

Estuarine and Coastal Ecology, EVPP 581: Syllabus Fall 2021

Meeting Time: Wednesday 3:30 - 6:20 PM

Location: Potomac Science Center 3102

Instructors: **Dr. T. Reid Nelson**, tnelso3@gmu.edu
Assistant Professor, Environmental Science and Policy
Phone: (703) 993-4480
Office: Potomac Science Center 3115
Office hours: Wednesdays 1:00 – 3:00 pm and by appointment



Course Web Site: Go to <http://mymason.gmu.edu>, log in with your email name and your GMU email password, select Blackboard, and then select Estuarine and Coastal Ecology EVPP-581 (Fall 2021). All information will be in this location.

Note: The course takes place at an off-campus location: The Potomac Science Center, 650 Mason Ferry Ave, Woodbridge, VA.

Course Description and Goals: Our course is an overview of the ecology of coastal systems including rocky coasts, salt marshes, mangroves, seagrasses, and beaches. I will place an emphasis on estuaries like the Chesapeake Bay. During the course, you will examine the physical, chemical, and biological processes and their interrelationships. You will learn concepts in coastal geomorphology, physical oceanography, biogeochemistry, biology, ecosystem ecology, and anthropogenic impacts as they relate to estuaries and coasts. After completion of the course, you will have knowledge of the physical, chemical, and biological processes operating in these systems. You will understand how these systems are formed, and why and how they are important. In addition, you will understand how anthropogenic factors affect these systems, how estuarine and coastal ecosystems benefit humanity (ecosystem services), and how a changing climate may alter these environments. This course will also strengthen your presentation, communication, and discussion skills which are necessary assets to anyone entering a career in the sciences. Finally, this course will help to develop your critical reading and thinking, valuable skills for everyone to possess as an educated member of society.

Course Content and Instructional Methods: Our course will consist of my lectures and your presentations followed by literature discussions. Below is a list of the lecture topics I hope to cover each week. My syllabus is a guideline and not set in stone, as the semester progresses we will see how much material we cover and adjust exams and lectures accordingly. I encourage questions and in class discussions, if this leads to less material being covered throughout the semester that is perfectly fine. I would rather that you have a good understanding of the material instead of being bombarded or overwhelmed with too many topics. My lectures will consist of PowerPoint presentations that I will post to our course on the day of the lecture. Each of you will give a 15-minute (max) presentation in class on a topic in estuarine and coastal ecology that you will choose. One week before your presentation, you will assign one paper (publication in a scientific journal) to the rest of the class on your presentation topic. After your presentation, we will have a question and discussion session about the presentation and paper. Reading and interpreting scientific papers is part of the course; your participation grade (25 pts of total) will be based on reading the assigned material and participating in the discussions. Check the course web site every week for readings that are part of the course material. On the last day of class (or sooner if you desire), you will turn in a double-spaced term paper that dives deeper into your

presentation topic. Your terms paper will be formatted like a scientific review paper and we will read some good examples throughout the semester of what an ideal term paper could look like.

Here are a couple good examples dealing with the role of estuaries as nursery habitats.

M. W. Beck et al. (2001). The Identification, Conservation, and Management of Estuarine and Marine Nurseries for Fish and Invertebrates. *BioScience*, Volume 51, Issue 8, August 2001, Pages 633–641, [https://doi.org/10.1641/0006-3568\(2001\)051\[0633:TICAMO\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2001)051[0633:TICAMO]2.0.CO;2)

K. Able (2005). A re-examination of fish estuarine dependence: Evidence for connectivity between estuarine and ocean habitats. <https://www.sciencedirect.com/science/article/pii/S0272771405000351>

Grading:	2 mid-term exams:	125 pts each (41.67 % for both exams combined)
	Cumulative Final:	150 pts (25 %)
	Participation:	25 pts (4.17 %)
	Student Presentations:	75 pts (12.5 %)
	Term Paper:	100 pts (16.66%)
	Total:	600 pts (100%)

Lecture Topics and Assignments Schedule

Week	Date	Topic	Readings
1	8/25	Intro to Class, Estuaries and Coasts; Coastal and Estuarine Processes	Ch. 1
2	9/1	Coastal and Estuarine Processes Continued; Discussion	Ch. 1 Bb
3	9/8	Coastal Geomorphology and Estuarine Mixing	Ch. 2
4	9/15	Biogeochemistry	Ch. 3
5	9/22	Microbial Ecology; Student Presentation	Ch. 9 and 10
6	9/29	Exam 1: Physical and Biogeochemical Considerations	
7	10/6	Phytoplankton and Benthic Algae; Student Presentation	Ch. 4 and 8
8	10/13	Saltmarshes, Mangroves and Seagrasses; Student Presentation	Ch. 5, 6, and 7
9	10/20	Estuarine Invertebrates; Student Presentation	Ch. 11 and 12
10	10/27	Estuarine Nekton and Food Webs; Student Presentation	Ch. 13 and 16
11	11/3	Estuarine Fisheries, Nursery role concept; Student Presentation	Ch. 18 & Bb
12	11/10	Exam 2: Biological Life in Estuaries	

