ABET Course Syllabi for IND E 351: Human Factors In Design

1. Course number and name: IND E 351: Human Factors In Design

2. Credits and contact hours: 4 credit hours, 5 hours per week

3. Instructor’s name: Linda Ng Boyle

4. Text book, title, author, and year

4a. Other supplemental materials: Readings from Atomic Chef (by S. Casey, 2006)

5. Specific course information
   5a. Brief description of the content of the course (catalog description):
   Engineering considerations of the abilities and limitations of the human aspect in the design of operational systems and components. Functional, psychological, physiological, and environmental considerations.

5b. Prerequisites or co-requisites: NONE

5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Elective for d (Design).

6. Specific goals for the course
   The objective of this course is to introduce the basic concepts of human factors and to demonstrate the importance of considering human capabilities and limits in system design. This includes an overview of human characteristics and research and design techniques. Case studies are used to demonstrate how humans have contributed to accidents and students learn from these studies to improve designs.

6a. Specific outcomes of instruction
   - Students will have a broad knowledge of various modern industrial engineering methods and tools associated with designing systems in manufacturing, health care, transportation, and other related fields.
   - Students will develop sensitivity to human capabilities and their implications for system performance.
   - Students will be able to perform task analysis and other skills to understand human/machine interactions and guide human considerations in design.
   - Students will have the ability to apply engineering design methods to represent, integrate and solve problems, including the ability to recognize problem context and integrate knowledge and skills appropriate sources.
   - Students will have the ability to communicate effectively.
   - Students should possess the following professional characteristics: leadership, ethics, the ability to work with others, and an appreciation for other disciplines.
• Students will have an understanding of the integrated, broad nature of the IE discipline with an appreciation of the depth of the field and an ability to find information, when needed.

6b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

- c) an ability to design a system, component, or process to meet desired needs
- 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 and societal context
- j) a knowledge of contemporary issues.
- l) an understanding of the integrated, inter-disciplinary nature of the discipline

7. Brief list of topics to be covered

- Human Factors Research Methods (Preparing an Internal Review Board for studying human subjects)
- Design and Evaluation Methods (including Task Analysis and Decision Matrices)
- Visual Sensory Systems
- Auditory, Tactile, Vestibular Systems
- Cognition, Decision Making
- Displays, Controls
- Stress and Workload
- Safety and Accident Prevention