

# Syllabus for HCI 520: Learner-Centered Design, Spring 2020

## 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:

- 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](#)
- 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

As I'm sure you're all aware, we're going completely online this quarter. For those of you used to online classes, this will be no big change. If you're used to taking classes face-to-face, this will

require some adjustment. It will be largely up to you to ensure that you're keeping up with all of the class videos, requirements, discussions, warm-ups, and assignments.

The current plan is to have an "interactive session" via Zoom at the originally scheduled time of class, Mondays at 5:45 Central time. This will be for announcements, warm-ups, and other things where I'd expect more questions. If you have other commitments at this time, I can try to arrange one or two more interactive sessions. 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.*

## Class Plan

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

- **Class 1:** (3/30) Course overview. Introduction.
- **Class 2:** (4/6) Experts and novices, Learning and transfer, Learning objectives
- **Class 3:** (4/13) Mind and brain, Evidence-based practice
- **Class 4:** (4/20) How people learn summary, Multimedia Principle, Cognitive models
- **Class 5:** (4/29) Contiguity, Modality, Redundancy, Learning styles, Engagement in e-learning
- **Class 6:** (5/4) Coherence, Personalization, Intelligent Tutoring Systems
- **Class 7:** (5/11) Segmenting and pretraining, Examples, Practice, Applying the Guidelines
- **Class 8:** (5/18) Guest speakers (TBD), Online collaborative learning, Learner control
- **Class 9:** (5/25) Memorial Day. Alternate class arrangements
- **Class 10:** (6/1) Guest Speaker (TBD), Thinking skills, Serious Games, Final topics
- **Class 11:** (6/8) Term project presentations

## Instructor Information

Email	<a href="mailto:peterh@cdm.depaul.edu">peterh@cdm.depaul.edu</a>
Home Page	<a href="http://reed.cs.depaul.edu/peterh/">http://reed.cs.depaul.edu/peterh/</a>
Phone	312-362-5736
Office Hours	Monday and Wednesday: 3:30-5:00 PM (except 4/8, 4/10, 5/6, 6/3) or by arrangement
Address	CDM Center 717

## 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 by 2:00 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 10 days after the relevant class. You should have all received an invitation to sign up for it. Please do so quickly so you can start racking up the participation points!
- This quarter we'll be using Piazza for our discussions and Q&A. I've heard it's a lot easier to deal with than D2L's discussion forums.
- [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 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 incomplete or 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 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>