

Communicating Ocean Sciences
Topics in Biological Oceanography - MIT/WHOI 7.433
Spring 2006 updated 04/19
Course Information

Instructor: Lauren Mullineaux

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Course Website: <http://www.whoi.edu/science/B/COS/index.html>

Course: For students interested in improving their ability to communicate scientific knowledge by using inquiry-based science teaching methods. The course will include six weeks of supervised teaching in a local school classroom. Students will practice communicating scientific knowledge and receive mentoring on how to improve their presentations.

Meeting Time: Wednesday 1:30-3:30 in Redfield 204
2 to 3 hours observing in classrooms in a local school
6 hours teaching in a local school (times to be arranged)

Recommended Text:

Castro, P. and M.E. Huber. Marine Biology, 5th ed. McGraw-Hill Higher Education.
(Unnecessary if you have taken a general course in oceanography or marine science).

Supplementary Readings:

These will be distributed (in electronic form) in advance of weekly meetings. The selected readings provide a background on the learning theory explored during each session. Readings include classic papers as well as more recent thinking or expansion on historically important papers. We have also attempted to provide additional citations in each session for those wishing to explore a subject further. Readings are to be completed before the associated class session. You may be asked to answer a 'quickwrite' question in class to gauge your level of understanding of the reading material.

Grading:	Participation	25%
	(attendance, class discussion, on-line, quickwrites)	
	Written assignments for grade school lesson	40%
	(lesson idea proposal, lesson plan, lesson debrief, assessment task for pupils, assessment analysis)	
	Presentation of session for undergrads	35%
	(written description of undergrad session, oral presentation of undergrad session, review of peers)	
	Teaching in grade school	
	(obligatory – must complete to pass)	

Requirements:

1. Attend class and participate in discussion and on-line warm-up assignments. Most assignments will take less than 15 min to complete. On-line assignments should be submitted by email no later than 12 noon on the day before class meets.
2. Complete assigned readings and be prepared to do 'quickwrites' at start of class
3. Teach an ocean science unit containing six lessons in a local school with a partner. Five of the lessons will come from inquiry-based, grade-level appropriate curriculum developed by Lawrence Hall of Science including GEMS (Great Explorations in Math and Science) and MARE (Marine Activities, Resources & Education). Each lesson has an accompanying kit that you will bring to the school to use when teaching your unit. A description of the series of lessons for each grade level is posted on the course web site. The sixth lesson will be designed by you based on criteria and models presented in the course.
4. Develop a lesson of your own design with your partner. You may adapt activities from the GEMS/MARE curriculum, or use activities from your own experience. The lesson plan has two parts:

A. Prepare a *Lesson Idea Proposal* with your partner, which briefly describes your idea for a lesson. **Due March 15**

This is a partner assignment and each set of partners will turn in one lesson proposal that they have developed together. Please feel free to discuss your ideas with the instructor, the TA and your classmates before developing your proposal. The target length for the lesson proposal is 1 page (typed, dbl-spaced, 12 pt font). The instructors will give you email feedback on your idea.

B. Prepare a *Written Lesson Plan* with your partner describing the goal and key concepts of the lesson along with a description of the activity you plan to do. **Due April 19**

Be sure to incorporate how you will use the learning cycle and questioning strategies. This is a partner assignment and each set of partners will turn in one lesson plan that they have developed together. Feel free to discuss your ideas with the instructor, TA and your classmates before developing your plan. The target length for the lesson plan is 3 pages (dbl-spaced, 12 pt font).

5. Prepare a *Lesson Debrief* after you teach the lesson in the elementary classroom about what went well and how you might change your lesson to be even more effective were you to teach it again. **THIS IS AN INDIVIDUAL ASSIGNMENT.** You should discuss your ideas with your partner before writing your debrief, but each person is responsible for writing his or her own lesson debrief in his or her own words. The target length for the lesson debrief is 3 pages (dbl-spaced, 12 pt font). **Due May 10**

NOT due – class discussion instead

- 6A. Create a short *Written Assessment* (1 item) to find out what your students have

learned. Part A is a partner assignment. You and your partner will develop and administer the assessment together. You will hand in your assessment materials and the student responses on **May 17**. We will hand back your assessment materials during finals week if you would like to return them to your students. **NOT due – class discussion instead**

6B. Write an *Assessment Analysis*. You will collect the student responses, evaluate whether the responses show understanding, partial understanding, or no understanding of the lessons you presented, and then write an analysis of the results. Part B is an individual assignment. You should discuss your ideas with your partner before writing your assessment analysis, but each person is responsible for writing his or her own assessment analysis. The target length for the assessment analysis is 2 pages (dbl-spaced, 12 pt font).

Due May 17. In your report, address these questions:

- What was the goal of your assessment?
- What did you find out about student learning?
- After seeing student responses, how would you modify the assessment or the instruction

NOT due

7A. Select a topic that you are interested in, or a class session that you have experienced. The topic should be appropriate for high-school, undergrad or graduate level – whatever level you think you will most likely to be involved with. Write a *Session Plan* and describe how you have incorporated techniques or strategies learned in this course. Target length is 3 pages for the session plan description and explanation of modifications (dbl-spaced, 12 pt font).

7B. Present a ~20-min section of the lesson during one of the *Oral presentation* meetings at the end of the course.

7C. You will also be assigned to write a short (<1-page) *Presentation Review* of 2 of your peers' presentations.