



Marshall University
College of Information Technology & Engineering
Safety Technology Department

Spring 2007

HUMAN FACTORS IN ACCIDENT PREVENTION
SFT 660

LOCATION: Smith Hall, Room 437, Huntington Campus

TIME: Thursdays, 6:30pm-9:00pm

INSTRUCTOR: J. Patrick Conlon, CSP
Safety Technology Department
Communications Bldg., Room 212-I
Huntington Campus
Office Phone – 304.696.3067
Department Fax – 304.696.3070
Email – conlonj@marshall.edu

OFFICE HOURS: Tuesdays – 1:00pm to 3:00pm
Wednesdays – 1:00pm to 3:00pm, 6:30pm-8:30pm
Thursday – 1:00pm to 3:00pm
Other times by appointment

DESCRIPTION: This 3 credit course introduces students to human factors engineering concepts and their application to human-machine system design and interaction. Students will explore the principles of human factors and their relationship to accident causation and prevention focusing on the development of safe user-friendly systems. The course addresses design and evaluation methods, human cognitive and physical capabilities and limitations, biomechanics and work physiology, engineering anthropometry, work space design, and production automation.
Prerequisites – None

TEXTBOOK: *An Introduction to Human Factors Engineering*
Wickens, C. D., Lee, J. D., Liu, Y., and Gordan Becker, S. E.
2nd Edition, Pearson Prentice Hall, 2004, ISBN:0-13-183736-2

- OUTCOMES:** Successful completion of the course will enable the student to:
- Describe the basic principles of human factors engineering including human-machine interaction and human information processing;
 - Evaluate human sensory, cognitive, and physical capabilities and limitations relevant to the design of human-machine systems;
 - Develop effective recommendations to correct human factors deficiencies in existing human-machine systems;
 - Familiarize students with information resources and research techniques used by human factors engineering professionals for design and evaluation.

- ACTIVITIES:** Course activities will include:
- Case Studies
 - Guest Speakers
 - PowerPoint Presentations & Lectures
 - Research Project – Individual Writing Exercise
 - PowerPoint Presentation – Individual Public Speaking Exercise

TECHNICAL

REQUIREMENTS: Ability to use basic computer software for Internet research, word processing, graphic presentation, and a calculator for mathematical problem solving.

EVALUATION: Exams/100 points each – two per semester, each will include a combination of multiple choice, true/false, fill in the blank, and essay questions based on the textbook assignments and classroom activities.

Research project/100 points – technical paper investigating current applications of human factors engineering in accident prevention. Students will prepare a paper with a 15-page minimum, double-spaced, using at least ten referenced sources.

PowerPoint Presentation/100 points – a ten minute presentation to the class based on the student's research project.

Class Attendance & Participation/100 points – students are expected to attend all scheduled classes and participate in class discussions and activities.

[1st absence = -5 points, 2nd absence = -5 points, 3rd absence = -10 points, and each subsequent absence = -10 points]

Total Possible Points = 500

Note: Late completion exams and projects must be approved in advance by the instructor.

GRADING:

Grades will be awarded according to the following scale:

- 90% - 100% = A
- 80% - 89% = B
- 70% - 79% = C
- 60% - 69% = D
- 59% or lower = F

**SCHEDULE OF ASSIGNMENTS
& ACTIVITIES:**

1. 1/11/07:
Student Data Sheets, Introductions, Course Overview/Syllabus
Out of class activities: Chapters 1 & 2
2. 1/18/07:
Review: Chapters 1 & 2
Multimedia: Insight Media: Fall Protection – It's No Game
Out of class activities: Chapter 3, Case Study 1 – Power Failure
3. 1/25/07:
Review: Chapter 3, Case Study 1 – Power Failure
Multimedia: Insight Media: Blackout
Out of class activities: Chapters 4 & 5, Case Study 2 – TWA Flight 800
4. 2/1/07:
Review: Chapters 4 & 5, Case Study 2 – TWA Flight 800
Multimedia: The Crash of TWA Flight 800
Out of class activities: Chapters 6 & 7
5. 2/8/07:
Review: Chapters 6 & 7
Multimedia: Behavior-Based Safety at Proctor & Gamble Drinko Library –
Library Resources Seminar – Drinko Library
Out of class activities: Chapters 8 & 9, Case Study 3 – Three Mile Island
6. 2/15/07:
Review: Chapters 8 & 9, Case Study 3 – Three Mile Island
Multimedia: Insight Media: Nuclear Power
Meltdown at Three Mile Island
Out of class activities: Prepare for exam 1 (Chapters 1 through 9)
7. 2/22/07:
Exam 1 (Chapters 1 through 9)
Multimedia: Dan Petersen Safety Management Series – Module 1
Out of class activities: Chapters 10 & 11

