Instructor: Marshini Chetty  
E-mail: marshini@umd.edu  
Office: Hornbake library building, South Wing, 2117H  
Office hours: By appointment

Classroom location and meeting time: TBD, Thursdays 2:00 – 4:45pm

Course Website: http://elms.umd.edu (Note: This printed syllabus is subject to change. Please refer to the course website weekly schedule for the most up to date schedule.)

Course Goals

The goal of this course is to provide students with the opportunity to apply the skills they have learned in their coursework in a semester long project applied to a real world problem. This project will be more extensive and in-depth than course projects assignments. Students will be required to do comprehensive background research, choose appropriate Human Computer Interaction research methods and execute their projects with rigor. The project will be documented as the class progresses. Capstone projects will vary individually but all students are expected to follow a user-centered design process that may include the end-to-end process from design, prototyping, and evaluation or some subset of these steps conducted in depth, such as formative research.

Course Outcomes

Students who complete this course should develop the following skills and capabilities:

- Develop proficiency in conducting independent research on designing, prototyping, and evaluating an interface
- Ability to identify the most appropriate research approach within the context of their individual project
- Refine oral and written skills for communicating HCI problems, goals, research methods, and outcomes
- Develop a design for an interface at the appropriate level of fidelity for their individual project for inclusion in their project portfolio
Required Textbook

There is no required textbook for this course. The instructor will provide all readings as the course progresses. These readings may include research papers and readings on research methods.

COURSE SCHEDULE (SUBJECT TO CHANGE)

The following schedule lists the major topics and assignment due dates, which will be subject to change throughout the semester. The schedule provides a framework in which students can focus on their projects, while receiving guidance from the faculty and peers. The assignments will ensure that students make adequate progress towards their project goals but it is ultimately the students’ responsibility to complete their proposed work in a timely manner. The class will not meet formally each week but the instructor will be available for one-on-one consultations for individual feedback throughout the semester.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Session Topics</th>
<th>Class</th>
<th>Assignment Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 30</td>
<td>Introductions and plan for the semester.</td>
<td>Class</td>
<td>Project Proposal</td>
</tr>
<tr>
<td>2</td>
<td>Feb 6</td>
<td>Methods/TBD</td>
<td>Class</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Feb 13</td>
<td>One-on-One</td>
<td>One-on-One</td>
<td>Preliminary Progress Report</td>
</tr>
<tr>
<td>4</td>
<td>Feb 20</td>
<td></td>
<td>One-on-One</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Mar 6</td>
<td>Methods/TBD</td>
<td>Class</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Mar 13</td>
<td>Project presentations</td>
<td>Class</td>
<td>Mid-term Progress Report</td>
</tr>
<tr>
<td>7</td>
<td>Mar 20</td>
<td>Spring Break</td>
<td>No meeting</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Mar 27</td>
<td></td>
<td>One-on-One</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Apr 3</td>
<td>Lecture TBD</td>
<td>Class</td>
<td>Draft Reports and Slides</td>
</tr>
<tr>
<td>10</td>
<td>Apr 10</td>
<td>No meeting</td>
<td>No meeting</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Apr 17</td>
<td>No meeting</td>
<td>No meeting</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Apr 24</td>
<td>No meeting</td>
<td>No meeting</td>
<td>Report and Artifact Due</td>
</tr>
<tr>
<td>13</td>
<td>May 1</td>
<td>Final Project Presentations</td>
<td>Class</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>May 8</td>
<td></td>
<td>No meeting</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>May 15</td>
<td>No class</td>
<td>No meeting</td>
<td>Final Project Report &amp; Artifact Due</td>
</tr>
</tbody>
</table>

The instructor may arrange additional class sessions depending on emerging topics of interest. For example, if there are many students using a similar research methodology, the instructor may arrange for a class session to cover that methodology in more detail.

