1. ISYE 564, Occupational Ergonomics and Biomechanics
2. Credits: 3  Contact Hours: 2.5

a. Other Supplemental Materials: N/A

Specific Course Information:

a. Brief description of the content of the course (Course Catalog Description):
   Introduces engineers how to design manufacturing and industrial operations in which people play a significant role, so that human capabilities are maximized, physical stress is minimized, and workload is optimized. Examples and topics emphasize industrial applications.

b. Pre-requisites or Co-requisites: ISYE 349, or Biomed Engr 315, or Grad standing

c. This is a Selected Elective course.

Specific Goals for the Course:

a. Course Outcomes:
   1. Teaches engineers the basic concepts and design tools needed to consider the physiological basis of human work in the design of industrial operations, equipment and products that are healthful and safe.
   2. Understand how to design workspaces for a diverse work population to accommodate the variability of human dimensions.
   3. Learn how to determine when loads and forces encountered in manual tasks exceed human strength limits.
4. Understand how to prevent fatigue and enhance performance by designing tasks that account for human energy requirements.
5. Learn how to design work environments that prevent excessive exposure to noise and vibration.
6. Learn how to design physically demanding work for hot and cold environments.
7. Learn how to establish work schedules that prevent adverse effects of shift work.
8. Learn how to design manual material handling tasks that prevent back injuries.
9. Understand how to analyze workstations and tasks for upper limb disorder risk factors.
10. Learn how to institute a plant ergonomics program to control musculoskeletal injuries.

- **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:**


- **Additional Information:** N/A