MARINE ECOLOGY

BIOL / EVPP 449, EVPP 549

Lectures: Tuesdays / Thursdays 5:55 – 7:10pm, Innovation Hall 330

Instructor

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Goals of this Course

Marine Ecology is an intensive study of the basic principles of oceanography and the life sciences of the oceans and coastal biomes. We will adopt the approach that the author of your textbook uses by focusing on functional biology, ecology, and biodiversity. The overall objective of this course is to instill an understanding and appreciation of the interaction of organisms with the major physical processes in marine systems. Another goal is to get students to speak the language of marine biology and think critically about the problems marine biologists try to solve.

Textbook

Levinton, J. S. 2018. ***Marine Biology***. Fifth Edition, Oxford University Press.

Structure of the Course

Course requirements: Attendance at lectures, reading of textbook chapters, completion of two written examinations, delivery of a presentation on one of the "Hot Topics in Marine Biology" discussed in Levinson's book, completion of iClicker quizzes, and iClicker class participation. In addition, students registered in EVPP 549 will be required to complete a special class project (details to be provided later in the semester). Also, each student is required to have an iClicker remote device, NOT the phone app, in order to participate in the iClicker quizzes and class participation.

Method of instruction: Lectures presented by the course instructor will include textbook material supplemented by information from peer-review and online resources. Students are expected to read textbook chapters and review lecture slides outside of class. Students are encouraged to ask questions about the covered material. Furthermore, classroom participation will be supplemented by iClicker questions (i.e., quizzes and participation).

Methods of evaluation: Two written tests are given. Questions may include multiple choice, matching, fill-in the blanks, definitions, and essay-type questions. The final exam is not comprehensive. Also, eight iclicker quizzes will be given during the course of the semester, as well as various graded iClicker participation questions.

Lecture exams may include all textbook and lecture material (including; text readings, PowerPoint slides, videos, handouts, etc.). All exams must be taken as scheduled. Make-ups will not be given, unless for exceptional circumstances with a legitimate excuse (e.g., signed doctor's excuse). Otherwise, any missed exams will be scored a zero. In addition, all electronic devices must be turned off and put totally away (out of sight) during exams. Once the exam starts, do NOT touch, use, or look at any electronic device until you have completed the exam and are out of the room. NOTE: Touching, using or looking at any electronic device during an exam is a breach of the GMU Honor Code. Also, no talking or communication is allowed during exams.

***"Hot Topics in Marine Biology"*:** The Levinson textbook contains 13 "Hot Topics in Marine Biology", which are case studies discussing issues of emerging interest in marine ecology. Each student will select one topic and will deliver a 10-15 minute presentation to the class on a designated date. A sign-up sheet with topics and dates will be circulated in the first week of classes. A maximum of two students can sign up for any given topic.

iClicker performance quizzes: Eight iClicker quizzes will be given throughout the semester. The two lowest iClicker quiz grades will be dropped per student; therefore, **no make-up quizzes will be allowed**. Any missed iClicker quiz will be scored a "zero". The average score of the iClicker quizzes will be worth 15% of your final grade.

iClicker participation questions: These questions will be asked during lectures at random moments, and students will respond by using their iClickers. Grading will be based on participation only, not on the correctness of your answer. **Thus, the more you attend class, the more you help your grade and vice versa.** The total participation in these questions will be worth 10% of your final grade.

IMPORTANT: All students are required to have an iClicker remote device (not the phone app) to participate in iClicker quizzes and participation questions. The phone app is not reliable because it generates recording errors up to 25%, whereas the iClicker remote devices typically show 0% recording errors.

COURSE GRADING: For students enrolled in EVPP 449 and BIOL 449, grades will be determined by the results of a midterm exam, a final exam (not comprehensive), one presentation (Hot Topic in Marine Biology), and class attendance as measured by iClicker performance and participation quizzes. Weighting of these activities will be as follows:

Midterm Exam	30%
Final Exam	30%
"Hot Topic in Marine Biology" presentation	15%
Average score of iClicker performance quizzes	15%
Average score of iClicker participation quizzes	10%
TOTAL	100%

For students enrolled in EVPP 549, grades will be determined by the results of a midterm exam, a final exam (not comprehensive), one presentation (Hot Topic in Marine Biology), work on a special research project (details to be announced later) and class attendance as measured by iClicker performance and participation quizzes. Weighting of these activities will be as follows:

Midterm Exam	30%
Final Exam	30%
"Hot Topic in Marine Biology" presentation	12.5%
Research Project	12.5%
Average score of iClicker performance quizzes	10%
Average score of iClicker participation quizzes	5%
TOTAL	100%

Your final score in the course will be calculated based on the percentage grade earned on each of the course activities listed above, multiplied by the weighting listed for each activity. For undergraduate students, letter grades will be assigned based on the final course score as follows:

- A+ = 97-100%
- A = 93 - 96%
- A- = 90 - 92%

- B+ = 87 - 89%
- B = 83 - 86%
- B- = 80 - 82%
- C+ = 77 - 79%
- C = 73 - 76%
- C- = 70 - 72%
- D = 60 - 69%
- F = 0 - 59%

For graduate students, letter grades will be assigned based on the final course score as follows:

- A+ = 97-100%
- A = 93 - 96%
- A- = 90 - 92%
- B+ = 87 - 89%
- B = 83 - 86%
- B- = 80 - 82%
- C = 70 - 79%
- F = 0 - 69%

PLEASE NOTE THAT I DO NOT ROUND UP. FOR EXAMPLE, AN 89.99 IS A B+ AND IT WILL NOT BE ROUNDED UP TO AN A-.

