Introduction to Human-Computer Interaction Theory

Department of Human-Centered Computing
Indiana University School of Informatics and Computing, Indianapolis

Section No.: 25271 – 3 credit hours
Time: Online
Location: Online
First Class: August 22, 2016
Website: https://iu.instructure.com/courses/1592142 (Online Section)
Instructor: Harry Tunnell, PhD Graduand, PMP
Office Hours: Monday, 11:00 am – 12:00 pm in IT 395 and by appointment
Email: hadtunne@iupui.edu
Prerequisites: None (not an extension of any undergraduate or graduate course)

COURSE DESCRIPTION

Students will learn the fundamental theories of human-computer interaction (HCI) and user-centered design. This course is both a survey of HCI research and an introduction to the psychological, behavioral, and other social science knowledge and techniques relevant to the design of interactive and ubiquitous computing systems.

REQUIRED TEXT:

Title: Cyberpsychology: An Introduction to Human-Computer Interaction Author(s): Norman, Kent L.

PRINCIPLES OF UNDERGRADUATE LEARNING (PUL):

Learning outcomes are assessed in the following areas (this course emphasizes PUL 1A, 1C, 2, 4, and 5):

1A. Core communication: written, oral and visual skills
1B. Core communication: quantitative skills
1C. Core communication: information resources skills
2. Critical thinking
3. Integration and application of knowledge
4. Intellectual depth, breadth, and adaptiveness
5. Understanding society and culture
6. Values and ethics
LEARNING OUTCOMES:

On completion of the course, students will be able to:

1. Investigate and explain the increasing pervasiveness of computers in human activities in light of thought-provoking historical works in HCI. (PUL 1A, 2, 4, 5. Assessed deliverables: Assignments.)

2. Dissect various human-computer interactions as they relate to memory, motivation, privacy, emotions, and interpersonal relationships. (PUL 1A, 2, 4. Assessed deliverable: Project 1 report and presentation.)

3. Analyze and model a computer-supported cooperative work environment using the activity theory framework and HCI models to develop a proposal for an improved environment that meets the goals of the stakeholders. (PUL 1A, 1B, 2, 3, 4, 5. Assessed deliverables: Project 2 report and presentation.)

4. Plan and execute background research in an emerging HCI-related technology (e.g., augmented reality, artificial intelligence, wearable computing, brain-computer interfaces, etc.) and present a conceptual design solution using the technology to solve a particular problem. (PUL 1A, 1C, 2, 4. Assessed deliverables: Project 3 report and presentation.)

5. Precisely identify, understand and define HCI principles. (PUL 1C, 4. Assessed deliverables: Tests)

6. Discuss HCI principles and provide thoughtful insight into interactions and the influence of context. (PUL 1A, 2, 4. Assessed deliverables: Class discussion and participation.)

7. Apply and investigate HCI principles in context. (PUL 1A, 1C, 2, 5. Assessed deliverables: Assignments.)

EXPECTATIONS, GUIDELINES, AND POLICIES

Attendance

A basic requirement of this course is that you will participate in all class meetings and conscientiously complete all required course activities and assignments. Class attendance is required for classroom-based courses. It entails being present and attentive for the entire class period. Attendance will be taken in every class. If you do not sign the attendance sheet while in class, you will be marked absent. Signing the attendance sheet for another student is prohibited. Online students will routinely have submissions through Canvas that reflect learning activities similar to those experienced in the classroom. Timely completion of the online student activities counts as the attendance grade. The instructor is required to submit to the Registrar a record of student attendance, and action will be taken if the record conveys a trend of absenteeism.

Only the following are acceptable excuses for absences: death in the immediate family (e.g. mother, father, spouse, child, or sibling), hospitalization or serious illness; jury duty; court ordered summons; religious holiday; university/school coordinated athletic or scholastic
activities; an unanticipated event that would cause attendance to result in substantial hardship to one’s self or immediate family. Absences must be explained with the submission of appropriate documentation to the satisfaction of the instructor, who will decide whether missed work may be made up. Absences that do not satisfy the above criteria are considered unexcused. To protect your privacy, doctor’s excuses should exclude the nature of the condition and focus instead on how the condition impacts your attendance and academic performance.

