Course Syllabus

General Information
Course Number: InIn 6016
Course Title: Human Factors Engineering
Credit-Hours: Three

Course Description
Human factors application in the design of equipment and work environment. Methods for the analysis of human errors and skills and their utilization in the design of control systems and information displays.

Prerequisites
Authorization of the Director of the Department

Textbook and References

Purpose
This is an elective course for the completion of an ME degree in industrial engineering. It has been primarily designed for a major in industrial engineering; however, it is appropriate for anyone with interest in the areas of ergonomics and work design. The purpose is to gain basic knowledge in human anatomy, biomechanics, physiology, and the human information processing; learn to perform ergonomic workplace assessment, and design work for the prevention of cumulative trauma disorders.

Course Goals
After completing the course, the student should be able to perform ergonomic workplace assessment and design work and workplace for the prevention of cumulative trauma disorders.

Requirements
All students are expected to come to class all the time, on time, and prepared; do all assigned readings and related work; actively participate in class discussions; and satisfy all assessment criteria to receive credit for the course.
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Department and Campus Policies

Class attendance: Class attendance is compulsory. The University of Puerto Rico, Mayagüez Campus, reserves the right to deal at any time with individual cases of non-attendance. Professors are expected to record the absences of their students. Frequent absences affect the final grade, and may even result in total loss of credits. Arranging to make up work missed because of legitimate class absence is the responsibility of the student. (Bulletin of Information Undergraduate Studies)

Absence from examinations: Students are required to attend all examinations. If a student is absent from an examination for a justifiable reason acceptable to the professor, he or she will be given a special examination. Otherwise, he or she will receive a grade of zero of "F" in the examination missed. (Bulletin of Information Undergraduate Studies)

Final examinations: Final written examinations must be given in all courses unless, in the judgment of the Dean, the nature of the subject makes it impracticable. Final examinations scheduled by arrangements must be given during the examination period prescribed in the Academic Calendar, including Saturdays. (see Bulletin of Information Undergraduate Studies).

Partial withdrawals: A student may withdraw from individual courses at any time during the term, but before the deadline established in the University Academic Calendar. (see Bulletin of Information Undergraduate Studies).

Complete withdrawals: A student may completely withdraw from the University of Puerto Rico, Mayagüez Campus, at any time up to the last day of classes. (see Bulletin of Information Undergraduate Studies).

Disabilities: After been identified with the professor and the institution, the students with disabilities will receive reasonable accommodations in their courses and evaluations. For more information, please contact Student Services with Disabilities at the Student Dean’s Office at (Q-019), 787-265-3862 ó 787-832-4040 x-3250 ó 3258.

Ethics: Any academic fraud is subject to the disciplinary sanctions described in article 14 and 16 of the revised General Student Bylaws of the University of Puerto Rico contained in Certification 018-1997-98 of the Board of Trustees. The professor will follow the norms established in articles 1-5 of the Bylaws.

Campus Resources

General Library and University Computer Center is available to obtain professor=s reference materials. The University=s Counseling Office has a tutorial program for students who need extra help.
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<tr>
<th>Lecture</th>
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| 1       | Introduction  
– Need for Ergonomic Job Design  
– Definitions  
– Ergonomic Standards | R1: Ch. 1 |
| 2       | Research and Evaluation Methods  
– Experimental Research  
– Descriptive Methods | R1 & R2: Ch. 2 |
| 3       | Visual System  
– Light  
– Color and Perception | R1: Ch. 8  
R2: Ch. 4 |
| 4       | The senses  
– Noise  
– Touch  
– Vestibular System  
– Vibration | R1: Ch. 8  
R2: Ch. 5 |
| 5       | Cognition  
– Information Processing  
– Decision Making Models | R2: Ch. 6, 7 |
| 6       | Controls and Displays | R1: Ch. 3, 4  
R2: Ch. 8, 9 |
| 7-8     | Anthropometry and work design | R1: Ch. 3  
R2: Ch. 10 |
| 9-10    | Biomechanics  
– Musculoskeletal system  
– Low-back problems  
– Lifting guides  
– Manual Materials Handling | R1: Ch. 2, 7  
R2: Ch. 11 |
| 11      | Work Physiology  
– Circulatory system  
– Respiratory system  
– Work Capacity and Fatigue | R1: Ch. 6  
R2: Ch12 |
| 12-13   | Worker Selection and Training  
– Tests and Procedures  
– Analysis methods | R1: Ch. 2  
R2: Ch. 18 |
| 14      | Stress and Workload | R1: Ch. 6  
R2: Ch. 13 |
| 15      | Design for special populations | Instructor’s Notes |