

# MARS 1011 – Spring 2010

## An Introduction to the World's Oceans

The physics, geology and chemistry of the marine environment

This course fulfills the Physical Sciences requirement.

### Course objectives

The goal of this course is to familiarize you with an earth system that influences your lives everyday, even though you may not be aware of it.

In this course, we expect you to

- 1) explore the physical, geological, and chemical processes that define the ocean environment covering over 70% of the earth surface,
- 2) discuss the role of the oceans in regulating global climate, their importance to our natural resources, and the relation between land-based processes (like earthquakes, volcanoes, and the shape of our coastlines) and the ocean system, and
- 3) examine how human activities are changing the ocean.

Although we do not formally cover marine biology (which is covered by MARS 1020 in the spring semester), MARS 1011 should give you an appreciation for what it must be like to live in the ocean and for the connections between humans and the blue planet.

**Lecture:** 10:10-11:00 – Monday, Wednesday and Friday

and 11:00-12:15 – Tuesday and Thursday

Room 261, Marine Science Bldg.

### Professors:

Dr. Bill Miller (Monday, Wednesday, Friday)

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Dr. Ming-Yi Sun (Monday, Wednesday, Friday)

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*Dr. Chuanlun Zhang (Tuesday, Thursday)*

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Phone: 706 - 542-1605

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Dr. Renato Castelao (Tuesday, Thursday class)

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**Office Hours** (Miller and Sun): 11:15 – 12:15 pm every Friday

**Office Hours** (Castelao and Zhang): 12:30 – 1:30 pm every Thursday

**Textbook:** An Introduction to the World's Ocean, 10<sup>th</sup> edition.

Sverdrup & Armbrust. McGraw Hill. (ISBN 978-0073376707)

9<sup>th</sup> edition is also acceptable

**Student Text Website:** <http://www.mhhe.com/sverdrup10e>

**ELC:** Copies of this syllabus, overheads, announcements, assignments, etc. will be available through UGA's e-learning commons at <https://www.elc.uga.edu/>

### **Grading & General Course Rules**

**Attendance.** Attending *lecture* is expected and attendance will be used in assigning final course grades for students whose course grades are borderline (attendance sheets). Any material covered in lecture – even if it is not in the primary textbook – can be used as the basis for exam questions. Some lectures will be based on topics covered in brief overview sheets and/or supplemental readings that are either handed out in class and/or posted on the web. Please make every attempt to attend lectures so that you have the materials and information you need to do well on exams

A grade of W, WP, or WF will be assigned to withdrawing students as a function of class attendance, grades earned at the point of withdrawal, circumstance, and UGA policy. If you have a lecture grade of D or lower, you will receive a WF when you drop the course. Students who miss more than three lectures with a valid excuse after the midpoint of the semester should contact the Office of the Vice President for students Affairs for permission to withdraw. More information about absences and UGA student attendance policies can be found at: <http://www.uga.edu/studentaffairs/FAQ.htm>

**Exams.** Exam grades will be posted one week after the exam date. If you have a question about your exam, submit a Challenge form, carefully explain the rationale for your objection to a question, and give the form to the professor in charge (Miller & Sun; MWF lectures and Castelao & Zhang; TTH lectures) who will respond as soon as possible.

**Missed exams.** Under extreme circumstances (an excused absence), a make-up exam will be given. You must make arrangements prior to the exam date to take a make-up exam. If you DO NOT show up for an exam, you will receive a zero. It is your responsibility to contact Drs. Miller/Sun (MWF lectures) or Drs. Castelao/Zhang (TTH lectures) if you miss the exam due to unforeseen circumstances.

