

Our Global Ocean

Biology, Chemistry, Geology, Physics 344
Gustavus Adolphus College – Fall 2012

Instructors:	Julie	Joel	Jim	Jeff	Chuck	Brian	Laura
	Bartley	Carlin	Dontje	Jeremiason	Niederriter	O'Brien	Triplet
Office:	NHS131	NHS336	Interp 102	NHS206C	Olin211	NHS304	NHS124B
Phone:	7307	6305	7206	6235	7315	7310	7442
Email (@gac):	jbartley	jcarlin	jdontje	jjeremia	chuck	bobrien	ltriplet

Robert E. and Susan T. Rydell Professor: William (Bill) Fitzgerald – wfitzger@gustavus.edu

Textbooks: *Oceanography: An Invitation to Marine Science*, Tom Garrison, 8th Edition
Additional readings will be made available online or on reserve at the library

Course Objectives:

The oceans have long been a source of fascination, from the tales of Sinbad to the popular Blue Planet nature documentary. The marine world provides us with seafood and medicines, fertilizers and petroleum. And the oceans are a wellspring of danger, from the exaggerated fiction of Jaws to the under-reported facts of climate change. This fall, Nobel Conference® 48 examines Our Global Ocean as a source of knowledge. Top researchers in biogeochemistry, oceanography, deep-sea biology, molecular genetics and coral ecology are coming together at Gustavus Adolphus College on 2-3 October 2012. They are meeting to discuss the marine realm: what we know, what we don't know, and how we humans (yes, even in midwestern Minnesota!) rely upon healthy, vibrant seas.

After putting together this year's conference, the Nobel Conference Committee decided that the college should offer a course on oceanography, wrapped around and taking advantage of the conference theme. The course will also take advantage of the expertise of Bill Fitzgerald, Board of Trustees Distinguished Professor Emeritus of Marine Sciences at the University of Connecticut. Professor Fitzgerald is a marine biogeochemist and chemical oceanographer who studies the cycling of mercury in the environment, an "an extraordinarily useful metal with an insidiously complex biogeochemical cycle." Fitzgerald has been called "the father of mercury research."

This course is designed to present an integrated overview of the principles and concepts of the geology, chemistry, physics, and biology of the world's oceans at the level of an upper-division science course. Physical and chemical properties of seawater and the role of the oceans in elemental cycles, particularly the carbon cycle, will be examined. Discussions of physical oceanography will include large-scale patterns, ocean circulation, as well as small-scale phenomena such as waves. The geology of the coastal ocean, beaches, and estuaries leads into a discussion of the ocean's major communities and the biotic and physical factors structuring them.

Given that the background of the students varies from biology to physics, with chemistry, environmental studies, and geology in between, a significant portion of the class will be an introduction to the subject of oceanography. However, each of the subgroups will have opportunities to delve deeper into topics within oceanography, like marine biology or physical oceanography. In addition, topics of current interest, like global warming, ocean contaminants, etc will be explored.

All students are responsible for gaining an understanding of fundamentals (e.g., textbook content) outside of class. On your own (and with your peers) you will work to fully comprehend textbook knowledge prior to class. Instructors will help you understand confusing terminology or concepts,

Our Global Ocean

but the vast majority of class time is to be spent analyzing and evaluating scientific problems in current oceanography. Stay current with all readings, utilize professors' office hours, and together we can craft lively and challenging discussions.

Course Policies and Evaluation

- 1. Academic Honesty:** The instructors are bound to abide by the College's Honesty Policy and therefore must report all incidents of academic dishonesty (cheating, copying, etc.) to the Dean's Office. In the spring of 2003, the College adopted an academic honesty policy and honor code system, which is printed in the Academic Bulletin and in the Gustavus Guide. All students will be required to abide by the policy and write the following honor code on every examination and graded assignment:
"On my honor, I pledge that I have not given, received, nor tolerated others' use of unauthorized aid in completing this work."
- 2. Learning Styles:** Recognizing that students learn science in a variety of ways, the instructor will take advantage of many different techniques, including collaborative learning, to maximize the overall effectiveness of this course. Although collaborative efforts will be encouraged for solving in-class problems, assigned homework, labs, and some quizzes, they are **not allowed** for most quizzes and all exams. The instructor will make it clear which quizzes are to be group efforts and which are not to be.
- 3. Class Meetings and Reading Assignments:** The class will meet three days a week (MWF) for lecture, discussion, homework review, quizzes, and exams. Quizzes and exams are indicated on the attached schedule. The student will be responsible for completing reading assignments before coming to class and completing the online reading quizzes.
- 4. Quizzes:** Online quizzes based on the assigned readings will be taken periodically to assist instructors in determining what material needs to be covered and at what depth. These will be due 30 minutes in advance of class. The lowest two quiz grades will be dropped when calculating quiz average.
- 5. Homework:** In addition to the online quizzes based on the assigned readings, there will be occasional homework assignments based on in-class discussions.
- 6. In-Class Activities:** A number of in-class activities, including problem solving and simulations, will be done throughout the semester. These activities will not be scheduled in advance and may be used to test students' knowledge of old material or to introduce new material.
- 7. Attendance:** Regular attendance at all lectures is expected and excessive absenteeism will result in some reduction of final grade. Attendance at all Nobel lectures and the Nobel preview is required.
- 8. Exams:** There will be a mid-term exam in this course but the term paper will substitute for the final exam. Students are expected to arrange in advance to take an exam at other than the announced time. Permission to make up a missed exam after the fact will be at the discretion of the instructor.
- 9. Late Work:** A standard penalty of 10% per 24 hour time period will be assessed on work turned in late.

Our Global Ocean

10. **Incompletes:** A grade of incomplete will be given only for work not completed due to circumstances beyond the control of the student.

11. **Evaluation:**

Online Quizzes	30%	A	94 - 100	C+	74 - 78
Homework &		A-	90 - 94	C	70 - 74
In-class Exercises	10%	B+	86 - 90	C-	66 - 70
Mini Project &		B	82 - 86	D+	62 - 66
Presentation	20%	B-	78 - 82	D	58 - 62
Term Paper	30%			F	< 58
Mid-term Exam	10%				

Assignment of final letter grades will also take into account the instructors' subjective evaluation of the student's attendance, initiative, class participation, preparation (particularly quantity and quality of homework), and evidence of improvement. Excessive absences may result in failure to pass the course.