

EOC 4804 OCEAN ENGINEERING SYSTEMS CONTROL AND DESIGN
ABET Course Syllabus

1. **Course number and name:** EOC 4804 Ocean Engineering Systems Control and Design

2. **Credits and contact hours:** 3 credits / Two 80 minute lectures each week

3. **Instructor's or course coordinator's name:** Dr. P.-P. Beaujean

4. **Text book, title, author, and year:** None

References: Lecture notes provided by instructor.

Recommended readings: (i) Elements of Ocean Engineering, Robert E. Randall, *SNAME*, 1997, (ii) Submersible Vehicle Systems Design, E.E. Allmendinger, *SNAME*, 1990

5. **Specific course information:**

- (a) Brief description of the content of the course (catalog description): The course deals with ocean engineering design, creativity and professionalism, ocean systems design, simulation and control, dynamic modeling, system trade-offs and system evaluation, feasibility, preliminary and final design for project to be completed in EOC 4804L.

Prerequisites: All 3000 level core engineering courses required by the Ocean Engineering Program, excluding EOC3213, and including EOC 4193 and EGN 4432 (each with a minimum C grade. *Co-requisite: EOC 4631C*

- (a) Indicate whether a required, elective, or selected elective course in the program: Required

6. **Specific goals for the course:**

- (a) Specific outcomes of instruction (course specific objective): The objective of the course is to introduce students to engineering design and the design process through applied ocean related design projects. Emphasis shall be placed on professionalism, creativity, engineering, design logic and communication.

- (b) Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course. The learning outcomes of the course (and related ABET Criterion 3) outcomes are:

1. An ability to design a system that satisfies an ocean engineering related need (2)
2. An ability to function in multidisciplinary design teams (5)
3. An ability to communicate effectively during the progress review meetings and Final Design Review (3)
4. An understanding of the potential economic, environmental, and societal impacts of ocean engineering design, and how contemporary issues affect engineering design (4)
5. An ability to acquire and apply new knowledge towards a detailed engineering design (7)
6. An ability to understand, consider, apply and test engineering standards and codes (8)

7. **Brief list of topics to be covered:**

Systems Engineering Topics:

- Introduction to an engineering design process
- Project management & scheduling
- Teambuilding
- Requirements analysis

- Functional analysis
- Trade studies
- Subsystem interfaces
- Risk management

Ocean Engineering Topics:

- Technical standards and codes
- Pressure vessel design
- Hydrodynamic drag estimation
- Electrical power system design
- Circuit schematic diagrams
- Micro-controller and applications
- Basic software design
- Sensor data and interface
- Basic navigation and control