Syllabus for ISE 412  
**Human Factors Engineering**  
Fall Semester 2009  
MW  
4:30 – 5:45 p.m.

**Instructor:** Dr. Laura Moody, Associate Professor  
Department of Industrial Engineering and Industrial Management

**Office:** 201A, School of Engineering

**Phone:** 301-2349 (w)  
333-6011 (h)

**Email:** moody_le@mercer.edu

**Textbooks and Supplies:**


**Web Site:** http://faculty.mercer.edu/moody_le/ise41209.htm

**Class Listserv:** ISE41200109F@mercer.edu

**Catalog Description:**  
Human-machine systems modeling and design for human interaction with complex systems such as nuclear power plants, aircraft, and automated manufacturing systems. Models of human information processing, perception, memory, decision making and error generation. Design of interfaces for complex systems, including human-computer interfaces.

**Course Objectives:**  
Upon successful completion of this course, you should be able to do the following:

1. Develop, conduct, and evaluate the results of human factors research.
2. Develop models of human-machine systems.
3. Develop information requirements based on understanding of human sensory processing and cognition.
4. Develop action requirements based on understanding of human response capabilities and limitations.
5. Design human-machine interactive systems based on appropriate models, information and action requirements, and an understanding of human abilities, limitations, and preferences.

Prerequisites: ISE 311

Grading:

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework/Labs</td>
<td>20%</td>
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<tr>
<td>Paper Review(s)</td>
<td>10%</td>
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<tr>
<td>Team Project</td>
<td>25%</td>
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<tr>
<td>Exam 1</td>
<td>15%</td>
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<td>Exam 2</td>
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<td>Final Exam</td>
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Course Standards:

1. **Assignments are due at the beginning of the class period on the date due.** The due date and point values for these assignments will be announced when the assignments are made. Late assignments will lose 5% of the point value per day, including weekends. Homework assignments that are not of acceptable quality (neat, readable, etc.) will be returned for revision and late penalties will apply.

2. During the semester you will be assigned one or more papers from a conference or technical journal to **review**. Your review will include both a factual summary of the experiment or study and a critique of the objectives, methods, results, conclusions, etc.

3. **Group Project:** An important part of this course will involve students working in teams to engage in a project similar to one that might be required of a human factors engineer in industry. Grading will be based on overall group grades for tollgate and final submissions, peer reviews of milestone submissions, and individual effort and performance. Your final product will be a paper suitable for submission to the Human Factors and Ergonomics Society Annual Meeting.

You will select your project from the following:

A. Design and evaluate a method for gathering and entering patient data into an Electronic Medical Records (EMR) system:
   1. Model the current process by which data is collected and entered (paper form filled out by patient and transcribed by office personnel). Identify potential sources of error.
   2. Design an interface and process that will allow a patient to enter data directly into the system (note: this will probably not look like the EMR screen)
   3. Develop a study to evaluate your design.
   4. Make recommendations based on results.
   5. Suggest areas of future research.

B. Evaluate methods for engaging patients in the data review process (reviewing records, verifying medications, etc.) using an Electronic Medical Records (EMR) system:
   1. Model the process by which clinical personnel use the EMR system to gather patient data.
   2. Design an interface on which the patient is able to view the data entered in the system, ask for more information if needed, and alert clinic personnel to any errors or missing information.
3. Develop a study to evaluate 3 methods for patient interaction in the process:
   i. “Verbal method” – i.e., patient tells clinical worker, worker enters data and reads back what was entered, patient confirms.
   ii. “Direct view” – i.e., a second monitor allows patients to view the same screen as the worker’s.
   iii. Your interface.
4. Make recommendations based on results.
5. Suggest areas of future research.

C. Using a human factors approach, develop a means by which to encourage sustainable practices among the faculty, staff, and students in the school of engineering:
   1. Model the activity you would like to encourage.
   2. Design a means (computer interface, signage, audible reminder, …?) of encouraging the activity.
   3. Develop a study to evaluate your design.
   4. Make recommendations based on results.
   5. Suggest areas of future research.

Further information regarding project requirements will be distributed once you have selected your project.

4. There will be two midterm exams and one final exam. Midterm exams will be closed-book, closed-notes. No make-up exams will be given.

5. Please turn off cell phones and pagers before entering the classroom.

6. The honor code provisions as outlined in the Bulletin and in the student handbook, The Lair, will be assumed for everyone. It should be clear from class discussion which projects will be collaborative and which ones must be individual. When in doubt, please ask to avoid potentially embarrassing situations. Plagiarism is a violation of the honor code and is prohibited.

7. Students requiring accommodations for a disability should inform the instructor at the close of the first class meeting or as soon as possible. If you are not registered with Disability Services, the instructor will refer you to the Disability Support Services office for consultation regarding documentation of your disability and eligibility for accommodations under the ADA/504. In order to receive accommodations, eligible students must provide each instructor with a “Faculty Accommodation Form” from Disability Services. Students must return the completed and signed form to the Disability Services Coordinator on the 3rd floor of the Connell Student Center. Students with a documented disability who do not wish to use academic accommodations are also strongly encouraged to register with Disability Services and complete a Faculty Accommodation Form each semester. For further information, please contact Carole Burrowbridge, Disability Services Coordinator, at 301-2778 or visit the website at http://www.mercer.edu/stu_support/swd.htm

8. This syllabus is subject to change. Changes will be announced in class and will appear on the class web site.