Students are encouraged to arrange one on one sessions with the instructor throughout the semester to address any challenges that emerge in their specific projects.
Grading

The overall grade consists of the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Portion of Overall Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project proposal</td>
<td>10%</td>
</tr>
<tr>
<td>Preliminary progress report</td>
<td>5%</td>
</tr>
<tr>
<td>Mid-term progress report</td>
<td>15%</td>
</tr>
<tr>
<td>Final project presentations</td>
<td>20%</td>
</tr>
<tr>
<td>Final project report and artifact</td>
<td>40%</td>
</tr>
<tr>
<td>Class participation (i.e., peer feedback, in-class discussions)</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Project proposal:** Students must have a proposal for their capstone project prepared by the first class, ready for approval by the instructor. It is expected that the preparatory course (INST 799) taken in the immediately preceding semester will provide students with sufficient opportunity to explore potential project options and prepare a project proposal.

**Preliminary and mid-term progress reports:** These reports will ensure that the students’ projects remain on track and appropriately scoped. Mid-term reports will also be presented to the class to facilitate peer feedback.

**Final project reports and presentations:** At the end of the semester, students will present their capstone projects to a panel of three HCI experts including the instructor, the director of the HCIM program, and an external evaluator. The presentations will be open to the public and will be advertised on relevant mailing lists. One week prior to the final capstone project presentation, each student will deliver a written report as appropriate for that project to the panel. Based on the oral presentation and the written report, the panel will determine if the final project is acceptable for completion of the course. Upon satisfactory completion of the project capstone project, the final report must be deposited in DRUM and made publicly accessible at [http://drum.lib.umd.edu](http://drum.lib.umd.edu).

**Types of Capstone Projects**

There is no quintessential model for an HCIM capstone project. Projects may consist of formative studies, design, prototyping, and evaluation. These components may be combined in a number of ways but it is expected that these approaches will form the basis of most capstone projects. The descriptions below are to serve as guidelines only. The instructor must approve each project. All projects, regardless of the structure, must include a background literature review including a review of existing comparative systems if relevant.
1. End-to-end User Centered Design Process (including formative research, design, building, and evaluation)

Projects falling into this category will balance their effort on a subset of these core components of an end-to-end user-centered design process. For example, designing, building, and evaluating a new prototype or conducting a formative study that informs the design and implementation of a prototype with a limited evaluation.

2: Focus on Formative Work

Projects that focus primarily on formative work will devote the majority of the effort on requirements gathering and analysis. This may include work on evaluating data from an existing data set or a study of existing practice. For example, such a project could identify the need for improving the application of security patches by average Internet users and conduct qualitative interviews with Internet users to understand why or why not they apply security patches. The outcome of this analysis would be an understanding of current user perceptions about cybersecurity and security patches, existing practice on software patching behaviors, and proposed solutions for increasing the adoption of security patches i.e., implications for the design of software patching interfaces. The expected output of such a project may be initial sketches and mockups but not necessarily a fully functional software prototype.

3. Focus on Design and Implementation of a Prototype

The primary contribution of projects that focus on design will be a novel and functional technology artifact. In these projects, the final artifact will form one part of the output but the design process and design rationale must also be clearly articulated. Artifacts could include a functional software application or a tangible computing interface. An example of such a project might be to conduct participatory design sessions with children and then to design a tangible computing computer game for kids. In these projects, evaluation is necessary but may not be as extensive as options 1 and 4.

