Marshall University
College of Information Technology & Engineering
Division of Safety Technology

<table>
<thead>
<tr>
<th>Course Title/Number</th>
<th>SFT660  Principles of Ergonomics and Human Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester/Year</td>
<td>Spring 2014</td>
</tr>
<tr>
<td>Days/Time</td>
<td>Tue, 6:30pm – 9:00pm</td>
</tr>
<tr>
<td>Location</td>
<td>Communications Building, Room 212, Huntington Campus</td>
</tr>
<tr>
<td>Instructor</td>
<td>Jian Liu, PhD, AEP</td>
</tr>
<tr>
<td>Phone</td>
<td>304-696-3067</td>
</tr>
<tr>
<td>E-Mail</td>
<td><a href="mailto:liuji@marshall.edu">liuji@marshall.edu</a></td>
</tr>
<tr>
<td>Office</td>
<td>CB 212, Huntington Campus</td>
</tr>
<tr>
<td>Office/Hours</td>
<td>Mon/Wed/Fri  8:00 – 9:00am  Tue/Thu  9:30 – 11:00am</td>
</tr>
</tbody>
</table>

University Policies
By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to www.marshall.edu/academic-affairs and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802
Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

Course Description: From Catalog
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, and workspace design.

Course Student Learning Outcomes

<table>
<thead>
<tr>
<th>Course Student Learning Outcomes</th>
<th>How students will practice each outcome in this Course</th>
<th>How student achievement of each outcome will be assessed in this Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will describe the basic principles of human factors engineering including human-machine interaction and human information processing</td>
<td>In-class discussions</td>
<td>Midterm and Final Exams</td>
</tr>
<tr>
<td>Students will evaluate human sensory, cognitive, and physical capabilities and limitations relevant to the design of</td>
<td>Case studies</td>
<td>Midterm and Final Exams</td>
</tr>
</tbody>
</table>
human-machine systems.

| Students will identify and use human factors engineering resources and research techniques for workstation design or evaluation. | Case studies | Research Project |
| Students will develop effective recommendations to correct human factors deficiencies in existing human-machine systems. | In-class discussions and presentations | Research Project |

**Required Textbook and Additional Readings**


**Course Requirements / Due Dates**

- Class Participation (20%): attendance and active participation in class discussion are required.
- Exams (40%): one mid-term (20%) and one final exam (20%) are scheduled. Each will include a combination of multiple choice, computation, and essay questions.
- Research Project (40%): prepare a technical paper (30%) investigating current applications of human factors engineering in accident prevention within industries such as: aerospace, information technology, transportation, etc. The project will require detailed Internet and library research of the selected topic. Papers will be eight pages in length (excluding cover page and references), Times New Roman 12 font, one-inch margins, double-spaced, and includes a minimum of ten different references. Final papers must be submitted electronically in MS Word format. Prepare a ten-minute PowerPoint presentation (10%) based on the research project and deliver to the class.

Note: Late submission of research paper without instructor’s approval will carry penalty.

**Grading Policy**

I will calculate your final grade using the following weights:

- Mid-term Exam: 20%
- Final Exam: 20%
- Participation: 20%
- Class Project: 40%

Total possible: 100%

Percentage ranges for final grades are as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100%</td>
</tr>
<tr>
<td>B</td>
<td>80-89%</td>
</tr>
<tr>
<td>C</td>
<td>70-79%</td>
</tr>
<tr>
<td>D</td>
<td>60-69%</td>
</tr>
<tr>
<td>F</td>
<td>0-59%</td>
</tr>
</tbody>
</table>
Attendance Policy

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.

Course Schedule

Note: This schedule is to be used as a guide and is tentative. The instructor reserves the right to make necessary modifications and will announce all changes in class. It is the students’ responsibility to know what changes if any have been made.

Week 1
Introduction to Ergonomics

Week 2
Engineering Anthropometry

Week 3
Ergonomics in Hand Tool design

Week 4
Ergonomics in Workstation design

Week 5
Occupational Biomechanics

Week 6
Work Physiology

Week 7
Manual Material Handling

Week 8
Mon (3/6): Mid-term Exam
Cognitive Ergonomics

Week 9
Display and Control

Week 10
NO CLASS (Spring Break)

Week 11
Usability

Week 12
Human Error and Reliability

**Week 13-14**
Special Topics in Ergonomics

**Week 15**
Class project Presentation

**Week 16**
Course review

5/6 (Tuesday) 6:30 – 9:00pm    FINAL EXAM