**Academic Honesty:** All academic work must meet the standards contained in “A Culture of Honesty”. Each student is responsible for informing themselves about the standards contained in “A Culture of Honesty” before performing any academic work. Evidence of academic dishonesty will be turned over to the Office of the Vice President for Academic Affairs for consideration and possible action. The minimum penalty for a student found guilty of academic dishonesty is a grade of “F” in the course and a note on the student’s transcript. There have been several recent changes in the academic honesty policy at the University of Georgia. This information is available on-line at (Click on the UGA Academic Honesty Policy Statement): <http://www.uga.edu/honesty/>. *Plagiarism* (“to take ideas, writings, etc. from another and pass them off as one’s own”, Webster’s New World Dictionary) will not be tolerated. Plagiarism ranges from outsourcing your work to somebody else, to slight rewording of a published text or summarizing a text without citing it. If you are in doubt consult with the instructor *before* you hand something in.

**Changes to the Course Syllabus:** The course syllabus is a general plan for the course; deviations from the syllabus when necessary will be announced by the instructor in class. Failure to regularly attend class may result in your being uninformed about changes in the course content or timing of assignments. Students who miss class are responsible for all announcements and assignments given in lecture.

**Learning/Study Aides:** The instructors are available to assist you during their office hours or by appointment. You can also find help by contacting the University of Georgia's Tutorial Service at 706-542-7575

([http://www.uga.edu/dae/services/tutoring/tutoring\\_index.html](http://www.uga.edu/dae/services/tutoring/tutoring_index.html)).

**Access Statement:** The University of Georgia School of Marine Programs is committed to providing access for all people with disabilities and will provide accommodations if notified prior to the start of the semester. Please contact the Disability Resource Center if you will need a sign language interpreter, assisted listening device, or other classroom accommodations. If you would like to discuss classroom and/or testing accommodations, please discuss your needs with Drs. Miller, Sun, Castelao, or Zhang as soon as possible.

**Cell Phones and Other Personal Electronic Devices:** Cell phone should be turned off or placed on "silent mode" during lecture and lab class periods. Please be considerate of your fellow classmates and don't engage in cell phone conversations or texting during class. If you receive an emergency phone call, please ask to be excused from class and conduct your conversation outside of class. Cell phones are expressly forbidden in class during exam periods. iPods and PSP (and other gaming devices) use during lecture is prohibited. It is distracting to your classmates and disrespectful to your instructor(s). We want to foster a learning environment that encourages active engagement; listening to music, playing electronic games, and text messaging during class do not promote academic success. Those engaging in such activities may be asked to leave.

**Grading.** Grades will be assigned using the following grading scheme (in accordance with UGA's new +/- grading policy):

100 - 93 <sup>1/3</sup>	percent - A	(4.0)
93 <sup>1/3</sup> - 90	percent - A-	(3.7)
90 - 86 <sup>2/3</sup>	percent - B+	(3.3)
86 <sup>2/3</sup> - 83 <sup>1/3</sup>	percent - B	(3.0)
83 <sup>1/3</sup> - 80	percent - B-	(2.7)
80 - 76 <sup>2/3</sup>	percent - C+	(2.3)
76 <sup>2/3</sup> - 73 <sup>1/3</sup>	percent - C	(2.0)
73 <sup>1/3</sup> - 70	percent - C-	(1.7)
70 - 60	percent - D	(1.0)
< 60	percent - F	(0.0)

For more on plus/minus grading see:

<http://www.bulletin.uga.edu/PlusMinusGradingFAQ.html>

The final grade will be the average of the individual exams given during the whole course of the class. There is no mandatory curve for this course. Classroom interaction (and by proxy attendance) may be used in curving.

Incompletes. The grade of Incomplete (I) is given to students who, for reason of accident or illness, were unable to complete a segment of the course. In no case will an Incomplete be given as a means of avoiding a failing grade.

