



## **IE 403.001 HUMAN FACTORS ENGINEERING**

**COURSE SYLLABUS: FALL 2015**

**MW 8:00 am – 9:15 am / AGIT 211**

**Instructor:** Dr. Pelin Altintas-de Leon  
Assistant Professor

**Office Location:** Department of Engineering & Technology  
Charles J. Austin Engineering & Technology Building (AGIT), Room 215

**Office Hours:** MW 10:00 am – 11:30 am  
TR 10:00 am – 11:00 am or by appointment

**Office Phone:** (903) 468-8117

**Office Fax:** (903) 886-5960 (Inform instructor when a fax is sent)

**University Email Address:** [pelin.altintas-deleon@tamuc.edu](mailto:pelin.altintas-deleon@tamuc.edu)

### **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.

(2015-2016 Undergraduate Catalog, Texas A&M University-Commerce,  
<http://catalog.tamuc.edu/undergrad/colleges-and-departments/college-of-science-and-engineering/engineering-technology/industrial-engineering-ie-bs/>)

#### **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

Problems will be assigned to support the instructional material. The assignments will include both take home and unannounced in-class homework. Due dates of each take home assignments will be provided with the assignment sheets.

Exams and final exam: 60% of total course grade

There will be two exams and a final exam. Students will apply theory and mathematical principles to solve applied engineering problems. Exams will be used to assess a student's knowledge and skills related to human factors engineering concepts.

Term project: 20% of total course grade

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%	Final Grade: A	90 – 100
Exam 2	20%	B	80 – 89
Assignments	20%	C	70 – 79
Term Project	20%	D	60 - 69
Final Exam	20%	F	Below 60

## TECHNOLOGY REQUIREMENTS

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:

1. One day late assignment is accepted with a 20% grade deduction; after this, no assignment will be accepted.
2. You will be expected to do all the readings throughout the semester.
3. 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. Cell phones are not acceptable as a calculator. Use of unauthorized aids on exams will result in a grade of zero.
4. There will be one design assignment and it will be a group project.
  5. The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.
  6. 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 allow plagiarism in any form. The students' course works should be their own. Plagiarism represents disregard for academic standards and is strictly against University policy. If you have a question regarding academic dishonesty and integrity, please talk to the instructor or refer to the Code of Student Conduct from Student Guide Handbook.

## **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

Email: Rebecca.Tuerk@tamuc.edu

Website: Office of Student Disability Resources and Services

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

### **Nondiscrimination Notice**

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

**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).

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 is 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.

## COURSE OUTLINE / CALENDAR

WEEK	DATE	TOPIC	READING
	8/31	First day of class	
1	8/31, 9/2	Introduction to Human Factors and Ergonomics.	Chapter 1
	9/7	Labor Day – University Closed	
2	9/9	Body Mechanics at work.	Chapter 2
3	9/14, 9/16	Body Mechanics at work. Workspace Design Using Anthropometric Data.	Chapter 2 Chapter 3
4	9/21, 9/23	Workspace Design Using Anthropometric Data. <b>Exam 1</b>	Chapter 3 Chapter 4
5	9/28, 9/30	Static Work Design.	Chapter 4
6	10/5, 10/7	Repetitive Task Design.	Chapter 5
7	10/12, 10/14	Manual Handling Tasks.	Chapter 6
8	10/19, 10/21	Stress and Fatigue (Physical Work Capacity).	Chapter 7
9	10/26, 10/28	<b>Exam 2.</b> Environmental Conditions.	Chapter 9,10,11
10	11/2, 11/4	Environmental Conditions. Mental Workload.	Chapter 9,10,11 Chapter 12
11	11/9, 11/11	Display and Control Design.	Chapter 13
12	11/16, 11/18	Human Error, Accidents, and Safety.	Chapter 15
13	11/23	Human Error, Accidents, and Safety.	Chapter 15
	11/26, 11/27	Thanksgiving Break – University closed.	
14	11/30, 12/2	Systems Design and Assessment.	Chapter 16
15	12/7, 12/9	Project Presentations.	
	12/11	Last day of class.	
16	December 14	Final Exam (8:00 am – 10:00 am)	