



Course Information

Course Title: Oceanography of the Chesapeake and Mid-Atlantic

Course Number: AOSC421

Term: Spring 2022

Credits: 3

Course Dates:

Course Times: MWF 1-1:50PM

Professor: Jacob Wenegrat

Pronouns: he/him

Email: wenegrat@umd.edu

Office Hours: TBD

Office Hours Zoom: TBD

Course Description

This course introduces the oceanography of the Chesapeake Bay and Mid-Atlantic bight, with a focus on physical oceanographic processes, the impact of ocean circulation on the coastal and estuarine environment, and the future of our coast in a changing climate. This will include major topics in coastal oceanography such as the shelf circulation, waves and tides, estuarine circulation, and sea-level rise. In addition to lecture, students will read recent selections from the scientific literature, develop a report on an oceanographic issue relevant to Maryland coastal waters, and take part in a research cruise on the Chesapeake Bay.

Course Objectives

After successfully completing this course you will be able to:

- Describe the physical oceanography of the Mid-Atlantic Bight and the Chesapeake Bay.
- Use physics to interpret observations and models of the coastal ocean.
- Relate topics in the coastal environment to physical oceanographic processes.
- Investigate current issues in coastal oceanography and climate change, and connect these to coastal management and human impacts.

Course Resources

- Course Website: elms.umd.edu
- Books (optional):
 - Waves, Tides, and Shallow-Water processes. 2nd Edition. Edited by Dave Park. ISBN-978-0-7506-4281-1. Available online through: <https://umaryland.on.worldcat.org/v2/oclc/881855067>
 - Atmosphere, ocean, and climate dynamics. John Marshall and R. Alan Plumb. ISBN-10: 0125586914. Available online through: <https://umaryland.on.worldcat.org/oclc/662453156>

Course-Specific Policies

Names/Pronouns and Self-Identifications

The University of Maryland recognizes the importance of a diverse student body, and we are committed to fostering inclusive and equitable classroom environments. I invite you, if you wish, to tell us how you want to be referred to both in terms of your name and your pronouns (he/him, she/her, they/them, etc.). The pronouns someone indicates are not necessarily indicative of their gender identity. Visit trans.umd.edu to learn more.

Additionally, how you identify in terms of your gender, race, class, sexuality, religion, and dis/ability, among all aspects of your identity, is your choice whether to disclose (e.g., should it come up in classroom conversation about our experiences and perspectives) and should be self-identified, not presumed or imposed. I will do my best to address and refer to all students accordingly, and I ask you to do the same for all of your fellow Terps.

Communication with Instructor:

If you have questions related to topics in lectures or homework, and you feel comfortable, please post them on the ELMS discussion board. This allows others (who likely have similar questions) to see the answer, or to provide their own input.

That being said, it is also completely fine to email me directly at wenegrat@umd.edu. Other routes for communication are attending the office hours, or emailing to setup a phone/zoom chat.

Activities, Learning Assessments, & Expectations for Students

- 1) 4 assignments due at approximately 4 week intervals. You may discuss the assignments with fellow students but you need to complete the assignment yourself. **60% of grade**
- 2) Journal article readings and discussions. Most weeks we will have an assigned reading of a recent journal article relevant to the course materials, which we will discuss in class on Fridays. Students will be graded on leading 1 of the discussions, and participating weekly. **10% of grade**
- 3) Research report: Students will work in small groups to research a topic related to coastal physical oceanography (eg. sea-level rise impacts in Maryland, offshore wind and wave energy, etc.). This will be worth a total of **30% of grade**, broken down as 5% draft-review activity, 15% final paper, and 10% final presentation.

Grades

Grades are calculated by the combined performance on assignments and assessments as specified above under *Activities, Learning Assessments, & Expectations for Students*. Your final grade is determined by your performance on the learning assessments in the course and is assigned individually (not curved). The precise division between the scores for different grades will be adjusted depending on how hard I think the assignments and quizzes ended up being (and so cannot be specified a priori).

However, the maximum possible cutoffs are (i.e. grading may get easier than this but not harder):

Maximum Grade Cutoffs									
+	97.00%	+	87.00%	+	77.00%	+	67.00%	+	
A	93.00%	B	83.00%	C	73.00%	D	63.00%	F	<60.0%
-	90.00%	-	80.00%	-	70.00%	-	60.00%	-	

Grades and assessment scores will be posted on the course ELMS page. If you would like to review any of your grades (including the exams), or have questions about how something was scored, please email me to schedule a time for us to meet 1-1.

