Oceanography Lab
Biology 342L, Fall 2022
Lab Instructor: Nicole Schanke (schanken@cofc.edu)
Location: GML 202/113
Time: Fridays at 10:30am-1:30pm (Biol 342L-03) and 2:00-5:00pm (Biol 342L-04)
Office Hours: Fridays 8:30-10:00am, Grice 113 or by appointment

Course Objective: To introduce the student to analytical oceanographic techniques while working in a laboratory setting. This will include sample processing for a variety of analyses. The student will also analyze global oceanographic datasets and present relevant findings.

Student Learning Outcomes:

- Students will gain field experience in collecting oceanographic samples and data using a CTD system in Charleston Harbor.
- Students will learn how to analyze seawater for various chemical components including nutrients such as nitrate, phosphate and ammonia.
- Students will learn how to measure acidification of seawater by determining various components of the carbonate system (e.g. alkalinity, pH and carbonate concentration)
- Students will gain experience in identifying live plankton species from Charleston Harbor.
- Students will demonstrate an ability to interpret and synthesize oceanographic datasets and present analytical results in a Power Point presentation.

Course Grading: Lab assignments are due the following week, unless stated otherwise. Late assignments will be penalized 10% per week and no late assignments will be accepted after two weeks. Due to the nature of this course, labs cannot be made up, so attendance is required and contributes toward the lab attendance and participation portion of the course grade. A group presentation exploring oceanographic data using the ODV software will be due on October 14th. A brief presentation and discussion of the data collected from the Charleston Harbor sampling will be on December 2nd.

Lab Attendance and Participation: 60 points
Lab Assignments: 90 points
ODV Presentation: 50 points
Charleston Harbor Report and Presentation: 50 points
Schedule: The schedule below is subject to change depending on boat availability and weather. Closed-toe shoes are required for all lab work.

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<th>Date</th>
<th>Topic</th>
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<tr>
<td>Aug. 26</td>
<td>Lab Intro; Bathymetry</td>
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<tr>
<td>02</td>
<td>Ocean Data View (ODV) Intro</td>
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<td>Sept. 09</td>
<td>ODV Workday</td>
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<tr>
<td>16</td>
<td>Total CO₂ &amp; the Carbonate Buffering System in Seawater</td>
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<tr>
<td>23</td>
<td>Measurement of Phosphate in Seawater</td>
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<td>30</td>
<td>Measurement of Nitrate/Ammonia in Seawater</td>
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<td>Oct. 07</td>
<td>Spectrophotometric and Fluorometric Algal Pigment Analyses</td>
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<td>14</td>
<td>ODV Presentations</td>
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<td>21</td>
<td>Charleston Harbor Cruise</td>
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<td>Charleston Harbor Sample Analysis</td>
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<td>Nov 04</td>
<td>Oxidative Stress Week 1</td>
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<td>Oxidative Stress Week 2</td>
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<td>18</td>
<td>Plankton Tow and Microscopy</td>
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<td>25</td>
<td>No Lab--- Thanksgiving Break</td>
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<tr>
<td>02</td>
<td>Charleston Harbor Presentations</td>
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College Policies:

1. **Center for Student Learning:** I encourage you to utilize the Center for Student Learning’s (CSL) academic support services for assistance in study strategies, speaking & writing strategies, and course content. They offer tutoring, Supplemental Instruction, study strategy appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at [http://csl.cofc.edu](http://csl.cofc.edu) or call (843)953-5635.

2. **Center for Disability Services** ([http://disabilityservices.cofc.edu/for-faculty/faqs.php](http://disabilityservices.cofc.edu/for-faculty/faqs.php))
   - Any student eligible for and needing accommodations because of a disability is requested to speak with the professor during the first two weeks of class or as soon as the student has been approved for services so that reasonable accommodations can be arranged.
   - The College will make reasonable accommodations for persons with documented disabilities. Students should apply for services at the Center for Disability Services/SNAP located on the first floor of the Lightsey Center, Suite 104. Students approved for
accommodations are responsible for notifying me as soon as possible and for contacting me one week before accommodation is needed.

- This College abides by section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act. If you have a documented disability that may have some impact on your work in this class and for which you may require accommodations, please see an administrator at the Center of Disability Services/SNAP, 843.953.1431 or me so that such accommodation may be arranged.

3. **College of Charleston Honor Code and Academic Integrity**

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when suspected, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student’s actions are related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student’s file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This status indicator will appear on the student’s transcript for two years after which the student may petition for the XX to be expunged. The F is permanent.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor.