Missing class (or the previously described online student submissions) reduces your grade through the following grade reduction policy: You are allowed two excused or unexcused absences. Each additional absence, unless excused, results in a 5% reduction in your final course grade. Missing class may also reduce your grade by eliminating opportunities for class participation. For all absences, the student is responsible for all covered materials and assignments.

The online section assignments are designed to test comparable knowledge to students meeting in classroom sections. They will usually include online threaded discussions of the reading material and practical exercises. Other assignments to test how well online students internalize lessons will also be used.

**Incomplete**

The instructor may assign an Incomplete (I) grade only if at least 75% of the required coursework has been completed at passing quality and holding you to previously established time limits would result in unjust hardship to you. All unfinished work must be completed by the date set by the instructor. Left unchanged, an Incomplete automatically becomes an F after one year, see [http://registrar.iupui.edu/incomp.html](http://registrar.iupui.edu/incomp.html)

**Deliverables**

You are responsible for completing each deliverable (e.g., assignment, test) by its due date and submitting it by the specified method. Due dates for tests and project presentations are outlined in the last section of this syllabus. Due dates for other assignments will be posted on Canvas. Should you miss a class, you are still responsible for completing the deliverable and for finding out what was covered in class, including any new or modified deliverable. In fairness to the instructor and students who completed their work on time, a grade on a deliverable will be reduced 10%, if it is submitted late and a further 10% for each 24-hour period it is submitted after the deadline.

The online student project and test deliverables are the same as classroom student. However, online students will do all team presentations using the tools in Canvas (e.g., conferences). Classroom students will do most presentations in person during class. However, at least one presentation will be conducted using the tools in Canvas to reinforce lessons about synchronous and asynchronous collaboration and the impact upon teamwork.
Grading Information

The breakdown of assessed items is shown below.

<table>
<thead>
<tr>
<th>Points</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Discussions &amp; Assignments</td>
<td>400</td>
</tr>
<tr>
<td>Project Presentations and Reports</td>
<td>300</td>
</tr>
<tr>
<td>Tests</td>
<td>300</td>
</tr>
</tbody>
</table>

Grading Scale

A+ 100-97% Professional level work, showing highest level of achievement.

A 96-93% Extraordinarily high achievement; quality of work shows command of the subject matter.

A– 90-92% Excellent and thorough knowledge of the subject matter.

B+ 87-89% Above average understanding of material and quality of work.

B 83–86% Mastery and fulfillment of all course requirements; good, acceptable work.

B– 80-82% Satisfactory quality of work.

C+ 77-79% Modestly acceptable performance and quality of work.

C 73-76% Minimally acceptable performance and quality of work.

C– 70-72% Unacceptable work (Core course must be repeated for credit).

D+ 67-69% Unacceptable work (Course must be repeated for credit).

D 63-66% Unacceptable work.

D– 60-62% Unacceptable work.

F < 60% Unacceptable work.

No credits toward major, minor, or certificate requirements are granted for a grade below C. No credits toward general education or elective requirements are granted for a grade below C–.
CODE OF CONDUCT

All students should aspire to the highest standards of academic integrity. Using another student’s work on an assignment, cheating on a test, not quoting or citing references correctly, or any other form of dishonesty or plagiarism shall result in a grade of zero on the item and possibly an F in the course. Incidences of academic misconduct shall be referred to the Department Chair and repeated violations shall result in dismissal from the program.

All students are responsible for reading, understanding, and applying the Code of Student Rights, Responsibilities and Conduct and in particular the section on academic misconduct. Refer to The Code > Responsibilities > Academic Misconduct at http://www.indiana.edu/~code/. All students must also successfully complete the Indiana University Department of Education “How to Recognize Plagiarism” Tutorial and Test. https://www.indiana.edu/~istd You must document the difference between your writing and that of others. Use quotation marks in addition to a citation, page number, and reference whenever writing someone else’s words (e.g., following the Publication Manual of the American Psychological Association). To detect plagiarism, instructors apply a range of methods, including Turnitin.com. http://www.ulib.iupui.edu/libinfo/turnitin

Academic Misconduct

1. Cheating: Cheating is considered to be an attempt to use or provide unauthorized assistance, materials, information, or study aids in any form and in any academic exercise or environment.

