

Human Factors
Nowy Sacz School of Business
May 27-29, 2009

Professor: Cleotilde Gonzalez, Ph.D.
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Lecture: 5 hours each day.

OVERVIEW

In this course you will learn basic methods and principles to investigate and analyze problems that involve human factors such as: perception, cognition, decision making and human errors; and you will also learn to use technology design to help improve these processes and avoid error. As a Human Factors consultant, your job will be to understand problems and apply human factors knowledge to analyze these problems, find sources of error, and propose the design (or redesign) of systems in order to improve human-system interactions. Thus, the focus of this course will be to introduce you to the capabilities and limitations of human performance, to present several guidelines and principles of design that accommodate these factors, and to encourage you to apply human factors' processes to produce human-system interactions that are safe, effective, and efficient.

OBJECTIVES

By the end of this course, you should be able to:

- Appreciate the breadth and depth of the Human Factors discipline.
- Understand human limitations and capabilities and how they impact the design of controls, displays, and related devices.
- Appreciate how human factors can influence the design and resulting effectiveness of human-system interactions.
- Demonstrate the **critical thinking** skills of a Human Factors consultant.

This course will provide you with problem-solving exercises similar to those required from Human Factors consultants. I emphasize a critical thinking approach to learning. Thus, you will not passively absorb knowledge from my slides. In contrast, **you must create knowledge in your own mind by actively thinking about the material.**

Thus, it is crucial that you prepare for each lesson, reading and reviewing the material before coming to class. I will use class time to clarify difficult concepts, to expand your knowledge of selected topics, and to challenge you intellectually. This means you are responsible for more material than is covered in class. I will not teach straight out of the book. Instead, the readings will be used as a springboard for classroom activities and discussions. Classroom work will blend lectures, discussions, movies, exercises, and demonstrations in order to give you the breadth and depth of experience necessary for analyzing human factors problems.

TEXTBOOKS AND READINGS

The following book is required for the course.



Wickens, C., Gordon, S., Liu, Y., & Gordon-Becker, S. (2004). **Introduction to Human Factors Engineering**. Second Edition. Prentice Hall .

ISBN: 0-13-183736-2

Other readings will be provided in electronic form.

REQUIREMENTS AND GRADING

You will be scored on the following requirements:

Case Analyses.

Case analyses will help you practice the concepts presented in the lectures and also help you prepare for the exams. The case analysis is a problem-solving exercise, similar to those required from Human Factors consultants. All of the cases will be graded according to how well you answer the guideline questions and use the relevant readings to evaluate the case. In the class where the case is discussed, students will be chosen at random to discuss their recommendations for solving the problem represented in the case.

I expect your case analyses to be of high quality. Points will be subtracted for unprofessional assignments. A case analysis that receives all the 22 points is one that is complete, correct, and convincing in every respect. It demonstrates the student's initiative as well as thoughtfulness, insight, and depth of analysis into the methodologies and techniques. Obtaining the total number of points in each homework project means that you have demonstrated outstanding effort and that you have exceeded my expectations in every dimension.

Case analyses should be **done individually and independently**. You are not allowed to share any information concerning the solution of the project assignments with other students in this course. Any form of **cheating/copying/plagiarism will not be excused and will lead to failure in the course.**

Exams

Exams will help you study some of the concepts that need of your comprehension from the readings provided and from material presented in the lectures. Exams will include multiple choice, open answers, and other exercises.

Attendance and class participation.

Class attendance is the easiest way to learn the material fundamental to this class. Given the interactive character of the course, you obviously need to be present in class as often as possible and be **able to make your contributions** to class by participating in class discussions and activities. Attendance can give you up to 5 extra final points. You will receive extra credit for full attendance (+5 points) if you are present in all of those sessions and if you contributed to the discussions and exercises in the class regularly.

THE SCHEDULE

Week 1 5-27 to 5-29	TOPIC	Readings Due	Assignment Due	In-class Exercise
1. May 27	Introduction Human Factors Applications	WLLG Chapter 1		Video: Intro to Human Factors Human Factors in Emergency situations
2. May 27	Human Error A Case of Human Error	Case: Zeebrugge WLLG Chapter 14		Video: Zeebrugge
3. May 27	Human Factors Methods Task Analysis (TA)	WLLG Chapters 2, 3		TA exercise
4. May 28	Human Information Processing System. Introduction and Vision	WLLG Chapter 4	Due: Case 1	Video: Vision: mystery of senses Video: Tenerife island
5. May 28	Human Information Processing System. Human Memory	WLLG Chapter 6		Memory exercises
6. May 28	Decision Making: Classical, Dynamic, Naturalistic	WLLG Chapter 7		Repeated Choice Firechief
7. May 29	Displays	WLLG Chapter 8	Due Case 2	Video: Human Factors Success stories
8. May 29	Application: Transportation & Driving	WLLG Chapter 17		Fast cars Nova video
9 May 29	Final EXAM			