



IE 202

Work Study and Ergonomics (3 2 4)

Spring 2025

Instructor: Figen Eren
Office: L319, Phone: 233 1372, e-mail: feren@cankaya.edu.tr

Assistant: Elif Ecem Çeltek
Office: L305, Phone: 233 1365, e-mail: elifecemceltek@cankaya.edu.tr

Course Description:

This course is designed to teach the fundamentals of Work Study and Ergonomics, which are both used in the examination of human and work in all their contexts. The topics covered in the course are introduction, problem solving tools (recording and analysis tools, activity charts, line balancing), operation analysis, manual work design (principles of motion economy, motion study), time study (performance rating and allowances), standard data and formulas, work sampling, predetermined time systems, job analysis, job evaluation and compensation, design (workplace, equipment, and tool), work environment design.

Corequisites: ME 210

Class meeting hours:

There will be **lecture weeks** and **lab weeks**. Class meeting hours will depend on the week.

LECTURE	Monday	Tuesday	Wednesday	Thursday	Friday
09:20	Sec 01-02 LEC. (LA14)			Sec 03-04 LEC. (LA14)	
10:20	Sec 01-02 LEC. (LA14)			Sec 03-04 LEC. (LA14)	
11:20	Sec 01-02 LEC. (LA14)			Sec 03-04 LEC. (LA14)	
12:20					
13:20					
14:20					
15:20					

LAB	Monday	Tuesday	Wednesday	Thursday	Friday
09:20					Sec 01 LAB. (NB01-B)
10:20					Sec 01 LAB. (NB01-B)
11:20					Sec 02-03 LAB. (NB01-B)
12:20					Sec 02-03 LAB. (NB01-B)
13:20					Sec 04 LAB. (NB01-B)
14:20					Sec 04 LAB. (NB01-B)
15:20					
16:20					

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Day	21/02	28/02	7/03	14/03	21/03	28/03	4/04	11/04	18/04	25/04	2/05	9/04	16/05	23/05
Type	Rec.	Rec.	Rec.	Lab1	Rec.	Lab2	Rec.	Lab3	Rec.	Lab4	Lab5	Rec.	Lab6	Lab7

Office hours: Tuesday 14:20-16:10-Wednesday 14:20-16:10

Textbook: M. P. Groover, Work Systems and the Methods, Measurement and Management of Work, Pearson Prentice Hall, 2007

Supplementary course material:

B. Niebel and A. Freivalds Methods Standards and Work Design, McGraw-Hill, 2003
R. L. Brauer, Safety and Health for Engineers (Industrial Health and Safety), Wiley, 1993
R. M. Barnes, Motion and Time Study: Design and Measurement of Work, Wiley,
B. W. Niebel, Motion and Time Study, Irwin, 1992
M. S. Sanders and E. J. McCormick, Human Factors Engineering and Design, McGraw-Hill, 1993

Tentative Course Schedule:

Week	Topic	Textbook chapter(s)
1 (Feb 17-20)	Introduction: Methods, Standards, and Work Design	1
2 (Feb 24-27)	Manual Work and Worker-Machine Systems	2
3 (Feb 31-Mar 6)	Work Flow and Batch Processing	3
4 (Mar 10-13)	Lab#1 Manual Assembly Lines	4
5 (Mar 17-20)	Methods Engineering and Operations Analysis	8
6 (Mar 24-27)	Lab#2 Charting and Diagramming Techniques for Operations Analysis	9
7 (Mar 31-Apr 3)	Motion Study and Work Design	10
8 (Apr 7-10)	Lab#3 Direct Time Study	13
9 (Apr 14-17)	Predetermined Motion Time Systems	14
10 (Apr 21-24)	Lab#4 Work Sampling	16
11 (Apr 28-May 1)	Lab#5 Ergonomics and Human Factors in the Workplace	22
12 (May 5-8)	Physical Ergonomics: Work Physiology and Anthropometry Cognitive Ergonomics	23,24
13 (May 12-15)	Lab#6 Physical Work Environment	25
14 (May 19-22)	Lab#7 Job Analysis, Job Evaluation and Compensation	29

Group Work: Students will conduct most tasks in groups. Laboratory groups will consist of *three students* and maintain its members all throughout the semester. Groups for the project consist of *six students*, respectively. For each group work, each

student will evaluate the performance of his/her group members to grade the individual performances.

Laboratory Work: A total of seven scheduled laboratory sessions will be held in weeks as announced in *Tentative Course Schedule*. Lab sessions take two hours in scheduled lab weeks. **Attendance for lab sessions is compulsory.** Every student should attend at all lab meetings at his/her regular section.

Project: You should form a group consists of six students and submit project team information form to the course assistant until March, 13 at 16:40. Then, you should schedule a LEGO practice hour with the course assistant and take LEGO from the course assistant at this practice hour regularly. A report should be submitted to MOODLE as a soft copy and to the course's assistant as a hard copy on May, 9 at 16:40. This report should contain the explanation of the work assignments, video of your work, necessary forms (will be given) that should be filled and the results of your work. Also, you should prepare a presentation and present your work on May, 17 (Saturday).

<u>Grading:</u>	Midterm	25%
	Final Exam	30%
	Project (Oral presentation 10% + Report 14%)	24%
	Lab Work	21%

Make-Ups: There will be make-up exams for midterm and for final for students with a valid excuse.

NA Grade: The followings may lead to NA grade:

1. Attending to LABs less than 80%. If you attend less than 80%, you **cannot** attend to final exam.
2. Not participating in Project work. This includes not finding a group, having a group report without your name on it, not making oral presentation, etc.
3. Not taking midterm and final exams (or their make ups).

Web page: Every student is responsible to check the page of the course, **webonline.cankaya.edu.tr**, regularly (at least twice a week). All the related announcements, lecture notes, grades, attendance and other information will be uploaded.

Honesty Policy: All students enrolled to this course are expected to act honestly and ethically and should declare her/his understanding and belief in the Honor Code stated below. Therefore, any form of dishonesty will not be tolerated. If you conduct any dishonest act during any course activity (i.e., cheating on exam, using any extra material that you are not allowed to use during an exam, copying materials off of someone else's homework or assignment, using solution keys from previous years, copying materials from published and electronic sources without paraphrasing and/or citing appropriately), you will get a credit of zero on that particular exam or assignment. Necessary disciplinary action(s), as dictated by the rules of Çankaya University, will also be taken.

Honor Code: Every student enrolled to this course should declare her/his understanding and belief in the Honor Code stated below by 1) writing the Honor Code on a paper with her/his hand writing, 2) sign it (using blue-ink pen), 3) scan it / take a picture of it (in color), 4) upload it to the course's website.

I hereby declare that in all the activities related to this course I'm enrolled: I will neither give nor receive any aid during the exam; I will not submit any assignment, project, report, or similar work which includes any part other than my or our group's work without citation and it will totally be my / our work.

[Burada kayıt olduğum bu ders ile ilgili tüm aktivitelerde: sınav sırasında hiç kimseden hiçbir şekilde yardım almayacağımı ve hiçbir kimseye hiçbir şekilde yardım etmeyeceğimi; sunacağım ödevlerin, projelerin, raporların, vb. işlerin, benim veya grubumun çalışması dışında referans vermeden hiçbir kısım içermeyeceğini ve tamamen kendi eserim / eserimiz olduğunu beyan ederim.]

NOTE THAT EVERYTHING ON THIS SYLLABUS IS SUBJECT TO CHANGE. STUDENTS WILL BE NOTED ABOUT ANY CHANGE.