

**MARINE ECOLOGY**  
BIOL / EVPP 449, EVPP 549  
Synchronous Online Lecture Wednesday 4:30 – 7:10pm

**Instructor**

Dr. Amy Fowler  
Department of Environmental Science and Policy  
Virtual Office hours: M 4:15 - 6:00pm and by appointment  
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**Goals of this Course**

Marine Biology 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. To that end, we will complement the readings from the textbook with peer-reviewed journal articles, guest lectures from practicing marine scientists, and student-led discussions of projects that focus on current issues in the field.

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**Textbook**

Levinton, J. S. 2009. Marine Biology. Third Edition, Oxford University Press.

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**Grading and Assignments**

The final grade you earn in this course will be based on your performance in examinations, quizzes, and assignments. There will be a **midterm exam (25%)**, **final exam (35%)**, **quizzes (10%)**, and **student projects that involve writing summaries of journal articles as well as student-led discussions and project presentations (30%)**. To encourage students to keep up with the reading assignments, some quizzes will be unannounced and administered at any time. Final grades will be assigned for undergraduates based on a standard plus/minus scale:

A	(94 - 100 %)	C+	(77 - 79.99 %)
A-	(90 - 93.99 %)	C	(73 - 76.99 %)
B+	(87 - 89.99 %)	C-	(70 - 72.99 %)
B	(83 - 86.99 %)	D	(60 - 69.99 %)
B-	(80 - 82.99 %)	F	(< 60 %)

Final grades will be assigned for graduates using the university-wide system for grading graduate courses:

A	(94 - 100 %)	B-	(80 - 82.99 %)
A-	(90 - 93.99 %)	C	(70 - 79.99 %)
B+	(87 - 89.99 %)	F	(< 70 %)
B	(83 - 86.99 %)		

**Midterm, Quizzes and Final Examination:** The questions on these tests will cover material presented in lectures, readings, guest lectures, and student-led discussions. The quizzes are intended to both encourage and reward students who come to class prepared and on time. Quizzes will include material from the required reading for that day, previous lectures, guest lectures, or discussions. The midterm exam will be on the material presented during the first half of the course. The final examination will be on the material from the second half of the course.

**Student-led Discussion/Project Presentation:** This assignment will allow you to explore a specific area in marine biology that you find interesting and share the results of your background and library research with your colleagues. You will receive handouts providing details of these assignments but it is important that you narrow the focus of your project and start gathering peer-reviewed journal articles early in the semester.

You will sign up for a time to meet with Dr. Fowler to get you started and help you explore some topic that you want to pursue. Undergraduates will turn in three peer-reviewed articles you have read for your project; graduate students will turn in six articles. Students will also produce a handout for the class to read that will include a synopsis of the peer-reviewed literature as well as questions for a discussion. Students will lead a 10 minute (undergraduate) or 15 minute (graduate) presentation, followed by a 5 minute discussion of the topic statement with

supporting results from the related articles at the end of the semester. All deadlines for turning in materials associated with these assignments are listed on the schedule.

**Extra Credit:** Students can email Dr. Fowler a short article from a newspaper or magazine (online or print), or a clip from a radio station or television news program (or educational program) from the **past 6 months** on the topic of marine ecology (from any perspective) to share with the class. Students must send their chosen articles or multimedia to Dr. Fowler **48 hours in advance of the class**. Be prepared to give a short 2-5 minute explanation of why you chose the piece, how it links to this course, and how it advances the field of marine ecology. Each student will be able to present one article or clip per week (a possibility of 15 weeks). Each presentation will count for one extra point on any exam for a maximum of 15 extra points. (This idea was courtesy of AC Willox, University of Guelph).

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## Practical Matters

It is not possible to master this material without regular class attendance. I will use some different examples than are in the book and incorporate material from other sources. The PowerPoint lectures, posted on Blackboard, are ***not a substitute for lecture attendance***. Students should focus on taking detailed notes of lectures and synthesizing the information with the ideas illustrated in the slides. Occasionally videos will be shown, and students will be responsible for knowing the organisms as well as the concepts they illustrate. Students are responsible for everything discussed in lecture, announced changes in the syllabus, and any handouts distributed in class. All of that is fair game for exams.

Please adhere to the list below during lecture and lab:

- Be prepared for class.

