Review Session

- Final Exam
  - Wednesday Dec 17th
  - 9:45 AM - 11:45 AM
  - 1505 SC

Exam Makeup

- Content
  - Comprehensive
  - Slight Emphasis on material from after the midterm

- Question Types
  - 43 Multiple Choice
  - 5 short answer (all on material from after the midterm)
  - No Long Answer

Chapter 1

- Goals of Human Factors
  - Safety
  - Productivity
  - Comfort
  - Acceptance
  - Error reduction

- Definition of Human Factors
  - Design for Human Use
Chapter 2 - Human Factors Research Methods

- Types of Research
  - Applied
  - Basic
- Dependent
- Independent variables
  - Within and Between Subject Variables
- Qualities of "good" research
  - Construct Validity
  - Internal Validity
  - External Validity

Chapter 3 - Design and Evaluation Methods

- Task Analysis
  - Define Purpose
  - Collect Data
  - Summarize
  - Analyze
- Iterative Design
- Trade Studies

Chapter 4 - Visual Sensory Systems

- The receptor system
  - Rods
  - Cones
  - Sensory limits
- Perceptual processing
  - Depth perception
  - Visual search
  - Detection
  - Discrimination
  - Absolute judgement
- Bottom-up and top-down processing
Chapter 5 – Auditory, tactile, and vestibular sensory systems

- Perceptually relevant characteristics of sound
- Haptic Cues
- Vestibular Cues

Chapter 6 – Cognition

- Working Memory
- Long-Term Memory
- Attention Resources
- Object and pattern perception
  - Top-down and Bottom-up processing

Chapter 7 – Decision Making

- Classical vs Naturalistic
- Heuristics and Biases
- Characteristic of Naturalistic
- Levels of Cognitive Control
  - Experience
  - Cognitive continuum
  - Error Tendencies
Chapter 8 – Displays

- Analog Displays
- Digital Displays
- Design principles
  - Perception
  - Attention
  - Mental Model
  - Memory

Chapter 9 - Controls

- General Principles
  - Decision Complexity
  - Response Expectancy
  - Compatibility
  - Speed-Accuracy Trade-off
  - Feedback
- Higher Order
- Open vs. Closed Loop
- Fitts’s Law

Chapter 13 – Stress and Workload

- Types of Stressors
- Sleep and Fatigue
- Vigilance / Under and Over Arousal
- Workload
  - What is it
  - How is it measured
Chapter 14 – Safety, Accidents and Human Error

- Hazards and How to Manage
- Warnings

Chapter 15 - HCI

- User Consideration
  - Experience
  - Frequency of Use
- Usability
  - Heuristics
  - Metrics

Chapter 16 - Automation

- Reasons for automating
- Classes of automation
- Problems with automation
- Automation design
  - Keep person informed
  - Keep person trained
  - Keep person in the loop
  - Make automation flexible
  - Maintain a positive management philosophy
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