University of Arkansas - Fort Smith
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General Syllabus

PRFS 4743 Human Factors and Ergonomics

Credit Hours: 3 Lecture Hours: 3 Laboratory: 0

Prerequisites: PRFS 3533 Workplace and Environmental Safety or departmental consent.

Effective Semester: Summer I 2011

I. Course Information

A. Catalog Description

An examination of human-machine systems and the characteristics of people that affect system performance. Topics include systems analysis, and the perceptual, cognitive, physical, and social strengths and limitations of human beings.

B. Additional Information - None

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Apply human factors principles to their own design problems.
2. Explain the basic human systems of cognition and perception (vision and hearing) and how that affects design.
3. Design displays and controls which properly respond to human attributes.
4. Specify designs that avoid occupation-related injuries.
5. Locate and evaluate published human factors research apply that research to their own design problems.
6. Design human-computer interfaces for information processing and control.
7. Design workspaces such that cumulative trauma disorders may be prevented.
8. Understand the role that stress plays in workload and the perception thereof.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills
Critical Thinking Skills - The student will demonstrate the ability to identify a problem, isolate its components, organize information for decision making, establish criteria for evaluation, and draw appropriate and creative conclusions through participation in problem-solving and troubleshooting activities.
Quantitative Reasoning - The student will demonstrate the use of quantitative reasoning via the application of mathematics skills to problems related to course concepts.

Communication Skills (written and oral)
The student will demonstrate the ability to read and comprehend information through application of theoretical information obtained from course written materials to practical application. Additionally, the student will have opportunities to express ideas and concepts through descriptive writing assignments.

Ethical Decision Making
Students will evaluate ethical dilemmas in work ergonomics and propose solutions to the benefit of the most stakeholders.

Global & Cultural Perspectives
Through group projects, the student will reflect upon cultural differences and their implications to work with other students from diverse backgrounds.

III. Major Course Topics

A. What are Human Factors and Ergonomics?
B. Research Methods
C. Design & Evaluation Methods
D. Perception – Vision
E. Perception – Hearing
F. Cognition & Memory
G. Displays & Controls
H. Workspace Design
I. Biomechanics of Work
J. Cumulative Trauma Disorders
K. Stress & Workload (Physical & Mental)
L. Safety & Human Error
M. Human-Computer Interaction