4. Focus on Evaluation

Projects that focus on evaluation will involve little or no formative work. If prototypes are produced, they will be much smaller scale than option 3. Evaluations can be conducted in the lab or in the field as appropriate for the interface under study. In these projects, the interface to be evaluated could be an existing product in collaboration with a company. The evaluation could also be of a prototype that is simple and fast to implement, leaving the majority of the time for in-depth evaluation e.g., via a usability study. An example might be partnering with an existing company that wants to evaluate a new interface or product. Outputs could include extensive usability testing of the product and recommendations for improvements.
Letter Grades: Letter grades will be assigned according to the following scale:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>98-100</td>
</tr>
<tr>
<td>A</td>
<td>93-97</td>
</tr>
<tr>
<td>A-</td>
<td>90-92</td>
</tr>
<tr>
<td>B+</td>
<td>88-89</td>
</tr>
<tr>
<td>B</td>
<td>83-87</td>
</tr>
<tr>
<td>B-</td>
<td>80-82</td>
</tr>
<tr>
<td>C+</td>
<td>78-79</td>
</tr>
<tr>
<td>C</td>
<td>73-77</td>
</tr>
<tr>
<td>C-</td>
<td>70-72</td>
</tr>
<tr>
<td>D+</td>
<td>68-69</td>
</tr>
<tr>
<td>D</td>
<td>63-67</td>
</tr>
<tr>
<td>D-</td>
<td>60-62</td>
</tr>
<tr>
<td>F</td>
<td>0-59</td>
</tr>
</tbody>
</table>

Academic Integrity

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 of academic dishonesty, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit [http://www.shc.umd.edu](http://www.shc.umd.edu).

Students with Disabilities

Please let the instructor know at the beginning of the semester if you have any kind of physical or learning disability that will affect your coursework. The instructor will then contact the relevant services at the University’s Disability Support Services to work out appropriate accommodations for you. Please refer to the DSS website for more details: [http://www.counseling.umd.edu/DSS/](http://www.counseling.umd.edu/DSS/).

Emergency Preparedness:

Please refer to the website: [http://www.umd.edu/emergencypreparedness/](http://www.umd.edu/emergencypreparedness/) for the state of the campus. If campus is closed, information about rescheduling course activities will be provided via email or the course website once the campus has re-opened.

Attendance policy
Attendance is extremely important in this course to ensure students make the most of faculty guidance for their individual projects and to facilitate peer feedback. Attendance will be taken at each class and will influence each student’s class participation grade. Allowances can be made for special circumstances such as illness (self or dependent), religious observances, and other compelling circumstances beyond the student’s control (see the University’s attendance policy at http://www.testudo.umd.edu/soc/atedasse.html). Please contact the instructor as soon as you know (or suspect) that you will not be able to attend.

**Late Assignments & Grading Procedures**

It is important that assignments are turned in on time to ensure the instructor has sufficient time to provide feedback on your project. An electronic copy of the assignment is due at the beginning of class and must be uploaded to the ELMS website as a single PDF document, unless otherwise indicated. If there are extenuating circumstances (e.g., personal illness, death in the family) that make it impossible to turn in an assignment please let the instructor know (i.e., before the assignment is due) so that appropriate accommodations can be made. The general policy is that late work will have 20% of its total grade deducted per calendar day, starting on the same day that it is due. Accepting late work and assigning late penalties is at the instructor’s discretion.

**Class Participation**

Students are expected to fully participate in all class activities. You should come to class prepared to discuss any assigned readings as well as to provide your perspectives on these readings. You will also be expected to provide peer feedback during presentation days. The effectiveness of the course depends on the quality of your participation and willingness to internalize the skills and concepts covered in the course and efforts to apply them to real-world settings.

**CourseEvalUM:**

Helping to evaluate courses is a part of your responsibility as a member of the University of Maryland community. All feedback you provide is confidential and important and it will help improve teaching and learning at the University as well as the tenure and promotion process. Further, all instructors and academic administrators can only view submitted feedback after grades have been entered. CourseEvalUM will be open for fall semester classes in December at http://www.courseevalum.umd.edu. Students with no “Pending” evaluations in their Evaluation Dashboard will have access to the aggregate results of other course evaluations online.
Preliminary Progress Report

Purpose: This assignment provides the first checkpoint to ensure that each project is off to a reasonable start. At this point, milestones can be readjusted if necessary.

Deliverables: A brief progress report (PDF) must be uploaded to the ELMS course website at the beginning of class on the due date.

