**Educ Psych/Psychology 456/ISE 445**

**Human Performance and Cognition in Context**

**Fall 2015 Syllabus**

Lecture: Tu & Th 3:30-4:50

Location: 31 Psychology Bldg

Instructor: Prof. Dan Morrow ([dgm@illinois.edu](mailto:dgm@illinois.edu)). 217 300-0915

Office: 2015 Beckman, 210b Educational Psychology

Office hours: By appointment, and usually after class.

Teaching Assistant: Renato Azevedo ([razeved2@illinois.edu](mailto:razeved2@illinois.edu)).

Office: 2414 Beckman

Office hours: By appointment.

Course Description: We will cover theories and findings from cognitive science and related disciplines concerning human information processing mechanisms and capacities. We will consider how understanding our perceptual and cognitive strengths and limitations can inform decisions about education and training strategies, as well as designing technological environments to suit our needs and abilities. The course also considers methodologies for assessing human performance in different contexts. Lectures use examples from transportation (aviation and driving), medical, and education domains to expand on concepts from the readings. We also consider design and training implications of individual differences in cognitive abilities by examining the impact of aging on user abilities.

Course Website: A website can be accessed from <https://compass2g.illinois.edu>. We will post general course information, lecture notes and readings, as well as test scores and grades when they are available. Quizzes will also be administered through this site (see below).

Readings:

Wickens, C., Hollands, J., Banbury, S. & Parasuraman, R. (2013). Engineering Psychology and Human Performance (4th Edition). Pearson.

Optional readings are available on the Compass website.

Requirements and Grading:

1. Exams. There are 2 in-class examinations, each covering roughly one-half of the material from the lectures and assigned readings (**each exam** **is worth 25% of the course grade**). While lectures overlap the readings, they provide a good deal of new information as well. So, it is important to attend lectures! There is also an optional, cumulative, final examination. It can be used in place of one of the three required exams (unless the final score is lower than any score from the earlier exams; that is, it won’t hurt you to take the final!).
2. “System critique” paper assignment (**25% of the course grade**) gives you a chance to use concepts from the course in order to analyze how cognitive strengths and limitations influence your use of devices, systems, etc., from daily life. An outline of the paper will be due about a month before final version is due. More information about the assignment will be posted on the Compass course site.

*Additional requirements for graduate students*. Graduate students write a more elaborate “critique” paper, requiring background reading relevant to the paper topic (more information will follow).

Because you will be using information from others sources when writing the paper, sometimes issues related to plagiarism can arise. For information about my policy related to plagiarism, see the following link:

<http://education.illinois.edu/edpsy/about/academic-integrity>

1. Periodic quizzes will be administered on the Compass course site. There will be six quizzes throughout the semester (see syllabus for approximate dates). Each quiz will be available for a 48-hour period and consist of 4-6 fill-in-the-blank and short answer questions. The purpose of these quizzes is to help you keep up with material that will be covered on the in-class exams, as well as give you an idea of the type of items on these tests. **Collectively, the quizzes will be worth 25% of the course grade.**
2. Extra credit. Extra Credit (up to 2 points) will be given to students who send Renato and me three good examples (for example, links to relevant websites) of concepts that are covered in the course, along with a brief explanation of how/why the example illustrates the concept(s)**.**