- Do not be late to class (classes will start on time).

- Cell phones are **not** to be used in any way, under *any* circumstances during lecture/lab, and should be turned OFF and stowed out of sight for the duration of every lecture/lab.

**Policies for Online Learning:** Activities and assignments in this course will regularly use the Blackboard learning system, available at <https://mymason.gmu.edu>. Students are required to have regular, reliable access to a computer with an updated operating system (recommended: Windows 10 or Mac OSX 10.13 or higher) and a stable broadband Internet connection (cable modem, DSL, satellite broadband, etc., with a consistent 1.5 Mbps [megabits per second] download speed or higher.)

Activities and assignments in this course will regularly use web-conferencing software (Blackboard Collaborate / Zoom). In addition to the requirements above, students are required to have a device with a functional camera and microphone. In an emergency, students can connect through a telephone call, but video connection is the expected norm.

All course materials posted to Blackboard or other course site are private to this class; by federal law, any materials that identify specific students (via their name, voice, or image) must not be shared with anyone not enrolled in this class.

Some/All of our synchronous meetings in this class will be recorded to provide necessary information for students in this class. Recordings will be stored on Blackboard and will only be accessible to students taking this course during this semester.

Video recordings — whether made by instructors or students — of class meetings that include audio, visual, or textual information from other students are private and must not be shared outside the class. Live video conference meetings (e.g. Collaborate or Zoom) that include audio, textual, or visual information from other students must be viewed privately and not shared with others in your household or recorded and shared outside the class

Students must use their MasonLive email account to receive important University information, including communications related to this class. I will not respond to messages sent from or send messages to a non-Mason email address.

The only valid reasons for missing an assignment deadline or an examination are those accepted by the University and include death in the immediate family and major illness of the student. Any student missing a graded

assignment (including tests) for health reasons or other extenuating circumstances may be required to submit a doctor's statement or other appropriate documentation to avoid a zero for that assignment.

If the campus closes or class is canceled due to weather or other concern, students should check Blackboard for updates on how to continue learning and information about any changes to events or assignments.

**Student and Faculty Names and Pronouns:** Gender identity and pronoun use: If you wish, please share your name and gender pronouns with me and how best to address you in class and via email. I use she/her for myself and you may address me as "Dr. Fowler" in email and verbally.

**Academic Integrity:** It is expected that students adhere to the George Mason University Honor Code as it relates to integrity regarding coursework and grades. The Honor Code reads as follows: "To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the University Community have set forth this: Student members of the George Mason University community pledge not to cheat, plagiarize, steal and/or lie in matters related to academic work." More information about the Honor Code, including definitions of cheating, lying, and plagiarism, can be found at the Office of Academic Integrity website at <http://oai.gmu.edu>. Students should read these statements and understand their implications and how they apply to this course. Any violation of the code of academic integrity will result in a severe penalty assessed on the final grade. This penalty will range from a **minimum** of a full letter grade reduction to an F for the course. All academic integrity violations will be reported to the Chair of the Department of Environmental Science and Policy, the Dean of the College of Science, and the Director of the Academic Integrity Board.

Any assignment turned in for a grade in this course must reflect your work and your work only.

Some kinds of participation in online study sites violate the Mason Honor code: these include accessing exam or quiz questions for this class; accessing exam, quiz, or assignment answers for this class; uploading of any of the instructor's materials or exams; and uploading any of your own answers or finished work. Always consult your syllabus and your professor before using these sites.

**Student Disabilities:** Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit <http://ds.gmu.edu/> for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: [ods@gmu.edu](mailto:ods@gmu.edu) | Phone: (703) 993-2474.

**Diversity and Inclusion:** In this course, we welcome and value individuals and their differences, including gender expression and identity, race, economic status, sex, sexuality, ethnicity, national origin, first language, religion, age and ability. We encourage all members of the learning environment to engage with the material personally, but to also be open to exploring and learning from experiences different than their own.

Students are responsible for verifying their enrollment in this class. Schedule adjustments must be made by the deadlines posted in the Schedule of Classes.

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## Useful Resources

The following sources may be useful resources for you throughout this course and are good places to discover more information about marine biology and ecology.