## MARS 1011 Class Schedule for Spring 2010 (BM - Bill Miller; MYS - Ming-Yi Sun)

### MWF Schedule

Week	Date	Section	Lecture Topic	Reading	lecture	Instructor	
1	Jan 8	F	Introduction	Course Overview & Introduction	1	BM	
2	Jan 11	M	Introduction	The Early Earth and Ocean	Chapter 2	2	BM
	Jan 13	W	Physics	Solar Input	Chapter 7	3	BM
3	Jan 15	F	Physics	Earth's Rotation and the Coriolis Force	Chapter 7	4	BM
	Jan 18	M	MLK Holiday	NO class			
	Jan 20	W	Chemistry	Properties of Water	Chapter 5	5	MYS
4	Jan 22	F	Chemistry	Properties of Water & The hydrologic cycle	Chapter 5	6	MYS
	Jan 25	M	Physics	Atmosphere/Ocean Processes	Chapter 7	7	BM
	Jan 27	W	Physics	El Nino	Chapter 7	8	BM
5	Jan 29	F	Physics	Thermohaline Circulation	Chapter 7	9	BM
	Feb 1	M	Physics	Vertical Circulation	Chapter 8	10	BM
	Feb 3	W	Physics	Wind Driven Circulation - Ekman Transport	Chapter 8	11	BM
6	Feb 5	F	Physics	Wind Driven Circulation - Surface Currents	Chapter 9	12	BM
	Feb 8	M	Physics	Short Period Waves - wind waves	Chapter 10	13	BM
	Feb 10	W	Physics	Long Period Waves - internal, tsunami	Chapter 10	14	BM
7	Feb 12	F	Physics	Tides - Equilibrium theory	Chapter 11	15	BM
	Feb 15	M	Physics	Tides - Dynamic theory	Chapter 11	16	BM
	Feb 17	W		Review for Exam #1		17	BM
	Feb 19	F		Exam #1		18	BM
8	Feb 22	M	Geology	Plate Tectonics I	Chapter 3	19	MYS
	Feb' 24	W	Geology	Plate Tectonics II	Chapter 3	20	MYS
	Feb 26	F	Geology	The Sea Floor and its Sediments I	Chapter 4	21	MYS
9	Mar 1	M	Geology	The Sea Floor and its Sediments II	Chapter 4	22	MYS
	Mar 3	W	Geology	Coasts, beaches, and estuaries I	Chapter 12	23	MYS
	Mar 5	F	Geology	Coasts, beaches, and estuaries II	Chapter 12	24	MYS
10	Mar 8	M	Spring Break	No class			
	Mar 10	W	Spring Break	No class			
	Mar 12	F	Spring Break	No class			
11	Mar 15	M	Geology	Paleoceanography		25	MYS
	Mar 17	W	Chemistry	Salts	Chapter 6	26	MYS
	Mar 19	F	Chemistry	Gases	Chapter 6	27	MYS
12	Mar 22	M	Chemistry	Ocean pH	Chapter 6	28	MYS
	Mar 24	W	Chemistry	Nutrients	Chapter 6	29	MYS
	Mar 26	F	Chemistry	Organics	Chapter 6	30	MYS
13	Mar 29	M		Review for Exam #2		31	MYS
	Mar 31	W		Exam II		32	MYS
	Apr 2	F	Chemistry	Primary production	Chapter 15	33	MYS
14	Apr 5	M	Chemistry	Carbon and nutrient cycles	Chapter 15	34	MYS
	Apr 7	W	Ecosystem	Global ecosystems		35	MYS
	Apr 9	F	Ecosystem	Water and sediment quality	Chapter 13	36	MYS
15	Apr 12	M	Ecosystem	Coastal eutrophication	Chapter 13	37	MYS
	Apr 14	W	Ecosystem	Polar Oceans I (Arctic)		38	MYS
	Apr 16	F	Ecosystem	Polar Oceans II (Antarctic)		39	BM
16	Apr 19	M	Ecosystem	Human impacts		40	BM
	Apr 21	W	Ecosystem	Harmful algal blooms		41	BM
	Apr 23	F	Ecosystem	Global Climate Change I		42	BM
17	Apr 26	M	Ecosystem	Global Climate Change II		43	BM
	Apr 28	W		Review for Exam #3		44	BM/MYS
	Apr 29	Th		Class ends			
18	May 3	M		Exam III		45	BM/MYS

### Grading

Exam 1	30%
Exam 2	30%
Exam 3	30%
Quiz	5%
Attendance	5%