OCEANOGRAPHIC METHODS & DATA ANALYSIS: BIOLOGY/CHEMISTRY (11:628:363, 3 credits)

Instructors
Professor Grace Saba
Professor Rob Sherrell

Prerequisites
Dynamics of Marine Ecosystems 11:628:320
Rutgers REHS Laboratory Safety Training. This course requires the use of chemicals in a laboratory. Thus, students are required to complete the Rutgers REHS Laboratory Safety Training prior to the start of the Fall semester, http://rehs.rutgers.edu/rehs_train.html#labsafety. If the student has already taken the initial half-day REHS training and his/her annual certificate will expire during the Fall semester, he/she is responsible for completing the annual online refresher prior to the start of the semester.

Course Materials
All required reading will be available through the course website

Topics
Data analysis, Excel tutorial
Sample collection (CTD/Niskin/refractometer)
Fauna sampling: zooplankton, benthos (trawl, dredge, grab, nets, traps)
Water sampling: phytoplankton, nutrients, water quality (YSI/castaway)
Dissolved oxygen; respirometry on live aquatic organisms
Chlorophyll-a/phaeophytin analysis, measuring primary productivity
Ammonia, phosphate analysis
Carbonate chemistry: pH, alkalinity on preserved samples; CO2CALC Lesson
Zooplankton sampling abundance and composition on preserved samples
Benthic organism abundance and composition

Course Learning Goals and Assessment
The Learning Goals for the Marine Science Program are posted on our website at http://marine.rutgers.edu/main/academics/undergraduate/program-description. The learning goals for this course apply to Program Learning Goal 1 (master the basic biological, chemical, physical, and geological principles of marine science) and Goal 2 (analyze and interpret contemporary oceanographic datasets).
Students completing this course will be able to:

Goal A. Make use of software for entering, organizing, and analyzing oceanographic data
Instructional Activities: lectures
Assessment Method: performance on lab reports, class participation

Goal B. Demonstrate ability to use oceanographic instruments and equipment to collect field data
Instructional Activities: lectures, field trips
Assessment Method: performance on lab reports, class participation

Goal C. Design a research question centered on modern techniques for collecting and analyzing oceanographic data, evaluate the relevant literature, and communicate the results in a poster, oral report, and written term paper
Instructional Activities: guidance on using databases available through the Rutgers libraries, guidance on proper citation procedures
Assessment Method: performance on oral and poster presentations, performance on term paper

Grading
Homework: 50% (all lab reports must be turned in to receive a grade)
Participation and presentations: 25%
Final paper: 25%