Advanced Seminar I in Human-Computer Interaction

Indiana University School of Informatics IUPUI

Syllabus Version 7.3

Course Info: course section and schedule
Instructor: instructor’s info

COURSE DESCRIPTION
The goal of the course is to introduce students to advanced aspects of Human-Computer Interaction research and practice, by following 3 specific drivers of inquiry: (1) surveying relevant theoretical and methodological debates in the field, as well as learn fundamental meta-skills to structure, present and review research problems and research artifacts (2) grasping HCI implications for state-of-the-art, real-life applications, systems and technologies, and (3) innovatively exploring how HCI intersects important vertical domains of research and practice. Lectures include theoretical presentations and discussions, research proposal and paper reviews, on-the-field visits, hands-on experiences, and guest lectures. At the end of the class, successful students will be able to:

- Understand how to extract interesting HCI themes from existing technologies and tools
- Grasp and articulate the contribution of novel HCI ideas for specific informatics domains
- Ideate and present the key ingredients of a competitive HCI grant project proposal
- Be familiar with the National Science Foundation (NSF) panel review process
- Articulate a review of published papers on important HCI topics, as well as structure solid research paper abstracts on HCI topics.

PREREQUISITES
Advanced graduate standing or consent of instructor. The course is particularly suited for research-active Ph.D. students, but open and relevant to MS students as well. The instructor recommends that students take I575, I541, I543 and I561 before enrolling in this class.

REQUIRED COURSE READINGS
- Lecture notes and reading material made available on OnCourse
- Published research papers made available on OnCourse

ASSIGNMENTS - See weekly schedule below and detailed description of assignments.

GRADING AND ASSIGNMENTS

<table>
<thead>
<tr>
<th>Grades Structure</th>
<th>Grade Scale</th>
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<tbody>
<tr>
<td>Assignment 1</td>
<td>A+ 97 - 100 [outstanding achievement]</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>A  93 - 96.99 [excellent achievement]</td>
</tr>
<tr>
<td>Assignment 3</td>
<td>A- 90 - 92.99 [very good work]</td>
</tr>
<tr>
<td>Assignment 5</td>
<td>B+ 87 - 89.99 [good work]</td>
</tr>
<tr>
<td>Assignment 6</td>
<td>B  83 - 86.99 [marginal work]</td>
</tr>
<tr>
<td>Assignment 7</td>
<td>B- 80 - 82.99 [marginal work]</td>
</tr>
<tr>
<td>Pfaff Assignment</td>
<td>C+ 77 - 79.99 [unsatisfactory work]</td>
</tr>
<tr>
<td>Class Participation</td>
<td>C  73 - 76.99 [unacceptable work]</td>
</tr>
</tbody>
</table>
POLICIES for ATTENDANCE & ASSIGNMENT/PROJECT DEADLINES

1. Missing class time 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 whole or majority of the session (including field visits). Starting from the third absence, -15 points will be deducted from the final class grade for every day of absence.

2. Responsible for due dates and related materials: All weekly assignments are the students’ responsibility whether you come to class or not. Weekly assignment deadlines should be adhered to, to insure fairness to all students.

UNIVERSITY POLICIES

1. University Attendance Policy: Attendance is required. The University regulations state: “Students are expected to be present for every meeting of the classes in which they are enrolled.” IUPUI faculty are required to submit to the office of the Register a record of student attendance through the semester, on which they will take action if the record conveys a trend of absenteeism. As a result, ATTENDANCE WILL BE TAKEN IN ALL CLASSES. An Attendance sheet will be passed out in class for each student to sign their name. If you do not sign your name while in class you will be marked absent. The instructor is not expected to remember who attended when, so signing the sheet while in class is important. Signing the attendance sheet for another student is absolutely prohibited. Any student found doing so will be in violation of university policies on ethics and/or conduct.

2. Bringing your children to class: University Policy states that: “Children are not permitted to attend class with parents, guardians, or childcare providers. This conduct has the effect of unreasonably interfering with an individual’s work or academic performance creating an offensive learning environment.” “A student must not violate course rules as contained in a course syllabus, which are rationally related to the content of the course or to the enhancement of the learning process in the course.”