   a. A student must not use external assistance on any “in-class” or “take-home” examination, unless the instructor specifically has authorized external assistance. This prohibition includes, but is not limited to, the use of tutors, books, notes, calculators, computers, and wireless communication devices.

   b. A student must not use another person as a substitute in the taking of an examination or quiz, nor allow other persons to conduct research or to prepare work, without advanced authorization from the instructor to whom the work is being submitted.

   c. A student must not use materials from a commercial term paper company, files of papers prepared by other persons, or submit documents found on the Internet.

   d. A student must not collaborate with other persons on a particular project and submit a copy of a written report that is represented explicitly or implicitly as the student’s individual work.

   e. A student must not use any unauthorized assistance in a laboratory, at a computer terminal, or on fieldwork.

   f. A student must not steal examinations or other course materials, including but not limited to, physical copies and photographic or electronic images.
g. A student must not submit substantial portions of the same academic work for credit or honors more than once without permission of the instructor or program to whom the work is being submitted.

h. A student must not, without authorization, alter a grade or score in any way, nor alter answers on a returned exam or assignment for credit.

2. Fabrication: A student must not falsify or invent any information or data in an academic exercise including, but not limited to, records or reports, laboratory results, and citation to the sources of information.

3. Plagiarism: Plagiarism is defined as presenting someone else’s work, including the work of other students, as one’s own. Any ideas or materials taken from another source for either written or oral use must be fully acknowledged, unless the information is common knowledge. What is considered “common knowledge” may differ from course to course.

   a. A student must not adopt or reproduce ideas, opinions, theories, formulas, graphics, or pictures of another person without acknowledgment.

   b. A student must give credit to the originality of others and acknowledge indebtedness whenever:
      i. directly quoting another person’s actual words, whether oral or written;
      ii. using another person’s ideas, opinions, or theories;
      iii. paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;
      iv. borrowing facts, statistics, or illustrative material; or
      v. offering materials assembled or collected by others in the form of projects or collections without acknowledgment

4. Interference: A student must not steal, change, destroy, or impede another student’s work, nor should the student unjustly attempt, through a bribe, a promise of favors or threats, to affect any student’s grade or the evaluation of academic performance. Impeding another student’s work includes, but is not limited to, the theft, defacement, or mutilation of resources so as to deprive others of the information they contain.

5. Violation of Course Rules: A student must not violate course rules established by a department, the course syllabus, verbal or written instructions, or the course materials that are rationally related to the content of the course or to the enhancement of the learning process in the course.

6. Facilitating Academic Dishonesty: A student must not intentionally or knowingly help or attempt to help another student to commit an act of academic misconduct, nor allow another student to use his or her work or resources to commit an act of misconduct.
Other Policies

1. **Right to revise**: The instructor reserves the right to make changes to this syllabus as necessary and, in such an event, will notify students of the changes immediately.

2. **IUPUI course policies**: A number of campus policies governing IUPUI courses may be found at the following link: [http://registrar.iupui.edu/course_policies.html](http://registrar.iupui.edu/course_policies.html)

3. **Classroom civility**: To maintain an effective and inclusive learning environment, it is important to be an attentive and respectful participant in lectures, discussions, group work, and other classroom exercises. Thus, unnecessary disruptions should be avoided, such as ringing cell phones, engagement in private conversations, and other unrelated activities. Cell phones, media players, or any noisy devices should be turned off during a class. Texting, surfing the Internet, and posting to Facebook or Twitter during class are generally not permitted. Laptop use may be permitted if it is used for taking notes or conducting class activities. Students should check with the instructor about permissible devices in class. IUPUI nurtures and promotes “a campus climate that seeks, values, and cultivates diversity in all of its forms and that provides conditions necessary for all campus community members to feel welcomed, supported, included, and valued” (IUPUI Strategic Initiative 9). IUPUI prohibits “discrimination against anyone for reasons of race, color, religion, national origin, sex, sexual orientation, marital status, age, disability, or [veteran] status” (Office of Equal Opportunity).

4. Profanity or derogatory comments about the instructor, fellow students, invited speakers or other classroom visitors, or any members of the campus community shall not be tolerated. A violation of this rule shall result in a warning and, if the offense continues, possible disciplinary action.

5. **Bringing children to class**: To ensure an effective learning environment, children are not permitted to attend class with their parents, guardians, or childcare providers.

