Jordan University of Science and Technology

Faculty of Engineering

Industrial Engineering Department

IE451 Human Factors Engineering - JNQF Level: 7

First Semester 2024-2025

Course Catalog
3 Credit Hours. This course is designed to provide students with a fundamental understanding of human factors that must be taken into account in the design and engineering of systems. The primary focus is the derivation of human engineering design criteria from sensory, motor, and cognitive sources to include principles of displays, controls and ergonomics, manual control, the nature of human error, basic experimental design, and human-computer interaction in supervisory control settings
Teaching Method: Blended

Text Book	
Title	Work Design: Occupational Ergonomics
Author(s)	Konz, S. and Johnson, S.,
Edition	7th Edition
Short Name	Ref 1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref 2	The Design of Everyday Things	Norman, D	2nd Edition	

Instructor	
Name	**Dr. ESRAA ABDEL ALL**
Office Location	-
Office Hours	
Email	esabdulal@just.edu.jo

Class Schedule & Room

Section 2:
Lecture Time: Sun, Tue : 13:30 - 14:30
Room: M5124

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
293460	IE346 Work Measurement And Analysis	Prerequisite / Pass

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Overview and History: Technological Society, Contributors to Technology, Work Smart, Not Hard	**Chapter 1** From **Ref 1**
Weeks 1, 2, 3, 4, 5	The Human Body and Design, Anthrpometry, Biomechanics, Metabolism, Cardiovascular System	**Chapter 2** From **Ref 1**
Week 5	The Design Process, Engineering Design, Cost Analysis	**Chapter 4** From **Ref 1**
Weeks 6, 7, 8, 9, 10, 11, 12, 13, 14	Ergonomics Guidelines: Workstation Design (chapter 11) , Cumulative Trauma (chapter 12) , Push & Pull, Holding, Carrying (chapter 13) , Handtools (chapter 14), Displays (chapter 16), Vision and Illumination (chapter 20), Hearing and Noise (chapter 21), Noise Reduction (chapter 21)	**Chapters: 11, 12, 13, 14, 15, 16, 20, 21** From **Ref 1**
Weeks 15, 16	Implementing the Design : Job instruction/Training (chapter 28) , Managing Change (chapter 30)	**Chapters 28 and 30** From **Ref 1**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Identify the basic human sensory, cognitive, and physical capabilities to relate these and safety, efficiency and work satisfaction within any systems by analyzing examples from industry. [1SO1, 1SO4] [1L7K1]	30%	
Apply human factors engineering concepts in the evaluation and redesign of existing systems to ensure compatibility of systems to humans by conducting usability studies in groups [1SO2, 1SO3, 1SO5, 1SO6] [1L7S3]	40%	
Define the principles of work design, motion economy, and work environment design to describe designs that avoid occupation-related injuries by analyzing case studies in groups [1SO1, 1SO5] [1L7C3]	30%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
30	10	10	15	25	10	

Relationship to NQF Outcomes (Out of 100%)		
L7K1	L7S3	L7C3
30	40	30

Evaluation	
Assessment Tool	**Weight**
MIDTREM Exam	20%
Project	20%
Final Exam	40%
Assignments	20%

Policy	
Attendence	Attendance will be checked at the beginning of each class. University regulations will be strictly followed for students exceeding the maximum number of absences. No make-up test will be given without an official university-approved excuse.
Homework	Homework problems are designed to give the students the opportunity to practice solving problems related to the course materials presented each week.
Student Conduct	It is the responsibility of each student to adhere to the principles of academic integrity. Academic integrity means that a student is honest with him/herself, fellow students, instructors, and the university in matters concerning his or her educational endeavors. Cheating will not be tolerated in this course. University regulations will be pursued and enforced on any cheating incident.

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