ISE/PSY 540 – Human Factors in Systems Design

Spring 2018 Syllabus

Course Description
This course (3 credit hours) will provide you with an understanding of concepts and methods in human factors and applications to human-machine system design and interaction. We will consider the system design implications of human cognitive and physical capabilities and limitations in, for example, perception, memory, decision-making and motor-control. Coverage will also be provided on human factor considerations in specific domains, including transportation, computer-supported work and design for special populations. Pre-requisite: ISE452 or PSY340; Co-requisite: ST507 or ST515.

Course Hours and location
10:15-11:30AM Monday and Wednesday
Daniels Hall 331

Course Instructor
David Kaber, PhD, CHFP, CSP
Email: dbkaber@ncsu.edu
Phone: 919-515-0312
Room: Daniels Hall 472
Office hours: 3-5PM M & W; or by appointment
EOL office hours: by appointment

Teaching Assistant
Prithwish Tarafder
Email: ptarafd@ncsu.edu
Room: Daniels Hall 458
Office hours: 3-5PM T & R; or by appointment

Course website: https://moodle-courses1718.wolftware.ncsu.edu/course/view.php?id=7074

Course Objectives
• Develop knowledge of human factors and ergonomics (hf/e) terminology and issues in design;
• Learn models of human-machine interaction;
• Develop an understanding of basic human factors research methods;
• Learn human capacities in information processing;
• Develop an understanding of approaches to human-systems design and how the principles of human factors can be applied;
• Develop familiarity with a model of human information processing;
• Develop a familiarity with the human factors literature;
• Apply human factors design principles to real-world problems through exercises; and
• Learn outcomes that can be expected from human factors in systems design.

Textbook and Readings
• Supplemental readings will be provided.

Communications
Lecture material will be made available to students on the course website. Email is the best way reach the course instructor. Please include [ISE/PSY 540] in the email subject to ensure timely attention. You are welcome to drop-in or call-in during office hours, or make alternative office hour appointments.

All off-campus students must provide the Engineering On-line (EOL) Program with contact information for a designated proctor. Please contact Sarah Boswell (sarah_boswell@ncsu.edu) with the EOL Program to arrange for an exam proctor as soon as possible. You will not be permitted to take exams if your proctor is not approved. It is up to the student to notify the proctor of any necessary accommodations. EOL students
will be permitted to take exams ±1 day of the on-campus exam. For example, the first exam is on Feb 12 in class; therefore, EOL students can take the exam starting Feb 12 through Feb 14. Completed exams must be submitted to the EOL office as soon as possible. Course problem sets should be submitted electronically (in PDF file format) to the EOL office by class time on the day the assignment is due.

**Captured Lectures.** The on-campus lecture sessions of this course will be captured and distributed via the Internet and/or electronic media as part of the EOL Program for distance education students. These video recordings may contain an image of you entering the classroom, asking a questions or being a part of the studio class. Please notify both the instructor and Dr. Linda Krute, Director at EOL (ldkrute@ncsu.edu) in writing if you DO NOT want your image to be included in the lecture presentation. If we do not hear from you during the first week of class, we will assume that you are in agreement with this procedure.

**Assignments**

**Problem Sets.** There will be a total of six (6) problem sets assigned during the course of the semester for completion and grading. Each set will be worth an equivalent number of points (see below).

**Exams.** There will be three (3) exams as part of this course. They will involve defining hfe terms, describing design principles, summarizing design methods, quantitatively analyzing human performance data, identifying results of research articles covered in class discussions, and writing short answers on how you would conduct design and evaluation of complex systems in relation to human factors principles.

**Grading**

The below table presents a summary of the point values for each type of assignment:

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Points</th>
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<tbody>
<tr>
<td>Problem sets (6 @ 25 pts. ea.)</td>
<td>150</td>
</tr>
<tr>
<td>Class participation</td>
<td>25 (EOL exempted)</td>
</tr>
<tr>
<td>Exam 1</td>
<td>100</td>
</tr>
<tr>
<td>Exam 2</td>
<td>100</td>
</tr>
<tr>
<td>Final exam</td>
<td>125</td>
</tr>
<tr>
<td>Total points possible</td>
<td>500 (EOL total 475)</td>
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- Assignment grades will be assigned based on the standard NCSU scale, including “+” and “-” (i.e., an average between 97.5-100% will be assigned a grade of "A+", an average between 92.5% and 97.4% will be assigned a grade of “A”, an average of 89.5-92.4% will be assigned an “A-”, etc.; see below table).

