



Spring 2009



Marine Field Methods (OCE5009L-01)

Includes a 4-day research cruise in the Gulf of Mexico (April 7-10, 2009)



Instructors:

Kevin Speer

Physical Oceanogr., rm 431a
OSB, 645-4846,
kspeer@ocean.fsu.edu

office hours: Wed 3:00 to 4:00
(KS) or by appointment **any** time.

Nicolas Wienders

Physical Oceanogr.
OSB 436
wienders@ocean.fsu.edu

Course Objectives:

Experience onboard a research vessel is essential for a career in oceanography and related fields. This course will provide a multidisciplinary hands-on experience of the field methods most commonly used in physical oceanography. It will give graduate students the opportunity to gain a greater appreciation of the complexity of coastal circulation and dynamics through the active participation in ocean science field research. A specific research topic of coastal oceanography will be addressed.

This course is a practical and field-oriented supplement to the introductory courses of the different disciplines of oceanography (OCB 5050, OCC 5050, OCG 5051, OCP 5050). Interested graduate students from related natural sciences (e.g. Physics, Meteorology, Biology, Geosciences, or Chemistry) are welcome.

At the end of the course you will

1. be able to operate basic oceanographic instruments at sea
2. be able to organize a small research project at sea
3. be able to analyze important chemical, physical and biological environmental parameters
4. recall the primary distribution of ocean properties in the Gulf of Mexico
5. be able to state the dominant processes that transport chemicals and biota
6. produce a small research paper and present scientific results in a seminar

Outline of topics to be covered:

In 6 introductory lectures we will cover the fundamentals of coastal oceanography and continental margins. Specific topics include: tides and waves, coastal circulation on the inner shelf, wind and tidal forcing, basic circulation in estuaries, simple models of coastal and estuarine flow, introduction to field methods in oceanography.

A two-to-four-day (48-96 hr) cruise on the research vessel Bellows (Florida Institute of Oceanography) in Gulf of Mexico shelf waters will be the core of this course. Basic physicochemical parameters will be measured in situ, and water samples will be taken along

salinity gradients, over tidal cycles and moving away from protected nearshore regions to those that are farther offshore. Water samples if taken will be prepared onboard and stored for subsequent laboratory measurements of chemical constituents. This course will focus on drifters and dispersion in the coastal environment. Some assembly may be required.

Field work, data collection and interpretation will be done as a team under guidance of the instructors. The results of the cruise will be presented by the team in the style of a single small research paper (objectives, methods, results and discussion; ~1000 words plus figures or tables) and an oral presentation (approx. 15 minutes per student) at the closing session.

Materials:

All academic and scientific materials will be provided. You will have to provide appropriate clothing for the cruise. Meals are provided on the cruise.

Important dates:

- Weekly classes, Fridays 9-11am (433 OSB). (Meets with OCB5930 Estuarine as needed).
- Four-days training cruise **April 7-10, 2009**. The research vessel Bellows will depart from Carrabelle on April 7 and return to Carrabelle on April 10. This cruise may be split into two legs. Transport between FSU and Carrabelle will be arranged.
- The results obtained during the cruise will be analyzed shortly after, on **April 13-17**. Depending on the individual interests, groups will be formed.
- In a closing session on **April 24** you will present the results from the cruise.
- Deadline for the final group report: **April 24**.

Course Evaluation:

This course heavily depends on your active participation. Grades will be based on active participation in field and laboratory work (50%) and on your participation in the group project (oral presentation and paper; 50%). Details on the grading scheme will be discussed in class.

Attendance on the cruise and laboratory and seminar sessions is mandatory. If you are unable to participate in any activity please discuss possible alternatives with an instructor.

Please don't hesitate to contact us for help with the research projects or other aspects of the course.

Prerequisites:

Being disposed to spend 2-4 days on a small research vessel at sea and work on irregular schedule during the cruise. General knowledge of natural and environmental sciences and enrollment in a relevant program.

Reasonable Accommodation:

Students with disabilities needing academic accommodations should: 1. Register with and provide documentation to the Student Disability Resource Center (SDRC); 2. Bring a letter to the instructor from the SDRC indicating you need academic accommodations. This should be done within the first week of class. (This syllabus and other class materials are available in alternative format upon request.)

Academic Honor Code:

Students are expected to uphold the Academic Honor Code published in The Florida State University Bulletin and the Student Handbook. The Academic Honor System of the Florida State University is based on the premise that each student has the responsibility (1) to uphold the

highest standards of academic integrity in the student's own work, (2) to refuse to tolerate violations of academic integrity in the University community, and (3) to foster a high sense of integrity and social responsibility on the part of the University community.

Recommended readings and important web pages:

- Waves, Tides, and Shallow Water Processes, Open University, **Paperback:** 227 pages, **Publisher:** Butterworth-Heinemann; 2 edition (May 15, 2000), **ISBN:** 0750642815. (Check Amazon.com for used books)
- Research papers to be distributed.
- Bianchi, Thomas (2007) Biogeochemistry of Estuaries, Oxford University Press.
- Florida Institute of Oceanography (including information on the research vessel Bellows):
<http://www.marine.usf.edu/FIO/>
- Tide predictions:
<http://tbone.biol.sc.edu/tide>
- Satellite images:
<http://imars.usf.edu/index.html>
- More Gulf data:
<http://www.csc.noaa.gov/coos/florida.html>
<http://seawater.tamu.edu/negom/>
<http://nerrs.noaa.gov/Apalachicola/>