

Human Computer Interaction¹

CSE 40424/60424 PSY 40676/60676

Fall 2016

Basics

Meeting Time and Place

Monday and Wednesday
3:30 to 4:45 pm
DeBartolo Hall 117

Instructor

Sidney D'Mello
Associate Professor
Computer Science and Psychology
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Office Hours (Instructor)

Monday/Wednesday: 11:00 to 11:30 am in Haggar 22C
Monday/Wednesday: 04:45 to 05:15 pm in Debart 117
By appointment (email me to setup an appointment)

Teaching Assistant (TA)

Shuai He
Graduate Student
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Office Hours (TA)

Tuesday/Thursday: 1:00 - 2:00 pm in 212 Cushing
By appointment (email TA to setup an appointment)

Course Information

Description

You will engage in an in-depth exploration of the field of Human-Computer Interaction (HCI) including its history, goals, principles, methodologies, successes, failures, open problems, and emerging areas. Broad topics include theories of interaction (e.g., conceptual models, stages of execution, error analysis, constraints, memory by affordances), design methods (e.g., user-centered design, task analysis, prototyping

¹ Subject to change at instructor's discretion. The most updated copy will always be posted on Sakai.

tools), visual design principles (e.g., visual communication, digital typography, color, motion), evaluation techniques (e.g., heuristic evaluations, model-based evaluations), and emerging topics (e.g., affective computing, natural user interfaces).

Intended Outcomes (Learning Objectives)

Upon successful completion of this course you will be able to:

- (LO1) Demonstrate conceptual understanding of the underlying theory of human-computer interaction and master the basic principles of effective computer interface design and evaluation.
- (LO2) Apply state-of-the art methods and techniques to critically evaluate existing computer interfaces.
- (LO3) Apply the interaction theories, design methods, visual design principles, and interface evaluation techniques towards the design, implementation, and evaluation of a new computer interface.
- (LO4) Learn about new and exciting trends, paradigms, and applications in HCI by reading and critiquing peer-reviewed publications in this area.
- (General Goal) Develop a general appreciation for the science of HCI, its past, present, and future.

Plan to Achieve Intended Outcomes (Action Plan) (also see Table at end)

Content, activities, and assessments have been carefully selected to help you meet or exceed the learning goals as illustrated below.

- **LO1:** Lectures, readings, and quizzes
- **LO2:** Interface evaluation assignments, peer feedback
- **LO3:** Semester long group project
- **LO4:** Lectures, presentations, and reflections on the state of the art
- **General Goal:** All activities along with considerable autonomy in selecting content for assignments, group project, presentations, and reflections (65% of your grade involves content and materials that you or your group will select based on your interests).

Materials

Materials will include a combination of Norman's book (required), Klimczak's book (required), and other materials that will provide by the instructor.

- **(Required)** *The Design of Everyday Things: Revised and Expanded Edition* (2013 edition) by Don Norman (Basic Books)
- **(Required)** *Design for Software: A Playbook for Developers* (2013) by Erik Klimczak (Wiley)
- **Copies of book chapters and peer-reviewed publications** will be distributed over the course of the semester.

Prerequisites

There are no formal prerequisites for the course with the exception that all students should be able to create simple web-pages and work in teams.

Groups

You will be asked to form a group with three students for the group project and presentations on cutting-edge HCI topics. Each member of the group will receive the same score on each group assignment unless extenuating circumstances arise (e.g., a group member does not contribute adequately, the instructor is notified, and an investigation determines this to be the case). For each group submission, you will be asked to list the roles of each member of the group and the division of labor. The instructor reserves the right to deduct points from a student if it has been demonstrated that the student has not adequately contributed to group work.

Assessment

You will be evaluated on the basis of individual assignments (IA) and group assignments (GA). 50% of the assessments will be based on individual performance, while the remaining 50% will be based on group performance. A brief description of the various assignments and evaluation components are listed in the table and summarized below. Note that this is only a rough sketch. The instructor will add specific details for each assignment over the course of the semester (see Schedule link on Sakai Resources).

