Course Description
625. Cognition and Instruction I. Three semester hours.

This course will examine the psychological principles and scientific knowledge base underlying the major instructional theories. Content will include an evaluation of how current theories and knowledge of human cognition relate to the principles and practices of instructional design and development.

The amount of material on cognition and instruction is absolutely staggering. Some of it is “pop psychology” junk and some of it is way too “education oriented” for me to stomach. Still, much of it is written by very credible cognitive scientists. Indeed, the classic articles and books listed below are easily less than 10% of the “good stuff.” As such, my aims in this course are to 1) expose you to the scope of available resources, 2) use Norman and Tufte to show you that the topic can be both fun and rigorous at the same time, 3) have you delve into some area(s) of the literature in more detail.

As the two texts should make clear, instructional design is not just about schools and classrooms. Likewise, we will look at topics such as web design and game design as other domains of cognition and instruction. Our goal then will be to look for “general principles” of cognition that will obtain across various instructional applications.

Texts

The Basics
Keep in mind that a syllabus sometimes shifts as the course unfolds. I say that by way of noting the importance of class attendance, as you will be held responsible for any change in plans announced in class. Another basic admonition every syllabus should include is that cheating (broadly defined) is not allowed. Or, as the University likes me to say: “All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See Student's Guide Handbook, Policies and Procedures, Conduct).” Also, note that “Students requesting accommodations for disabilities must go through the Academic Support Committee. For more information, please contact the Director of Disability Resources & Services.”

Course Format
The course format will vary from class to class, so I have been as specific as possible on the schedule of events. However – much of the class will involve you making presentations.
**Grades**
Currently you have an A. To keep the A, just do what I ask you with an appropriate sense of professionalism and punctuality. Specifically: I expect you to “do the homework,” and to actively participate in the discussions over the Norman and Tufte readings. Your real chance to shine will come in your three individual presentations, our critiques, and your “glorified book report.” Should you feel a need to do “extra credit,” then you should do two “glorified book reports.”

**Presentations and Reports**
You will do three presentations over journal articles/book chapters that you have read for the course. Some “classic” options are found below in the list of Suggested Readings.

Based on the number of folks in the class, we’ll determine an appropriate length for each presentation. Your task will be to provide a summary of the material, and then to lead/stimulate a discussion of that topic. You can use handouts/overheads/the chalkboard/powerpoint/French mimes as pleases you, but none of that is required. These will begin after Spring Break.

*And yes, this is class that leads to the widely spread rumor that “Henley hates powerpoint.” But, if you actually read the Tufte book (as assigned) then you’ll see that is a gross over-simplification…*

Additionally, I want to see you apply what you have learned. As such, everyone will do a “critique” on an instructional material. We’ll cover the specifics of this assignment in class.

The “glorified book report” is just what it says. Write a 10 page-ish summary/review of the book with the class in mind as your audience. Along with your taxes, these will be due April 15th (so don’t procrastinate). Books for this assignment are found at the end of the syllabus, and you will present these in the last few weeks of the course.

**The Instructor**
Dr. Tracy B. Henley

You are welcome to drop by and speak with me any time that you find me in my office. Beyond that, just see me before (or after) class to schedule a meeting.

**Schedule of Events**

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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1/14</td>
<td><strong>Pointless Pontification</strong></td>
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<tr>
<td></td>
<td>Course Overview</td>
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<tr>
<td>1/21</td>
<td><strong>Holiday – No Class</strong></td>
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Lecture
An Idiosyncratic Summary of Cognitive Science in less than 3 hours…

What is Cognitive Science? The computer as an Interdisciplinary model
The foundations of cognitive science: "a cognitive revolution"
George Miller and Jerome Bruner
Ulric Neisser
The philosophy of science (as it relates here)
From Logical Positivism to Kuhn and beyond
Neuroscience: Perception, Learning, Memory, and Cognitive Development
Anthropology and Linguistics
Cultural universals (Whorf)
Language, thought, and reality (Vygotsky)
Describing language: phonology, syntax, semantics, etc
Language acquisition (Chomsky)
Linguistic Flexibility (Lakoff)
Philosophy
Philosophy of psychology (Ryle and Wittgenstein)
Philosophy of mind (Fodor and Dennett)
Consciousness, free will, AI (Searle and Dreyfus)
Philosophy of language (Grice)
Cognitive Psychology
Schema and Mental representations
Perception and Memory = Mind (James)
Concepts and categories (Rosch)
Reasoning, planning, and problem solving
Computer Science
Artificial Intelligence
Connectionism and Machine Learning
Natural Language Processing
The “sociology” of computing and cognitive science

Homework
Go to the library and look for textbooks on topics such as cognition and instruction, instructional design, and related areas. What are the core and common features?

While at the library also look for materials (such as journals, like Cognition and Instruction) on topics such as cognition and instruction, instructional design, and related areas. What are the classical and current topics that folks write about?

Go to the web and look for other materials on cognition and instruction, instructional design, web design and game design. What are the common features in this literature? What are the current “hot topics?”

While on the web also look for syllabi from courses on cognition and instruction, instructional design, and such. What are the core and common features?

Be prepared to present and discuss all your findings at the next class.
2/4 Seminar
We will discuss the previous homework in Seminar fashion (i.e., you do the talking).

Homework
Review the list of suggested readings and pick the three articles you want to read and present (rank order 10 or 12, as folks may not get all their top picks). Finding the papers and skimming the abstracts would be optimal as time allows. Many of them are available online. Make sure you can obtain the articles you select.
By next Monday, have read Norman’s book (at least chapters 1-3).

2/11 Schedule Presentations
Discussion: Norman Chapter 1-3
Homework
Have finished the Norman book

2/18 Discussion: Norman Chapter 4-5

2/25 Discussion: Norman Chapter 6-7
Homework
Have read Tufte’s booklet. Have your first presentation about ready.

3/4 Discussion: Tufte

3/11 Spring Break – No Class

3/18 Seminar: Student presentations from selected readings
Homework
Make sure you have your next presentation ready for next week (that will be my birthday – so wow me).

Find an “instructional material,” which can be an educational material, a training material, a game manual/tutorial, or even an appropriate web site, and then provide a critique of it based on the principles of cognition and instruction that you have learned thusfar. These are due in about a month.

3/25 Seminar: Student presentations from selected readings
Homework
Make sure you have your last presentation ready for next week.

4/1 Seminar: Student presentations from selected readings

4/8 Seminar: Discuss design critiques
Homework
Have your “glorified book reports” and final presentations ready
4/15 Seminar: Final Presentations of glorified book reports

Homework
Think about what else we need to do/discuss (comps?)

4/22 (Final Class Meeting unless something comes up)

Discussion
Final discussion, course evaluation, etc

The suggested readings list represents a very eclectic collection of things. Some I personally like, many are by authors that I respect, and others are works that are considered “classics” in the field. This list should be large enough that all of you can find three articles of interest. As noted previously, several of these are available online.

Thirty-Four Selected Readings for Student Presentations


**Seventeen Suggested Books for Final Paper(s)**


James, W. (1899). *Talks to Teachers on Psychology: And to Students on Some of Life's Ideals*. Note: Both Harvard and Dover have reprinted this recently.


