

IE 545

Human Factors Engineering

Fall Term 2005

Catalog Description

Analysis and design of systems considering human characteristics, capabilities and limitations. Analysis and design of displays, controls, tools, and workstations. Human performance analysis. Human factors research methods.

Meeting Times and Locations

Lecture: TR 1230 – 1350, MLM 123
Lab: F 1000 – 1150, location TBD

Prerequisites

ST 314 or equivalent

Instructor

Ken Funk

E-mail: funkk@enr.orst.edu
Phone: 541-737-2357
FAX: 541-737-5241
Mail: Department of Industrial and Manufacturing Engineering
118 Covell Hall
Oregon State University
Corvallis, OR 97331-2407

Office: 118 Covell Hall
Office Hours: Mondays 2:00 – 3:00 PM
Tuesdays 2:00 – 3:00 PM
Wednesdays 2:00 – 3:00 PM
Thursdays 2:00 – 3:00 PM
Fridays 2:00 – 3:00 PM

Text

Wickens, C.D., J.D. Lee, Y. Liu, and S.E. Gordon Becker, & (2004). *An Introduction to Human Factors in Engineering*, 2nd edition. Upper Saddle River, NJ: Pearson Prentice Hall.

Course Learning Objectives

Students completing this course should be able to

1. Describe in writing the meaning and importance of human factors engineering, with reference materials.
2. Describe in writing and/or by illustrations human sensory, cognitive, and physical capabilities and limitations relevant to the design of human-machine systems, with reference materials.
3. Correctly apply human-machine system design principles to develop written and graphical design specifications, with reference materials.
4. Select and correctly use appropriate human-machine system analysis and design tools, with reference materials.
5. Recognize and make effective recommendations in written and/or graphical form to correct human factors deficiencies in existing human-machine systems, with reference materials.
6. Describe in writing and/or by illustrations the human-machine systems engineering process, with reference materials.
7. Correctly apply the human-machine systems engineering process by developing analysis documents and design specifications for a simple human-machine system, with reference materials.
8. Identify questions or problems in the realm of human factors engineering appropriate for graduate-level research.
9. Design, conduct, and document a human factors experiment or other human factors study approved by the instructor.

Requirements and Policies

Readings, as assigned in the course schedule, below, should be completed before class. Most classes will consist of discussion and students should be prepared to answer questions about the assigned materials. Laboratory sessions will generally be focused on the design or research projects described below.

The midterm examination will cover all material through the preceding class or laboratory session. The exam will be closed book, closed notes, except that students may bring to the exam on 4" x 6" note card with handwritten notes (both sides) for each assigned reading and each lab session. The final examination will cover material from the midterm examination through the end of the term. The exam will be closed book, closed notes, but one note card may be used for each reading/lab the exam covers

Human Factors Design Project

Each student will design a user interface or workstation. The topic of the design will be selected by the student, but must be approved by the instructor. Stages in the human factors design process will be covered in the labs and the students will apply that information to his/her project. A final design project report will be submitted at the end of the term. Further information and instructions will be given in class. Most of each lab session will be devoted to stages in the design project.

Human Factors Research Project

Students will work in small teams on research projects. The topics of these projects will be suggested by the instructor. Teams will apply accepted human factors research methods as described in the text and in class. Each team will submit a final research report at the end of the term. A portion of each lab will be devoted to research project progress reports.

Grading

Midterm Examination	100 points possible
Final Examination	100
Human Factors Design Project	100
<u>Human Factors Research Project</u>	<u>100</u>
	400 points, total, possible

Any questions or concerns about the grading of specific work must be brought to the attention of the instructor within one week of when the graded work is returned.

Academic Honesty

This statement is provided in compliance with Oregon State University policy. Academic dishonesty is prohibited, it is considered a violation of the OSU Student Conduct Regulations, and any instances of it will be dealt with accordingly. Academic dishonesty includes cheating (the intentional use of unauthorized materials, information, or study aids), fabrication (intentional falsification or invention of any information), assisting in dishonesty (intentionally or knowingly helping or attempting to help another commit an act of dishonesty), tampering (altering or interfering with evaluation instruments or documents), and plagiarism (intentionally or knowingly representing the words or ideas of another person's as ones' own). Any questions regarding academic honesty should be referred to the instructor or to the [OSU Student Conduct & Mediation page](#), from which the above definitions were derived.

Course Schedule (subject to change)

Day	Date	Reading	Topic
Tue	27-Sep-05	Chap. 1	Introductions, Human Factors Engineering
Thu	29-Sep-05	Chap. 2	Human Factors Research
Fri	30-Sep-05	Chap. 3	Human Factors Design, Human Factors Design Projects
Tue	4-Oct-05		MS Thesis Defense: Jeff Stebel, <i>TME validation</i> , 1:00 PM in 139 Covell Hall
Thu	6-Oct-05		Human Factors Research Projects
Fri	7-Oct-05		Research Project Progress Reports, Design Project Requirements Development
Tue	11-Oct-05	Chap. 4	Human Vision
Thu	13-Oct-05	Chap. 5	Auditory, Tactile, and Vestibular Senses
Fri	14-Oct-05		Research Project Progress Reports, Design Project System Analysis, Function Analysis
Tue	18-Oct-05	Chap. 6	Cognition
Thu	20-Oct-05	Chap. 7	Decision Making
Fri	21-Oct-05		Research Project Progress Reports, Design Project Task Analysis
Tue	25-Oct-05	Chap. 8	Displays
Thu	27-Oct-05	Chap. 9	Controls
Fri	28-Oct-05		Midterm Examination
Tue	1-Nov-05	Chap. 10	Anthropometry and Workplace Design
Thu	3-Nov-05		IME Graduate Program Review -- no class
Fri	4-Nov-05		Research Project Progress Reports, Design Project Basic Design
Tue	8-Nov-05	Chap. 11	Biomechanics
Thu	10-Nov-05	Chap. 13	Stress and Workload
Fri	11-Nov-05		Research Project Progress Reports, Design Project Detailed Design
Tue	15-Nov-05	Chap. 14	Safety
Thu	17-Nov-05	Chap. 15	Human-Computer Interaction
Fri	18-Nov-05		Research Project Progress Reports, Design Project Prototyping and Evaluation
Tue	22-Nov-05	Chap. 16	Automation
Thu	24-Nov-05		Thanksgiving Holiday -- no class
Fri	25-Nov-05		Thanksgiving Holiday -- no lab
Tue	29-Nov-05	Chap. 18	Selection and Training
Thu	1-Dec-05	Chap. 19	Social Factors
Fri	2-Dec-05		Wrapup and Review
Mon	5-Dec-05		Final Examination at 2:00 PM
Wed	7-Dec-05		Design Project Reports due at 5:00 PM in 118 COVL
Fri	9-Dec-05		Research Project Reports due at 5:00 PM in 118 COVL

