SYLLABUS PSYC 2270

Engineering Psychology

MWF 2:05p - 2:55p

Weber SST III Room 1

Instructor: Cara Fausset

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or by appointment

Course website

https://t-square.gatech.edu for **PSYC-2270-A**

Course objectives

This course is intended to introduce you to Engineering Psychology, often also referred to as Human Factors. This course will introduce you to the process of user-centered design and demonstrate the need to consider and design for human capabilities and limitations throughout the entire design process. The goal is for you to learn how basic psychological knowledge and principles can be applied to design efficient and safe products or systems. The student who successfully completes this course will acquire a broad understanding about the major empirical findings and applications of the field. A major part of this class is a team project, where you will redesign an existing product or system using the knowledge and skills you acquire as you progress through the course.

Required text

Wickens, C.D., Lee, J.D., Liu, Y., & Becker, S.E.G. (2004). *An introduction to human factors engineering, 2nd Ed*. Upper Saddle River, NJ: Pearson/Prentice Hall.

There may be other reading materials assigned throughout the semester. When such material is assigned, I will make them available in class or on the course website.

General policies

1. Respect and be considerate of others in the class. Please be on time and turn off anything that makes any kind of noise. If you disturb the class you may be asked to leave.
2. There are no make-ups for missed in-class assignments.
3. Late assignment will not be graded; no exceptions.

Attendance policies

1. Your attendance in class is expected.
2. Changes to the assigned readings and schedule may be announced during class time.
3. In-class assignments are not scheduled in advance but will be included when the relevant topic has been covered.
4. Your attendance is required on the days team projects are presented. Failure to attend these sessions will negatively affect the grade you receive for the presentation portion of your project.

Grading

Grades will be determined through performance on three tests, multiple assignments, a weekly journal, and one team project.

Your grade will be determined as follows:

Three exams (15% each)
Assignments (10%)
Weekly journal (10%)
Team project presentation (15%)
Team project paper (20%)

A straight grading scale is the default:
90-100 = A; 80-89 = B; 70-79 = C; 60-69 = D; 59 or lower= F. I do reserve the right to adjust the grades up depending on the distribution of scores, but this adjustment is in no way guaranteed. Grades will never be adjusted downward.

Exams

There will be three exams during the course of the semester. All the exams are *primarily* noncumulative. The content of the exams may change depending on how much material we cover by exam time. You will be notified in class of any changes.

Much of the material you will be tested on comes from class lectures, and may or may not be included in the textbook. You will also be responsible for the textbook information.

Exam dates are set; see course schedule on page 6. There will be no deviation from these exam dates. If you arrive to the examination after the first person has turned in the exam you will not be permitted to take the exam. **Make-up exams will not be given.**

If a student will be absent during a scheduled exam time because of participation in an approved Institute activity, prior arrangements must be made with the instructor. Minimum notice for approval is one week and documentation may be required where appropriate.

Assignments

Certain class periods will be used to practice a certain skill or task. In these class activity periods, you will conduct some kind of pre-determined activity individually or with your team. Most assignments will be turned in at the end of class. If you are absent the day of the assignment, there is no make-up.

Weekly journal

The primary objective of this course is for you to learn how basic psychological knowledge and principles can be used to evaluate and improve products and systems, many of which you use everyday. The purpose of the weekly journal is to give you an opportunity to observe the world around you as an engineering psychologist. **Every Friday by 2:05p**, you will submit two brief journal entries via T-Square: One example of poor human factors and one example of good human factors. Be prepared to talk about your entries in class.

Each entry example must contain the following elements:

> *Product or system*: Clearly and concisely describe the product or system you are evaluating. Include any background information necessary for someone who might not be familiar with the product or system to understand it.
>
> *What is difficult (or excellent) about this product or system?* Describe the factors that you think make the product or system difficult or easy to use.
>
> *Engineering psychology principles:* Describe how the product or system violated (or followed) engineering psychology principles.
>
> *Potential solutions:* Briefly describe how you could improve the product or system. Do not let current technology limitations or cost inhibit your potential solutions—think of this as brain-storming.

Team project

A big part of engineering psychology is applying knowledge about human capabilities and limitations, and thus documenting and reducing design problems is a large part of the field. Consistent with this, you will be assigned to and work in small teams. Your task is to evaluate the usability of an existing technological system of your choice and propose ways to improve the usability of that system following the psychological principles and standards outlined during the semester.

