# Psy 436/536 Human Performance Fall 2012

CRN: 15817/15835 (4 credits) Lecture: TR 16:00 pm-17:20 pm Location: 242 Gerlinger

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### **OVERVIEW**

This course is an introduction to human factors psychology. We will consider how humans interact with technology and their environment to perform tasks and how these interactions can go wrong. We will discuss general approaches to understanding human factors and cover a variety of topics in attention, perception, memory, communication, and decision-making as they apply to problems in human factors. We will analyze accidents and discuss human factors interventions. In addition, you will learn some basic human factors analysis methods and practice these on an actual human factors problem in the field.

As an introductory course, this course will be characterized more by breadth than by depth. Tuesday class sessions will be mixtures of lectures, discussions, and demonstrations. Thursday class sessions will generally be devoted to learning new methods and planning field work.

#### **OBJECTIVES**

This course has both substantive and methodological objectives. By the end of the course, students should have a broad familiarity with human factors psychology and the ways in which psychological research and methodology have been applied to address human factors problems. Students should be able to read the relevant literature and perform simple human factors analyses using standard psychological and statistical methods, Cognitive Task Analysis, Signal Detection Theory, and Bayesian analyses.

### MATERIALS

- Wickens, C. D., Lee, J. D., Liu, Y., & Becker, S. E. (2004). *An Introduction to Human Factors Engineering* (2nd Ed). Upper Saddle River, NJ; Prentice Hall
- Norman, D. A. (2002). The Design of Everyday Things. New York, NY; Basic Books
- Additional materials available on BlackBoard.

### UNDERGRADUATE CLASS REQUIREMENTS

Read the material and come to class prepared to discuss it. As part of this class, we will be conducting a project analyzing a real human factors problem. In connection with this project, there will be 6 exercises that undergraduates will need to complete. These exercises will be assigned on Thursdays as indicated on the syllabus and due the following Thursday uploaded to BlackBoard before class. You may discuss these exercises with the instructional staff, graduate students, and each other – but you should turn in your own work. There will also be a final examination. It will be composed of two parts – a multiple choice section designed to test declarative knowledge of the course material and a short essay section designed to test your ability to apply your substantive and methodological knowledge by analyzing problems. A review session will be scheduled prior to the final examination. For undergraduates, each exercise is worth 10% of the class grade. The final examination will be worth 40%.

## **GRADUATE CLASS REQUIREMENTS**

Graduate students will be asked to lead a group of undergraduates in conducting the field project. This means that you will be in charge of all aspects of the investigation and project management for your group from conception to producing the final report. But you won't be on your own. We'll be organizing the entire enterprise and we will be having weekly meetings with you outside of class at a time to be determined by your schedules (and ours). Also, you will be expected to take the final examination. For graduate students, the final report and the final examination will each be worth 50% of the grade.

Date	Topics	References	Required Readings	Exercises
9/25	1. Introduction: Thinking About Human Error	Swissair 111	W 1 & 14	
9/27			W 17	
10/2	2. Auditory, Tactile, & Vestibular Attention & Perception	JFK Jr.	W 5	
10/4	Research & Design Methods: Cognitive Task Analysis		W 2 & 3, CTA	СТА
10/9	3. Visual Attention & Perception	TWA 800 COPA 201	W 4	
10/11	Building Structural & Measurement Models			Model
10/16	4. Cognition (Memory, Procedures)	Spanair 5022	W 6	
10/18	Signal Detection Theory		SDT	SDT
10/23	5. Language & Communication	Tenerife KAL 801	N 1-3	
10/25	Decision-Making	Challenger	N 4-6	
10/30	6. Training & Decision Making	Colgan 3407	W 7 & 18	
11/1	Bayesian Analysis		BA	BA
11/6	7. Displays & Control	TMI Royal Majesty	W 8 & 9	
11/8	Data Analysis			DA
11/13	8. Fatigue, Stress, Emotion, Workload		W 12 & 13	
11/15	Data Summary			DS
11/20	9. Automation & Human Computer Interaction	Air France 447	W 15 & 16	
11/22	Thanksgiving Holiday			
11/27	10. Complex Systems	Columbia	W 19	
11/29				
12/6	Final Examination 1300			