8. 3/1/07:
Review: Exam 1, Chapters 10 & 11
Multimedia: Dan Petersen Safety Management Series – Module 2
Out of class activities: Chapters 12 & 13, Case Study 4 – Flight 90 Crash

9. 3/8/07:
Review: Chapters 12 & 13, Case Study 4 – Flight 90 Crash
Multimedia: Wrath of God: Death in the Potomac – Crash of Flight 90
Dan Petersen Safety Management Series – Module 3
Out of class activities: Chapters 14 & 15

10. 3/15/07:
Review: Chapters 14 & 15
Multimedia: Dan Petersen Safety Management Series – Module 4
Out of class activities: Chapters 16 & 17, Case Study 5 – Collapse by Design

11. 3/22/07:
SPRING BREAK – No Class

12. 3/29/07:
Review: Chapters 16 & 17, Case Study 5 – Collapse by Design
Multimedia: Insight Media: Collapse by Design
Dan Petersen Safety Management Series – Module 5
Out of class activities: Chapters 18 & 19, Case Study 6 – Car Manufacturing

13. 4/5/07:
Review: Chapters 18 & 19, Case Study 6 – Car Manufacturing
Multimedia: Insight Media: Design Engineering Challenges of the Corvette
Dan Petersen: The Challenge of Change – Module 1
Out of class activities: Research Project & PowerPoint

14. 4/12/07:
Case Study 7 – Engineering Errors
Multimedia: Insight Media: Accidents Will Happen – Engineering Errors
Dan Petersen: The Challenge of Change – Modules 2 & 3
Review: Research Project & PowerPoint
Out of class activities: Research Project & PowerPoint

15. 4/19/07:
Case Study 8 - Robotics
Multimedia: Insight Media: Industrial Robotics
Dan Petersen: The Challenge of Change – Modules 4 & 5
Due Date: Research Project Paper
Out of class activities: Research Project PowerPoint

16. 4/26/07:

Presentations: Research Project PowerPoint

Out of class activities: Prepare for exam 2 (Chapters 10 through 19)

17. 5/3/07:

Exam 2 (Chapters 10 through 19)

**ADDITIONAL
NOTICES:**

Plagiarism/Academic Honesty/Academic Integrity – cheating, fabrication/falsification, plagiarism, etc., shall be subject to University policy as described in the current Undergraduate and Graduate catalogs.

Student Disabilities – students entitled to academic accommodations during the course are encouraged to contact Disabled Student Services (304.696.2288/Prichard Hall Room 117) as soon as possible to ensure that reasonable accommodations can be provided.

Academic Support Services – students interested in academic support services (advising, tutoring, and writing) are encouraged to contact the University College's Academic Advising Center for free programs and services to help them succeed in college courses (located in the Community and Technical College Building, lower level, 304-696-3169).

Weather-Related and/or Emergency Closings and Delays – students must adhere to the University policies for these events/conditions. Please contact the instructor by phone prior to class if you will miss class due to your local weather conditions if the University is still open. For information concerning the University status during inclement weather or emergencies will be available on local radio and television channels or call (304) 696-3170 or (304) 696-HELP.

Attendance – students are expected to attend all scheduled classes following the University policy for excused absence and weather related class cancellation as applicable. Students should notify the instructor of an absence prior to the class by voice mail or email. In the event of an excused absence class work can be made up within one week with scheduling and approval of the instructor.

