MARS 1010 – Fall 2012

The Marine Environment

The physics, geology and chemistry of the marine environment

This course fulfills the Physical Sciences elective.

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) Discover the role of the oceans in climate and weather, their importance to our natural resources, and how apparently land-based processes (like earthquakes, volcanoes, and the shape of our coastlines) relate to the ocean system, and
3) Decipher how human activities are changing the ocean.

We do not cover marine biology (we do in MARS 1020 spring term), but MARS 1010 should give you an appreciation for what it must be like to live in the ocean world and the connections between humans and the blue planet.

Lecture: 11:15-12:05 – Monday, Wednesday and Friday
Zell B. Miller Learning Center, Room 101

Instructor: ***Dr. Christof Meile***
Office: Marine Science Bldg., Rm. 110G
Phone: 706 – 542 6549
Email: cmeile@uga.edu

Instructor: ***Dr. Renato Castelao***
Office: Marine Science Bldg., Rm. 252
Phone: 706 - 542-2422
Email: castelao@uga.edu
Office Hours: Monday and Wednesday, 12:05-1:05 pm (meet up with Professor immediately after class) or by appointment

Lab: Room 139 – Marine Science Building
You MUST register for an open lab section of MARS 1010L Lab. Enrollment is capped at 20 students because of equipment and space constraints.

Lab coordinator: ***Dr. C. Teare-Ketter***
Office: Marine Sciences Bldg., Rm. 110J
Phone: 706 – 583 0892
Email: cmscatk@uga.edu
Office Hours: Wednesday, 1:30-3:30 pm, Room 110J, else by appointment

Textbook: We do not require you to buy a textbook, but recommend the following text as a supplement. It covers a large part of the lecture material and provides an alternative presentation of key content.
An Introduction to the World's Ocean, 10th edition.
Sverdrup & Armbrust. McGraw Hill. (ISBN 978-0073376707)
9th edition is also acceptable.
The textbook is also available online at www.coursesmart.com

eText ISBN-10: 0-07-727279-X	eText ISBN-13: 978-0-07-727279-1
Print ISBN-10: 0-07-337670-1	Print ISBN-13: 978-0-07-337670-7
Saleable Print ISBN-10: 0-07-337670-1	Saleable Print ISBN-13: 978-0-07-337670-7

ELC: Copies of overheads will be made available through UGA's e-learning commons at https://www.elc.uga.edu/
Let us know if you have problems accessing the system

Grading & Rules

Attendance. Attending the *lectures* is expected and attendance *may* 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 for exam questions. It is strongly recommended that you make every attempt to attend lectures so that you have the materials and information you need to do well on exams.

Laboratory attendance is required. When signing up for MARS 1010 lecture, you must also be signed up for MARS 1010 lab. You cannot take the lecture section without also taking the laboratory section of the course. MARS 1010 labs will meet for the first time during the week of August 20. You must attend the laboratory session you are registered for that week. If you need to change lab sections, make arrangements with the laboratory coordinator after attending the first lab session. ***If you miss a lab, you must make arrangements with the laboratory coordinator to attend another lab section that week. If you do not make up the lab that week, you will receive a zero for that lab. Note that the last lab of the week meets Wed at 4.40pm, so it is not possible to request reassignment to a different lab on Thursday or Friday!*** *There are NO exceptions to this rule. An unexcused lab absence translates to a zero on the grade sheet.*

A "valid" excuse is one that is written, verifiable, and covers the date and time of your scheduled lab class. Students who miss one, two, or three lab classes will be allowed to make-up any lab for which they have a valid excuse, provided that you contact your lab instructor within 48 hours of the absence. Making up a lab involves completing a written make-up exercise and taking a quiz. Students who do not have a valid excuse for a lab or who fail to complete the written make-up work within the allocated time will not receive credit for the lab exercise. Students who miss more than three labs before the

midpoint of the semester should initiate withdrawal from the course prior to the midpoint (Oct 18). For the official UGA summer school calendar see: http://www.bulletin.uga.edu/bulletin/univ/calendar.html - Fall2012

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 combined lab (40%) and lecture (60%) grade of lower than D, you will receive a WF when you drop the course.*** Students who miss more than three labs 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

You have 48 hours of missing an exam to provide a verifiable written excuse for your absence and schedule a make-up exam. All make-up exams will consist of essay, short-answer questions relating to the lecture topics covered on the missed exam. To further encourage student attendance, students who attend all of the labs (which means coming to lab class on time and completing all of the work for the class period) will be allowed to drop their lowest quiz grade at the end of the semester. Missing a single lab class means that you have missed a significant portion of the course. DO NOT schedule any other appointments or activities during the time that you are scheduled to be in lab.