Brief Progress Report:
Submit a ~1 page report that includes the following information:

- **Original Timeline:** Include the original timeline that was approved by the instructor at the start of the semester. Provide a short description of whether you are on track or not, and if not, explain why.
- **Milestones Accomplished:** List the major milestones you have accomplished so far this semester and provide a description of the work done. In other words, instead of listing ‘Finished prototype for experiments’, provide details on what that entailed and how it will feed into the next part of the project.
- **Updated Timeline and Plan:** Provided an updated timeline and milestones for the remainder of the semester.

Grade Breakdown (5%):
The first progress report comprises 5% of your total grade. It will be graded for completeness in terms of the outline above.
Midterm Project Report and Presentation

**Purpose:** This assignment provides a checkpoint to ensure that all projects are proceeding on schedule in line with the goals and milestones. At this point, milestones can be readjusted if necessary.

**Deliverables:** The following components must be uploaded to the ELMS course website at the beginning of class on the due date.

1. Brief Progress Report
2. Final Report Section Outline
3. In-class Presentation

**Brief Progress Report:**
Submit a ~1 page report that includes the following information:

- **Original Timeline:** Include the original timeline that was approved by the instructor at the start of the semester. Provide a short description of whether you are on track or not, and if not, explain why.

- **Milestones Accomplished:** List the major milestones you have accomplished so far this semester and provide a description of the work done. In other words, instead of listing ‘Finished prototype for experiments’, provide details on what that entailed and how it will feed into the next part of the project.

- **Updated Timeline and Plan:** Provide an updated timeline and milestones for the remainder of the semester.

**Final Report Section Outline:**
Please provide an outline of the planned sections you will include in your final report as appropriate for your individual project. Provide first and second level headings and a one sentence description for each heading.

Most reports will have the following sections but this exercise is to get you to think about what is relevant for your particular project and to help you plan for each section and additional sections as necessary to communicate your project goals, results, and outputs.

1. Introduction and Motivation
2. Related Work/Background
3. Design Approach
4. Prototype Design and Implementation
5. Evaluation Method
6. Evaluation Findings
7. Discussion including implications of the findings and a reflection on which parts of the projects worked well or not and why.
8. Limitations
9. Future Work
10. Conclusions

**In-class Presentation:**
Each student will be expected to do an in-class presentation on their progress to solicit peer feedback. Presentations should be 10 minutes and will be cut off if they run long. To ensure you communicate your progress properly and provide the class with the best opportunity to provide you with feedback, practice your delivery ahead of time.

The following is a recommended outline but you do not need to follow this exactly. Adjust the sections as appropriate for your individual project.

1. Overall problem and motivation
2. Brief overview of approach / solution
3. Related work – Please be brief and only include the most important work necessary to put your project contributions in context
4. Methods
   a. Design approach and design rationale
   b. Evaluation Method (completed or planned)
5. Prototype
6. Findings (If completed)
7. Progress Reflection (Show the original timeline and explain where progress has drifted and why)
8. Plan (Explain your remaining milestones and how your plan will be adjusted in light of current progress)

Presentations may be in PowerPoint, Keynote, Google docs, or Adobe PDFs. You are welcome to use my laptop for the presentation but your slides must be emailed to me by **12pm on the due date**. If you are using your own laptop for the presentation, ensure that you have the necessary connectors/adapters for the presentation.

**Grade Breakdown (Total 15%):**
This assignment is worth 15% of the total grade.

**Progress Report (5%):** All reports will be graded based on outline provided below. The overall writing quality will affect your grade. All efforts should be made to ensure that the writing is clear and concise. Reports should make good use of section headings and subsections, appropriate whitespace, and ensure that the spelling and grammar is error-free. Where appropriate, you may include images and figures in the write-up, ensuring that these are captioned and numbered and referred to as such in the body of your report.

