

Rice University
Department of Psychology

PSYC 370: Human Factors and Ergonomics Fall 2008
MWF 1-1:50, SH303

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Office Hours Monday and Wednesday 2-3, or by appointment

Required Texts:

M. S. Sanders & E. J. McCormick (1993). *Human Factors in Engineering and Design*, 7th Ed. NY: McGraw-Hill

Casey, S. (1998). *Set Phasers on Stun and other true tales of design, technology and human error.*, 2nd Ed., Santa Barbara, Aegean

Date	Lecture	Topic	Readings
8/25	1	Introductions, Class logistics and the 8 Basic Principles of Design	Notes
8/27	2	History of Human Factors	Chapter 1
8/29	3	Research and evaluation methods	Chapter 2 Handout: Death on Call
9/1		Labor Day – No class	
9/3	4	Data collection methods	Notes
9/5	5	Information Processing 1	Chapter 3 Stun: Double Vision
9/8	6	Information Processing 2 <i>Engineering deficiency presentations start</i>	Chapter 3 Stun: That newfangled technology
9/10	7	Static Visual displays 1	Chapter 4 Stun: Silent Warning
9/12	8	Static Visual displays 2	Chapter 4 Stun: Set Phasers on stun
9/15	9	Dynamic Visual displays 1	Chapter 5 Stun: The peppermint twist
9/17	10	Dynamic visual displays 2	Chapter 5 Stun: Zzzs in Zeebrugge
9/19		Exam 1	
9/22		No class – Instructor at HFES <u>Work in your teams on your projects</u>	

9/24		No class – Instructor at HFES <u>Work in your teams on your projects</u>	
9/26		No class – Instructor at HFES <u>Work in your teams on your projects</u>	
9/29	11	Auditory displays	Chapter 6 Stun: Never cry wolf
10/1	12	Tactile and olfactory displays	Chapter 6: Stun: In search of the lost cord
10/3	13	Speech communications	Chapter 7
10/6	14	Physical work	Chapter 8 Stun: Tigershark!
10/8	15	Motor skills	Chapter 9 Stun: The price of Amagasaki
10/10		No class – Mid-term recess	
10/13	16	Control of systems	Chapter 10 Stun: Leap of Faith
10/15	17	Physical controls	Chapter 11 Stun: Return from Salyut
10/17	18	Data entry	Chapter 11 Stun: A memento of your service
10/20	19	Tools	Chapter 12 Stun: The wizards of wall street
10/22	20	Physical space design	Chapter 14 Stun: Rental Car
10/24	20	Workplace design 2/ Anthropometry	Chapters 13 & 15 Stun: Business in Bhopal
10/27		Exam 2	
10/29	21	Illumination	Chapter 16
10/31	22	Climate	Chapter 17
11/3	23	Noise	Chapter 18
11/5	23	Motion	Chapter 19
11/7	24	Human computer interaction 1	Handout from Wickens et al Stun: An act of God
11/10	24	Human computer interaction 2 <i>Second Engineering deficiency assignment due</i>	Handout from Wickens et al
11/12	25	Usability	Notes Stun: Chutes and

			ladders
11/14	26	Tying it all together: Error, accidents and safety	Chapter 20 Stun: Murphy's law and Newton's law
11/17	27	Tying it all together: Human Factors and Automobiles	Chapter 21 Handout: A Kid in a Car
11/19	28	Tying it all together: Systems design	Chapter 22 Stun: Genie in the bottle
11/21	29	Aesthetics	Notes
11/24		Catch-up and review	
11/26		Exam 3	
11/28		No Class - Thanksgiving	
12/1		Project Presentations	
12/3		Project Presentations	
12/5		Project Comparisons and Discussion <u>Team Papers Due</u>	

Examinations: There will be 3 examinations. The 3 in class exams will be closed book/closed note and may cover any of the material assigned up to that point. This includes material from *Human Factors in Engineering and Design* and *Set Phasers on Stun*, my lecture notes and presentations that other students have given.

Presentations: Each student will be required to give 1 brief presentation during the course of the semester on an item that exhibits deficiencies in human engineering. These will be very short presentations, about 5 minutes long, in which the student is expected to show the item or a picture of the item to the class, describe the deficiency in professional human factors terms and provide one or more design suggestions for resolving the deficiency. The item must be something you have had personal experience with (i.e. you can't bring a picture of the Three Mile Island control room, unless you were there), and can't be taken directly from Norman, BadDesigns etc. Novelty and the degree of the design deficiency, as well as the clarity and professionalism of your presentation will be factors in your score.

A second presentation (on a second item) will be documented via PowerPoint, but will be turned in for grading. The best of these will be presented to the class near the end of the semester

Project: Each student will be part of a project team (3-4 students/team) that will specify a human-machine system. A sketch or concept of a system will be provided to each group that describes the fundamental design that the designers are trying to implement. It will be your job to make the final detailed specifications for the design. This is not a methods class, so no testing should be conducted.

- 1) Using the knowledge you have gained from the class, transform the design idea into a detailed specification. Provide detailed specifications of all of the components that are related to human use, (e.g. screen size, layout, brightness, control response, feedback, font, menu designs, physical ergonomics etc).

- 2) The specification document should be detailed enough that you could give it to someone to build the device without further input from a human factors specialist.
- 3) The final design should be detailed with final drawing of the design, incorporating your specifications. The drawing should be to scale. Document and show all of your design iterations. Physical prototypes may be included as well and are encouraged.
- 4) Prepare a team report on the design specification.
- 5) Present the project to the class in a 12 minute presentation at the end of the semester.
- 6) The last day of presentations will be spent comparing the designs and discussing similarities and divergences in their designs.
- 7) Work within your teams, but do not compare notes or collaborate with other teams!!

Participation: A good deal of this class will entail open discussions of human factors issues, as well as discussions of the case studies in *Set Phasers on Stun*. Active, thoughtful participation is expected from every student

Evaluation:

Exams 1,2,3:	20% each
Project:	25%
Engineering deficiency assignments	10%
Participation	5%

Disabilities:

Any student with a disability requiring accommodations in this course is encouraged to contact me after class or during office hours. Additionally, students will need to contact Disability Support Services in the Ley Student Center.

Honor System Policy:

As with all endeavors at Rice, you are expected to adhere to the Honor Code and follow the guidelines given in the Blue Book. Exams are given under the honor system. Students are encouraged to work collaboratively on the projects, but each student is expected to contribute an equal share to the final project. Each team must work independently on the project. Selection of the individual presentation items should be done independently, but discussion of the system and its deficiencies may be discussed with other students. Students are encouraged to bring any concerns involving academic integrity to the attention of the instructor.