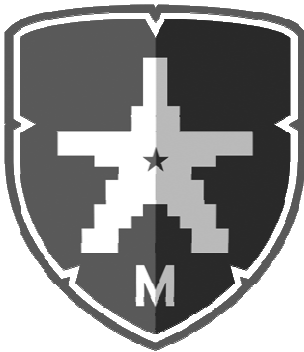


HDCC 208F

Designing Technology for and with Humans



Instructor

Evan Golub

egolubUMD@gmail.com

Course Description

The field of Human-Computer Interaction draws in researchers from many disciplines. Here at Maryland, our HCI Lab has had faculty and students from departments including Computer Science, Psychology, the iSchool, Journalism, Sociology, Business, and English. Individual project teams tend to have similar combinations of disciplines represented. These teams also work with “end users” who come from diverse populations such as medical doctors, children, older adults, and others. How does such a diverse group work together when designing new technologies *for and with* the people for whom the technologies are being built? If your core group is more science and engineering focused, how do you bring diverse viewpoints into a team's work? This course will explore and answer questions such as these!

We will explore the idea that to create a good and useful tool, you need to understand the people who will come to use it, and the tasks they want to accomplish with it. We will see that a cross-disciplinary team works best when each member contributes their unique view and skills to the whole. We will also see that to make a creation usable, you need to learn what mistakes might be common and then design to avoid them from happening. You will develop an understanding of these through the course readings, lectures, exercises, discussions, and projects.

For certain parts of this course there will be an implementation component. However, it is important to note that programming or building isn't the "new thing" here. The focus will be on the things that should be done when designing what you want to program or build. The group projects will have working prototypes as one of their outcomes, but you will find that much of the early design work and brainstorming will happen using "paper prototyping" via art supplies and graphical tools such as Photoshop and that much time will be spent working with potential users.

Unlike many traditional courses where there is a single set of learning outcomes expected for all students who enroll, you will find that while there are some uniform goals this course also sets different goals for you based on your background. For example, students with non-technical backgrounds will gain new insight into technology, students with technical backgrounds will gain new insight into the power of diversity in technology projects, and students with diverse backgrounds will learn how to shape them.

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Course Topics Include

- Defining the field of Human-Computer Interaction and exploring how it grew to include such diverse fields
- HCI -vs- User Interface Software and Technology
- Exploring the history of HCI through classic/historic readings
- Psychology of Everyday Things
- User-centered design
- Task-centered design
- Idea-ation/Brainstorming/Prototyping
- Team building across disciplines
- Overview of rapid prototyping tools (software and hardware)
- Project management
- Graphical Design
- Finding the strengths in both qualitative and quantitative evaluation (social science versus natural science approaches)
- The future direction of HCI and UIST in a more technologically diverse society

Some Student Learning Outcomes

Students completing this course will:

- obtain an understanding of how the areas of psychology and psychopathology connect to the design of hardware and software.
- gain a perspective of how the field of Human-Computer Interaction has grown and evolved as the technology as well as the users and their tasks have changed, and be able to discuss issues that have remained constant for decades as well as new issues designers face today.
- have the background, vocabulary, and experience to express to others the importance of elements of HCI such as task-centered and user-centered design.
- have the skills needed to search for historic and research project examples of what the industry sees as “new” ideas.
- learn about designing apps for mobile platforms
- both have experiences in taking an idea and bringing it to the level of a low-fidelity prototype, as well as using the appropriate assessment techniques and technologies to evaluate the design of both prototype and production software.

Major Course Deliverables

Individual Journal: As you read the assigned papers and articles, you will need to add a brief summary of each and your thoughts on the way it relates to course topics to your journal. As you work on your team project you will use the journal to help documented your contributions to the project, the progress being made on the project, and what lessons you have learned through working on the project. I would also like you to make special note of anything that surprised you as you are reading things or working on things. The journal will take the form of a Google Doc which you will share with me and which will be reviewed regularly.

Semester Project: There will be a group project where you will start by looking at real design challenges posted online and provided in class, consider which interest you, form teams to then develop the challenge into ideas for a new piece of software, and work through the process of user and task analysis, low-fidelity design, testing of that design, and building a medium-fidelity prototype and document describing your full implementation concept.