<table>
<thead>
<tr>
<th>A+ (97.5-100%)</th>
<th>B+ (87.5-89.4%)</th>
<th>C+ (77.5-79.4%)</th>
<th>D+ (67.5-69.4%)</th>
<th>F ≤ 59.4%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (92.5-97.4%)</td>
<td>B (82.5-87.4%)</td>
<td>C (72.5-77.4%)</td>
<td>D (62.5-67.4%)</td>
<td></td>
</tr>
<tr>
<td>A- (89.5-92.4%)</td>
<td>B- (79.5-82.4%)</td>
<td>C- (69.5-72.4%)</td>
<td>D- (59.5-62.4%)</td>
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</tr>
</tbody>
</table>

- Assignment and exam grades may be “curved”; however, no extra credit will be offered to individual students for “improving” grades. If you believe there is an error in any of your grades, please communicate with the instructor or TA within 48 hrs. after receiving your graded paper.

**Class Policies**

**Dropping courses.** If dropping this course becomes necessary for you, please review the University policy on **Adding and Dropping Course:** [http://policies.ncsu.edu/regulation/reg-02-20-02](http://policies.ncsu.edu/regulation/reg-02-20-02)
**Make-Up exams.** Exams are pre-scheduled and there will be no defined make-up period for missed exams unless arranged for in advance.

- If you have an unanticipated event (e.g., illness, family emergency), please contact the instructor within 24 hours after missing an exam to schedule a make-up exam.
- The instructor will determine on a case-by-case basis if a make-up exam is appropriate and will require documentation to verify the excuse (e.g., a valid, written, medical, or university excuse).
- A make-up exam must be taken within 1 week of missing an exam unless personal circumstances do not allow. Anyone not meeting this deadline will receive a “0” for a missed exam.
- The final exam will be given on the assigned date with no exceptions.

**Assignment due date and late submission.** All assignments are due at the beginning of each class. Points will be deducted from late assignments equivalent to one-letter grade for each lecture date past the due date.

**Class attendance and participation.** Class attendance is important for success; you are strongly encouraged to attend and participate in each class session.

- For complete University attendance and excused absence policies, please see [http://policies.ncsu.edu/regulation/reg-02-20-03](http://policies.ncsu.edu/regulation/reg-02-20-03)
- Repeated or egregious instances of classroom disruption (e.g., arriving late, leaving early, eating in class, surfing the web, phone use, random and disruptive conversations, etc.) will result in referral to the Office of Student Conduct.

**Academic integrity.** Students are required to comply with the University policy on academic integrity found in the *Code of Student Conduct*: [http://policies.ncsu.edu/policy/pol-11-35-01](http://policies.ncsu.edu/policy/pol-11-35-01)

- It is understood and expected that all work submitted under your name is your own work and that you have neither given nor received unauthorized aid. This same understanding applies to all group work.
- Your signature on any test or assignment indicates "I have neither given nor received unauthorized aid on this test or assignment."

**Accommodations for disability.** Reasonable accommodations will be made for students with verifiable disabilities upon registration with the Disability Services Office ([http://www.ncsu.edu/dso](http://www.ncsu.edu/dso)), 919-515-7653. Please see the *Academic Accommodations for Students with Disabilities Regulation* for more information: [http://policies.ncsu.edu/regulation/reg-02-20-01](http://policies.ncsu.edu/regulation/reg-02-20-01)

**Non-discrimination policy.** NC State University provides equality of opportunity in education and employment for all students and employees. Policies and regulations covering discrimination, harassment, and retaliation may be accessed at [http://policies.ncsu.edu/policy/pol-04-25-05](http://policies.ncsu.edu/policy/pol-04-25-05) or [http://www.ncsu.edu/equal_op/](http://www.ncsu.edu/equal_op/). Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity at 919-515-3148.