ISE 4300/IHE 6300 – Fundamentals of Human Factors Engineering

Course Description
Fundamentals of human factors engineering tools and processes as applied to systems development. Emphasis is placed on user-centered design principles. Material is presented through lectures and application-oriented projects.

Offered both face-to-face and online
Undergraduate/Graduate level – 3 credit hours

Graduate students in IHE 6300 will do an oral presentation about current research in an HFE-related topic. Distance students should notify the professor whether they plan to present in class or to submit a recorded version of their presentation. A list of potential topics will be given to the class at a later date, and other topics may be proposed for the instructor's approval. The presentation should be about 20 minutes, plus time for questions/discussion. You will be graded on organization, discussion questions, knowledge of material, ability to answer questions, use of visual aids, maintaining eye contact, and effectiveness. These will be presented throughout the semester and will be assigned by the second week. An effort will be made to assign topics with coordinating weekly topics in the course where appropriate.

Course Learning Objectives
Students enrolled in this course will learn to:

- Use various human factors methods to design and evaluate systems
- Determine appropriate methods for various applications
- Perform a task analysis
- Use diagrams to represent activities and processes graphically
- Use human factors methods to examine human performance
- Use human factors methods to analyze user interfaces

Course Learning Outcomes
Upon successful completion of this course, students can:

- Use various human factors methods to design and evaluate systems
- Determine appropriate methods for various applications
- Perform a task analysis
- Use diagrams to represent activities and processes graphically
- Use human factors methods to examine human performance
- Use human factors methods to analyze user interfaces

Tentative Weekly Schedule

Whether taught in-person, online, or partially online, the course outline remains the same.

	In Class Discussions	Reading (from Wickens)/**HF Method (Stanton)**
Week 1	Introduction/questionnaire	Chapter 1,2,14; **Data Collection**
Week 2	Errors & Reliability, Design & Analysis	Chapter 3,4; **Task Analysis**
Week 3	Visual Sensory System	Chapter 5; **Error Identification**
Week 4	Auditory, Tactile & Vestibular System	Chapter 6,7; **Cognitive Task Analysis, Process Charting**
Week 5	Cognition, Information Theory	Chapter 8; **Situation Awareness**
Week 6	Decision Making: Review	
Week 7	Exam 1; Signal Detection Theory	Chapter 9
Week 8	Displays & Control, Group Project Work	Chapter 10; **Interface Analysis**
Week 9	Anthropometry, Workplace Design	Team Assessment
Week 10	Biomechanics of Work, Work Physiology	Chapter 11, 12
Week 11	Stress, Workload	Chapter 13,14; **Workload Profile; NASA-TLX**
Week 12	HCI, Automation, Selection & Training	Chapter 15,16; **Design Methods**
Week 13	Review	Chapter 18, 19
Week 14	Exam 2	
Week 15	Final Project Presentations	