**Final Report Section Outline (2%):** The final report section outline will be graded for completeness and relevance for the individual project.
Presentation (8%): Presentations will be graded for aesthetics (easy to read slides with an appropriate balance of text and images) and for completeness based on the presentation outline guidelines. Grades will be given for presentation style, the content and quality of the work, and for adherence to the timing constraints.
Final Project Presentation

Purpose: The final presentations will give students an opportunity to provide an overview of their capstone project to a panel of HCI experts for feedback from the panel and the class. Presentations will be open to the public and will be advertised on relevant mailing lists.

Deliverables: Slides must be submitted to the instructor by 12pm on the day the assignment is due. You may use your own laptop to present or my laptop. Acceptable formats are PowerPoint, Keynote, Google Docs, and Adobe PDFs.

Requirements: Final presentations will be 10 minutes long with 5 minutes for questions. Presentations going over time will be cut off so please be sure to prepare and practice in advance to make sure you meet the timing constraints.

The following is a recommended outline but you do not need to follow this exactly. Adjust the sections as appropriate for your individual project.

1. Overall problem and motivation
2. Brief overview of approach / solution
3. Related work – Please be brief and only include the most important work necessary to put your project contributions in context
4. Methods
   a. Design approach and design rationale
   b. Evaluation Method
5. Prototype/Demo
6. Findings
7. Discussion and Reflection
8. Limitations
9. Future Work
10. Conclusions

Grade Breakdown (Total 20%):

This assignment forms 20% of the entire grade. The presentation will be graded on the content and quality of the work, how well the information is communicated, the aesthetics, and style of the presentation.

• Problem, Motivation, and Related Work (3%): Is the research problem clearly explained and is the motivation for the project conveyed in a compelling way? Is the relevant related work presented to provide the context of the project contributions?
• Method (4%): Does the presenter clearly explain why they chose the methodology for their particular project? Are the methods chosen appropriate and
well justified in the context of the project? Is there sufficient detail presented to convey whether the research was conducted in a valid and rigorous manner? Does the presenter discuss the limitations of the methods used in the context of the project? Note methodologies for the individual projects will vary but be sure to include where relevant the number of participants, description of the research instruments used, recruiting strategies, and analysis techniques.

- **Artifact/Design and Findings (5%)**:
  - If you are presenting an artifact/design: Is the artifact/design presented well justified? How well does the artifact/design address the research problem? If relevant, was the artifact/design modified in any way in response to evaluation?
  - If you are presenting empirical findings: Are the findings grounded in the data and does the presenter use examples from the data to justify the findings?

- **Discussion and Future Work (4%)**: What are the implications of the findings both for the immediate project and for HCI in general? What are the ideas for future work in terms of refining artifacts/designs or conducting further empirical work or moving to design? What are the limitations of this specific project?

- **Presentation Style (4%)**: How well prepared is the speaker? Is the delivery well organized and clear? Does s/he keep to timing constraints? Are the slides clear and concise?
Final Project Report and Artifact/Design

**Purpose:** The final project report and the artifact/design comprise the final outputs of the capstone project.

**Deliverables:** The final project report (PDF only), any code/designs, and a narrated video demo artifact/design must be submitted to me by the start of class on the due date.

**Requirements:**
- The final report should be written clearly and concisely. There is no page limit but make sure to keep the writing to the point.
  - **Page layout and fonts:** Please use an 11pt or 12pt font, 1” margins, and single line spacing.
  - **Citations:** Please cite all work that you have referenced within the body of your text including reports, websites, papers, books, and other published or unpublished material. Please use the American Psychological Association (APA) citation format.
  - **Tables and Figures:** Please make sure that any tables or figures used in the report are correctly labeled and that these have appropriate captions.
- Artifacts/designs will vary per individual project. Please submit any code/designs to the ELMS website for review. If you are unsure about what to submit for this portion of the project, please discuss this with the instructor as early in the semester as possible.
- For the artifact/design, please create a 3-5 minute narrated screen capture demo of your artifact/design and upload it to ELMS or YouTube (send me the link if it’s on YouTube). For creating the video demo, I recommend downloading a free trial copy of Camtasia (http://www.techsmith.com/camtasia.html). To get ideas for video demo formats, search for “CHI Interactivity” or “CHI Madness” on YouTube.

