IE 403.001 HUMAN FACTORS ENGINEERING

COURSE SYLLABUS: FALL 2014

MWF 8:00 am – 8:50 am / AGIT 211

Instructor: Dr. Pelin Altintas-de Leon
Assistant Professor
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Charles J. Austin Engineering & Technology Building (AGIT), Room 215
Office Hours: MWF 9:00 am – 11:00 am
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COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings:

Textbook(s) Required: Introduction to Ergonomics, Third Edition, R. S. Bridger
Publisher: CRC Press, Taylor & Francis Group
ISBN-13: 978-0-8493-7306-0

Course Description: The emphasis of this course is the design of the human-system interface. The principles of the life sciences, engineering, and mathematics are applied to the investigation of existing and proposed socio-technical systems. Methods for reduction of fatigue and human error are taught. Prerequisite: IE 211 – Engineering Probability and Statistics.
(2014-2015 Undergraduate Catalog, Texas A&M University-Commerce, http://catalog.tamuc.edu/)

Student Learning Outcomes:

1. Explain and apply human factors engineering concepts in both evaluation of existing systems and design of new systems.
2. Specify designs that avoid occupation related injuries.
3. Define and apply the principles of work design, motion economy, and work environment design.
4. Identify the basic human sensory, cognitive, and physical capabilities and limitations with respect to human-machine system performance.
5. Acknowledge the impact of workplace design and environment on productivity.

COURSE REQUIREMENTS

Instructional / Methods / Activities Assessments

This course utilizes lectures, assignments (in-class and take home) to assist students in achieving the course learning outcomes. The assessment criteria for the stated student learning outcomes will include assignments, a term project, exams, and a final exam.

Assignments: 20% of total course grade
Student learning outcomes #1, #2, #3, #4, #5
Problems will be assigned to support the instructional material. The assignments will include both take home and unannounced in-class homework. No late homework will be accepted! Due dates of each take home assignments will be provided with the assignment sheets.

Exams and final exam: 60% of total course grade
Student learning outcomes #1, #2, #3, #4, #5
There will two midterms and a final exam. Students will apply theory and mathematical principles to solve applied engineering problems. Exams will be used to asses a student's knowledge and skills related to human factors engineering concepts.

Term project: 20% of total course grade
Student learning outcome #1, #2, #3, #4, #5
The student design projects are intended to allow students to employ human factors engineering concepts to measure, analyze, and design manual work or workstations. The project should make use of several such methods introduced in lectures. The types of projects will be left up to the student teams. The final report should be comprehensive, should describe methods used, and should show and illustrate the improvements and the final design. A detail written procedure will be provided at the time of team member formation.

Grading

Exam 1	20%
Exam 2	20%
Assignments	20%
Term Project	20%
Final Exam	20%

Final Grade:	A	90 – 100
	B	80 – 89
	C	70 – 79
	D	60 - 69
	F	Below 60

TECHNOLOGY REQUIREMENTS

This is a web based course. The following technologies will be required for this course.

- A scientific calculator
- Microsoft Word, Excel, PowerPoint.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures:

Course Policies:

- No late assignments will be accepted!
- You will be expected to do all the readings throughout the semester.
- Each exam will be given in class. Exams are closed book and notes (necessary formulas will be provided on a separate page). Students will need a scientific calculator for exams. Use of unauthorized aids on exams will result in a grade of zero.
- There will be one design assignment and it will be a group project.
- I reserve the right to make changes to this syllabus as needed. The changes will be announced in class.
- Students are expected to attend all class periods and to be prepared for each class. Students are expected to refrain from any disruptive behaviors during class, which includes but not limited to working on assignments/projects from another course, reading non-course materials, or using the computer for non-class purposes. Cell phones, iPods, and other electronic devices should be turned off during class.
- No make-up exams will be permitted unless official documentation for absences is provided (e.g., death in the family, illness).

Academic Dishonesty

Texas A&M University-Commerce will not condone plagiarism in any form. Plagiarism represents disregard for academic standards and is strictly against University policy. Plagiarized work can result in a "0" on a given assignment(s) or an "F" for the course as well as further administrative sanctions permitted under University policy.

Guidelines for properly quoting someone else's writings and the proper citing of sources can be found in the APA Publication Manual. If you do not understand the term "plagiarism", or if you have difficulty summarizing or documenting sources, contact your professor for assistance.

University Specific Procedures:

ADA Statement

Students with Disabilities:

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Gee Library- Room 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamuc.edu

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See *Code of Student Conduct from Student Guide Handbook - http://www.tamuc.edu/studentLife/documents/studentGuidebook.pdf).*

COURSE OUTLINE / CALENDAR

WEEK	DATE	TOPIC	READING
1	August 25	Introduction of the class.	Chapter 1
	August 27	Introduction to Human Factors and Ergonomics.	Chapter 1
	August 29	Introduction to Human Factors and Ergonomics.	Chapter 1
2	September 1	Labor Day / University is closed.	
	September 3	Body Mechanics at work.	Chapter 2
	September 5	Body Mechanics at work.	Chapter 2
3	September 8	Body Mechanics at work.	Chapter 2
	September 10	Workspace Design Using Anthropometric Data.	Chapter 3
	September 12	Workspace Design Using Anthropometric Data.	Chapter 3
4	September 15	Workspace Design Using Anthropometric Data.	Chapter 3
	September 17	Static Work Design.	Chapter 4
	September 19	Static Work Design.	Chapter 4
5	September 22	Static Work Design.	Chapter 4
	September 24	Exam 1	
	September 26	Repetitive Task Design.	Chapter 5
6	September 29	Repetitive Task Design.	Chapter 5
	October 1	Repetitive Task Design.	Chapter 5
	October 3	Manual Handling Tasks.	Chapter 6
7	October 6	Manual Handling Tasks.	Chapter 6
	October 8	Manual Handling Tasks.	Chapter 6
	October 10	Manual Handling Tasks.	Chapter 6

WEEK	DATE	TOPIC	READING
8	October 13	Stress and Fatigue (Physical Work Capacity).	Chapter 7
	October 15	Stress and Fatigue (Physical Work Capacity).	Chapter 7
	October 17	Stress and Fatigue (Physical Work Capacity).	Chapter 7
9	October 20	Environmental Conditions.	Chapter 9
	October 22	Environmental Conditions.	Chapter 10
	October 24	Environmental Conditions.	Chapter 11
10	October 27	Mental Workload.	Chapter 12
	October 29	Mental Workload.	Chapter 12
	October 31	Exam 2.	
11	November 3	Display and Control Design.	Chapter 13
	November 5	Display and Control Design.	Chapter 13
	November 7	Display and Control Design.	Chapter 13
12	November 10	Human Error, Accidents, and Safety.	Chapter 15
	November 12	Human Error, Accidents, and Safety.	Chapter 15
	November 14	Human Error, Accidents, and Safety.	Chapter 15
13	November 17	Human Error, Accidents, and Safety.	Chapter 15
	November 19	Human Error, Accidents, and Safety.	Chapter 15
	November 21	Human Error, Accidents, and Safety.	Chapter 15
14	November 24	Systems Design and Assessment.	Chapter 16
	November 26	Systems Design and Assessment.	Chapter 16
	November 28	Thanksgiving Holiday / University is closed	
15	December 1	Project Presentations.	
	December 3	Project Presentations.	
	December 5	Project Presentations.	
16	December 8	Final Exam (8:00 am – 10:00 am)	