

Instructor: John Lee
Email: jdlee@engineering.uiowa.edu
Office: 2130 SC
Phone No.: 384-0810
Office Hours MWF 2-3 or by appointment

TA: Josh Hoffman
hferg1@engineering.uiowa.edu
1307 SC
MW 11:30-12:30 Thurs 1:30-2:30

Course objective:

The objective of this course is to introduce the basic concepts of human factors and to develop an understanding for the importance of considering human capabilities and limits in system design. This will include an overview of human characteristics and research and design techniques. We will also use case studies to understand how people contribute to accidents and to improve designs.

Course goals:

1. Develop sensitivity to human capabilities and their implications for system performance.
2. Develop task analysis and other skills to understand human/machine interactions and guide human considerations in design.
3. Develop knowledge regarding human capabilities, limits, and tendencies relevant for design.
4. Learn accident analysis techniques to identify causes and cures.

Text:

Wickens, C.D., Lee, J.D., Liu, Y., Becker, S.E. (2004). *An Introduction to Human Factors Engineering 2nd Edition*. New York: Longman
Casey, S. (1998). *Set Phasers on Stun*. Santa Barbara, CA: Aegean.

Quizzes and Exams:

Biweekly quizzes will be given that cover the material of the previous weeks. A final exam will be given during the assigned exam period in the Schedule of Courses. The final will be comprehensive and will test the student's overall understanding of the concepts and methods presented in the book and in lecture. All quizzes and exams will be closed book and closed note.

Case Studies:

The case studies from *Set Phasers on Stun* provide the basis for class discussions of how human factors engineering principles can be applied to real systems. Before class, 1) read the specified case(s), 2) write a short (50-150 word) summary of the accident (s), 3) list at least two causes of the accident, then 4) list at least two ways to design the system to avoid the accident. Turn in this summary at the beginning of the class on the specified date.

Design Exercises:

A series of four design exercises are planned. Each of these will require a short (4 pages or less) report. A more detailed description will be provided when assigned.

Attendance & Participation:

You are expected to attend and participate in class. If you miss class you are responsible for obtaining the class notes and the assignment. You have a responsibility to help create a classroom environment where all may learn. This means that you will treat the other members of the class with the courtesy you hope to receive.

The points for participation will be allocated according to the following basis: attentiveness and contributions to class discussion, response to periodic request to identify confusing topics, response to requests for potential quiz and exam questions.

Assignments and Homework:

Students are expected to read the scheduled chapters and complete the specified case study prior to class. Case studies will be collected at the start of class.

Grading (± grading will be used):

Biweekly quizzes and exams	200 points
Final Exam	100 points
Case Studies	50 points
Design Exercises	100 points
<u>Participation</u>	<u>50 points</u>
Total	500 points

Topics and Assignments:

* Readings due on days assigned ** Case study page numbers refer to the first page of the case study in *Set Phasers on Stun*.

Week	Date	Topic	Read for Class*	Case study**
1	22 Aug	Course introduction		
	24 Aug	Research Methods	Chap. 1 & 2	40
	26 Aug	Design 1: Observation		
2	29 Aug	Design and evaluation methods	Chap. 3	
	31 Aug	Cognitive task analysis		241, 117
3	2 Sept	Design 2: Task analysis		
	4 Sept	Labor Day – No Class		
	7 Sept	Cognitive task analysis (continued)		
4	9 Sept	Visual Sensory System	Chap. 4	212
	12 Sept	Visual Sensory System (continued)		
	14 Sept	Auditory, Tactile, and Vestibular Systems	Chap. 5	89
5	16 Sept	Auditory, Tactile, and Vestibular (continued)		
	19 Sept	Cognition	Chap. 6	177
	21 Sept	Cognition (continued)		
6	23 Sept	Cognition (continued)		
	26 Sept	Decision Making	Chap. 7	152
	28 Sept	<i>Work on design project—No class</i>		
7	30 Sept	Exam 1		
	3 Oct	Displays	Chap. 8	181
	5 Oct	Displays (continued)		
8	7 Oct	Design 3: Interface design		
	10 Oct	Control	Chap. 9	35
	12 Oct	Control (continued)		
9	14 Oct	Control (continued)		
	17 Oct	Stress and Workload	Chap. 13	142
	19 Oct	Stress and Workload (continued)		59
10	21 Oct	Safety, Accidents, and Human Error	Chap. 14	
	24 Oct	Safety, Accidents, and Error (continued)		
	26 Oct	<i>Work on design project—No class</i>		
11	28 Oct	Human-Computer Interaction	Chap. 15	109
	31 Oct	Human-Computer Interaction (Continued)		
	2 Nov	Automation	Chap. 16	92
12	4 Nov	Automation (continued)		161
	7 Nov	Design 4: Usability evaluation		23
	9 Nov	Selection and Training	Chap. 18	200
13	11 Nov	Exam 2		
	14 Nov	<i>Work on design project—No class</i>		
	16 Nov	Social factors	Chap. 19	71
14	18 Nov	Social factors (continued)		
	21 Nov	Thanksgiving—No class		
	23 Nov	Thanksgiving—No class		
15	25 Nov	Thanksgiving—No class		
	28 Nov	Transportation	Chap. 17	133
	30 Nov	Design presentations		
16	2 Dec	Design presentations		
	5 Dec	Design presentations		
	7 Dec	Design presentations		
	9 Dec	Review		

Academic Honesty:

Students will be held to the highest standards of academic honesty. Students are not allowed to copy the work of another student nor are they to allow their work to be copied. Violations will be dealt with as outlined in the Engineering College's guidelines on academic dishonesty. You are expected to be honest in completing assignments and in taking quizzes and exams (http://www.clas.uiowa.edu/students/academic_handbook/). It is acceptable for students to collaborate so long as work is not directly copied. All students are expected to contribute to all design assignments.

Students with disabilities:

I would like to hear from anyone who has a disability that may require some modification of the seating, testing, or other class requirements so that appropriate arrangements can be made. Please contact me to discuss any issues you might have.

This course is given by the College of Engineering. This means that class policies on matters such as requirements, grading, and sanctions for academic dishonesty are governed by the College of Engineering. Students wishing to add or drop this course after the official deadline must receive the approval of the Dean of the College of Engineering. Details of the University policy of cross enrollments may be found at: <http://www.uiowa.edu/~provost/deos/crossenroll.doc>