Marine Science Today, <http://marinesciencetoday.com/>

Marine Bio, <http://marinebio.org/oceans/creatures/>

Marine Biology Links, <http://life.bio.sunysb.edu/marinebio/mblinks.html>

The Scientist, <http://www.the-scientist.com/?articles.list/tagNo/183/tags/marine-biology/>

New Scientist, <https://www.newscientist.com/article-topic/marine-biology/>

Science Daily, [https://www.sciencedaily.com/news/plants\\_animals/marine\\_biology/](https://www.sciencedaily.com/news/plants_animals/marine_biology/)

## Peer-reviewed Journals

George Mason's library system has reasonably good access to journals that will be useful in this course. Students should focus on using these sources and not depend on ILL (Interlibrary Loan) for their final laboratory report (it could take too long to get your articles). The list below is divided into two categories – "Most Useful" and "Additional Journals" categories to help you get started.

### Most Useful

Aquatic Biology  
Aquatic Ecology  
Biological Bulletin  
Ecology  
Invertebrate Biology  
Journal of Experimental Marine Biology and Ecology  
Limnology and Oceanography  
Marine Biology  
Marine Ecology Progress Series

### Additional Journals

Nature  
Science  
Biological Bulletin  
Animal Behaviour  
Ecological Monographs  
Evolutionary Ecology  
Ecological Applications  
Journal of Experimental Biology  
Oecologia  
Oikos  
Conservation Ecology

Wk	Date	Lecture topic	Reading / Assignment
1	27 Jan	Introduction Modern Marine Science	Chapter 1
2	3 Feb	The oceanic environment Oceanic inhabitants - Plankton	Chapters 2 and 3 Individual conferences for projects
3	10 Feb	Oceanic inhabitants - Inverts Oceanic inhabitants – Nekton 6:40 – Guest speaker Dr. Will Ryan www.willhryan.com	Chapters 4 and 5, Chapter 14 (pp. 357-362)
4	17 Feb	4:30 – Guest speaker Lisa Sette <a href="https://coastalstudies.org/seal-research/">https://coastalstudies.org/seal-research/</a> Oceanic inhabitants – Seaweeds, seagrasses, benthic microorganisms Ecology and Evolutionary Principals – Individual level	Chapter 6
5	24 Feb	4:30 – Guest speaker Dr. Stacy Krueger- Hadfield www.quooddy.com Ecology and Evolutionary Principals – Population and Community levels	Chapters 7, 8 <b><u>Feb 24 = topic statements due</u></b>
6	3 Mar	Plankton Abundance	Chapter 9
7	10 Mar	<b><u>March 10 = MIDTERM EXAM</u></b>	Chapter 10
8	17 Mar	Productivity, Food Webs, and Global Climate Change	Chapters 11, 12 <b><u>Mar 17 = 3 article PDFs and word file due from each undergrad; 6 from each grad</u></b>

9	24 Mar	4:30 – Guest speaker Dr. Jen Salerno <a href="http://www.salernolab.com">www.salernolab.com</a>  Benthic Life Habits  Instructor-led Discussion / Tidelands	Chapters 13, 14
10	31 Mar	4:30 – Guest speaker Chris Moore <a href="https://ncseagrant.ncsu.edu/currents/2019/01/p/parasites-partners-in-coastal-restoration/">https://ncseagrant.ncsu.edu/currents/2019/01/p/parasites-partners-in-coastal-restoration/</a>  Tidelands  Sea Grass Beds, Rocky Reefs, Kelp Forests, and Coral Reefs	Chapters 14, 15
11	7 Apr	4:30 – Guest speaker Darby Pochtar  Continental Shelf to Deep Sea  Biodiversity and Conservation	Chapters 16, 17
12	14 Apr	4:30 – Guest speaker Dr. Owen Nichols <a href="https://coastalstudies.org/tag/owen-nichols/">https://coastalstudies.org/tag/owen-nichols/</a>  Fisheries  Environmental Impacts	<b><u>Apr 14 = All project handouts due</u></b>  Chapters 18, 19
13	21 Apr	Student-led project presentations and discussions	Read handouts for project presentations / discussions
14	28 Apr	Student-led project presentations and discussions	Read handouts for project presentations / discussions

**FINAL EXAM – WEDNESDAY, MAY 5, 2021**

**4:30 – 7:15 PM**