ABET Course Syllabi for IND E 495: Industrial Engineering Design

1. Course number and name: IND E 495: Industrial Engineering Design

2. Credits and contact hours: 4 credit hours, 4 contact hours per week.

3. Instructor’s Name: Christina Mastrangelo

4. Textbook: None.

5. Specific Course Information:
   a. Description: Capstone senior design project involving identification and synthesis of industrial engineering skills. Students apply their knowledge of industrial engineering to actual industrial problems.
   b. Pre-requisites: IND E 494.
   c. This is a required course in the program.

6. Specific goals for the course: In this course, student teams complete their senior design project.
   a. Specific outcomes: At the end of the course students will be able to do the following:
      i. Demonstrate proficiency in the practice of design in an industrial engineering context by being able to define a design problem, to identify customer needs, to generate design alternatives, to choose among the design alternatives, and to justify the correctness of their design solution.
      ii. Apply engineering analysis to design problems to identify which analytical skills are appropriate, gather necessary data, make necessary and appropriate assumptions, complete analysis in a correct manner, and apply results of analysis to their design decision making.
      iii. Manage themselves and others on a design project by establishing and meeting deadlines, communicating to clients and others about their progress, and identifying and implementing an appropriate solution.
   b. Criteria 3 outcomes addressed by the course:
      a. An ability to apply knowledge of mathematics, science, and engineering.
      b. An ability to design and conduct experiments, as well as analyze and interpret data.
      c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
      d. An ability to function on multi-disciplinary teams
      e. An ability to identify, formulate, and solve engineering problems.
      f. An understanding of professional and ethical responsibility
      g. An ability to communicate effectively
      h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
      i. A recognition of the need for, and ability to engage in life-long learning.
j. A knowledge of contemporary issues.
k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
l. An understanding of the integrated, inter-disciplinary nature of the discipline.

7. Brief list of topics covered: Not applicable as each team meets individually with the faculty advisor on a weekly basis for project review.