

Syllabus for HCI 520: Learner-Centered Design, Spring 2024

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

HCI 440 (IT 403 and HCI 450 recommended)

Textbooks

Required:

A. **HPL:** *How People Learn II: Learners, Contexts, and Cultures.*, Washington, DC: The National Academies Press. doi: <https://doi.org/10.17226/24783>.

Note: This book is also available for free download from [the publisher's site](#)

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

The book is also available through [course reserves](#) or Safari books online, but there may be a limit on the number of people who can access it this way at one time.

(Note: You may also use the 3rd edition, from 2011, but it is missing a chapter or two, and some significant updates.)

C. Other readings provided

Attendance

This quarter, we will be back in the classic (if challenging) in-class and online hybrid modality. Students in the in-class section are expected to come to class (*unless you're sick!*) so that we can have healthy discussions. Remote students are invited and strongly encouraged to participate

synchronously via Zoom. These sessions will be recorded for those who are unable to attend synchronously. If you can not join synchronously, you will be expected to watch the videos so you can understand the material and any announcements / discussions made in that class.

In the classroom, please silence and stow your cellphones. No texting or tweeting, etc during class. (Guesses about why?)

At class time (Mondays at 5:45 central time), we will have a live "interactive session" . This will be for important announcements, discussions of the warm-ups, and other things where I expect more questions. The interactive sessions will be augmented by videos where I go into more depth about the topics covered in the readings, show examples, etc. *There will also be exercises and discussion items linked to these, so make sure you watch those as well.*

Class Plan

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

- **Class 1:** (4/1) Course overview. Introduction.
- **Class 2:** (4/8) Types of learning, Procedures supporting learning, Learning objectives
- **Class 3:** (4/15) Objectives to Teaching, Knowledge and reasoning, Evidence-based practice, Multimedia principle
- **Class 4:** (4/22) Digital technology, Contiguity principle, Cognitive models and learning
- **Class 5:** (4/29) Motivation, Engagement in e-learning, Modality, Redundancy, Learning styles
- **Class 6:** (5/6) Coherence, Personalization, Intelligent Tutoring Systems
- **Class 7:** (5/13) Segmenting and pretraining, Examples, Practice, Applying the Guidelines
- **Class 8:** (5/20) Collaborative learning, Learner control
- **Class 9:** (5/27) (Memorial Day: No class meeting, but still warm-up, video, and exercises) Learning across the Life Span, Thinking skills, Serious games, Evaluating e-learning
- **Class 10:** (6/3) Minds on Fire, Learning from Video, Final topics

Instructor Information

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|--------------|---|
| Email | peterh@cdm.depaul.edu |
| Home Page | http://reed.cs.depaul.edu/peterh/ |
| Phone | 312-362-5736 |
| Office Hours | 3:30-5:00pm Mondays and Wednesdays via zoom, office, or phone, or at other times by arrangement. Please email beforehand to ensure I'm expecting you! |
| Address | CDM Center 717 |

Assessment

Your final grade will be based on:

- Weekly warm-ups: 20 points
- Class participation (primarily via online exercises): 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 by 1:00 PM (Central) on the day of the corresponding class. The lowest score will be dropped.

NOTE: You may be tempted to think of these as quizzes, but try hard not to. They are meant to be incentives and "conversation starters", not a final evaluation of your understanding of the topic. And 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 can get participation points 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 1 week after the relevant class, **by 2 PM**, i.e., 1 hour after the Warm-Up.
- [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 will be expected to do a larger project, and 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:

- submit your modified assignment (with modifications clearly indicated by track changes or highlighting) to the **Resubmissions ONLY** D2L submissions folder,
- do it within one week of receiving the grade

However, this does not apply to assignments which were not submitted at all.

When you resubmit, add a note to clearly indicate which assignment this resubmission is for. Also, email me to notify that you have resubmitted, with the subject line: "HCI 520: Project _ RESUBMISSION for _" (filling in the project number and your name).

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 AND 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 TurnItIn for automatic plagiarism testing. This system is *very good* at finding things that have been copied, so just don't do it. "Originality scores" will be visible.

General Policies

[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>