Item	No. Items	Points/Item	Total Points	Project	Group	Self-Selected
Quizzes	7	5	30	0	0	0
Assignments	3	5	15	0	0	1
Project Proposal	1	5	5	1	1	1
Project Updates 1 and 2	2	12.5	25	1	1	1
Final Project	1	15	15	1	1	1
State of the art Presentations	1	5	5	0	1	1
Responses to Presentations	10	0.3	3	0	0	0
Class Participation	1	2	2	0	0	0

Note. Project = 1 for item related to project, else 0; Group = 1 for group work, else 0. Self-selected = 1 when students can select topics and configure assignments to their interests or interests of the group. Lowest quiz is dropped.

Quizzes on Lectures and Readings (LO1: IA: 30 points total)

There will be *seven* short quizzes (*5 points each*) to test basic conceptual understanding of the material covered in the classes and the readings. The quizzes will include open ended and (occasionally) multiple-choice questions. The quizzes are not expected to be

particularly difficult per se but will focus on important facts and conceptual understanding of topics. Your scores on the top six quizzes will count towards your grade (i.e., one quiz will be dropped).

Assignments (LO2: IA: 15 points)

You will be asked to complete three assignments at various points in the course. These assignments are associated with key milestones in the course. For example, the first assignment asks that you select and perform an evaluation of an interface of your choosing based on the interaction theories and design principles we will cover in the course. A second assignment might ask you to comparatively evaluate two interfaces, while a third might ask you to design a usability study to evaluate an interface.

Semester-Long Project² (LO3: GA: 45 points)

At the core of the course is a semester-long *group* project where you will have an opportunity to apply all the principles and techniques covered in the course towards the design, implementation, and evaluation of a functional computer interface. You will have considerable freedom in selecting a target application for your project, but selection of topic and scope of project will be done in consultation with the instructor. It is imperative that you select a topic that is personally meaningful to you and your group since you will be working on this project for a major part of the semester. The project will be evaluated on the basis of the following four components.

- **Project Proposal (GA: 5 points).** The project proposal is an agreement between the instructor and your group. Although it might be necessary to slightly deviate from your proposed project and scope, you are to a certain degree committed to the work specified in the proposal. Hence, be very careful when defining scope. Do not overpromise and under deliver.
- **Project Update 1 (GA: 12.5 points).** This update will focus on results of some of the brainstorming, planning, exploration, and design activities required for your project. You will not develop a computer prototype at this time. Instead, you will need to turn in a report that focuses on a user analysis, a task analysis, design sketches, wireframes, and storyboards.
- **Project Update 2 (GA: 12.5 points).** This report will focus on developing and the preliminary testing of the first concrete rendition of your system. This computer prototype should have high-fidelity in look, medium-fidelity in feel, medium-fidelity in breadth, and low-fidelity in depth. You will also perform a heuristic evaluation of your prototype and receive formative feedback from your peers.
- **Final Project (GA: 15 points).** The final report will focus on your finalized prototype and the results of a summative user evaluation. In particular, you will refine your computer prototype based on feedback received in Project Update 2, expand its breadth and functionality to enable a meaningful usability study,

² Structure of the project is modeled after Dr. Bickmore's HCI course.

perform a usability study on your final prototype, and analyze the results of the study. You will also submit the final prototype to the Instructor for evaluation.

Presentations and Reflections on the State of the Art (LO4: GA and IA: 8 points total)

- **Presentations (GA: 5 points).** Your group will select a peer-reviewed publication of interest to your group and of relevance to the course. You can find suitable papers by perusing the recent proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems (CHI – recommended), International Conference on Human-Computer Interaction (HCII), the International Journal of Human-Computer Studies, and Human-Computer Interaction (the journal). The instructor will approve the selected publication no later than one week before your scheduled presentation. It is your responsibility to contact the instructor via email or in person to discuss your presentation topic. The last 20 minutes of certain classes (see Schedule for specifics) will be devoted to a presentation of the topic. All group members are expected to participate in the presentation.
- **Reflections (IA: 3 points).** You will have 5 minutes after each presentation to write a short statement (one paragraph) depicting your thoughts, reactions, and critiques of main ideas discussed in the presentation. The exact weight of each response will vary based on the number of presentations (i.e., weight for an individual response = $3/\text{number of presentations}$), but 10 presentations are envisioned at this time. A subset of these personal reflections will be selected for class discussion.