[Code of Student Rights, Responsibilities, and Conduct, page 29]

3. 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: http://life.iupui.edu/dos/code.htm.

4. 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.

5. 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 can access www.iupui.edu/code for further information regarding the above points)

6. 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. Students with learning disabilities must provide written verification for this policy to be recognized.
### I624 Weekly Schedule

*Dates of guest lectures or field visits may change due to changes in other faculty/guest schedules – students will be promptly notified of any change.*

<table>
<thead>
<tr>
<th>WK</th>
<th>Date</th>
<th>Class Topics and Activity</th>
<th>Assignment Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug 21</td>
<td>Course Introduction &amp; Overview, Structures of Research Assignments</td>
<td>Study syllabus &amp; schedule</td>
</tr>
<tr>
<td>2</td>
<td>Aug 28</td>
<td>Mapping HCI – presentations</td>
<td>Assignment 1: Accessibility</td>
</tr>
<tr>
<td>3</td>
<td>Sept 4</td>
<td>Experiencing Advanced Interactions: Indiana Experience Field Visit</td>
<td>(read background info on Indiana experience)</td>
</tr>
<tr>
<td>4</td>
<td>Sept 11</td>
<td>NSF Panel Review Simulation on Assignment 2</td>
<td>Assignment 2: Indiana Experience Proposals</td>
</tr>
<tr>
<td>5</td>
<td>Sept. 18</td>
<td>Experiencing Advanced Interactions: UITS – Advanced Visualization Labs Field Visit (M. Boyles)</td>
<td>(read background info on UITS)</td>
</tr>
<tr>
<td>6</td>
<td>Sept. 25</td>
<td>NSF Panel Review Simulation on Assignment 3</td>
<td>Advanced Interactions – Assignment 3</td>
</tr>
<tr>
<td>7</td>
<td>Oct 2</td>
<td>Communicating HCI Research: the logical pattern of an HCI Paper Abstract (with in class exercise)</td>
<td>Revised Assignment 3</td>
</tr>
<tr>
<td>8</td>
<td>Oct 9</td>
<td>In-class Abstracts Review and Discussion</td>
<td>Assignment 7: preliminary Abstracts</td>
</tr>
<tr>
<td>9</td>
<td>Oct 16</td>
<td>*** FALL BREAK — NO CLASS ***</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Oct 23</td>
<td>In-class Abstracts Review and Discussion</td>
<td>Assignment 7: revised and final Abstracts</td>
</tr>
<tr>
<td>11</td>
<td>Oct 30</td>
<td>Multimodal HCI Research</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Nov 6</td>
<td>M. Pfaff’s Guest Lecture and Readings</td>
<td>Pfaff’s Readings Assignment</td>
</tr>
<tr>
<td>13</td>
<td>Nov 13</td>
<td>Domains for HCI: Bioinformatics Field Visit (Dr. J. Chen)</td>
<td>(study background paper before visit – prepare questions)</td>
</tr>
<tr>
<td>14</td>
<td>Nov 20</td>
<td>Bioinformatics – essay peer discussion</td>
<td>HCI Domains – Assignment 6 (bio)</td>
</tr>
<tr>
<td>15</td>
<td>Nov 27</td>
<td>Domains for HCI: Health Informatics Field Visit (J. Duke, MD)</td>
<td>(study background paper before visit – prepare questions)</td>
</tr>
<tr>
<td>16</td>
<td>Dec 4</td>
<td>IURTC visit and Course Wrap-up</td>
<td>HCI Domains – Assignment 5 (health)</td>
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</table>
Detailed Description of the Weekly Assignments and Deliverables

General considerations for Weekly Discussion and Participation in class.

At every class meeting, successful students demonstrate proactive and mature participation and individual contribution to the intellectual growth of the discussion. In particular, successful class participation will demonstrate:

(a) Full command of the readings studied for the day
(b) Innovative, creative, and transformative HCI ideas, yet grounded in realistic scenarios and supported by theories/approaches.
(c) Ability to “connect the dots”, maturely linking the intellectual contributions emerging from the readings, peers, instructors, guest lecturer, own experience, other classes and on-the-field visits.

