Course overview

This course is a combination programming course and design studio, and is for those who want to express their interactive ideas in working prototypes. Students will learn how to use programming languages, how to design and implement effective GUI interfaces, and how to perform rapid, effective iterative user tests. The course will cover several prototyping tools and require a number of prototypes to be constructed in each. These will range from animated mock-ups through fully functional programs. The course will also cover usability testing of interactive prototypes. This course is intended for HCII Masters students who come to CMU with a minimal, but competent programming background. It is also appropriate for CMU HCI undergraduate "second majors" in HCII who have had an introductory programming course. Because this course has a design studio component, class attendance is mandatory.

The course is project-based; the assignments all require implementing an interface in a prototyping system, iteratively testing that interface with real users, and then modifying the interface based on what you find. Some class sessions will be design reviews where students present their findings/modifications based on the user testing data. The students taking this course will often not be professional programmers, but will probably need to interact with programmers, and need to:

- Learn to express yourself in executable form
- Learn the basics of what is hard and easy to rapidly prototype
- Learn the basic terminology and approaches used by programmers, so you can work with them
- Experience the frustration and joy of programming a working prototype
- Design and conduct informal user tests of prototypes to find flaws with your interfaces

Prerequisites

Proficiency in a programming language such as C, programming methodology and style, problem analysis, program structure, algorithm analysis, data abstraction, and dynamic data. Normally met through an introductory course in programming in C, C++, Pascal or JAVA, such as: 15100 or 15112 or 15127 or equivalent.

Pragmatically, the requirement can be defined as "can successfully write a 300 line program in a 48 hour period." If you cannot complete the first assignment on time, I take that as evidence that you do not have adequate pre-requisites for the course.

Textbooks

There are two books required for this course:

Grading and exams

The individual components of this course will be weighted as follows:

- Participation (in-class & online) 5%
- Assignment 1 5%
- Assignment 2 10%
- Assignment 3 10%
- Assignment 4 10%
- Assignment 5 10%
- Assignment 6 5%
- Assignment 7 15%
- Midterm 10%
- Final 20%

Classroom and online participation

There will be material covered in class that is not available in the readings, so attendance at all lectures is mandatory. After 2 unexcused absences, each unexcused absence will result in a 1/3rd of a letter grade penalty on the semester grade, so show up to class, or let me know beforehand why you won’t be in!

You are expected to actively participate in classroom discussion by asking questions, answering questions, and in general making comment where appropriate. In addition, you are expected to have an active online participation by commenting on other students’ critique and questions. Your participation will be assessed on the quality of your comments and their frequency.

Late policy, incompletes, and missed tests

Homework is due before class on the assigned day (submission via email to the instructor’s email address). Starting immediately at the start of the class when an assignment is due, a full grade will be deducted, followed by another full grade for each class period late.

It is the policy of this class not to give incompletes. All of the assignments end with an in-class presentation of your work, so you will need to have each one finished on time. Note that the course load is designed to be quite uniform during the term, since there is no big project at the end.

Make up tests will not ordinarily be given. If you know you are going to have to miss a test for valid reasons, discuss it with me and you can take the test early. If you miss a test due to a medical emergency, you must notify me before the exam.
## Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings</th>
<th>Assignments</th>
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| Tu 10 Feb  | Course Introduction: Why are interfaces important, and why are they hard to design and implement? | Nielsen: Chapters 1 and 2  
| Th 12 Feb  | What is design?                            | Norman: All chapters                                                     | #0 assigned |
| Tu 17 Feb  | Flex Tutorial Room: TBD                    |                                                                          | #1 assigned |
| Th 19 Feb  | Flex Tutorial Room: TBD                    |                                                                          |             |
| Tu 24 Feb  | NO CLASS                                   |                                                                          |             |
| Th 26 Feb  | Usability engineering design process       | Nielsen: Chapter 4  
Recommended Readings:  
Scott Berkunn. "Issue #12: The Art of UI Prototyping " November 2000. | #1 due  
#2 assigned |
<p>| Th 5 Mar   | In-class paper prototyping exercise        |                                                                          | #0 due      |</p>
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<tr>
<th>Date</th>
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<th>Assignments</th>
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<tbody>
<tr>
<td>Th 12 Mar</td>
<td>Presentation of Assignment #0</td>
<td></td>
<td>#2a due</td>
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<tr>
<td>Tu 17 Mar</td>
<td>Debugging</td>
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<td>#2b assigned</td>
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<tr>
<td>Th 19 Mar</td>
<td>Output</td>
<td>Nielsen: Chapter 3</td>
<td>#2b due</td>
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<tr>
<td>Tu 24 Mar</td>
<td>Input</td>
<td>Nielsen: Chapter 5</td>
<td>#3 assigned</td>
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<tr>
<td>Th 26 Mar</td>
<td>Interaction techniques</td>
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<td>#3 (prelim.) due</td>
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<tr>
<td>Tu 31 Mar</td>
<td>Review for midterm</td>
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<td>#4 assigned</td>
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<tr>
<td>Th 2 Apr</td>
<td>MIDTERM</td>
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<tr>
<td>Tu 7 Apr</td>
<td>NO CLASS</td>
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<td>Th 9 Apr</td>
<td>NO CLASS</td>
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<tr>
<td>Tu 14 Apr</td>
<td>Presentation of Assignment #3</td>
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<td>#3 due</td>
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<tr>
<td>Th 16 Apr</td>
<td>Midterm and UARS</td>
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<td>#4 (prelim.) due</td>
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<td>Tu 21 Apr</td>
<td>Finite state machines</td>
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<td>#5 assigned</td>
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<td>Th 23 Apr</td>
<td>Properties of people</td>
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<td>#6 assigned</td>
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<tr>
<td>Tu 28 Apr</td>
<td>International design</td>
<td>Nielsen: Chapter 9</td>
<td>#5 due</td>
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<td>Th 30 Apr</td>
<td>NO CLASS</td>
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<tr>
<td>Tu 5 May</td>
<td>Presentation of Assignment #4 and #5</td>
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<td>#4 due</td>
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<td>Th 7 May</td>
<td>Animation, sound and time</td>
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<td>#7 assigned</td>
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<td></td>
<td>#7 (idea) due</td>
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<td>Th 14 May</td>
<td>Review for Final</td>
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<tr>
<td>Tu 19 May</td>
<td>Presentation of Assignment #7</td>
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<td>#7 (software &amp; 1 page) due</td>
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<td>Th 21 May</td>
<td>NO CLASS</td>
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<td>Tu 26 May</td>
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<td>#7 (report) due</td>
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<td>TBD</td>
<td>Final exam</td>
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**Extra reading material**

The following papers may be found via the ACM Portal (http://portal.acm.org) or Google Scholar (http://scholar.google.com)


Resources

Forum

http://hci.dme.uma.pt/forums

Syllabus

http://hci.dme.uma.pt/courses/pui

Instructor email

vassilis+pui@cmu.edu