BIOPHYSICAL INTERACTIONS: FROM BARNACLES to JELLYFISH (11:628:410, 3 credits)

Instructor
Professor Heidi Fuchs

Prerequisites
Dynamics of Marine Ecosystems 11:628:320
Calculus 2

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

Topics
Essentials of fluid mechanics and relevance to marine organisms
Propulsion
Schooling
Biomixing
Material transport
Boundary layer processes

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 3 (show evidence of scientific literacy, and communicate the information effectively both orally and in writing).

Students completing this course will be able to:

Goal A. Explain how the physics of moving fluids have shaped the form, function, and ecology of marine organisms
Instructional Activities: lectures
Assessment Method: class participation, performance on quizzes

Goal B. Develop an ability to understand and use simple mathematical models describing effects of fluid motions on ecological processes
Instructional Activities: lectures
Assessment Method: performance on homework

Goal C. Develop a question centered on a topic discussed in class, evaluate the relevant literature, and write a proposal for a research project to answer the question
Instructional Activities: guidance on elements of a proposal, guidance on proper citation procedures
Assessment Method: performance on first draft, response to comments and incorporation into final draft

Goal D. Evaluate and critique the technical literature
Instructional Activities: in-class discussions of papers from the primary literature
Assessment Method: class participation, performance on writing assignments

Grading
Participation 15%
Paper presentations 25%
Writing assignments 20%
Homework 30%
Quizzes 10%