

OCEANOGRAPHY**TR 12:45-2 pm****CRN: 11246****Instructor:** Janelle Sikorski**Office:** Room 11 SHD**Office Hours:** TBA**Email:** sikorsj@miamiOH.edu

Course Description: Course material is structured to explore three general themes, including scientific ocean exploration, geologic features and active processes of the seafloor, and an exploration of a few of the challenges facing our ocean, such as climate change, pollution, overfishing, and oil spills.

Course Objective: Simply put this course is designed to increase your exposure and knowledge of our global ocean. No matter your experience level with science or the ocean in general, increasing your ocean literacy is a necessity. The ocean and humans are inextricably interconnected. The ocean affects every human life. Our security, culture, and resources are tied to the ocean. Yet, our oceans are in crisis. Over the last 40 years the use of ocean resources has increased significantly, therefore the future sustainability of ocean resources depends on our understanding of both the potential and limitations of those resources. Today many experts are predicting radical changes to the ocean's ecosystems, currents, and resources within the next 40 years if no changes are made. This means that you and your children may live in a world of increased global famine, greatly increased food and fuel prices, increased global conflict, and a world where aquariums may be the only place to view spectacular marine life.

This course will help you:

1. Fulfill elective requirements for both the Earth Science BA and Environmental Earth Science BA, will count toward a minor in geology, and is part of both the GLG1(oceanography) and GLG2 (The Water Planet) thematic sequences.
2. Compare and contrast the fundamental methods used by scientist to explore the ocean.
3. Evaluate the impact ocean exploration has on society and marine life.
4. Categorize the geologic features found on the seafloor and summarize their significance as natural resources.
5. Analyze several case studies to assess the types of relationships that exist between society and the ocean.
6. Illustrate habits that lead to a more sustainable relationship between society and the ocean.

Required textbook: Essentials of Oceanography (Custom Edition) by Tom Garrison. ISBN: 978-285-15376-6.

Course Structure:

1) There will be three mandatory exams. With the exception of the first exam, each exam will have a cumulative portion. In general, exams will have both multiple choice and free response type questions. We will discuss the format of each exam in more detail as the exam dates get closer. **Make up exams will be given ONLY by arrangement PRIOR to the day and time of the exam.**

2) There are 13 announced in-class exercises (ICEs). The format of these activities will vary depending on the learning outcome for the day. For example, assignments may ask you to create and interpret oceanic charts, reflect on an assigned reading, plot and interpret both historical and modern oceanic data, or simply provide more practice with a fundamental oceanic process. These assignments will be collected for a grade at the end of the class session. You will be allowed to work in small groups, so make friends FAST! Each group member is to turn in his/her own paper. Unless otherwise noted, all exercises are to be completed and turned in before you leave that day. I will also be walking around the room to help out when needed. **ICE opportunities cannot be made up unless the instructor is notified prior to the day and time of the class period in question.**

3) There are 3 homework assignments. These assignments will be used to reinforce lecture material, to explore the methods used by marine scientists to study the ocean, as well as, to explore your own relationship with the ocean. All homework assignments are to be turned in by the beginning of class the day they are due. **No homework assignments will be accepted after the due date unless prior arrangements are made with the instructor.**

4) There are 4 reading question assignments (RQ). In order to nurture our curiosity and broaden our view of both geology and our oceans, I have chosen a few articles for us to read in addition to the textbook. The purpose of these articles is to: 1) introduce you to innovative or controversial ideas related to the ocean; 2) present you with alternative opinions different from that of the instructor; or 3) demonstrate the excitement, danger, successes and failures of ocean exploration and research. On discussion days, we will break into small groups and debate the information at hand. When necessary I will help facilitate class discussion. Reading questions (RQs) will be posted for each debate assignment and will be collected for a grade.

How will you be evaluated?

Final grades are earned on the basis of the overall accumulated points. I do not adjust/curve final grades. For example, if you are aiming for an “A” in this course, you need to earn at least 1070.6 points (93.5%).

