

Syllabus for HCI 520: Learner-centered Design, Spring 2018

Overview

This course will focus on computer systems which are meant to help people learn something, so the primary concern is how well they support learning. We will start by looking at the state of the art in the scientific understanding of how people learn. Then we will apply these principles to evaluating designs of learning systems and to creating effective designs. Projects will involve evaluation of existing learning systems, and the creation of a simple learning system which follows design principles for effective learning.

Learning Outcomes

By the end of this course you should be able to:

- describe the role and limitations of perception for learning,
- describe how learning takes place in the brain,
- evaluate an e-learning system based on principles of learner-centered design,
- specify testable learning objectives for a particular task,
- design and implement a system to achieve a specific set of learning objectives,
- evaluate how well the system helps people learn the intended material.

Prerequisites

IT 403, HCI 440, HCI 450

Textbooks

Required:

- A. **HPL:** *How People Learn: Brain, Mind, Experience, and School: Expanded Edition*, by Committee on Developments in the Science of Learning with additional material from the Committee on Learning Research and Educational Practice (Author), National Research Council (Author)

Paperback: 374 pages

Publisher: National Academies Press; 2 edition (September 15, 2000)

ISBN-10: 0309070368

ISBN-13: 978-0309070362

Note: This book is available for free from <http://www.nap.edu/catalog/9853.html>, but it's not expensive, so you may prefer to buy the bound copy.

- B. **ELSI:** *e-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*, by Ruth C. Clark and Richard E. Mayer

Hardcover: 528 pages

Publisher: Wiley; 4th edition (March 21, 2016)

ISBN-10: 1119158664

ISBN-13: 978-1119158660

(Note: You may also use the 3rd edition, from 2011.)

C. Other readings provided

Attendance

Class attendance is strongly encouraged and useful (whether in-person or online), but will not be checked. However, if you are absent from class you are responsible for understanding the material and for finding out about any announcements made in that class.

Please silence and stow your cellphones. No texting during class! (Guesses about why?)

Class Plan

The following class plan is tentative and subject to change as the course progresses.

- **Class 1:** (3/26) Course overview. Introduction.
- **Class 2:** (4/2) Experts and novices, Learning and transfer, Learning objectives
- **Class 3:** (4/9) Mind and brain, Evidence-based practice
- **Class 4:** (4/16) How people learn summary, Multimedia Principle, Cognitive models
- **Class 5:** (4/23) Contiguity, Modality, Redundancy, Learning styles, Engagement in e-learning
- **Class 6:** (4/30) Guest speaker? Coherence, Personalization, Intelligent Tutoring Systems
- **Class 7:** (5/7) Segmenting and pretraining, Examples, Practice, Applying the Guidelines
- **Class 8:** (5/14) Online, collaborative learning, Virtual communities, Learner control
- **Class 9:** (5/21) Thinking skills, Serious Games, Final topics
- **Class 10:** (5/28) Memorial Day. No class.
- **Class 11:** (6/4) Term project presentations

Instructor Information

Email	peterh@cdm.depaul.edu
Home Page	http://reed.cs.depaul.edu/peterh/
Phone	312-362-5736
Office Hours	Monday: 3:30-5:00 PM or by arrangement
Address	CDM Center 717
	DePaul University
	243 South Wabash Avenue
	Chicago, IL 60604-2301 USA

Assessment

Your final grade will be based on:

- Weekly warm-ups: 20 points
- Class participation (in class or via discussion forums): 15 points
- Learning objectives project: 10 points
- e-Learning system assessment: 10 points
- Term project (with a partner or individually):
 - Proposal and learning objectives: 5 points
 - Design: 10 points
 - Implementation: 15 points
 - Evaluation and presentation: 10 points
 - Comments on other presentations: 5 points

The grading scale will be:

Points	Grade
93.3+	A
90	A-
86.6	B+
83.3	B
80	B-
76.6	C+
73.3	C
70	C-
66.6	D+
60	D
< 60	F

Weekly Warm-ups:

To help you get the most out of the readings, there will be weekly warm-ups on that week's readings through D2L. The warm-ups will generally consist of 6-8 questions, and must be completed at least *3 hours before* class begins. (This applies to both in-class and online students.) The lowest score will be dropped.

NOTE: You may be tempted to think of these as quizzes, but try not to. They are meant to be incentives and "conversation starters", not a final evaluation of your understanding of the topic. There will be an extra credit question on each asking you what you didn't understand, or would otherwise like further discussion on.

Participation:

- All students (and especially online students) can get participation credit primarily by posting

comments to the weekly discussion topics. The postings should be meaty (not e.g., "I agree", or "I disagree").

- *Please note:* Timely participation is critical! Weekly discussion forums will close 10 days after the relevant class.
- In-class students can also get participation points by making meaningful contributions to in-class discussions.
- [More detail on Discussion Forum participation](#)

Assignments

- Unless otherwise stated, written assignments are due via D2L at the time and date posted on the course homepage.
- Late homework submissions will be accepted up to 3 days late with a penalty of 10% per day.
- All homework assignments will count towards the final grade.
- The term project can be done with a partner (of your choice) or individually. If you do the project with a partner, you must carefully document who was responsible for which components of the work.
- The term project will include an online presentation to the class due by the final exam date.

Assignment resubmissions:

If you get 85% or lower on Project 1, 2 or 3, you may resubmit the assignment for up to 75% of the missed points (except for late penalty points), if you do it within one week of receiving the grade, and clearly indicate (by highlighting or "track changes") what you updated. *However, this does not apply to assignments which were not submitted at all.*

On Plagiarism

You are encouraged to discuss all homeworks and projects with your classmates. You are, however, required to complete them on your own. In particular, this means that you are not allowed to "cut and paste" text from anywhere else, *or to paraphrase* someone else's work, unless it is a *very small* part of your submission, the copied text is clearly indicated (i.e. surrounded by quotation marks), and the source is clearly identified (with citation and full reference information).

All assignments will be submitted to "Turn it in" for automatic plagiarism testing. This system is very good at finding things that have been copied, so just don't do it.

[School policies on instructor evaluation, email, plagiarism and incompletes](#)

Subject pool

The CDM/Communications subject pool gives researchers access to participants for their studies. Extra credit (1/2 participation point per half hour, up to 3 points) will be provided for students who participate in the subject pool. To get extra credit, you must sign up as a participant here: <http://www.cdm.depaul.edu/academics/research/Pages/Instructions-for-Participants.aspx>, and let me know you're doing it.

The subject pool will also be available for use in the Term Projects. To get started using the subject

pool for your projects, start here:

<http://www.cdm.depaul.edu/academics/research/Pages/Instructions-for-Researchers.aspx>