There are two deliverables for the group project: a presentation and a paper. The presentation (during the last week of classes) is about communicating your project (goal, problems identified, method, results, recommendations) in a 10-minute PowerPoint-based presentation. The second deliverable will be a project report detailing the design process as it applied to your particular team project. There will be one paper per team (15-20 pages).

Students with disabilities

Students who require special accommodations due to disability must provide me with the Georgia Tech ADAPTS accommodation letter by the **third** week of class. No accommodations will be made without this letter, and there are no guarantees for accommodation if the letter is presented after the third week of class. Students who plan to use the ADAPTS testing facilities for any exam must notify me in writing (email is acceptable) at least one week prior to the date of the exam. Information about who qualifies for and what services are offered by ADAPTS can be obtained from the ADAPTS office (404-894-2563) or their website: http://www.adapts.gatech.edu/

Academic integrity

Academic dishonesty will not be tolerated in any fashion. All students are assumed to have read the Georgia Tech's academic honor code and considered to be bound by it. Violations of the Honor Code are taken very seriously and will result in a failing grade for the course and potentially a referral to the Dean of Students for further action. Examples of academic dishonesty include (but are not limited to) turning in someone else's work, plagiarism, receiving assistance from or giving assistance to others during exams, and using any notes, books, electronic, or other sources of information during exams. http://www.deanofstudents.gatech.edu/osi

Extra credit

Up to 2.5% extra credit can be earned for research experience. Most of this class is based on research, and it is important that students in this class are exposed to the process of research in the science of psychology. There are three options:

1. **Research Participation**: You can earn extra credit by participating in Subject Pool experiments. You will earn 0.5% extra credit for each hour volunteered (5 hours maximum). Sign up for experiments through the Experimentrix website (https://experimetrix2.com/GATech/). Note that you will also have to "assign" the hours to this class. I will not be able to perform this action for you and it must be done even if this is your only psychology class.
2. Research Report: For the second option, you may receive extra credit by reading and writing a report summarizing (using your own words) a journal article in the field of engineering psychology. Articles from *Human Factors* and the *Journal of Experimental*

Psychology: Applied published after 2005 will be accepted. The report should be brief, no more than 500 words, and must be acceptable to the instructor, indicating that you read and understood the article. Credit is awarded as either full (0.5%), half (0.25%), or no credit (0%). You will be allowed only one (1) rewrite. Each acceptable report with be equivalent to 1 hour of research participations. Reports are due the Friday before dead week.

3. Combination: Receive up to 2.5% by participating in research and writing reports.

Tentative Course Schedule

The exam dates are set. The topics days may alter. Topics for the exams will conform to the exam dates. This means that all dates are tentative except exam dates, team presentation dates, and team report dates.

Week	Topics	Chapters
9 Jan – 13 Jan	Introduction	1
18 Jan – 23 Jan	Research methods	2
25 Jan – 1 Feb	Design & evaluation methods	3
3 Feb –13 Feb	Vision & audition	4, 5
15 Feb	**Exam #1**	1, 2, 3, 4, 5
17 Feb – 22 Feb	Cognition	6
24 Feb – 27 Feb	Decision making	7
29 Feb –9 Mar	Displays & controls	8, 9
12 Mar	**Exam #2**	6, 7, 8, 9
14 Mar – 16 Mar	Automation	16
19 Mar –23 Mar	No class—Spring Break	
26 Mar – 28 Mar	Anthropometry & biomechanics	10
30 Mar – 2 Apr	Stress & workload	13
4 Apr – 9 Apr	Safety, accidents, & human error	14
11 Apr –16 Apr	Selection & training	18
18 Apr	**Exam #3**	10, 13, 14, 16, 18
20 Apr	Work on presentations and reports	
23 Apr – 27 Apr	Team presentations	
2 May (11:30am - 2:20 pm)	**Final exam time: Team reports due by 2:20p**	

Key dates:

16 Jan	No class (MLK Day)
15 Feb	**Exam #1**
2 Mar	Last day to drop with "W"
12 Mar	**Exam #2**
19-23 Mar	No class (spring break)
18 Apr	**Exam #3**
23-27 Apr	Team project presentations
2 May	Team project reports due by 2:20p