During on-the-field visits, make sure to come prepared to take notes on-the-fly, take pictures or record as much as relevant information you can from the experience.

Instructions for Assignment Delivery

- All assignments must delivered by the 12 noon of the class day of the DUE DATE (see weekly schedule) in the student’s individual DROP-BOX available on OnCourse. Follow the file naming convention indicated in the instructions of each assignment.
- Each assignment file must be uploaded both in source format (e.g. .doc) and in PDF.
- Deduction Grading for Late or Missed Deliveries:
  - Minus 15 pts. per every 24 hours the assignment is late.
  - Assignment gets an F on the 4th day past the due date

Overall Success Criteria across all assignments:
- Transformative contribution to the field and ability to push the intellectual boundaries
- Command of knowledge and resources assigned, explained and experienced during the class
- Ability to apply general, theoretical HCI knowledge to concrete problems and scenarios
- Ability to study additional resources relevant to the class experience but beyond the ones assigned
- Full commitment and perseverance
- Ability to maturely integrate feedback from instructors
- Professional, scholarly communication of research ideas and projects
Assignment 1: Accessibility

PART A: Background Reading
A. Study in-depth the following paper made available on OnCourse (PDF):

Also available on ACM DL (from within IUPUI network):
http://doi.acm.org/10.1145/1952383.1952384

B. Write and post in your Dropbox on Oncourse:
a. A 600-word paper critique maturely commenting on:
   i. Intellectual contribution to the field of HCI
   ii. Methodological aspects
   iii. Implications for HCI designers
b. 1 salient and interesting discussion points that can concern the connection of some of the concepts illustrated with a practical example, a resource found or personal/professional experience
c. 1 question that would need clarification or one issue or aspect that you would like to know more about
d. Name your Assignment as: ASSIGNMENT_1a_family_name.doc

PART B: Mapping HCI Science
Finding and characterizing relevant and salient research problems already addressed in the field is a necessary competence to be able to contribute to HCI research. To do that, you will exercise your skills in finding, understanding and modelling interesting research problems and corresponding solutions on a specific, assigned HCI topic. In this assignment, your goal is to find and mine the HCI literature on the topic Supporting Mobility for the Blind and intelligently characterize and present the relevant research done on this topic. Here are some important guidelines:

1. Search and browse known repositories for HCI literature:
a. ACM Digital Library http://dl.acm.org/ (> proceedings and > journals)
i. Conference proceedings and journals related to the ACM SIGCHI conferences:
   http://www.sigchi.org/conferences/
ii. Google Scholar: http://scholar.google.com/
2. Read carefully the papers you found (at least 20-30, starting from most recent work), take notes and summarize the key ideas in your notes.
3. Structure the research found in problems/sub-problems (not just a list of topics), related to context/technologies/user abilities or other dimensions related to the assigned topic. Connect the “dots” (establish relationships) between the various thrusts you find, and map the spectrum of issues within the area. Feel free to use narrative, schemas or visuals during your work.
4. Identify the main research solutions/approaches/findings employed to solve the identified problems
5. Identify untapped areas or problems and opportunities to significantly advance (not just improve) the research.
6. Prepare an engaging power point presentation (15-20 slides max) reporting the findings of your work (problems modelling, approaches/solutions, novel directions). Make sure that your last slide include all the references found, properly cited (ACM or APA format).
7. Upload in the DropBox and name your presentation: ASSIGNMENT_1b_family_name.ppt
Assignment 2: Indiana Experience – Research Proposals

1. Treasure and reflect on the experience and the material gathered during the recent field visit at the Indiana Experience exhibit.
2. Develop a sound and convincing 1-page research proposal aimed at one of the following objectives:
   - Envisioning substantial enhancements to the exhibit experience via the design/deployment of highly innovative HCI designs/systems/technologies. Target reader: Exhibit stakeholders.
   - Establishing a 3-year research project on an innovative HCI topic, partly relying on the exhibit resources (location, visitors, experience in place, all technologies and installations available). Target reader: HCI scholars (foundation or research funding agency).
3. Follow step by step the structure 1-page research proposal guide available on OnCourse.
4. Name your Assignment as: ASSIGNMENT_2_family_name.doc

In writing your 1-page proposal, keep in mind the following TWO National Science Foundation’s (NSF) merit criteria (intellectual merit and broader impact), that will be used to assess the quality of your proposal.

