Course Info: Class section, room and schedule

Class Instructor: Instructor’s info

COURSE DESCRIPTION

The course covers the psychological and behavioral science of human-computer interaction, including cognition, attention, memory, problem solving, mental models, perception, and action. Emphasis is placed on developing an understanding of the interaction between human and electromechanical systems and how these processes impact the design and testing of interactive technologies.

REQUIRED COURSE TEXTS

Course materials are available on OnCourse. However, many papers are also freely accessible on the Internet.

Title: Designing Pleasurable Products
Author: Jordan, P. W.
Copyright: 2000
Publisher: London: Taylor & Francis
Note: This book is available online at the IUPUI library (http://www.ulib.iupui.edu). You can download the e-book (in PDF format) for free.

Title: Human Factors: In Simple and Complex Systems, Second Edition
Author: Proctor, R. W. & Van Zandt, T.
Copyright: 2008
Publisher: CRC Press

Papers: Various papers will be read throughout the course. These papers will be available via on OnCourse, many can also be found on the Internet. Searching from within the IUPUI VPN will give you privileges of the IU Library system on some sites.

COURSE OUTCOMES

1. To familiarize students with some of the basic human and machine-related factors, which influence the design and development of interactive computing systems.
2. To familiarize students with current theory and research on the psychological factors to be considered in designing interactive computing systems.
3. To explore the interrelationships between psychological processes and the characteristics of computing systems being designed for human use and, in so doing, to develop an appreciation for the ways in which theory and research can guide design and in which design experience can contribute to the development of theory and research.

COURSE OBJECTIVES

The learning outcomes of this course will include each student acquiring the skill to

I. Explain terms and concepts related to the following range of Psychology of HCI topics:
   1. Experimental methods
   2. Theoretical underpinnings in cognitive psychology
      a. Human information processing
      b. Distributed cognition
   3. Emotional design
   4. Cultural and psychological aspects of HCI
   5. Human-robot interaction
   6. Ethics
   7. Product evaluation and testing methods
   8. Qualitative and quantitative methods of assessing an interaction under varying conditions

II. Evaluate interactive products by applying the above principles and models.

COURSE TEXT, READING, and CLASS DISCUSSIONS

Assessing Your Understanding of the Readings:
The weekly readings from the course texts and one supplemental journal article in human-computer interaction. Each student should not only read the assigned material but also arrive at a competent understanding of it. Four measures will be used to assess learning competency from the weekly readings:

1. Weekly discussions, directed by specific questions, will be organized through OnCourse. Students are required to participate each week. The discussion is intended to challenge student comprehension, while adding practical applications to the theoretical content.
2. Weekly in-class reading questions (i.e., quizzes) will be given to assess learning and comprehension, as well as to determine whether students are doing the reading.
3. A project and presentation involving an HCI method will be assigned in which students will summarize and integrate theories from the semester-long reading assignments. Students will demonstrate an application of their assigned method within their presentation.

Reading Presentation:
Beginning with Lesson 4, students will create presentations similar to those of the instructor. The presentation will be on outside paper related to the selected reading. In other word's: the student's presentation should complement the instructor's presentation not duplicate it. The selected additional reading must be provided to your section instructor by the Saturday preceding the due date. The presentation materials should be in a form that can easily be distributed to other students.
**Quizzes:**
Quizzes will be available on OnCourse one week prior to their assigned lesson under “Test and Surveys”. Students will have two minutes per question, and will be notified of errors after submission of the quiz. Quizzes will remain open for review one week after their assigned lesson. After this time, the quizzes will be closed, and late submissions will not be possible. Quizzes will be closed the following Tuesday at 6:00 PM.

