walks.
Sep	5	3	Communication Across, Between and Within Cells: Mechanisms of membrane permeation.
	6	3	Communication Across, Between and Within Cells: Equilibrium potentials; Membrane potentials; Nerves and muscles.
	12	4	TS Irma
	13	4	TS Irma
	19	5	Communication Across, Between and Within Cells: Equilibrium potentials; Membrane potentials; Nerves and muscles.
	20	5	FIRST LECTURE EXAM ***Ammonia Excretion Paper Due, Sept 22, 4 p.m.***
	26	6	Communication Across, Between and Within Cells: Nerves and muscles.
	27	6	Communication Across, Between and Within Cells: Nerves and muscles
Oct	3	7	~~Interactions with the Environment: Water and salt balance.~~ Communication Across, Between and Within Cells: Cell Signaling
	4	7	~~Interactions with the Environment: Water and salt balance.~~ Communication Across, Between and Within Cells: Molecular Mechanisms & Techniques in Molecular Biology
	10	8	~~Interactions with the Environment: Water and salt balance - chloride cells and fishes~~ Communication Across, Between and Within Cells: Molecular Mechanisms & Techniques in Molecular Biology
	11	8	Interactions with the Environment: Properties of solutes and characteristics of water inside cells. - Volume regulation.

Date		Week	Topic
	15	9	Interactions with the Environment: Water and salt balance.
	17	9	Interactions with the Environment: Water and salt balance.
	18	9	~~SECOND LECTURE EXAM in class~~ Interactions with the Environment: Water and salt balance - chloride cells and fishes ***CLASS PRESENTATIONS BEGIN***
	24	10	Interactions with the Environment: Water and salt balance - kidneys
	25	10	Interactions with the Environment: Respiration and Circulation. Hypoxia, activity, and air exposure.
	31	11	Interactions with the Environment: Respiration and Circulation. Hemodynamics.
Nov	1	11	Interactions with the Environment: Respiration and Circulation. Hemodynamics.
	7	12	Interactions with the Environment: Respiration and Circulation. Hemodynamics.
	8	12	Interactions with the Environment: Acid-base balance. Hypercapnia, activity, and air exposure.
	10	12	~~***Oxygen Uptake Paper Due***~~
	14	13	*Acid-base Balance continued*; ***Oxygen Uptake Paper Due IN CLASS***
	15	13	Interactions with the Environment: Ocean acidification.
	21	14	THIRD LECTURE EXAM
	24	14	THANKSGIVING HOLIDAY (Nov. 22-26)
	28	15	Interactions with the Environment: Ocean Acidification; ***Hemocyanin Paper Due***
	29	15	No Class
Dec	7	16	Help Session, 1 p.m. to 3 p.m.
	8	16	FINAL EXAM, 9-noon

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 Graduate 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.

Grading policy:
There will be three lecture exams and a cumulative final examination. The lecture portion of the course will count for 75% of the final grade and the laboratory 25%. Approximately one half of the final exam will count as the fourth lecture 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.

Policy on viewing previous exams:
- I allow students to view their exams when I hand them back and to learn from their mistakes. Any student may view his or her exam at any time, but this will be under supervised situations.
- **Exams may not be copied under any circumstances.**
- A student may take personal notes on specific questions, but **these notes may not be shared**

with other students at any time. To do so is a violation of the College of Charleston honor code.

- **A student may not view exams that may have been improperly copied by graduate students in previous years.** To do so is a violation of the College of Charleston honor code.

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 scientific 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 perform chemical assays, perform dilutions, and analyze raw data in the laboratory in the context of simple experimental questions.
6. Students will be able to analyze a particular situation and suggest ways a cell, a tissue, an organ, or an organism might respond.

Grade Distribution		**Percent**
Lecture	9% lowest lecture exam grade 14% middle lecture exam grade 20% highest lecture exam grade 22% final exam (cumulative)	65
Class Presentation		10
Laboratory	Lab Performance - 5% Reports - 20%	25
		100

The grading scale will be approximately as follows.

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

Laboratory Schedule		
Week	**Laboratory**	**Assignment**
1	• Safety Training and Introduction to the Lab	• None
2	• Ammonia Assay	• Record unknown in lab notebook
3	• Ammonia Excretion in Marine Organisms	• Report excretion data to professor
4	• Ammonia Excretion in Marine Organisms	• Write Title Page, M&M, Results, Discussion, Literature Cited
5	• Phenoloxidase Activity in Crustaceans	• Report data to professor
6	• Phenoloxidase Activity in Crustaceans	• Report data to professor
	From this point forward, make all your final graphs using SigmaPlot!	
7	• Osmoregulation	• Record data and post online; plot graphs using SigmaPlot
8	• Writing Workshop	• None
9	• Osmoregulation	• Record data and post online; plot
10	• Oxygen Uptake	• Report data online

11	• Oxygen Uptake	• Write Title Page, M&M, Results, Discussion, Literature Cited
12	• Hemocyanin Function	• Report data online
13	• Hemocyanin Function	• Report data online; Write Title Page, M&M, Results, Discussion, Literature Cited

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 suspected, 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 status indicator 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.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. 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