The National Science Foundation strives to conduct a fair, competitive, transparent merit-review process for the selection of projects. All NSF proposals are evaluated through use of two National Science Board approved merit review criteria. […]

The two merit review criteria are listed below. The criteria include considerations that help define them. […] While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgments.

What is the intellectual merit of the proposed activity?
How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?
How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?


• Class activity: NSF Panel Review Simulation
  1. In class, each student writes a half-page review other students’ proposals (max. 2). It is imperative that the review addresses separately in one or more paragraphs the two NSF merit criteria.
  2. Once every reviewer has submitted own reviews, reviews are shared (printed)
  3. One primary reviewer presents his review of the proposal
  4. The other reviewers participate in the discussion and contribute their review
5. 1 scribe takes notes and finalize a Panel Summary (see template and example on OnCourse/Resources)
6. The author of the proposal can participate but intervene during the panel
7. Steps 2 thru 5 are repeated for another proposal

Notes on roles at NSF review panel (from nsf.gov)

**Role of the Panel**
The role of the panel is to provide guidance to the Program Director for pending recommendations.

**Role of Panelists**
The role of the lead reviewer is to lead the panel discussion about the proposal. The lead will summarize the proposal so that all panelists are briefed on the proposal contents. Following the summary, the lead presents a critical review of the proposal. Many times lead reviewers are also assigned to be the scribe.
The role of the scribe is to record the panel discussion for the proposal. The scribe is responsible for writing the panel summary for each proposal to which s/he is assigned scribe. Click to download Panel Summary guidelines and template.
The role of the other reviewers is to present an oral summary of their reviews.
Unassigned panelists are encouraged to contribute to the discussion of all proposals and may submit written reviews for any proposal, barring COI.

**Assignment 3: Advanced Interactions – UITS Research Proposal**

Study the following background paper made available on OnCourse (PDF):


1. Treasure and reflect on the experience and the material gathered during the recent field visit at the UITS Advanced Visualization Labs.
2. Develop a sound and convincing 1-page research proposal aimed at **one** of the following objectives:
   - Establishing a 2-year research project on an innovative HCI topic, partly relying on the UITS resources and technologies. Target reader: HCI scholars (foundation or research funding agency).
   - Envisioning and providing convincing arguments about relevant and innovative applications/usage scenarios of any piece of technology available, besides the usage demonstrated or currently in place. Target reader: UITS administrators.
   - Follow the 1-page research proposal guide available on OnCourse.
3. Name your Assignment as: ASSIGNMENT_4_family_name.doc

In writing your 1-page proposal, keep in mind the following TWO National Science Foundation’s (NSF) merit criteria (intellectual merit and broader impact), that will be used to assess the quality of your proposal.
The National Science Foundation strives to conduct a fair, competitive, transparent merit-review process for the selection of projects. All NSF proposals are evaluated through use of two National Science Board approved merit review criteria. [...] The two merit review criteria are listed below. The criteria include considerations that help define them. [...] While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgments.

**What is the intellectual merit of the proposed activity?**
How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

**What are the broader impacts of the proposed activity?**
How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?


- Class activity: **NSF Panel Review Simulation**
  1. In class, each student writes a half-page review other students’ proposals (max. 2). It is imperative that the review addresses separately in one or more paragraphs the two NSF merit criteria.
  2. Once every reviewer has submitted own reviews, reviews are shared (printed)
  3. One primary reviewer presents his review of the proposal
  4. The other reviewers participate in the discussion and contribute their review
  5. 1 scribe takes notes and finalize a Panel Summary
  6. The author of the proposal can participate but intervene during the panel
  7. Steps 2 thru 5 are repeated for another proposal
Dr. Pfaff's Assignment: Follow instructions provided by Prof. Pfaff on Oncourse/Resources.