In-Class Exercises (ICEs) (13 @ 30 points each)	390 points
Reading Questions (RQs) (4 @ 50 points each)	200 points
Homework Assignments (3 @ 60 points each)	180 points
Exams (3 @ 125 points each)	375 points
TOTAL	1,145 points

Grading Scale

100-98%	A+	79-77%	C+
97-94%	A	76-74%	C
93-90%	A-	73-70%	C-
89-87%	B+	69-67%	D+
84-86%	B	66-64%	D
83-80%	B-	63-60%	D-
		< 60%	F

Course Expectations:

1) 1) One of the fundamental expectations of this course is that we will conduct our actions, including you completing and me assigning course assignments with academic integrity. To me academic integrity is an integration of several principles including: honesty, trust, fairness, respect, and responsibility. Please visit Miami University’s academic web page (<http://www.MUOHIO.edu/integrity>). Deviating from these core principles may lead you to committing an act of academic misconduct here at Miami University. I have attached a section of chapter 5 (academic misconduct) from the 2012-2013 Student Handbook in which actions that constitute academic misconduct are described. The consequences of such actions, as well as, the full handbook can be downloaded at http://www.MUOHIO.edu/student_handbook.

CHAPTER 5. Academic Integrity

1.5.A Introduction

The rights and responsibilities that accompany academic freedom are at the heart of the intellectual integrity of the University. Students are expected to behave honestly in their learning and in their behavior outside the classroom. Cheating and other forms of academic dishonesty undermine the value of a Miami education for everyone, and especially for the person who cheats. Misunderstanding of the appropriate academic conduct will not be accepted as an excuse for academic dishonesty. If a student is in doubt about appropriate academic conduct in a particular situation, he or she should consult with the instructor in the course, the department chair/program director, or the academic dean in the appropriate division in order to maintain the highest standards of academic honesty.

1.5.B Criteria

Academic dishonesty is defined as any activity that compromises the academic integrity of the institution or subverts the educational process. Examples of academic dishonesty include, but are not limited to:

1.5.B.1 Conduct with respect to and during a quiz, examination, or similar evaluation

- a. Possessing, referring to, or employing open textbooks or notes or other devices not authorized by the instructor.
- b. Looking at or using information from another person's paper.
- c. Communicating with, providing assistance to, or receiving assistance from another person in a manner not authorized by the instructor.
- d. Possessing, buying, selling, obtaining, or using a copy of any unauthorized materials intended to be used in the preparation of a quiz or examination or similar evaluation.
- e. Taking a quiz or examination or similar evaluation in the place of another person.
- f. Utilizing another person to take a quiz, examination, or similar evaluation in place of oneself.
- g. Violating procedures prescribed to protect the integrity of a quiz, examination, or similar evaluation.
- h. Changing material on a graded examination and then requesting a re-grading of the examination.

1.5.B.2 Written and other assignments

- a. Submitting an assignment purporting to be the student's original work that has been wholly or partly created by another person.
- b. Presenting as one's own the work, ideas, representations, or words of another person without customary and proper acknowledgment of sources.
- c. Knowingly permitting one's work to be submitted by another person as if it were the submitter's original work.
- d. Submitting the identical or substantially the same assignment to fulfill the requirements for two or more courses without the approval of the instructors involved, or submitting the identical or substantially the same assignment from a previously completed course to fulfill requirements for another course without the approval of the instructor of the later course.
- e. Violating procedures prescribed to protect the integrity of the assignment.

