EOC 3130L OCEAN ENGINEERING LABORATORY
ABET Course Syllabus

1. **Course number and name:** EOC 3130L Ocean Engineering Laboratory

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

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

4. **Text book, title, author, and year:** Experimental Methods for Engineers, 7th Ed. by J.P. Holman, McGraw-Hill 2001 (ISBN 0073660558)

5. **Specific course information:**
   (a) Brief description of the content of the course (catalog description): The course deals with basic engineering laboratory methods and techniques with experiences in measurements, experiment planning, data recording, and laboratory report preparation. Five major lab experiences, including one or more at sea, are included.

   (b) Prerequisites: CHM 2045, 2045L (General Chemistry I & lab), PHY 2044, 2049L (Physics for Engineers II & lab), COP 2220 (Introduction to C Programming) (all with a grade of C or above).

   (c) Co-requisites: MAP 3305 (Engineering Math I).

   (d) 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 provide a basic background in engineering laboratory techniques including: basic measurement theory, experimental purpose and planning, micro-controller data acquisition techniques, introductory-level data analysis, and technical memo preparation; an introduction to MATLAB for analyzing and presenting experimental data; and prepare students for laboratories associated with subsequent engineering courses in Ocean Engineering.

   (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 conduct engineering experiments with proper consideration of the type and amount of data to be acquired, the accuracy of the measurements to be made, a plan to reduce and analyze the data, and the quantification of the uncertainty of the outcome. (a,b,e/1,6)
   2. An ability to function in teams (d/5)
   3. An ability to present the results of an experiment in a professional manner. (g/3)
   4. An ability to use modern engineering tools for common data logging and computational tasks. (k/1,2,6)

7. **Brief list of topics to be covered:**
   1. Basic measurement theory
   2. Basic analog to digital conversion
   3. Basic microcontroller tutorial
   4. Experiment Planning
   5. Uncertainty Analysis
   6. Basic acoustic measurements

7. Basic calibration
8. Data fitting
9. Oceanographic measurements