

1. Course Number and Name: IEGR 360: Ergonomics and Workplace Design

2. Credits and Contact Hours: 3 credits; 3 contact hours

3. Instructor's Name: Masud Salimian, Ph.D.

4. Textbook: Stack, T., Ostrom, L. and Wilhelmsen, C., Occupational Ergonomics: A Practical Approach, Wiley, Hoboken, NJ, 2016, Print ISBN: 97811188142151 Online ISBN: 9781118814239

Supplemental Material: Fernandez, J.E. and Marley, R.J., Applied Occupational Ergonomics: A Textbook, 4th Edition, International Journal of Industrial Engineering Press, Cincinnati, OH, 2013.

5. Specific Course Information:

a. Catalog Description: This introductory course mainly focuses on occupational aspects of ergonomics. Human motor capabilities and limitations are addressed in the context of work and workplace design. Topics of discussion include anthropometry, work physiology, biomechanics, psychophysics, work methods/standards, time and motion study, analysis and design of work, tools/equipment, musculoskeletal disorders, and environmental stressors such as noise, vibration, illumination and heat stress.

b. Prerequisite(s): PHYS 205 and IEGR 251

c. Required course for ISE curriculum

6. Specific Goals for the Course:

a. Specific Course Outcomes of Instruction:

- 1) Students will be able to identify, analyze and solve ergonomics and work method problems.
- 2) Students will be able to apply basics tools and methods for solving ergonomic problems.
- 3) Students will be able to design/redesign work, workplace and equipment according to ergonomics principles.
- 4) Students will be able to conduct experiments in ergonomics, analyze and interpret collected data with industrial implications.
- 5) Students will develop engineering technical report writing skills.
- 6) Students will gain an understanding of professional and ethical responsibility.

b. Relationship of Course Outcomes to ABET Student Outcomes:

Course Outcome 1 supports ABET Outcomes 1, 2, 3, 4, 5, 6, 7
Course Outcome 2 supports ABET Outcomes 2, 3, 4, 5, 6
Course Outcome 3 supports ABET Outcomes 1, 2, 3, 4, 6, 7
Course Outcome 4 supports ABET Outcomes 1, 4, 5, 6
Course Outcome 5 supports ABET Outcomes 1, 3, 5, 6
Course Outcome 6 supports ABET Outcomes 2, 4, 7

7. Brief list of topics to be covered in IEGR 360

Topic 1	Introduction to Human Factors Ergonomics
Topic 2	Anatomical Terms & Planes of Reference
Topic 3	Anthropometry in Design
Topic 4	Office Ergonomics
Topic 5	Laboratory #1
Topic 6	Biomechanics
Topic 7	Work Physiology
Topic 8	Administrative Controls & Flex Program
Topic 9	Laboratory #2
Topic 10	Psychophysics
Topic 11	Work-Related Musculoskeletal Disorders
Topic 12	Cognitive Ergonomics
Topic 13	Hand Tools
Topic 14	Vibration
Topic 15	Industrial Workstation Design
Topic 16	Manual Material Handling
Topic 17	Elements of Ergonomics Programs
Topic 18	Noise and Illumination*
Topic 19	Laboratory #3*
Topic 20	Design for Unique Populations*
Topic 21	Special Topics*

(* = if time permits)

Grading Scheme

Three tests, each 25 points

Lab assignments, research assignments and homework, 25 points

Grade F: Total grade below 70

Grade C: Total grade 70 and above but below 80

Grade B: Total grade 80 and above but below 90

Grade A: Total grade of 90 and above