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 who will respond to your question as soon as possible.
Missed exams. Under extreme circumstances (an excused absence), a make-up exam will be given. All make-up exams will be given during the final exam period and will be in essay format. You must make arrangements to take a make-up exam prior to the exam date. If you DO NOT show up for an exam, you will receive a zero. It is your responsibility to contact Drs. Meile or Castelao if you miss the exam due to unforeseen circumstances.

Extra credit (up to 10% of the exam points) *for the lecture grade can be gained in the exam revisions. No make up for these extra credit exams will be offered.*

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. There are several forms of plagiarism, ranging 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 lecture and laboratory 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 542-7575 (http://www.uga.edu/dae/services/tutoring/tutoring_index.html).

Access Statement: The University of Georgia Study 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 Dr. Meile or Castelao as soon as possible (prior to the first week of labs).

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 other disruptive or distracting activities during class. Cell phones and other electronic devices are expressly forbidden in class during exam periods. We want to foster a learning environment that encourages active engagement; listening to music, playing electronic games, and text messaging during class or lab does not promote academic success and use of any such equipment is not allow in class.

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

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

(for plus/minus grading see: http://www.bulletin.uga.edu/PlusMinusGradingFAQ.html)
The final grade will combine lab (40%) and lecture (60%) performance. There is no mandatory curve for this course. Interaction (and by proxy attendance) may be used in curving. The grade for the lecture part will consist of

Exam #1 –	9/17 (11.15-12.05pm)	15 pts
Revision Exam #1B	9/19	up to 2 pts extra credit
Exam #2 –	10/15 (11.15-12.05pm)	15 pts
Revision Exam #2B	10/17	up to 2 pts extra credit
Exam #3 –	11/12 (11.15-12.05pm)	15 pts
Revision Exam #3B	11/14	up to 2 pts extra credit
Exam #4 (cumulative)	12/12 (12-3pm)	15 pts

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.

(Tentative) Schedule of Classes

Week	Date	Day	Section	Lecture Topic	Reading	
1	Aug 13	M	Introduction	Course Overview & History	Chapter 1	CM
	Aug 15	W	Introduction	The Early Earth and Ocean	Chapter 2	CM
	Aug 17	F	Introduction	Properties of Water	Chapter 5	CM
	Lab: Scientific Notation & Properties of Water					
2	Aug 20	M	Introduction	Properties of Water & The Hydrologic Cycle	Chapter 5	CM
	Aug 22	W	Physics	Solar Input	Chapter 7	CM
	Aug 24	F	Physics	Earth's Rotation and the Coriolis Force	Chapter 7	RC
	Lab: Science Library Orientation					
3	Aug 27	M	Physics	Atmosphere/Ocean Processes	Chapter 7	RC
	Aug 29	W	Physics	El Nino	Chapter 7	RC
	Aug 31	F	Physics	Thermohaline Circulation	Chapter 7	RC
	Lab: Density of Water and Thermohaline Circulation					
4	Sep 3	M		Labor Day		
	Sep 5	W	Physics	Vertical Circulation	Chapter 8	RC
	Sep 7	F	Physics	Wind Driven Circulation - Ekman Transport	Chapter 8	RC
	no lab					
5	Sep 10	M	Physics	Wind Driven Circulation - Surface Currents	Chapter 9	RC
	Sep 12	W	Physics	Review Exam1 & Short Period Waves - Wind Waves	Ch. 10	RC
	Sep 14	F	Physics	Long Period Waves - internal, tsunami	Chapter 10	RC
	Lab: Wind-driven Circulation and the Coriolis Effect					
6	Sep 17	M		Exam #1: Aug13-Sep10		CM&RC
	Sep 19	W	Physics	Exam 1B & Tides - Equilibrium theory	Chapter 11	RC
	Sep 21	F	Physics	Tides - Dynamic theory	Chapter 11	RC
	Lab: Waves and Tidal Cycles					
7	Sep 24	M	Geology	Plate Tectonics I - Observations	Ch. 3	CM
	Sep 26	W	Geology	Plate Tectonics II - Dynamic Theory	Chapter 3	CM
	Sep 28	F	Geology	Plate Tectonics III - Plate Boundaries	Chapter 7	CM
	Lab: Maps, Models and Scales					