Assignment 5: HCI Domains - Health Informatics

1. Study the following paper made available on OnCourse (PDF):

   Also available here, from within IUPUI network: http://www.sciencedirect.com/science/article/B6WHD-4XW00C1-2/2/cdf8b7fd4f7c49359e66ae48d468fd2

2. Write and post in your DropBox on Oncourse:
   a. A 600-word extended summary of the key lessons you have learned from the paper (do not rephrase sentences)
   b. 2 salient and interesting discussion points that can concern the connection of some of the concepts illustrated with a practical example, a resource found or personal/professional experience
   c. 1 question that would need clarification or one issue or aspect that you would like to know more about
   d. Based on the visit and meeting with the Health Informatics group, write a 1-page convincing essay answering the question: Why and How is HCI relevant for Health Informatics? Avoid obvious considerations and maturely pinpoint to concrete and insightful examples, experience, and observed applications.

3. Name your Assignment as: ASSIGNMENT_5_family_name.doc

Assignment 6: HCI Domains - Bioinformatics

1. Study the following paper made available on OnCourse (PDF):

   Available at: http://bioinformatics.oxfordjournals.org/cgi/reprint/btn633?ijkey=sOk5x8RPl2NsodX&keytype=ref

2. Write and post in your DropBox on Oncourse:
   a. A 600-word extended summary of the key lessons you have learned from the paper (do not rephrase sentences)
   b. 2 salient and interesting discussion points that can concern the connection of some of the concepts illustrated with a practical example, a resource found or personal/professional experience
   c. 1 question that would need clarification or one issue or aspect that you would like to know more about
   d. Based on the visit and meeting with the Bioinformatics group, write a 1-page convincing essay answering the question: Why and How is HCI relevant for Bioinformatics? Avoid
obvious considerations and maturely pinpoint to concrete and insightful examples, experience, and observed applications.

3. Name your Assignment as: ASSIGNMENT_6_family_name.doc

Assignment 7: Communication HCI Research – Paper Abstracts

- The title and abstract of an HCI paper (and of a scientific paper in general) are the most important part of the presentation of a paper. Writing an excellent abstract paves the way for a successful paper.
- Study the elements and flow of the PARC structure in the lecture notes on OnCourse and review the many examples of well-formed research abstracts indicated and explained in class.
- Choose any 5 (five) papers (on any topic of your research interest, also covering different topics) from the most recent proceedings of any ACM SIG CHI Conference http://www.sigchi.org/conferences/ available on the ACM Digital Library http://dl.acm.org/
- For the best results of your assignment, you want to select papers whose abstract DOES NOT follow the PARC structure.
- For each paper:
  - Study, examine and understand the entire paper content carefully.
  - Re-write the paper abstract from scratch (within 150 word limit strictly) by following the PARC structure learned in class and using your own words.
    - Rewrite fully the abstract by substantially restructuring logic, structure, concepts, wording and flow of the abstract to build a perfect PARC structure.
    - NOTE: it is imperative that you fully understand the content of the paper to write an accurate abstract.
    - No more than 6 words in sequence can be identical to the original abstract.
    - The higher the degree of restructuring and rewriting, the better will be the quality of the delivered assignment.
  - This re-writing will require MULTIPLE iterations and improvements to become a decent abstract. Plan and devote necessary time accordingly.
- Include in one Word document, the following element for each paper– see this template:

<table>
<thead>
<tr>
<th>Full paper reference HERE (ACM or APA format)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-written PARC abstract (150 words)</td>
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<td>Text txt text text Text txt text text Text txt text text</td>
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</table>

- Submit your assignment to the instructor early for multiple round of feedback.
- Preliminary rewritten abstracts due: OCTOBER 9.
- Final deadline: OCTOBER 23.
- Name your Assignment in your DropBox as: ASSIGNMENT_7_family_name.doc