



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Workplace Ergonomics: Analysis and Design of Physical Work Systems

ISE 3600

Credit Hours:

3.00 - 3.00

Course Levels:

Undergraduate (1000-5000 level)

Course Components:

Lecture

Lab

Course Description:

Explores physiological and biomechanical principles used to analyze and design work systems (tasks, tools, equipment) so people can perform their jobs more effectively and safely.

Prerequisites and Co-requisites:

Prereq: 2040 and Stat 3470, and enrollment in ISE or Engineering Physics major; CPHR 3.0 or above for students not enrolled in ISE or Engineering Physics major. Prereq or concur: ISE 2400 and MechEng 2040 for students enrolled in ISE major.

Course Goals / Objectives:

- Provide an introduction to the multidisciplinary field of occupational ergonomics, including human anatomy, physiology, biomechanics, properties of biological materials, and human physical capacities and limitations
 - Learn how to apply a structured, analytical approach to assess and improve jobs or elements of jobs for those who perform them
 - Identify jobs or tasks that are likely to pose an elevated risk to workers for development of work-related musculoskeletal disorders (WMSDs)
 - Suggest improvements to existing jobs, workstations, tools, etc, by controlling, reducing, or eliminating WMSD risk factors
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Course Topics:

- Introduction to ergonomics, work physiology, and biomechanics, and work design.
 - Epidemiology, occupational injury statistics (recordkeeping, sources, interpretation).
 - The Ergonomic Process; Task and posture analysis.
 - Anthropometry
 - Anatomy basics
 - Muscle and work physiology
 - Occupational biomechanics
 - Work-related musculoskeletal disorders and the concept of cumulative trauma.
 - Seated and standing work
 - Manual materials handling and basic Evaluation Tools
 - Arm and hand-intensive work
 - Work evaluation tools
 - Intervention process; Ergonomics programs
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Designation:

Required