Class Presentations and Reports: There will be several in-class presentations and written reports. These will be a mixture of group and individual presentation/reports. They will mostly be related to the semester project or to your capstone project proposal.

Individual Work: There will be individual homework assignments to explore specific topics that are covered as well as reflection essays based on their readings. There will also be a written midterm and final exam. The final exam will include a take-home written portion regarding perceptions of yourself and other members of your discipline in connection to technology design as a result of the semester's experiences.

Readings

There will be readings (academic, newspaper, and magazine articles, book excerpts) posted on the class website during the semester. These will come from (at least) psychology, computer science, sociology, English, and ergonomics. Examples include:

- "Psychology of Everyday Things" by Donald Norman
- "Leonardo's Laptop" by Ben Shneiderman
- "Universal Principles of Design" by Lidwell, Holden, and Butler
- "100 Things Every Designer Needs to Know About People" by Susan Weinschenk

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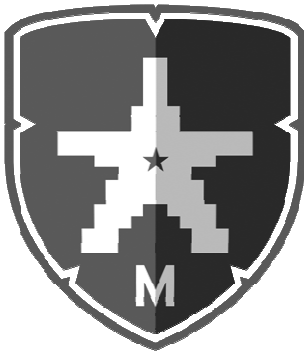
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Grading Distribution

Class participation: 12%

Individual journal: 8%

Homework assignments: 15%

Semester team project and written reports: 30%

Midterm and Final Exam: 30%

DCC workshops related to capstone: 5%

Academic Honesty

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. The University of Maryland Honor Pledge reads: ***I pledge on my honor that I have not given or received any unauthorized assistance on this***

assignment/examination. Unless you are specifically advised to the contrary, the Pledge statement should be *handwritten* and signed on the front cover of all papers, projects, or other academic assignments submitted for evaluation in this course. Students who fail to write and sign the Pledge will be asked to confer with the instructor.

Special Needs

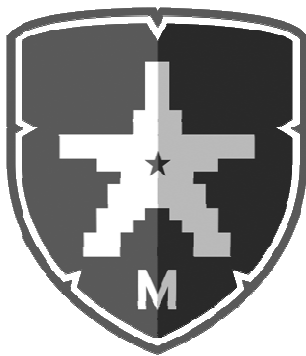
If you have a registered disability and wish to discuss accommodations, please email the instructors by the end of the second week of class. Disabilities can be registered through Disability Support Services (4-7682 or 5-7683 TTY/TDD).

Religious Observance

It is the student's responsibility to inform the instructor by email of any religious observances that will conflict with your attendance, assignment deadlines, or final exam. The student should provide emailed notification to the professor by the end of the second week of the term; the notification must identify the religious holiday(s) and the date(s). If this notification is not given to the instructor by this date, all missed assignments, quizzes, and exams are subject to grade penalties.

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Tentative Course Schedule

Weeks 1&2

What is the field of Human-Computer Interaction and how did it grow to include such diverse fields?
HCI -vs- User Interface Software and Technology
A “timeline” of the growth of Human-Computer Interaction.
Begin exploring real technology challenges for term project.

Week 3

Psychology of Everyday Things and how everyday objects provide clues to thinking about users.

Weeks 4&5

User-centered and task-centered design, and understanding both technical and non-technical user populations.
Idea-ation/Brainstorming/Prototyping and the power of arts and crafts supplies.
Team formation around a challenge with a team "pitch" of why they selected that challenge.

Week 6

Overview of rapid prototyping tools (software and hardware) that can be used by team members with different skills.

Week 7

Presentation of team project first round brainstorming results (wireframes/mock-ups/flowcharts/bullet lists).

Week 8

Midterm / Project management techniques and tools

Week 9

Graphical design and usability implications for diverse audiences

Weeks 10&11

Qualitative & Quantitative Evaluation – looking at how to apply approaches from both social and natural sciences.

Weeks 12&13

How to research for "prior art" examples of an idea.
How to write an original project pitch/proposal.

Weeks 14&15

Presentation of term projects and submission of final reports.
The future of the HCI and UIST fields and interdisciplinary design teams.