**COURSE GRADE BREAKDOWN**

1. Implementation and presentation of HCI method 20%
2. Report/project on related readings 20%
   - Proctor and Van Zandt assignment 7%
   - Proctor and Van Zandt, Kirsh and Maglio, and Hutchins assignment 13%
3. Practical exercises 20%
   - uLogLite/LogSquare assignment 5%
   - CogTool assignment 10%
   - NEM assignment 5%
4. Quizzes (Questions on weekly readings) 25%
5. Class participation* 5%
6. Reading presentation for specified lesson 10%

*Participation and engagement during class discussions:
- Responsive and knowledgeable of text material in discussions and presentations
- Evidence of preparation for class discussions
- Class attendance and promptness

**GRADING SCALE**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>97–100</td>
</tr>
<tr>
<td>A</td>
<td>93–96.99</td>
</tr>
<tr>
<td>A-</td>
<td>90–92.99</td>
</tr>
<tr>
<td>B+</td>
<td>87–89.99</td>
</tr>
<tr>
<td>B</td>
<td>83–86.99</td>
</tr>
<tr>
<td>B-</td>
<td>80–82.99</td>
</tr>
<tr>
<td>C+</td>
<td>77–79.99</td>
</tr>
<tr>
<td>C</td>
<td>73–76.99</td>
</tr>
</tbody>
</table>
# COURSE CALENDAR

Dates below refer to the date of the in class section of this course. The online section will follow the same schedule. Take particular note of the dates in the “Items Due” column.

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Date</th>
<th>Topics Covered</th>
<th>Items Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>8/21</td>
<td>Course orientation (no lecture)</td>
<td>Syllabus Quiz (8/23; 11 am)</td>
</tr>
<tr>
<td>1</td>
<td>8/28</td>
<td>Research methods in human factors Reliability and human error in systems</td>
<td>Quiz #1 (8/29; 11 am)</td>
</tr>
<tr>
<td>2</td>
<td>9/4</td>
<td>Human Information Processing (HIP) Attention and the assessment of mental workload</td>
<td>Quiz #2 (9/5; 11 am)</td>
</tr>
<tr>
<td>3</td>
<td>9/11</td>
<td>Retention and comprehension of information Solving problems and making decisions</td>
<td>Quiz #3 (9/12; 11 am)</td>
</tr>
<tr>
<td>4</td>
<td>9/18</td>
<td>The four pleasures</td>
<td>Proctor and Van Zandt assignment (9/18; 1 pm) Quiz #4 (9/19; 11 am)</td>
</tr>
<tr>
<td>5</td>
<td>9/25</td>
<td>Creating pleasurable products</td>
<td>Reading Presentation (9/25; 1 pm) Quiz #5 (9/26; 11 am)</td>
</tr>
<tr>
<td>6</td>
<td>10/2</td>
<td>Methods used in the product-creation process uLogLite/LogSquare assignment</td>
<td>Quiz #6 (10/3; 11 am)</td>
</tr>
<tr>
<td>7</td>
<td>10/9</td>
<td>GOMS Novice-Expert ratio Method (NEM)</td>
<td>CogTool assignment (10/9; 1 pm) Quiz #7 (10/10; 11 am)</td>
</tr>
<tr>
<td></td>
<td>10/16</td>
<td>We will observe fall break – the in class section will not meet</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>10/23</td>
<td>Psychometric evaluation</td>
<td>NEM assignment (10/23; 1 pm) Quiz #8 (10/24; 11 am)</td>
</tr>
<tr>
<td>9</td>
<td>10/30</td>
<td>Implicit Association Test (IAT)</td>
<td>Methods presentation (10/30; 1 pm) Quiz #9 (10/31; 11 am)</td>
</tr>
<tr>
<td>10</td>
<td>11/6</td>
<td>Academia versus industry Distributed cognition and communication</td>
<td>Quiz #10 (11/7; 11 am)</td>
</tr>
<tr>
<td>11</td>
<td>11/13</td>
<td>Context Epistemic and pragmatic action</td>
<td>Proctor and Van Zandt, Kirsh and Maglio, and Hutchins assignment (11/13; 1 pm) Quiz #11 (11/14; 11 am)</td>
</tr>
<tr>
<td>12</td>
<td>11/20</td>
<td>Wither psychoanalysis Epistemological pluralism Human agency</td>
<td>Quiz #12 (11/26; 11 am)* * Extended to 11/26 due to Thanksgiving break</td>
</tr>
<tr>
<td>13</td>
<td>11/27</td>
<td>Delay and user performance in Human-Computer Interaction Authenticity</td>
<td>Quiz #13 (11/28; 11 am)</td>
</tr>
<tr>
<td>14</td>
<td>12/4</td>
<td>Human values, ethics, and design Value sensitive design</td>
<td>Quiz #14 (12/5; 11 am)</td>
</tr>
</tbody>
</table>
POLICIES FOR ATTENDANCE AND ASSIGNMENT/PROJECT DEADLINES

