

IE 4362 Industrial Ergonomics Sp '06

Instructor: Dr. J. Smith IE 201
Office Hours: TT 8-11, Tue 1-3, or by appointment

TA Aditya Jayadas IE 105
Office Hours: M 8-10, 2-5, T 8-12, W 8-10, 2-3, Th 8-12, F 8-11, 2-3

Class meeting: MW 10:00-10:50, Lab M 3:00-5:50

Text: *Fitting the Task to the Human*, 5th Edition, Taylor & Francis, K.H.E. Kroemer and E. Grandjean

Supplemental References: *Occupational Ergonomics*, Tayyari and Smith
Probability and Statistics for Engineers and Scientists, Hayter

The purpose of the Industrial Ergonomics course is to help the student develop ergonomic analysis skills to be able to address ergonomics issues in industry. To sharpen ergonomics skills, the course will be developed around three projects. The projects will focus on: analysis of a simulated industrial case; analysis of a designed experiment to collect human performance data; and ergonomic design for a work environment. Lectures will support the projects.

Projects:

Project 1: Simulated Industrial Case Study

Project 2: Lab Experiment In Biomechanics

Project 3: Ergonomic Design Project

Readings

Text: Ch 1, 2, 3, 4, 6, 7
Supp Ref: 5, 9

Text: Ch 4
Supp Ref: Ch 2, 3, 4, 5

Text: Ch 9, 10, 12, 14, 17, 18
Supp Ref: Ch 7, 11, 13, 17

Grading:

3 Projects	50%	(Project Due dates: 1- Feb 15, 2- Mar 27, 3- Apr 26)
2 Exams	50%	(tentative exam dates: Feb 22 and Apr 10)

Each project will be graded on both a written and oral component of the final report as well as weekly oral progress reports. The Written report will be weighted 7.5% and the oral presentation will be weighted 5% and the oral progress reports will be weighted 4.17% , giving a total of 16.67% for each project.

Exams will be open book and open notes. Students will not be allowed to "share" materials during the exams.

Projects will be addressed as group activities. All three projects will be conducted in groups of 3 to 4 students. Students will be assigned to groups and the group membership will change for each project. No student should work with any other student on more than one group assignment. It is assumed that each group will be responsible for making sure that the work is distributed evenly over the members of the groups. Assuming no penalties, for all group assignments, each group member will receive the same grade for the assignment. If a student's name appears on a group assignment, it certifies that the student has participated in the assignment and understands all of it. If a group member is not contributing, the remaining group members can recommend lowering the grade of the non-participating member by 10 to 50 points. Such a recommendation must be made in writing to the student with a copy to the instructor and must be made at least one week prior to the due date for the project. If the non-performing student responds adequately, the penalty can be withdrawn upon submission of the final report.

Grading Details-

1. Two exams will be given and will be equally weighted (25% each). Exam solutions will not be posted. The burden is on you to make sure you find out how to solve the problems by getting help from classmates, or the instructor.
2. Each project will be graded on three components: oral progress reports (4.17%), the written report (7.5%) and the oral presentation (5%) of the project final report. Each project will be evenly weighted in determining the final grade.
3. Grades will be assigned using a 10 point scale: 90-100, A; 80-89.9, B; 70-79.9, C; 60-69.9, D, below 60, F. There will be a gray area between each grade in the final distribution, so that two people getting the same weighted average grade could get different letter grades. If you are in these gray areas, whether you get the higher or lower grade will depend upon: (a) your participation in the class, and participation with the groups, and (b) whether your test and homework performance has been improving or declining

Academic Integrity-

Academic dishonesty is prohibited and considered a violation of the TTU Code of Student Conduct. It includes cheating, the intentional use of unauthorized materials, information, or study aids); fabrication, assisting in dishonesty or tampering (intentionally or knowingly helping or attempting to help another commit an act of dishonesty or tampering with evaluation instruments and documents); and plagiarism, intentionally or knowingly representing the words or ideas of another person's as ones' own. If you have a question regarding academic integrity, please talk to the instructor or refer to the TTU Code of Student Conduct.

Special Needs-

Students with documented disabilities who may need accommodations, who have any emergency medical information the instructor should know of, or who need special arrangements in the event of evacuation, should make an appointment with the instructor as early as possible, no later than the first week of the term.

Course Objectives-

This is an undergraduate level course to provide the student with the opportunities to apply ergonomics knowledge in analysis, research and design of ergonomics issues. The student is required to develop skill in biomechanical analysis and modeling using various techniques, including body segment parameter determination, video data collection and analysis, and computational analysis using spreadsheets and/or computer programming. Course content as related to expected outcomes:

- An ability to design and conduct experiments as well as analyze data;
- An ability to use the techniques, skills, & modern engineering tools necessary for engineering practice

Outcomes Assessment (ABET related)

Outcome: (b) – An ability to design and conduct experiments as well as analyze data

Course Contents to Address this Criterion:

1. Biomechanical Modeling Project

Assessment Criteria:

1. Student performance (oral and written project report) Project 2
2. Student course assessment at end of semester

Outcome: (k) – An ability to use the techniques, skills, & modern engineering tools necessary for engineering practice

Course Contents to Address this Criterion:

1. Simulated Industrial Project
2. Ergonomics Design Project

Assessment Criteria:

1. Student performance (oral and written project report) on Projects 1 & 2
2. Student course assessment at end of semester