ISYE 575, Introduction to Quality Engineering

1. Credits : 3  
   Contact Hours : 2.5

2. Textbook and Materials :

   a. Other Supplemental Materials : N/A

   b. Brief description of the content of the course (Course Catalog Description) :
      Introduction to statistically based quality improvement methods useful in industrial settings; observational methods and design of experiments; experimentation to discover influential factors and to analyze sources of variation; robust products. There will be a one hour discussion section each week.

   c. Pre-requisites or Co-requisites : One intro crse in statistical methods, or cons inst

   d. This is a Selected Elective course.

   e. Specific Goals for the Course :

      a. Course Outcomes :

         1. Understand how to design experiments and analyze the resulting data in various phases of engineering work, including new product design and development, process development, manufacturing process improvement, and health systems design and improvement.

         2. Apply your increased quantitative literacy and new data analysis skills in statistical
methodologies, graphical displays, and visual and inferential interpretations to get experimental results faster, easier, and with fewer resources.

3. Work more effectively in a team-based experiential project focused on applying appropriate statistical tools and techniques.

4. Understand and describe the role of the industrial engineer as an innovator and manager of continuous improvement in complex systems composed of people, information, materials, equipment, and financial resources.

- **ABET Student Learning Outcomes**:

  (a) Ability to apply mathematics, science and engineering principles.
  (b) Ability to design and conduct experiments, analyze and interpret data.
  (c) Ability to design a system, component, or process to meet desired needs.
  (d) Ability to function on multidisciplinary teams.
  (e) Ability to identify, formulate and solve engineering problems.
  (f) Understanding of professional and ethical responsibility.
  (g) Ability to communicate effectively.
  (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context.
  (i) Recognition of the need for and an ability to engage in life-long learning.
  (j) Knowledge of contemporary issues.
  (k) Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

- **Brief List of Topics to be Covered**:

  Introduction to Six Sigma & Class Exercise, Six Sigma Methodology, Basic Statistics, Confidence Intervals and Prediction Intervals, Hypothesis Testing of Means, Hypothesis Testing for Differences Between Population Means, Factorial Design of Experiments

- **Additional Information**: N/A