Proposed dates for the in-class exams are indicated in the class schedule section of this syllabus. Any changes to these proposed dates will be announced in class at least one week in advance.

GENERAL COURSE POLICIES

Attendance in class: mandatory. Attending class is the best strategy for success.

Be considerate: please mute your cell phone during lecture time. Please do not surf the web while in class unless it involves performing a specific search related to a marine ecology topic being covered in class at that time. Do not disturb your colleagues, come to class on time, but if you are late or need to leave early, be noiseless and invisible.

Email: GMU email is the official way of communicating with students. Make sure that your ***GMU email*** is set up properly and working.

CANCELED CLASSES: If an examination is scheduled for a day on which classes are canceled because of inclement weather or any other reason, the examination will be given during the next scheduled class. Call (703) 993-1000 or GMU website for official notification of canceled classes.

Disability Statement: If you have a documented learning disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with the Office of Disability Services (SUB I, Rm. 2500; 3-4306) to determine the accommodations you need; and 2) give copies of your disability documentation to your instructors so we may discuss your accommodation needs.

Honor Code: GMU students, faculty and staff are bound by the GMU honor code. Adherence to the *GMU Honor Code* is expected of all students, specifically:

Members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.

In all assignments and communications, plagiarism will not be tolerated. This applies equally to oral and written communications in the context of any evaluated (graded) course assignments. As stated in the Honor Code, infractions may result in invalidated credit for dishonorable work and lowered grade, including failure from the class, suspension or dismissal. Inquiries for clarification from the professor are welcome. For more information see the complete honor code in the university catalog.

TENTATIVE CLASS SCHEDULE: Subject to changes.

Wk	Date	Lecture topic	"Hot Topic in Marine Biology" Assignment
1	21 Jan	Introduction – Ch. 1 & 2 (Sounding the Deep – The Oceanic Environment)	
	23 Jan	Ch. 3 (Climate Oscillations and Climate Change)	
2	28 Jan	Ch. 4 (Ecological and Evolutionary Principles of Marine Biology)	
	30 Jan	Ch. 5 (The Chemical and Physical Environment)	Keeping Your Legs Warm: A Sea Turtle Tale
3	4 Feb	Ch. 6 (Life in a Fluid Medium)	Crystal Eyes: Past and Present
	6 Feb	Ch. 7 (Reproduction, Dispersal and Migration)	A Lover and a Fighter
4	11 Feb	Ch. 7 - Continued	Sharks Find Their Way Home
	13 Feb	Ch. 8 (Plankton)	
5	18 Feb	Ch. 9 (Marine Vertebrates and Other Nekton)	Whales and Wonder Dogs
	20 Feb	Ch. 10 (The Open Sea: Distributions and Adaptations)	Blue Whale Diving: Balancing Foods and Energy Needs
6	25 Feb	Ch. 11 (Processes in the Water Column)	Angry Birds and Lost Seals: Solution of the Effects of a Mysterious Poison
	27 Feb	Ch. 12 (Productivity, Food Webs and Global Climate Change)	
7	3 Mar	**MIDTERM EXAM**	
	5 Mar	Ch. 13 (Benthic Microorganisms, Seaweeds and Sea Grasses)	Where Did All This Invertebrate Diversity Come From?
8	10 Mar	**SPRING BREAK**	
	12 Mar		
9	18 Mar	**NO CLASSES – INSTRUCTOR'S FIELD TRIP TO COLOMBIA**	
	20 Mar		

Wk	Date	Lecture topic	"Hot Topic in Marine Biology" Assignment
10	24 Mar	Ch. 14 (The Diversity of Benthic Marine Invertebrates)	
	26 Mar	Ch. 15 (Benthic Life Habits)	
11	31 Mar	Ch. 16 (The Tidelands: Rocky Shores, Soft-Substratum Shores, Marshes, Mangroves, Estuaries and Oyster Reefs)	Sea Star Catastrophe: Disease, Its Spread, and Its Diagnosis
	2 Apr	Ch. 16 - Continued	
12	7 Apr	Ch. 17 (The Shallow Coastal Subtidal: Sea Grass Beds, Rocky Reefs, Kelp Forests and Coral Reefs)	Reorganization of a Rocky Subtidal Ecosystem: A Cod and Lobster Tale
	9 Apr	Ch. 17 - Continued	
13	14 Apr	Ch. 18 (Benthos from the Continental Shelf to the Deep Sea)	
	16 Apr	Ch. 19 (Polar Marine Biology)	
14	21 Apr	Ch. 20 (Biodiversity and Conservation of the Ocean)	
	23 Apr	Ch. 21 (Fisheries and Food from the Sea)	Fin-ale for Sharks?
15	28 Apr	Ch. 21 - Continued	Shellfisheries: Which Will Fall to Ocean Acidification?
	30 Apr	Ch. 22 (Environmental Impacts of Industrial Activities and Human Populations)	Is the Gulf of Mexico Adapted to Oil?

FINAL EXAM – THURSDAY MAY 7, 2020

4:30 – 7:15 PM