

Physiological and behavioral ecology of marine animals

Fall 2017

## Physiological and behavioral ecology of marine animals

Instructor:

Dr. Yannis Papastamatiou

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Hours: Tuesday 2 p.m. – 4 p.m. or by appointment

Teaching Assistant:

### Time and Place:

- *Lecture:* T/TH 11 – 12:15 TBD

### Reference Materials (Required):

- Animal Physiology; Hill, Wise and Anderson 4<sup>th</sup> edition Ed. (ISBN: 978-0-87893-559-8)

### Course Description:

All marine organisms must cope with a variety of natural and anthropogenic challenges to survive, grow, and ultimately reproduce. Physical conditions (such as environmental temperature, salinity, dissolved oxygen) vary dramatically across habitats, and animals must possess the appropriate suite of physiological adaptations for success. In this class, we will emphasize conserved physiological principles that are broadly used across animal groups as well as highlight the many unique adaptations used by specific taxa. We will focus on the interaction between physiology and behavior, for example, how the animals may select habitats (e.g. temperature) to optimize their physiology. We will see how physiological and behavioral ecology is an integrated discipline that includes physiology, behavior, biomechanics, theoretical biology and more. We will also highlight the methods scientists are currently using to study the physiology of marine animals in the field and how an understanding of physiology is an important component of marine conservation.

### Blackboard:

Here you will find the course website, which includes updated syllabus and schedule, course announcements, lecture PowerPoints, supplemental resources, discussion board, and gradebook. Go to [fiu.blackboard.com](http://fiu.blackboard.com)

### Objectives and Outcomes:

#### Assigned Readings:

We will be discussing a lot of scientific literature throughout the course. You will be annotating scientific manuscripts during each class. A major goal is to learn to understand and interpret the scientific literature.

### Grading and Grading Policy:

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<b>Task</b>	<b>Percentage</b>
Midterm (x3)	20% each. I will keep the two highest scores
Class Participation	20 %
Class presentation	5%
Assignment	5%
Final Exam	30%

A	=	90-100%
B	=	80-89%
C	=	70-79%
D	=	60-69%
F	=	<60%

I round up to the nearest percentage. For example, an 89.5% will be considered an A, while 89.4% is a B.

## **Exams:**

**Midterms:** There will be three midterms, however I will only use the scores from the two highest exams (your lowest scoring exam will be discarded). You will have the full 75 minutes for the midterms. Each midterm will consist of multiple choice and short answer questions

**Final:** The final exam will include all material covered throughout the semester. You will have 2 h for the final, which will be a mix of multiple choice and short answer questions.

You will need a calculator for all exams.

**No makeup exams will be given.** A student that misses an exam must request a makeup exam in writing *prior to* the exam time. If the reason for missing the exam is acceptable, a makeup exam may be given during the finals week (date and time to be arranged). The makeup exam will not be the same exam as given to the rest of the class. Anyone who misses an exam and fails to arrange for a makeup exam will receive 0 points for the exam.

All assignments are due at the beginning of lecture on the day they are due. **Assignments turned in after the due date and time will not receive credit.**

## **Honor and safe place policies:**

As scientists and scholars, we hold ourselves to the highest standards of integrity. The FIU honor policy will apply fully to our work in this class. Any cheating on exams or plagiarism on written work will result in a grade of F for the assignment and the course. We will use turn-it-in.com to ensure that no inadvertent plagiarism creeps into your writing.

Likewise, as a progressive learning community, FIU does not tolerate sexual harassment or any other civil rights violation against any student or course personnel.

See the FIU Student Code of Conduct at: [http://www2.fiu.edu/~jms/standards\\_of\\_conduct.htm](http://www2.fiu.edu/~jms/standards_of_conduct.htm)

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FIU's discrimination and sexual harassment policies are available at:

<http://regulations.fiu.edu/regulation>

**Students with Disabilities:** Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of Florida International University to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Disability Student Services.

*This syllabus information, including course requirements and grading, may change at any time to better meet the needs of the group, or due to unforeseen circumstances. The most current version will be kept updated on Blackboard, so check there if in doubt.*

**Tentative Lecture Schedule** (*Topics and schedule subject to change – i.e., due dates of assignments and exams not available currently*)

Date	Week	Day	Topic
8/22/17	1	T	Course Introduction: What is physiological ecology? Basic physiological principles
8/24/17		Th	Fundamentals of Physiology/genomics and proteomics
8/29/17	2	T	Transport of solutes
8/31/17		Th	Energy metabolism
9/5/17	3	T	Aerobic and anaerobic metabolism
9/7/17		Th	Energetics of aerobic activity
9/12/17	4	T	Midterm 1
9/14/17		Th	Digestive physiology
9/19/17	5	T	Optimal foraging and digestion
9/21/17		Th	Thermal physiology
9/26/17	6	T	Pelagic fish and endothermy
9/28/15		Th	Sensory physiology
10/3/17	7	T	Nervous system and biological clocks
10/5/17		Th	Endocrinology and reproductive physiology
10/10/17	8	T	Practical: accelerometers and their use in ecology
10/12/17		Th	Midterm 2
10/17/17	9	T	Reproductive ecology
10/19/17		Th	TBA
10/24/17	10	T	TBA
10/26/17		Th	Biomechanics
10/31/17	11	T	Movement ecology and search patterns
11/2/17		Th	Animal Navigation
11/7/17	12	T	Social Biology
11/9/17		Th	Midterm 3
11/14/17	13	T	Oxygen physiology
11/16/17		Th	Diving physiology in marine mammals
11/21/17	14	T	Osmoregulation and behavior ( <b>assignments due</b> )

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11/23/15		Th	Student presentations
11/28/17	15	T	Student presentations
11/30/17		Th	Thanksgiving

**Assignments:**

*Class Activities*

Problem sets, discussion questions, and other types of classroom activities will be given throughout the quarter. You will be reading and annotating scientific papers during most classes. Dr Melissa McCartney will discuss the methods during the first week of class.

*Class Presentation*

Students will give a 5 min describing a study from a peer-reviewed publication. I will discuss closer towards the date tips on how to give a good presentation.

*Class Assignment*

You will write a 1-2 page paper detailing an experiment you would like to perform to answer a question in physiological ecology. You will need to describe the question, why it's important and briefly the methods you could use to answer the question. You can assume you would have as much scientific funding as you want for the experiment!