**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](https://elms.umd.edu)
- **Books (optional):**
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

<table>
<thead>
<tr>
<th>Grade</th>
<th>+ 97.00%</th>
<th>+ 87.00%</th>
<th>+ 77.00%</th>
<th>+ 67.00%</th>
<th>+ &lt;60.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93.00%</td>
<td>B 83.00%</td>
<td>C 73.00%</td>
<td>D 63.00%</td>
<td>F &lt;60.0%</td>
</tr>
<tr>
<td>-</td>
<td>90.00%</td>
<td>- 80.00%</td>
<td>- 70.00%</td>
<td>- 60.00%</td>
<td>-</td>
</tr>
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</table>

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.

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

Inner Shelf River Plumes

Activity: Data analysis, coastal river plumes

Estuaries

Estuaries Intro Estuarine residual circulation

Reading: The Chesapeake Bay

Chesapeake Bay

The Chesapeake Bay Estuary Nutrients, Pollutants, Hypoxia, and Circulation

Guest Speaker

Rising Seas

Global sea-level rise Sea-level rise in Maryland

Activity: Storms and Sea-Level Rise

Reading: Maryland Climate Change Report

Changing Climate

Coastal impacts Maryland Ocean Climate Change

Guest Speaker

Future of the coastal zone

TBD based on student interests TBD based on student interests TBD based on student interests

Group Presentations

TBD TBD TBD

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 you 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**
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