Class Participation (IA: 2 points)

The remaining 2% of your grade will be assigned on the basis of class participation. That is, how regularly you attend class and how actively you participate in class activities.

Grade Scale

Grades will be assigned via the scale listed below. Rounding or curving of grades is not anticipated.

A	(94-100)	A-	(90-94)		
B+	(87-90)	B	(82-87)	B-	(80-82)
C+	(77-80)	C	(72-77)	C-	(69-72)
D	(60-69)				
F	(0-60)				

Posting Grades

Your scores on the various assignments will be posted on Sakai one week after submission.

Workload

You will be required to spend a significant amount of time on out-of-class work. This includes reading 50-100 pages for each quiz (7 weeks), working on the group project (12

weeks), completing assignments (3 weeks), preparing presentations (2 weeks), and writing reflections (in class for 10 weeks).

Late Submissions

Late submissions will be accepted with a 50% deduction within the 24 hour period following the submission deadline. The deduction will be waived if there are extraneous circumstances out of the student's control and appropriate documentation is provided.

Missed Quizzes

Students who will have to miss a quiz for extraneous circumstances out of the student's control will be allowed to reschedule if the instructor is notified in advance and appropriate documentation is provided. Presentations (e.g., in-class reflections) cannot be rescheduled.

Other Information

Attendance

You are expected to attend class regularly. If you miss a class, it is recommended that you see the TA or the instructor to make up for the missed class. Students are expected to attend *all of the scheduled classes*.

Plagiarism/Cheating

Plagiarism or cheating in any form is unethical and detrimental to education and *will not be tolerated*. With the exception of group projects, all work submitted by a student is expected to be a student's own work. Plagiarism is incurred when any part of anybody else's work is passed as your own (no proper credit is listed to the sources in your own work) so the reader is led to believe it is therefore your own effort. Students are allowed and encouraged to look up resources in the literature (including the internet) for their assignments, but *appropriate references must be included for the materials consulted, and appropriate citations made when the material is taken verbatim*.

If plagiarism or cheating occurs, the student will receive a failing grade on the assignment and (at the instructor's discretion) a failing grade in the course. The instructor may also decide to forward the incident to the Departmental Honesty Committees for further disciplinary action.

Honor Code

Notre Dame students are expected to abide by the Academic Code of Honor Pledge: "As a member of the Notre Dame community, I will not participate in or tolerate academic dishonesty."

Students with Disabilities

The instructor encourages the full participation of students with disabilities within the university community. If you require any accommodations related to a disability, please

provide the instructor with the appropriate documentation from the University Student Disability Services (<http://disabilityservices.nd.edu/>). The instructor will be happy to meet with you to discuss arrangements for accommodations.

Diversity Statement

Diversity means the fair representation of all groups of individualism: gender, sexual orientation, disability, age, socioeconomic status, ethnicity, race, culture, perspective, and other background characteristics. The instructor will strive to ensure that all materials, topics, and lectures presented in this course are respectful of the diversity of the students.

Electronic Communication

We will use Sakai as the course management tool (sakai.nd.edu). Course announcement as well as consultation with the instructor will occur via e-mail. Each student must maintain an e-mail account and is responsible for regularly checking for course messages.

Schedule

Please see link to schedule on Sakai (HCI-F16-Schedule - <http://tinyurl.com/HCI-F16-Schedule>) for the most updated schedule, reading list, and due dates.

Mapping of Topics and Activities with Learning Objectives

Learning Objectives	Lectures and Readings	Quizzes	Assignments	Project	Presentations/ Reflections
(LO1) Conceptual understanding of HCI theory and basic principles	Interaction Theory	×	×	×	
(LO2) Critically evaluate existing computer interfaces	Interaction Theory; Visual Design Principles		×	×	
(LO3) Apply the interaction theories, design methods, design principles, and evaluation techniques	Design Methods; Visual Design Principles; Evaluation Techniques		×	×	
(LO4) Learn about new trends, paradigms, and applications in HCI	Emerging Topics				×
(General Goal) develop a general appreciation for the field of HCI	All	×	×	×	×