1. **Attendance and Participation:** All students are expected to participate in the class discussion hosted on OnCourse. Each student must pose at least one question to their fellow students and respond to at least two questions. Questions and responses should be designed to create a common understanding of the materials. Failure to participate will be counted as a missed “class”.

2. **Missing class WILL affect your grade.** Students are allowed two (excused or unexcused) absences before their grade will be affected. In other words, whether you are sick or have personal problems or issues for missing class, it will amount to the same. Missing class means you do not show for the entire evening of class. The grade reduction policy works in this way.
   a. On the third missed class your final grade will drop 5 points (regardless of the reason).
   b. On the fourth missed class your final grade will drop 10 points (regardless of the reason).
   c. On the fifth missed class a grade of “F” will be issued for the course.

3. **Responsible for all materials or content:** All material covered in class or any assignments made during class are the students’ responsibility. In other words, if class is missed, the student is responsible to find out what was covered, whether course content, an assignment, quiz, or a revision to a due date, time, or place of an assignment.

4. **Deadlines:** ALL assignment deadlines are outlined in this syllabus. BUT are described in DETAIL in the weekly DELIVERABLES handouts. The instructor will give reminders of these dates, BUT in the end, each student is responsible for the deadline. Also, course assignment deadlines should be adhered to, to insure fairness to all students. For the purpose of maintaining an equal and fair evaluation of each student’s work, no student will receive special treatment. As a result, the following rules will apply to this course:
   a. All assignments must be ready to hand in at the designated time and place as stated on the assignment sheet, as discussed in class or communicated via email, or on the syllabus.
   b. All assignments handed in late will be reduced 10 points for every day late (24 hrs. from the due date and time).
   c. Not coming to class to hand in an assignment or forgetting to bring the assignment does NOT constitute a valid excuse for being late. In other words, if a student has not finished an assignment and decides to not come to class, both the absence will be recorded and a zero grade will be assigned to the project without exception.
UNIVERSITY POLICIES

1. **Academic Dishonesty / Integrity / Plagiarism:** Using another student’s work on a project or assignment, cheating on a test, or any other form of dishonesty or plagiarism will result in a grade of zero on that assignment and possibly an "F" in the course, and will be referred to the Dean of Students. All students should aspire to high standards of academic honesty. This class encourages cooperation and the exchange of ideas. For further reference, students may see:

2. **Values and ethics:** Profanity or derogatory comments about or towards the instructor or any member of the class will NOT be tolerated. Violating this rule will result in a warning and if the offense continues, administrative action will be taken.

3. **Code of Student Rights, Responsibilities and Conduct:** All students are responsible for reading, understanding, and applying the Code of Student Rights, Responsibilities and Conduct of IUPUI. Students may access [http://life.iupui.edu/dos/code.htm](http://life.iupui.edu/dos/code.htm) for further information regarding the above points.