**Lecture Topics and Reading Assignments**

**Date Lecture Topic Textbook Optional Readings**

Aug 25 Introduction: Frameworks Wickens et al. pp 1-7 Durso et al 2010

Aug 27 Introduction: Examples and Methods

Sept 1 Signal Detection Theory pp. 8-20

Sept 3 SDT: Applications and Vigilance pp. 20-31 Warm et al. 2008

**Online Quiz**

Sept 8 Perception & Attention 1: Selective pp. 49-64

attention and visual search

Sept 10 Perception & Attention 2: Parallel pp. 64-83

processing/object displays

Sept 15 Graphs, Display compatibility pp. 84-102 Shah & Hoeffner 2002

Sept 17 Navigation, spatial cognition, pp. 103-137

reference frames

**Online Quiz**

Sept 22 Perception of Language 1: Reading pp. 160-172 Hulme & Snowling 2011

Sept 24 Perception of Language 2: Speech pp. 186-196

Sept 29 Short-term/working memory pp. 197-207 Baddeley, 1992; Cowan 2010

Oct 1 WM: Individual differences pp. 208-214

**Online Quiz**

Oct 6 Catch-up and Review

Oct 8 ***Exam 1***

Oct 13 Models of language comprehension Zwaan, 1999; Frenda et al. 2011

Oct 15 Multimedia comprehension pp.175-186 Mayer, 2002

**Online Quiz**

**Date Lecture Topic Assigned Readings Recommended Readings**

Oct 20 Long-term memory (LTM) and learning pp. 223-244

1: Training

Oct 22 LTM and learning 2: Optimizing learning pp. 223-244 Bjork & Linn, 2006; Karpicke, 2012

Oct 27 Decision making 1: Introduction pp. 214-220; 245-264 Blodget, 2004; Kahneman & Reshon, 2007

Oct 29 Decision making 2: Situation assessment

Nov 3 Decision-making 3: Choice of action pp. 264-283

***Outline of System Critique paper due***

Nov 5 Reaction time: Simple and complex pp. 284-304

Nov 10 Reaction time: Serial RT pp. 305-310 Levy et al. 2002

**Online Quiz**

Nov 12 Multi-task and attention 1: Time-sharing pp. 77-82; 321-345 Strayer, Watson, & Drews, 2011

among multiple tasks

Nov 17 Multi-task and attention 2: pp. 325-345

Multiple resources

Nov 19 Multi-task and attention 3: pp. 346-360; 360-376

Mental workload and Stress

Nov 24 Thanksgiving break

Nov 26 Thanksgiving break

**Online Quiz**

Dec 1 Human performance and automation pp. 377-404

***System Critique paper due***

Dec 3 Catch-up and Review

Dec 8 ***Exam 2***

Dec 15***Optional final exam (7:00-10:00 PM; 31 Psych)***

**Emergency Response Recommendations**

The Department of Homeland Security and the University of Illinois at Urbana-Champaign Office of Campus Emergency Planning recommend the following three responses to any emergency on campus: **RUN > HIDE > FIGHT**

Only follow these actions if safe to do so. When in doubt, follow your instincts—you are your own best advocate!

**RUN**

Action taken to leave an area for personal safety.

* Take the time now to learn the different ways to leave your building before there is an emergency.
* Evacuations are mandatory for fire alarms and when directed by authorities. **No exceptions!**
* Evacuate immediately. Pull manual fire alarm to prompt a response for others to evacuate.
* Take critical personal items only (keys, purse, and outerwear) and close doors behind you.
* Assist those who need help, but carefully consider whether you may put yourself at risk.
* Look for **EXIT** signs indicating potential egress/escape routes.
* If you are not able to evacuate, go to an Area of Rescue Assistance.
* Evacuate to Evacuation Assembly Area and remain until additional instructions are given.
* Alert authorities to those who may need assistance.
* Do not re-enter building until informed by emergency response personnel that it is safe to return.

**ACTIVE THREAT:**

* If it is safe to do so run out of the building. Get as far away as possible. Do not go to the Evacuation Assembly Area.

**HIDE**

Action taken to seek immediate shelter indoors when emergency conditions do not warrant or allow evacuation, such as for severe weather.

* Take the time now to learn the different ways to seek shelter within your building before there is an emergency.
* If you are outside, proceed to the nearest protective building.
* If sheltering-in-place due to severe weather, proceed to the identified Storm Refuge Area or to the lowest, most interior area of the building away from windows or hazardous equipment or materials.

**ACTIVE THREAT:**

* Lock or barricade your area.
* Get to a place where the threat cannot see you.
* Place cell phones on **silent**.
* Do not make any noise.
* Do not come out until you receive an Illini-Alert advising you it is safe.

**FIGHT**

Action taken as a last resort to increase your odds for survival.

**ACTIVE THREAT:**

* If you cannot run away safely or cannot hide, **be prepared to fight with anything available to increase your odds for survival.**

**Students that will require assistance in the event of an emergency should identify themselves to the instructor. Your instructor will make arrangements to assist you in moving to a Safe Area during an emergency. Safe Areas are located on each floor of the Psychology Building next to the freight elevator in the southwest corner.**