

**SYLLABUS 270.325 Introductory Oceanography,
Fall 2009
Mondays & Wednesdays, 1:30-2:45, Olin 247**

Faculty: Professors Haine, Thomas.Haine@jhu.edu,
Del Castillo, Carlos.Del.Castillo@jhuapl.edu

Synopsis: This class is an introduction to a wide range of physical, chemical and biological phenomena in the world's oceans. Underlying basic principles are exposed wherever possible. Topics covered include: seawater, waves, tides, ocean circulation, chemical oceanography, biogeochemical ocean processes, and remote sensing of the oceans. See below for the class schedule.

Prerequisites: Calculus through ordinary differential equations (AS.110.107 or AS.110.109), Freshman Physics (AS.171.102 or AS.171.104), and Chemistry (AS.030.101)

Credit: 3 Units, Natural Sciences class.

Texts: Unfortunately, there is no single satisfactory text for this class, and we do not follow text books closely. So, there is no required text. Nevertheless, the following books are helpful (roughly in order of importance/relevance):

The Open University:	Seawater: Its composition, properties and behavior Ocean circulation Waves, tides and shallow-water processes Marine Biogeochemical Cycles
Marshall & Plumb Garrison	Atmosphere, Ocean, and Climate Dynamics Essentials of Oceanography

Format: The course will be taught as 80min lectures. There will also be review sessions and discussion of graded homeworks. Class materials will be posted to:
<https://jshare.johnshopkins.edu:443/thaine1/270.325%20Introductory%20Oceanography>

Grading: There will be a mid-term exam, a final exam, and several (probably 6) homeworks. The final grade will be determined by an accumulation of those input data, with stress placed on (in order of importance): Final exam, mid-term exam, homeworks. Homeworks handed in late without an acceptable reason will be penalized, or returned un-marked, at the instructors' discretion. Please inform the instructors *before* the homework deadline if you anticipate a delay in submitting your work. You will also probably be asked to read independently.

Any student with a disability who may need accommodations in this class must obtain an accommodation letter from Student Disability Services, 385 Garland, (410) 516-4720, studentdisabilityservices@jhu.edu.

The professors are available to answer specific questions on course material. Please approach us at the end of class or send an email to arrange an appointment.

Ethics: The following guidelines are taken very seriously in this class: Cheating is wrong. Cheating hurts our community by undermining academic integrity, creating mistrust, and fostering unfair competition. The University will punish cheaters with failure on an assignment, failure in a course, permanent transcript notation, suspension, and/or expulsion. Offenses may be reported to medical, law or other professional or graduate schools when a cheater applies. Violations can include cheating on exams, plagiarism, reuse of assignments without permission, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic

dishonesty, and unfair competition. Ignorance of these rules is not an excuse. In this course, homeworks and tests must be done individually without any collaboration. If you have questions about this policy, please ask the instructor. On every exam, you will sign the following pledge: "I agree to complete this exam without unauthorized assistance from any person, materials or device. [Signed and dated]"

Schedule: We meet on Mondays & Wednesdays from 1:30pm – 2:45pm in Olin 247.

Week 1: September 2

Haine: Introduction. The global ocean basins. Physical structure of the global ocean.

Week 2: September 7, 9

(Labor Day)

Del Castillo: A brief history of the Universe

Week 3: September 14, 16 HOMEWORK 1

Del Castillo: A brief history of the Universe (cont'd)

Del Castillo: A brief history of oceanography

Week 4: September 21, 23

Del Castillo: Properties of Seawater: Curious chemistry of pure water

Del Castillo: Properties of Seawater: Why is seawater salty?

Week 5: September 28, 30 HOMEWORK 2

Del Castillo: Properties of Seawater: biogeochemical processes

Del Castillo: Properties of Seawater: biogeochemical processes (cont'd)

Week 6: October 5, 7 DROP DEADLINE

Haine: Ocean surface waves

Haine: Ocean surface waves (cont'd)

Week 7: October 12, 14 HOMEWORK 3

Haine: Tides

Haine: Tides (cont'd)

Week 8: October 19, 21

Review

Mid-term test

Week 9: October 26, 28

Haine: Air/sea interaction

Haine: Upper ocean mixed layer, seasonal cycle of the thermocline

Week 10: November 2, 4 HOMEWORK 4

Del Castillo: Sea ice

Del Castillo: Sea ice (cont'd)

Week 11: November 9, 11

Del Castillo: Marine Sediments

Del Castillo: Marine Sediments (cont'd)

Week 12: November 16, 18 HOMEWORK 5

Haine: Ocean Circulation

Haine: Ocean Circulation (cont'd)

Week 13: November 23, 25 THANKSGIVING

Haine: Ocean Circulation (cont'd)

Week 14: November 30, December 2

Del Castillo: Biogeochemical Models

Del Castillo: Biogeochemical Models (cont'd)

Week 15: December 7 HOMEWORK 6

Review

Exam Week: December 11-18

Final exam TBA.