6. **Course Evaluation Policy**: Course evaluations provide vital information for improving the quality of courses and programs. Students are required to complete one course and instructor evaluation for each section in which they are enrolled at the School of Informatics and Computing. This requirement has three exceptions: (a) The student has withdrawn from the course; (b) only one student is enrolled in the section (in which case anonymity is impossible); and (c) the section is a laboratory that must be taken with a course having a different section number. Course evaluations are completed at [https://soic.iupui.edu/app/course-eval/](https://soic.iupui.edu/app/course-eval/). Course evaluations are open from the eleventh week. Course evaluations are anonymous, which means that no one can view the name of the student completing the evaluation. In addition, no one can view the evaluation itself until after the instructor has submitted the final grades for the course. In small sections, demographic information should be left blank, if it could be used to identify the student. A course evaluation must close before the grade for that course can be released. To ensure students have had ample opportunity to complete the evaluation, an uncompleted course evaluation could delay the release of the grade for up to a week.
7. **Communication:** The instructor should respond to emails within 48 hours, excluding weekends and holidays, and announce periods of extended absence in advance. The instructor should provide weekly office hours or accept appointments for face-to-face, telephone, or teleconferenced meetings.

8. **Email:** Indiana University uses your IU email account as an official means of communication, and students should check it daily for pertinent information. Although you may have your IU email forwarded to an outside email account, please email faculty and staff from your IU email account.

9. **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 accommodations needed for the course. Students requiring accommodations because of a disability must register with Adaptive Educational Services (AES) and complete the appropriate AES-issued before receiving accommodations. The AES office is located at UC 100, Taylor Hall (Email: aes@iupui.edu, Tel. 317 274-3241). Visit [http://aes.iupui.edu](http://aes.iupui.edu) for more information.

10. **Administrative Withdrawal:** A basic requirement of this course is that students participate in all class discussions and conscientiously complete all required course activities and/or assignments. If a student is unable to attend, participate in, or complete an assignment on time, it is the student’s responsibility to inform the instructor. If a student misses more than half of the required activities within the first 25% of the course without contacting the instructor, the student may be administratively withdrawn from this course. Administrative withdrawal may have academic, financial, and financial aid implications. Administrative withdrawal will take place after the full refund period, and a student who has been administratively withdrawn from a course is ineligible for a tuition refund. Contact the instructor with questions concerning administrative withdrawal.

11. **Emergency Preparedness:** Safety on campus is everyone’s responsibility. Know what to do in an emergency so that you can protect yourself and others. For specific information, visit the emergency management website. [http://protect.iu.edu/emergency](http://protect.iu.edu/emergency)

**MISSION STATEMENT**

The Mission of IUPUI is to provide for its constituents, excellence in:

- Teaching and Learning;
- Research, Scholarship, and Creative Activity; and
- Civic Engagement.

With each of these core activities characterized by:

- Collaboration within and across disciplines and with the community;
• A commitment to ensuring diversity; and  
• Pursuit of best practices.

IUPUI’s mission is derived from and aligned with the principal components—Communities of Learning, Responsibilities of Excellence, Accountability and Best Practices—of Indiana University’s Strategic Directions Charter.

STATEMENT OF VALUES

IUPUI values the commitment of students to learning; of faculty to the highest standards of teaching, scholarship, and service; and of staff to the highest standards of service. IUPUI recognizes students as partners in learning. IUPUI values the opportunities afforded by its location in Indiana’s capital city and is committed to serving the needs of its community. Thus, IUPUI students, faculty, and staff are involved in the community, both to provide educational programs and patient care and to apply learning to community needs through service. As a leader in fostering collaborative relationships, IUPUI values collegiality, cooperation, creativity, innovation, and entrepreneurship as well as honesty, integrity, and support for open inquiry and dissemination of findings. IUPUI is committed to the personal and professional development of its students, faculty, and staff and to continuous improvement of its programs and services.