2) Regular attendance is expected by the University and the instructor. Why? Because I value your ability to contribute to class discussions and participate in class assignments. I also want to provide you with the best possible opportunities for learning while in class. In practice this means that almost everyday this semester I will provide you with the opportunity to work in small groups to solve ocean science problems or work on practice exercises relevant to the day's topic. These activities will be collected for course credit (graded). **A student that is successful in this class will be student who takes advantage of class time.**

3) I expect that you will learn to take control of your educational experience in this course. To support you in this goal I have provided a very detailed course schedule (p. 4-5). All important dates are highlighted on the syllabus including the day, time, and location of our final exam. Use the provided schedule as a tool to help organize your personal, social, athletic, and/or academic activities around course commitments. The common excuses of "I didn't know when..." or "How was I supposed to know that I would miss..." will not be tolerated. I will do my best to notify you of any changes to the syllabus. Please notify me, through email or in person, ASAP when you suspect a scheduling conflict.

4) I expect that you will learn to communicate your questions and concerns to me in an effective manner. I prefer that you speak to me directly about your questions or concerns during my office hours or set up an appointment. If due to scheduling conflicts this is not possible then please send me an email. All emails should include GLG244.A in the subject line. Also, please make sure to use both your first and last name in the email. **If these instructions aren't followed, I will not respond to your email.**

5) One last note about respect; please show your respect to me and your fellow classmates by coming to class on time, ready to learn. In general, this means coming to class with a positive attitude and a willingness to attempt new challenges. **Specifically, I ask that all cell phones are to be turned off (or at least volume turned off) and stored away in your pocket, purse, or book bag. I also ask that you don't bring your laptops to class.**

6) Speak Up! If you ever have questions relating to this course please feel free to see me immediately. Most situations can be positively handled if discussed early.

Additional Resources:

1. **Niihka**- Selected course material and all grades will be posted on the course site and available for download. Important announcements and reminders will also be posted weekly. Access Niihka through *myMiami*'s student tab, or at <https://niihka.muohio.edu/portal>. Log on using your Miami University unique id and password, and then select GLG 244 from the list. You will then be presented with a menu from which to select class-related items you wish to view/print. Only students registered for this course can access this Niihka "site," and although you can view your grades, this information is not available to others unless they know and use your unique id and password.

2. **Study Guides**- A review sheet will be provided for each unit of material as the semester progresses. Review sheets are to be completed voluntarily and will be the basis for review sessions.

Course Schedule:

The schedule below is tentative; it may be altered as we go.

Date	Topic	Required Reading	Homework
	PART 1: Ocean Exploration		
August 21	Welcome to GLG244! What do you know about the ocean?	Garrison, Chapter 1: p. 1-23	HW1 assigned
23	What do you know about the ocean? How are you connected to the ocean?	Kay, 2001; Lovett, 2006	HW1 due; HW2 assigned
28	What is the significance of gas hydrates in the ocean? ICE1 <i>Guest speaker: Dr. Brandon Briggs</i>		
30	Why do we explore the ocean?	Garrison, Chapter 2: p. 24-42	HW2 due RQ1 assigned
September 4	How do we explore the ocean with SONAR? <i>Guest speaker: TBA</i>	Garrison, Chapter 2: p. 43-49; Garrison, Chapter 4, p. 79-81	
6	Debate #1: National Security vs. Whales ICE2	RQ1 articles	RQ1 due RQ2 assigned
11	How do we explore the ocean with Submersibles?	Garrison, Chapter 2: p. 43-49; Garrison, Chapter 4, p. 81-84	
13	Debate #2: What is the future of deep sea exploration? ICE3	RQ2 articles	RQ2 due
18	What's it like to conduct scientific research in the ocean? ICE4 <i>Guest speaker: Dr. Brandon Briggs</i>		
20	How do we explore the ocean with deep sea drilling?	Garrison, Chapter 2: p. 43-49	
25	What types of data are collected with deep sea drilling? ICE5	Ruddiman, p. 359-361	
27	Review for exam 1		
October 2	Exam 1		
	PART 2: Ocean Features and Processes		
4	What features define the deep sea and does life exist there?	Garrison, Chapter 4, p. 90-103; Garrison, Chapter 14, p. 341-345	RQ3 assigned
9	Why are creatures of the deep sea of special		