4. **Disabilities Policy:** In compliance with the Americans with Disabilities Act (ADA), all qualified students enrolled in this course are entitled to “reasonable accommodations.” Please notify the instructor during the first week of class of any accommodations needed for the course.
BIBLIOGRAPHY


COURSE SCHEDULE (~50–60 pages of course reading each week)

LESSON 0  (August 21, 2012)
Introduction and Orientation
Items due
1. Syllabus Quiz (8/23; 11 am)

LESSON 1  (August 28, 2012)
HCI Methods: Research methods in human factors; Reliability and human error in systems
Readings due
Items due
2. Quiz #1 (8/29; 11 am)
   • You will need to be able to calculate reliability for a figure similar to Figure 3.5.

LESSON 2  (September 4, 2012)
Cognitive Psychology: Human Information Processing (HIP); Attention and the assessment of mental workload
Readings due
Items due
1. Quiz #2 (9/5; 11 am)

LESSON 3  (September 11, 2012)
Cognitive Psychology: Retention and comprehension of information; Solving problems and making decisions
Readings due
Items due
1. Quiz #3 (9/12; 11 am)
   - You will need to be able to determine the validity of a conditional syllogism.
   - You will need to understand Cowan’s model of short-term memory.

LESSON 4 (September 18, 2012)

Emotional Design: The four pleasures

Readings due

Items due
1. Proctor and Van Zandt assignment (9/18; 1 pm)
2. Quiz #4 (9/19; 11 am)

LESSON 5 (September 25, 2012)

Emotional Design: Creating pleasurable products

Readings due

Items due
1. Quiz #5 (9/26; 11 am)
   - You should be familiar with the “messages” being conveyed through pictograms.

LESSON 6 (October 2, 2012)

HCI Methods: Methods used in the product-creation process

Readings due

Items due
1. uLogLite/LogSquare assignment (10/2; 1 pm)
2. Quiz #6 (10/3; 11 am)

LESSON 7 (October 9, 2012)

HCI Methods: GOMS; Novice-Expert ratio Method (NEM)

Readings due

Items due
1. CogTool assignment (10/9; 1 pm)
2. Quiz #7 (10/10; 11 am)

Fall Break (October 17, 2012)
LESSON 8  
(October 23, 2012)

**HCI Methods: Psychometric evaluation**

Readings due


Items due

1. **NEM assignment (10/23; 1 pm)**
2. Quiz #8 (10/24; 11 am)
   - You will need to know the difference between reliability and validity.

LESSON 9  
(October 30, 2012)

**HCI Methods: Implicit Association Test (IAT)**

Readings due


Items due

1. **Methods presentation (10/30; 1 pm)**
2. Quiz #9 (10/31; 11 am)
   - The original IAT excluded the training block results from analysis. Was this a mistake or the right thing to do? Why?

LESSON 10  
(November 6, 2012)

**HCI Methods: Academia versus industry**

**Distributed Cognition: Distributed cognition and communication**

Readings due


Items due

1. Quiz #10 (11/7; 11 am)

LESSON 11  
(November 13, 2012)

**Distributed Cognition: Context; Epistemic and pragmatic action**

Readings due


Items due
1. Kirsh & Hutchins assignment (11/13; 1 pm)
2. Quiz #11 (11/14; 11 am)

LESSON 12  (November 20, 2012)
Cultural and Psychological Influences in Human-Computer Interact: Wither psychoanalysis; Epistemological pluralism
The Ethics of Human-Computer Interaction: Human agency

Readings due

Items due
1. Quiz #12 (11/26; 11 am) This is the day after Thanksgiving break (11/21-11/25)

LESSON 13  (November 27, 2012)
The Psychology of Time Perception in Human-Computer Interaction; Authenticity

Readings due

Items due
1. Quiz #13 (11/28; 11 am)

LESSON 14  (December 4, 2012)
The Ethics of Human-Computer Interaction: Human values, ethics, and design; Value sensitive design

Readings due

Items due
1. Quiz #14 (12/5; 11 am)