University of Rhode Island
Ocean Engineering Department
OCE 205/OCE215: Ocean Engineering Design Tools, Fall 2013

Instructor:	Stephen Licht
Office Location:	211 Sheets
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Office Hours:	TBD
Class Days/Time:	(Lecture) MW9:00-10:15;MW10:30 - 11:45 (Lab) T1:00-2:50;T3:00-4:50;Th4:15-6:05
Classroom:	(Lecture) Kirk 212 (Engineering Computing Center) (Lab) Middleton Shop & Comp. Center (Bay Campus) [See schedule below.]
Prerequisites:	EGR 106 or permission of instructor.

Course Description

This course is designed to introduce students to design principles and approaches in the context of marine systems, to provide some basic tools that can be used within the design process, and to reinforce fundamental engineering concepts through application. Students will be introduced to computer aided design and drafting tools; to advanced Matlab programming directed towards ocean engineering topics such as acoustics, hydrodynamics, and marine structures; and to the fundamentals of fluid-structure interactions.

These tools and approaches will be applied in a hands-on team project in the laboratory section of the class. Projects vary from year to year. This year's project is the design, analysis, construction, and testing of a mobile offshore platform.

Required Texts/Readings
Students are required to purchase the student version of Matlab.

Classroom Protocol
Students and instructors will respectfully treat one another as adults in this class.

Course Goals

1. To introduce students to the engineering design process from an ocean engineering perspective.
2. To provide real world motivation and intuition for the use of fundamental math and physics concepts in an engineering context.
3. To introduce students to the software tools that will be needed for numerical approaches to advanced engineering problems (in hydrodynamics, acoustics, structural design and robotics) that will be encountered in 3xx and 4xx level OCE courses.

Upon successful completion of this course, each student will be able to:

1. Apply basic theoretical and software tools to design and analyze mechanical systems for ocean environments. This will include the ability to:
    - Estimate fluid force on submerged and floating objects.
    - Estimate buoyancy, stability, and drag on surface and underwater vehicles.
    - Perform basic data analysis, signal processing, and data visualization with Matlab.
    - Design mechanical elements, perform parametric solid modeling, stress/strain and flow estimation, and analyze component and system mass properties using SolidWorks.

2. Work as a team to define and achieve an objective with a real physical system. This will include the ability to:
    - Create and execute a design for an offshore platform, using measurable incremental milestones to maximize the probability of team success.
    - Perform engineering analysis of design decisions and present those decisions for critical review.
    - Work together to execute a plan of action with flexibility and enthusiasm.

Assignments and Grading Policy

Assignment Type	%
In Class Quizzes	10%
Homework	40%
Project Reports	40%
Participation	10%

Disability Accommodations and Opportunities

If you have a documented disability which may require individual accommodations, please make an appointment with Prof. Licht as soon as possible. We will discuss how to meet your individual needs to insure your full participation and fair assessment procedures.