8	Oct 1	M	Geology	The Sea Floor and its Sediments I	Chapter 4	RC
	Oct 3	W	Geology	The Sea Floor and its Sediments II	Chapter 4	RC
	Oct 5	F	Geology	Coasts, beaches, and estuaries	Chapter 12	RC
	Lab: Plate Tectonics of Ocean Basins					
9	Oct 8	M	Ecosystem	Coastal circulation class: effects of storms, coastal upwelling etc.		RC
	Oct 10	W		Review Exam #2		CM&RC
	Oct 12	F	Ecosystem	Physics of migration		RC
	Lab: The Distribution of Marine Sediments					
10	Oct 15	M		Exam #2: Sep 12 – Oct 8		CM&RC
	Oct 17	W	Chemistry	Exam #2B & Ocean Chemistry I - Salts & Salinity	Chapter 6	CM
	Oct 19	F	Chemistry	Ocean Chemistry II - Gases and Nutrients	Chapter 6	CM
	Lab: Salts, Ions, and Sea Water: Salinity and Chlorinity					
	Oct 18	*Withdrawal Deadline*				
11	Oct 22	M	Chemistry	Ocean Chemistry III - pH, CO_2, Biological pump	Chapter 6	CM
	Oct 24	W	Climate	Paleoceanography I: Time and temperature	Slides	RC
	Oct 26	F		Fall break		
	Lab: Salts, Ions, and Sea Water: Buffering Capacity					
12	Oct 29	M	Climate	Paleoceanography II: change in earth configuration	Slides	RC
	Oct 31	W	Climate	Paleoceanography III: Change in pH and pCO_2	Slides	RC
	Nov 2	F	Ecosystem	Cold Seeps and Hot Vents I	Slides	CM
	Lab: Geologic History and the Fossil Record					
13	Nov 5	M	Ecosystem	Cold Seeps and Hot Vents II	Slides	CM
	Nov 7	W	Ecosystem	Polar Oceans	Slides	CM
	Nov 9	F		review Exam#3		RC & CM
	Lab: Chemosynthesis and Hydrothermal Vent Communities					
14	Nov 12	M		Exam 3: Oct 12-Nov 7		CM & RC
	Nov 14	W	Climate	Exam #3B & Global Climate Change I: Greenhouse gasses	Slides	CM
	Nov 16	F	Climate	Global Climate Change II: Ocean acidification	Slides	CM
	Lab: Introductory Modeling: the global carbon cycle					
15	Nov 19	M		Thanksgiving		
	Nov 21	W		Thanksgiving		
	Nov 23	F		Thanksgiving		
	no lab					
16	Nov 26	M	Climate	Global Climate Change III: Human policies	Slides	RC
	Nov 28	W	Ecosystem	Humans and Coastal Ecosystems I	Chapter 13	CM
	Nov 30	F	Ecosystem	Humans and Coastal Ecosystems II	Chapter 13	CM
	no lab					
17	Dec 3	M		Deep Horizon Oil Spill		CM
	Dec 4	Tue		review for Exam #4 (Friday schedule in effect)		CM&RC
	no lab					
18	Dec 12	W		Exam #4 (12pm-3pm) – cumulative		CM&RC

Other important dates:
Drop Period Aug 13-16
Add Period Aug 13-17
Midterm Oct 4
Withdrawal Deadline Oct 18
Grades due Dec 18, 5pm