**Final Report Outline**

**Introduction and Motivation:** This section should clearly introduce the goals of the research and motivate why this is an important problem or issue to address. Explicitly state what the problem is you are addressing, why it is interesting, and what your contributions will be to HCI or the wider body of knowledge. Include a brief overview of your solution and provide enough context for the rest of the report.

**Related Work/Background:** In this section, discuss the relevant existing literature related to the issue you are addressing. Make sure not to create a laundry list of related work. Instead, synthesis the literature to clearly show what work has been done in the past, and how your work contributes to the body of knowledge i.e., identify the gaps in the literature that your work fills. Rely primarily on academic or reputable sources and use the guidelines from the lecture on literature reviews.
Method: In this section, discuss how you tackled the issue you are addressing. Include information on the methods you used, the number of participants you had, recruiting strategies, and data analysis techniques. In this section, make sure to provide enough detail so that a reader could replicate the study if they wish to conduct a follow up.

- **Design Approach**: If your primary contribution is design, please be sure to discuss your design approach.

- **Prototype**: If you create a prototype, describe it in detail. Use screenshots as necessary or sketches or figures to communicate the designs.

- **Evaluation**: If you conducted an evaluation, describe the evaluation methods. Also include information on study design, research protocols used, participants and recruitment. Similarly, include details on how you analyzed the data.

Findings: In this section, discuss the findings from the research you conducted. These may include empirical findings, the results of an evaluation, design sessions, etc. Discuss the findings and justify the overall themes with examples from your data to make the results credible.

Discussion: In this section, provide an analysis of your findings and reflect on your project more broadly. Provide interpretations of your results. For example, if you found more participants liked version A of your interface as opposed to version B, why is that important? How will it affect the design of future prototypes of systems? Were any of your results surprising? If so, why? In this section, also include a reflection on the project as a whole. Were there things that worked well or areas were you feel you could have improved the project? The discussion section allows you to go beyond merely reporting findings and allows you to showcase your contributions.

Limitations: All projects have limitations of some sort. Explain the limitations in your project. Did the way you conduct the research affect the results? Were there choices you had to make that introduced limitations? Were the methods limited in some way?

Future Work: The final section of the report should outline ideas for future research. Based on your findings and discussion, what directions should future work focus on? What important problem areas remain and what are the most compelling areas for further study?

Conclusions: End the report with your overall conclusions and takeaways.

References: Please cite all references used in the body of the report.
Appendices: Use this section if needed to keep the report flowing and easy to read. For example, you may want to include examples of research instruments used (e.g. interview/survey questions, task breakdowns for usability tests), longer excerpts of data, larger screenshots, etc. You can also use this section for any other supplementary information that will help the reader understand your project.

Grade Breakdown (Total 40%): The final project report and the artifact/design comprise 40% of your total grade. These components are the culmination of your work across the entire semester. You will be graded for content and presentation style.

Introductory Material (5%): Well-motivated problem and solution including clearly articulated goals

Solid Methods (6%): Appropriate and well-justified methods section

Findings (7%): Clear and compelling findings

Discussion, Future Work, and Conclusions (7%): Well thought out discussion of implications of findings, interpretation of what findings mean, and outline of broader contributions to the body of knowledge. Concrete directions outlined for future work and overall takeaways for the entire project clearly stated.

Quality of artifact/design and video demo (10%): The artifact/design is well presented and justified. Implementations should be robust enough and at the appropriate level of fidelity for the purposes of the project.

Quality of writing and presentation (5%): The writing is clear and concise and the report uses sections, subsections, and headings to delineate content. The message is clearly conveyed and the material is well organized and covered in sufficient depth for the reader to understand the project without including extraneous details.