13	11/17	Estuarine Wildlife; Student Presentation	Ch. 14
14	11/24	Thanksgiving Holiday (No Classes)	
15	12/1	Human Impacts, Climate Change, and Class recap; Term Papers Due	Ch. 19 and 20

Cumulative Final Exam (Study everything offered in this class): Date: 12/8 Time: 3:30-6:20 PM

Readings:

Assigned textbook:

Day, J. W. Jr., B. C. Crump, W. M. Kemp and A. Yáñez-Arancibia (eds). 2012. Estuarine Ecology, second edition. Wiley-Blackwell, New Jersey. ISBN: 978-0-471-75567-8.

<https://onlinelibrary-wiley-com.mutex.gmu.edu/doi/book/10.1002/9781118412787>

Papers assigned for your presentations will be posted on Blackboard (Bb) the week before class and I may assign other papers as needed to supplement the course.

Other suggested readings for this class:

Woodroffe, C. D. 2002. Coasts: Form, process and evolution. Cambridge University Press, Cambridge, UK. Used on amazon for < 20\$

<https://www.amazon.com/Coasts-Evolution-Colin-D-Woodroffe/dp/0521011833>

Honor Code: Mason is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process (see below for the student pledge). In this course the honor code applies as follows, when you are responsible for a task, you will perform that task. When you rely on someone else's work in presentations or papers, you will give proper citation to that work.

Student Pledge: 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 for this Honor Code: Student Members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.

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 he/him/his for myself and you may address me as Reid or Dr. Nelson in email and verbally.

Safe Return to Campus Statement: First of all, I want to address that these are new and uncertain times for everyone. Over the course of the pandemic, I have dealt with my own anxiety and stress management issues and strongly encourage everyone to practice good self-care and try to consciously maintain a healthy mental state. For anyone that is feeling anxious

or overwhelmed by the return to campus, the state of the world in general, or any other issues, please reach out to the Counseling and Psychological Services (CAPS) center and seek help as needed <https://caps.gmu.edu/covid19/>. Speaking from personal experience, talking to someone and getting strategies to maintain good mental health can be paramount to our well-being, happiness, and intellectual pursuits.

All students taking courses with a face-to-face component are required to follow the university's public health and safety precautions and procedures outlined on the university Safe Return to Campus webpage (<https://www2.gmu.edu/safe-return-campus>). Similarly, all students in face-to-face and hybrid courses must also complete the Mason COVID Health Check daily, seven days a week. The COVID Health Check system uses a color code system and students will receive either a Green, Yellow, or Red email response. Only students who receive a "green" notification are permitted to attend courses with a face-to-face component. If you suspect that you are sick or have been directed to self-isolate, please quarantine or get testing. Faculty are allowed to ask you to show them that you have received a Green email and are thereby permitted to be in class. Students are required to follow Mason's current policy about facemask-wearing. As of August 11, 2021, all community members are required to wear a facemask in all indoor settings, including classrooms. An appropriate facemask must cover your nose and mouth at all times in our classroom. If this policy changes, you will be informed; however, students who prefer to wear masks either temporarily or consistently will always be welcome in the classroom.

Absenteeism Policy: I believe that being in the classroom is a valuable experience where a free exchange of ideas and healthy academic debate can flourish. In person presentations and discussions are also paramount to the learning process and building a sense of community. Therefore, I hope that everyone can make plans to be in class as frequently as possible. We live in uncertain times and unforeseen personal issues may arise. If these occur please contact me as soon as possible and we will work together to accommodate absences as needed.

Disability Accommodations: Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life, Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. Students can begin the registration process with Disability Services at any time during their enrollment at George Mason University. If you are seeking accommodations, please visit <http://ds.gmu.edu/> for detailed information about the Disability Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu | Phone: (703) 993-2474.

Sexual Harassment, Sexual Misconduct, and Interpersonal Violence: George Mason University is committed to providing a learning, living and working environment that is free from discrimination and a campus that is free of sexual misconduct and other acts of interpersonal violence in order to promote community well-being and student success. We encourage students and employees who believe that they have been sexually harassed, sexually assaulted

or subjected to sexual or interpersonal misconduct to seek assistance and support. University Policy 1202: Sexual Harassment and Misconduct speaks to the specifics of Mason's process, the resources, and the options available to students and employees.

Notice of mandatory reporting of sexual or interpersonal misconduct: As a faculty member, I am designated as a "Non-Confidential Employee," and must report all disclosures of sexual assault, sexual harassment, interpersonal violence, stalking, sexual exploitation, complicity, and retaliation to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-993-3686 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance or support measures from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu. Unforeseen personal issues may arise and if these occur please contact me as soon as possible and we will work together to accommodate absences as needed.