	interest to scientists? ICE6 <i>Guest Speaker: Dr. Brandon Briggs</i>		
11	What are continental margins and how do they form? ICE7	Garrison, Chapter 4, p. 84-90; Nance et al., 1988	RQ3 due
16	Why are continental margins important?	Garrison, Chapter 15, p. 351-358	
18	What are the sources of sediment in the world ocean?	Garrison, Chapter 5, p. 104-123	
23	What role do sediments play in modern oceanography? ICE8		
25	Review for exam 2		
30	Exam 2		
	PART 3: Ocean in Crisis		
November 1	How do ocean surface currents form? ICE9	Garrison, Chapter 8, p. 172-188	
6	What are ocean “garbage patches” and how do they impact the ocean ecosystem?	“Ocean garbage patches” by Lavender-Law & Goldstein; Garrison, Chapter 15, p. 376-78	
8	Local plastic collection and analysis ICE10		
13	What role does carbon play in Earth’s climate system? ICE11	“The Carbon Cycle and Climate Change” by Bennington	HW3 assigned
15	How does carbon impact the ocean? ICE12	Garrison, Chapter 6, p. 124-139; Garrison, Chapter 15, p. 380-387; Doney, 2006; Flannery, p. 104-113; De’ath et al., 2009	
20	<i>End of the Line</i> Video	Video worksheet; Danson, p. 75-147	HW3 due RQ4 assigned
22	No class- Thanksgiving Break		
27	What is tough oil?	Danson, p. 1-39, “Oceanography and the Deepwater Horizon Oil Spill” by Graham	
29	What are the risks of deep sea drilling? Debate #3: To clean or not to clean? ICE13	Garrison, Chapter 15, p. 366-373; RQ4 readings	RQ4 due
December 4	What do I know about the ocean now? How can you take action to improve your relationship with our ocean?	“What can you do?” by Soares	
6	Review for Exam 3		
11	Exam 3: 12:30-2:30 pm in room 10 Shideler Hall		

Selected References:

Bennington, J Bret. The carbon cycle and climate change. Enrichment Module Cengage Learning

Danson, Ted, and Michael D'Orso. *Oceana: our endangered oceans and what we can do to save them*. Rodale Press, 2011.

Garrison, Tom. *Essentials of oceanography*. Thomson Brooks/Cole, 2011.

Goldstein, Miriam. Impact of plastic on the ocean ecosystem. Enrichment Module Cengage Learning

Graham, William M. Oceanography and the Deepwater Horizon Oil Spill. Enrichment Module Cengage Learning

Kay, Sharon. Scientists seek new medicines from the ocean. Boston Globe, 2001.

Law, Kara Lavender. The science behind the ocean's "garbage patches." Enrichment Module Cengage Learning

Lovett, Richard. Ocean floor could be greenhouse gas "dump" scientist say. National Geographic News, 2006.

NANCE, RDAMIAN, THOMASR WORSLEY, and JUDITHB MOODY. "The supercontinent cycle." *Scientific American* 259.1 (1988): 72-79.

Parsons, E. C. M., et al. "Navy sonar and cetaceans: Just how much does the gun need to smoke before we act?." *Marine Pollution Bulletin* 56.7 (2008): 1248-1257.

Pignataro, Anthony. Looking at how US Navy training in Hawaii and California waters will harm marine mammals and what the service intends to do about it. Maui Times, 2012.

Ruddiman, William F. *Earth's Climate: past and future*. WH Freeman & Company, 2001.

Schaffner, Alicia. "National Security versus Whales: the Navy and the Natural Resource Defense Counsel Battle Their Way to the Supreme Court." *Sea Grant Law and Policy Journal* 1.2 (2008).

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Weilgart, Linda S. "A brief review of known effects of noise on marine mammals." *International Journal of Comparative Psychology* 20.2 (2007).