

IEE 3050

Course Syllabus

Catalog Data

Methods engineering and measurement of human work systems. Techniques for operation analysis, work measurement, and work sampling. Predetermined basic motion-time systems and standard data development are introduced. NOT FOR ENGINEERING CREDIT.

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.

Textbook:

Konz & Johnson Work Design, Occupational Ergonomics. Holcomb Hathaway

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.
2. Design and redesign tasks and workstations to fit employees.
3. Adequately apply standard work measurement techniques to various work environments.

Grading (tentative):

Midterm Exams (3), Final Exam	60%
Homework and In-Class Assignments	20%
Participation, Quizzes	20%

Scale:

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

Schedule of Topics (tentative):

	<i>Class Topic/Activity</i>	<i>Textbook Chapter:</i>
Wk 1	Introduction to Work Analysis, productivity, technological society	1
Wk 2	Problem Solving (Engineering Design)	4, notes
Wk 3	Operations Analysis (Exploratory Tools)	6
Wk 4	Operations Analysis (Process Charts)	6
Wk 5	Search for solutions, Project Scheduling	5,6
Wk 6	EXAM 1 , Time Study	24, 25
Wk 7	Time Study	24, 25
Wk 8	Work Sampling (Occurrence Sampling)	7
Wk 9	EXAM 2 , Ergonomics (Anthropometry and Workstation Design)	2, 11
Wk 10	Ergonomics (Musculoskeletal disorders)	12
Wk 11	Ergonomics (Manual Handling)	13
Wk 12	EXAM 3	
Wk 13	Predetermined Time Systems, <i>Thanksgiving Recess</i>	26
Wk 14	Motivation Theory	3 (sec 2)
Wk 15	FINAL EXAM WEEK	

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)

Computer Usage:

Use of PC based software (Word, Excel, Power Point) and the worldwide web is required throughout the course. Students are encouraged to explore and learn software tools (MS Visio or other) that facilitate the development and presentation of charts. All homework/class assignments will make use of these technologies in one form or another.

Oral and Written Communications:

Effective communication (oral and written) is a requirement for success in this class. Project reports and assignments are to be presented in an organized format, and written portions are to be free from errors in grammar, spelling, and context. Tabulated data should be easily understood and clearly labeled with no errors in mathematical calculations. Assume that you are preparing a business report for your (potential) employer, and present your work accordingly.

Calculus Usage:

Calculus is not directly used in this course. However, it may be used during elements of design in the course.

Library Usage:

Reference material is on reserve at the library and is expected to be used to supplement the material discussed during class.

Class Polices:

1. **Attendance** will not be taken; however, it is recommended that you attend all scheduled lectures since much of the material covered in class will supplement the text material. Pop-quizzes and in-class assignments will be given. You are responsible for all of the assigned reading plus the information covered in the lecture.
2. **Class participation** is extremely important and expected. Participation questions will be announced during class time, to be answered by randomly chosen students at the beginning of later class sessions. The participation grade will be given to students according to this activity. In addition, students can volunteer to participate or answer questions, addressing the instructor and classmates appropriately. The instructor will call students' names to facilitate discussion, and the student will have the option to answer the question or to pass.
3. Each student is responsible for all material discussed, distributed or assigned in class, the syllabus, and e-learning. Students are responsible for reviewing documents/assignments posted, participating in discussion forums, reading/practicing exercises, uploading homework assignments on time, and attending online live sessions (on the same class schedule) as they are announced and made available.
4. All exams will be closed book, closed note type. No laptops will be allowed.

5. All students are expected to do their own work on each exam, homework assignment, 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.
6. **There are no make-up exams or quizzes.** Any individual major circumstance that requires the instructor's reevaluation of this policy has to be fully documented and justified, e.g., a major illness or injury requires original medical documentation.
7. **Late assignments** will not be accepted. For electronic assignments, technical difficulties will not be accepted as valid excuses for late submission, particularly within an hour or after the submission deadline. A grade of 0 will be given to the student in the particular assignment.
8. **The lowest exam score** will be dropped. The mean of the remaining will be used to calculate a score to replace the dropped exam.
9. **Failure to have a passing average on the exams/final will result in automatic failure in the class.**
10. **No extra-credit** or bonus work will be given **to increase failing grades.** Extra credit opportunities will be provided to all students throughout the semester. Students should take advantage of them when they are available.
11. **E-mail questions** will be answered within a 24-hour period during business hours on a first come first served basis. Homework/assignment related e-mail questions must be sent more than 24 hours before the due date.
12. The **use of cell phones** and/or audio devices, including those with earphones, is not allowed.

Accommodation for Disabilities:

Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the instructor and/or Disability Services for Students at the beginning of the semester. A disability determination must be made by this office before any accommodations are provided by the instructor.

Academic Honesty:

You (the Student) are responsible for making yourself aware of and understanding the policies and procedures in the Undergraduate and Graduate Catalogs that pertain to Academic Honesty. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. [The policies can be found at <http://catalog.wmich.edu> under Academic Policies, Student Rights and Responsibilities.] If there is reason to believe you have been involved in academic dishonesty, you will be referred to the Office of Student Conduct. You will be given the opportunity to review the charge(s). If you believe you are not responsible, you will have the opportunity for a hearing. You should consult with your instructor if you are uncertain about an issue of academic honesty prior to the submission of an assignment or test.

Visit: www.wmich.edu/conduct, www.wmich.edu/registrar and www.wmich.edu/disabilityservices to access the Code of Honor and general academic policies on such issues as diversity, religious observance, student disabilities, etc.