Students can find the complete Honor Code and all related processes in the *Student Handbook* at:
http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php

4. **SAFETY POLICY AND PROCEDURES**

The School of Sciences and Mathematics of the College of Charleston understands that the safety of our students, staff and faculty is of paramount importance. Engendering a safety culture is an important part of our mission in teaching and doing science. Each department, course of instruction, or research lab may require higher standards or procedures. The policies and procedures set forth below are understood to be minimum requirements across our departments.
In this document, the term “laboratory” is meant for a work space/facility where chemicals, biological agents, or equipment is used for research and/or instruction. No one (student, staff, faculty, or visitor) will be allowed in a laboratory (teaching or research) to perform experiments or where experiments may be in progress unless these regulations are followed. Students dismissed from a teaching lab due to violations of the safety procedures will not be allowed to re-enter the laboratory until authorized to do so by their supervisor (instructor) and, in the case of research laboratories, by the department chair or designee. Any course work missed because of a violation of these guidelines cannot be made up at another time (or by an extension of the lab period) and will be treated as an unexcused absence.

1. You are responsible for knowing the biological, chemical, electrical, ergonomic, mechanical, and physical hazards associated with the equipment and materials that are being utilized in the laboratory. Listen to all instructions and ask questions about that which you do not understand.
2. Know the location of safety equipment: telephones, emergency shower, eyewash, fire extinguisher, fire alarm pull. 3. Know the appropriate emergency response procedures. If there is an injury or emergency, call 953-5611.
4. Do not work alone in the laboratory if you are working with hazardous materials or equipment.
5. Use hazardous chemicals, equipment, and biological agents only as directed and for their intended purpose.
6. Do not engage in horseplay, pranks or other acts of mischief while in lab.
7. Drinking, eating, and application of cosmetics is forbidden in laboratories where chemicals or biohazards are present. Smoking is forbidden in all College buildings.
8. Appropriate personal protective equipment shall be worn. The dress code for laboratory work when using chemicals, biological or physical hazards, or when instructed to do so by the laboratory supervisor is as follows:
   a) Wear safety glasses or goggles at all times.
   b) No exposed skin on arms, legs or torso.
   c) Wear lab coats or other approved protective garments.
   d) Wear gloves or other personal protective equipment (PPE) as directed by the instructor or mandated by prudent practices based on the chemicals being handled. If in doubt, wear appropriate gloves. Latex is not permitted. Avoid cross-contamination.
   e) Remove PPE (gloves and lab coat) when exiting the laboratory.
   f) Wash your hands, even if gloves were used, before leaving a lab where you did any lab work.
   g) Closed toe shoes are required. The heel and top of foot must be covered. High heeled shoes, sandals, and perforated shoes are not permitted.
   h) Confine long hair and loose clothing.
9. Inspect equipment or apparatus for damage before adding chemical reagents or biological samples or energizing electrical equipment. Do not use damaged equipment.
10. Never remove chemicals, biological samples, or laboratory equipment from a lab without proper authorization.
11. Presume that all chemicals and biological samples used in the laboratory are
hazardous for you and the environment, unless instructed otherwise.
12. Never leave an experiment unattended unless proper safety precautions are in place.
13. Read all labels on chemicals twice before using them in the lab. Read all instructions twice for the operation of any equipment or machinery.
14. Properly and safely dispose of all waste materials.
15. Treat sharps and broken glassware containers carefully.
   a) Broken glass should be disposed of in properly marked safety containers. All sharps (needles, razor blades, etc.) used for any purpose must be disposed of in specially labeled SHARPS containers.
   b) Do not place contaminated glass in the broken glassware container. Consult your supervisor.
   c) Waste chemicals and contaminated PPE should be discarded as directed.
16. When using a reagent, replace the lid immediately. Never return unused reagents to stock bottles. Take only the amount needed for your experiment.
17. All chemicals and biological samples/media are to be disposed of in appropriately labeled containers. Specific instructions for each material will be provided. Pay attention to waste container labels before adding the material to be discarded.
18. Use good personal hygiene. Keep your hands and face clean. Wash hands thoroughly with soap and water after handling any chemical or biological agent.
19. Keep the work area clean and uncluttered with chemicals and equipment. Clean up the work area on completion of an operation or an experiment. Before leaving the laboratory, you are responsible for making sure your lab area is clean and organized.
20. Never store a chemical or biological specimen in an unlabeled container.
20. Always have your College of Charleston identification and insurance information with you when working in a laboratory. MedicAlert identification must be worn if you have any potential life-threatening chemical sensitivities or medical conditions.
21. Report any accident or injury, however minor, to your teaching assistant, instructor, or lab supervisor immediately. An accident report form must be completed and forwarded to the department chair, dean and to the Director of Environmental Health and Safety.

If you have questions/concerns about safety in the lab please first consult your instructor. If these are not answered, please see the department chair. Finally, you may consult the director of Environmental Health and Safety at 3-6802.