Course Schedule

This is a tentative schedule, and subject to change as necessary – monitor the course ELMS page for current deadlines. In the event of a prolonged university closing, or an extended absence from the university, adjustments to the course schedule, deadlines, and assignments will be made based on the duration of the closing and the specific dates missed.

WEEK	TOPIC	MONDAY	WEDNESDAY	FRIDAY
1	Introduction	Class intro	Seawater and density	Budgets <i>Activity: T/S Budgets</i>
2	Fundamentals of GFD	Essential GFD	Essential GFD II	Review GFD <i>Activity: Geostrophic balance</i>
3	Shelf circulation	Mid-Atlantic Bight Circulation	Coastal fronts	<i>Activity: Group Project Brainstorming</i>
4	Shelf circulation 2	Upwelling/Downwelling	Hurricanes	<i>Activity: Wind-driven transport</i> <i>Reading: Physics + Fisheries</i>
5	Waves	Wave basics	Wave spectra	<i>Activity: Waves</i> <i>Reading: Wave energy</i>
6	Waves 2	Shoaling waves, sediment	Tsunamis	<i>Activity: Sediment transport calculations</i> <i>Reading: Coastal Erosion</i>
7	Tides	Intro to tides	Tides cont.	<i>Activity: Tidal resonance</i> <i>Reading: Tides and the origin of life</i>

8	Approaching Shore	Inner Shelf	River Plumes	<i>Activity: Data analysis, coastal river plumes</i>
9	Estuaries	Estuaries Intro	Estuarine residual circulation	<i>Reading: The Chesapeake Bay</i>
10	Chesapeake Bay	The Chesapeake Bay Estuary	Nutrients, Pollutants, Hypoxia, and Circulation	<i>Guest Speaker</i>
11	Rising Seas	Global sea-level rise	Sea-level rise in Maryland	<i>Activity: Storms and Sea-Level Rise Reading: Maryland Climate Change Report</i>
12	Changing Climate	Coastal impacts	Maryland Ocean Climate Change	<i>Guest Speaker</i>
13	Future of the coastal zone	TBD based on student interests	TBD based on student interests	TBD based on student interests
14	Group Presentations	TBD	TBD	TBD
15	Group Presentations	TBD	TBD	Course Summary and Review

Campus Policies

It is our shared responsibility to know and abide by the University of Maryland’s policies that relate to all courses, which include topics like:

- Academic integrity
- Student and instructor conduct
- Accessibility and accommodations
- Attendance and excused absences
- Grades and appeals
- Copyright and intellectual property

Please visit www.ugst.umd.edu/courserelatedpolicies.html for the Office of Undergraduate Studies’ full list of campus-wide policies and follow up with me if you have questions.

Resources & Accommodations

Accessibility and Disability Services

The University of Maryland is committed to creating and maintaining a welcoming and inclusive educational, working, and living environment for people of all abilities. The University of Maryland is also committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs, or

activities of the University, or be subjected to discrimination. The [Accessibility & Disability Service \(ADS\)](#) provides reasonable accommodations to qualified individuals to provide equal access to services, programs and activities. ADS cannot assist retroactively, so it is generally best to request accommodations several weeks before the semester begins or as soon as a disability becomes known. Any student who needs accommodations should contact me as soon as possible so that I have sufficient time to make arrangements.

For assistance in obtaining an accommodation, contact Accessibility and Disability Service at 301-314-7682, or email them at adsfrontdesk@umd.edu. Information about [sharing your accommodations with instructors](#), [note taking assistance](#) and more is available from the [Counseling Center](#).

Student Resources and Services

Taking personal responsibility for your own learning means acknowledging when your performance does not match your goals and doing something about it. I hope you will come talk to me so that I can help you find the right approach to success in this course, and I encourage you to visit [UMD's Student Academic Support Services website](#) to learn more about the wide range of campus resources available to you. As mentioned above this is a particularly difficult time, and I will do everything I can to make it possible for you to meet your learning goals in this class.

You should also know there are a wide range of resources to support you with whatever you might need ([UMD's Student Resources and Services website](#) may help). If you feel it would be helpful to have someone to talk to, visit [UMD's Counseling Center](#) or [one of the many other mental health resources on campus](#).

Basic Needs Security

If you have difficulty affording groceries or accessing sufficient food to eat every day, or lack a safe and stable place to live, please visit [UMD's Division of Student Affairs website](#) for information about resources the campus offers you and let me know if I can help in any way.

Access to technology

Course lectures and homework will require a computer with webcam, and reliable internet access. Please let me know as soon as possible if you foresee any issues with your access to these.

Copyright Notice

Course materials are copyrighted and may not be reproduced for anything other than personal use without written permission.