WEEKLY SCHEDULE

An initial weekly schedule is presented in the table below. An updated schedule will be maintained on Canvas. A general outline of class sessions and deliverables is:

• The first hour of class will typically involve an instructor presentation.
• The second hour of class will typically involve a practical exercise to reinforce and supplement the material covered in instructor presentations and the text book, along with discussions of class project activities and status.
• Complete the reading assignment before class so you can better participate in the class discussion (class discussion participation is graded).
• Assignments with deliverables will be posted on Canvas with specific due dates.
• Student teams will deliver a short (~ 10-minutes) presentation for each class project. Online students will schedule a 30-minute conference block in Canvas for team presentations. The presentation should take ~10-minutes and the remainder of the time will be used for questions and discussion.

<table>
<thead>
<tr>
<th>Week 01</th>
<th>Date</th>
<th>Instructor Presentations</th>
<th>Discussions &amp; Projects</th>
<th>Reading Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 22</td>
<td></td>
<td>Introduction &amp; Syllabus Review</td>
<td>Class Discussion &amp; Project 1 Launch</td>
<td>Ch 1</td>
</tr>
<tr>
<td>Week 02</td>
<td>Aug 29</td>
<td>Theoretical Approaches (Part 1) &amp; Research</td>
<td>Class Discussion &amp; Project 1 Review</td>
<td>Ch 3 (61-78), Ch 4</td>
</tr>
<tr>
<td>Week</td>
<td>Date</td>
<td>Instructor Presentations</td>
<td>Discussions &amp; Projects</td>
<td>Reading Assignment</td>
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<tr>
<td>03</td>
<td>Sep 05</td>
<td>Labor Day</td>
<td>No Class</td>
<td>No Class</td>
</tr>
<tr>
<td>04</td>
<td>Sep 12</td>
<td>Learning and Memory</td>
<td>Class Discussion &amp; Project 1 Review</td>
<td>Ch 6</td>
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<tr>
<td>05</td>
<td>Sep 19</td>
<td>Cognitive Psychology</td>
<td>Class Discussion &amp; Project 1 Review</td>
<td>Ch 7</td>
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<tr>
<td>06</td>
<td>Sep 26</td>
<td><strong>Test 1</strong></td>
<td><strong>Project 1 Presentations</strong></td>
<td>Test is open</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>book/open note</td>
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<tr>
<td>07</td>
<td>Oct 03</td>
<td>Theoretical Approaches (Part 2)</td>
<td>Class Discussion &amp; Project 2 Review</td>
<td>Ch 3 (78-90)</td>
</tr>
<tr>
<td>08</td>
<td>Oct 10</td>
<td>Interpersonal Relations</td>
<td>Class Discussion &amp; Project 2 Review</td>
<td>Ch 11</td>
</tr>
<tr>
<td>09</td>
<td>Oct 17</td>
<td>Fall Break</td>
<td>No Class</td>
<td>No Class</td>
</tr>
<tr>
<td>10</td>
<td>Oct 24</td>
<td>Motivation and Emotion</td>
<td>Class Discussion &amp; Project 2 Review</td>
<td>Ch 10</td>
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<tr>
<td>11</td>
<td>Oct 31</td>
<td><strong>Test 2</strong></td>
<td><strong>Project 2 Presentations</strong></td>
<td>Test is open</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>book/open note</td>
</tr>
<tr>
<td>12</td>
<td>Nov 07</td>
<td>Automation and AI</td>
<td>Class Discussion &amp; Project 3 Launch</td>
<td>Ch 13</td>
</tr>
<tr>
<td>13</td>
<td>Nov 14</td>
<td>Augmentive Technology</td>
<td>Class Discussion &amp; Project 3 Launch</td>
<td>Ch 14</td>
</tr>
<tr>
<td>14</td>
<td>Nov 21</td>
<td>Games, Entertainment &amp; Education</td>
<td>Class Discussion &amp; Project 3 Review</td>
<td>Ch 15</td>
</tr>
<tr>
<td>15</td>
<td>Nov 28</td>
<td>Future of HCI Interfaces</td>
<td>Class Discussion &amp; Project 3 Review</td>
<td>Ch 16</td>
</tr>
<tr>
<td>16</td>
<td>Dec 05</td>
<td><strong>Test 3</strong></td>
<td><strong>Project 3 Presentations</strong></td>
<td>Test is open</td>
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<tr>
<td></td>
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<td></td>
<td>book/open note</td>
</tr>
<tr>
<td>17</td>
<td>Dec 12</td>
<td>Course Wrap-Up</td>
<td>Honors student presentations</td>
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</table>