

IEE 2050 WORK DESIGN

Course Syllabus

Catalog Description:

Design jobs and work environments in business and industry. Topics include techniques for job design, ergonomics in the workplace, and work measurement. A semester project requiring the design of a workstation is required. Prerequisite: IEE 1020.

Textbook:

Frievalds, A., Neibel's Methods, Standards and Work Design, McGraw Hill.

Prerequisites by Topic:

1. Principles of objective presentation of factual material, logical organization, summarization, ethical practices, information gathering techniques, oral communications, and listening through practical applications. (IEE 1020)
2. Basic knowledge of spreadsheets, drafting software, presentation software, World Wide Web, and e-mail.
3. Basic knowledge of statistics; mean standard deviation, percentiles.

Objectives:

In accordance with the above stated course description, at the conclusion of the semester the students should have the ability to:

1. Analyze and evaluate the productivity of people and machines in manual and semi-automated environment. Design and redesign tasks and workstations to fit employees.
2. Adequately apply standard work measurement techniques to various work environments. Apply the knowledge, skills, and abilities learned in Work Design and apply them to an industry-based problem.

Topics by week: (Tentative)

Week	Topic	Chapters
1	Introduction, Problem Solving and Work Design Methods	Chapter 1
	Lab	
2		
	Lab	
3	Process of six sigma, Motivation Theory	Chapter 18
	Lab	
4	Process analysis tools	Chapter 2
	Lab	
5	Recording and analysis tools	Chapter 2
	Lab	
6	Operations Chart, Written Standard Practices, FMEA	
	Lab	
7	Plant Layout	Chapter 3
	Lab	
8	Time Study	Chapter 10
	Lab	
9	Time Study, Allowances	
	Exam 1	
10	Principles of Motion Economy, Environmental Factors, Manual Work Design	Chapter 4 & 11
	Lab	

11	Predetermined Time Systems	Chapter 13
	Lab	
12	Work Sampling	Chapter 14
	Exam II	
13	Tools of Six Sigma	
	Lab	
14	Special topics, Semester projects + Presentations Due	
	Lab	
15	Final Exam- TBA	

Evaluation:

Exam 1, Exam 2, Final Exam	55 %
Lab (Semester Project, Design Challenges)	25 %
Quiz & Homework	20%

Grading Scale (Tentative)

90-100	A
88-89.9	BA
80-87.9	B
78-79.9	CB
70-77.9	C
68-69.9	DC
60-67.9	D
Below 60	E

Performance Criteria

The students should be able to:

Objective 1

- 1.1 Accurately apply standard problem solving techniques to multiple types of work environments. (1,3,4,5)
- 1.2 Determine the appropriate type of chart to use to solve problems identified in objective 1.1 (1,3,4,5)
- 1.3 Accurately interpret data gathered from charts. (1,3,4,5)

Objective 2

- 2.1 Collect reliable and reproducible data on humans and workstations. (2,3,4,5)
- 2.2 Accurately interpret the statistical meaning of data gathered on humans. (2,4,5)
- 2.3 Understand the ramifications (ethical and legal) of making appropriate recommendations in the workplace. (2,5)

Objective 3

- 3.1 Accurately perform time studies on manual, semi-automated, and automated tasks. (4,5)
- 3.2 Accurately perform work-sampling studies on manual and semi-automated tasks. (4,5)
- 3.3 Accurately apply predetermined time study techniques to justify recommendations. (4,5)

Objective 4

- 2.1 Accurately define a problem and its corresponding constraints. (4)
- 2.2 Function as a productive and effective member of a team. (4)
- 2.3 Document work in a scholarly manner. (4)
- 2.4 Present information and ideas in a professional manner. (4)

Class Polices:

1. All tests will be closed book, closed note type.

2. No make up tests will be given.
3. Late assignments and lab reports will not be accepted.
4. One test score can be dropped. The mean of the other two will be used in the calculation of the exam grade.
5. Failure to have a passing average on the exams/final will result in automatic failure in the class.

Attendance:

Attendance will not be taken; however, it is suggested that you attend all scheduled lectures since much of the material covered in class will supplement the text material. You are responsible for all of the assigned reading plus the information covered in lecture.

Individual Work:

All students are expected to do their own work on each exam, homework assignments, and lab project unless specifically instructed to work in-groups. Anyone that does not follow this policy will be given a zero for the assignment and will be recommended for dismissal from the course.