

ISYS 4010: Work Measurement and Human Factors

Catalog Description

4010. Work Measurement and Human Factors. (3) (S) 3 lecture hours per week. P: MATH 3307. Work place design and analysis: Human information processing, motor skills, hand tool designs, biomechanics, and work-related injuries. Work measurement, motion analysis, human interface design and response.

Required Material:

1. Wickens, C., J. Lee, Y. Liu, S. Becker. An Introduction to Human Factors Engineering, 2nd Edition Pearson Prentice Hall, 2004, ISBN 0-13-183736-2
2. National Council of Examiners for Engineering and Surveying, *Fundamentals of Engineering Supplied-Reference Handbook (8th Edition)*, 2008, ISBN 978-1-932613-30-8.

Course Objectives:

Upon completion of this course each student will be able to:

- Describe the primary methods of measuring the interface of humans and their environment.
- Design and analyze systems in which humans interface with machines or external mechanisms.
- Define and analyze human-machine issues in safety, productivity and ergonomics and develop solutions to improve the ability of humans to interface with mechanisms and their environment.
- Design and analyze work elements for developing standard times
- Design motion analyses using predetermined time study methods
- Apply human learning capabilities to time studies and productivity analysis

Lecture Topics:

- Introduction to Human Factors (1 hour)
- Information Inputs and Processing (2 hours)
- Visual Displays of Dynamic Information (2 hours)
- Human Control of Systems (2 hours)
- Controls and Data Entry Devices (2 hours)
- Physical Work and Manual Material Handling (2 hours)
- Motor Skills (2 hours)
- Hand Tools and Devices (2 hours)
- Engineering Anthropometry and Work-Space Design (2 hours)
- Biomechanics of Work (2 hours)
- Work Physiology, Stress and Workload (2 hours)
- Safety, Accidents and Human Errors (1 hour)
- Human-Computer Interaction (2 hours)
- System Requirements (1 hour)
- Time Study (4 hours)
- Work Sampling (3 hours)
- Learning Curves (2 hours)

- Productivity Measures (1 hour)
- Environmental Stress Assessment (2 hours)
- Risk Factor Identification (2 hours)
- Tests (3 hours)

Grading:

Grading		Assessment	
A	90% or better	Homework/Assignments	20%
B	80% or better	Tests (2) @25% each	50%
C	70% or better	Final Exam	30%
D	60% or better	Total	100%
F	Less than 60%		