Course Details:  3 Credit Hours

COURSE DESCRIPTION
Expands previous exposure of students to major historical, contemporary and emerging theories, methods, techniques, technologies and applications in the field of Human-Computer Interaction. Students will explore relevant and influential research, results and applications. Students will develop an understanding of leading research approaches and paradigms, and will design an independent research program in relation to their individual research fields and personal interests.

PREREQUISITES
Advanced graduate standing or consent of instructor.

REQUIRED COURSE READINGS
See schedule below.

CLASS STRUCTURE
Given that this is an advanced graduate-level course, the format will primarily be seminar rather than lecture. The instructor will facilitate the discussion by introducing the topics, providing theoretical and historical context, and offering expertise. The success of the course depends on the students’ preparation and enthusiasm.

To provide structure for the discussion, the course will employ the jigsaw classroom technique. Each student will be assigned a workgroup, which combines diverse backgrounds, knowledge, and experience. The members of each workgroup will work out among themselves who is primarily responsible for each of the assigned readings each week, such that each student will make his or her own expert contribution to the group and to ensure that each article will be adequately covered. Some of class time will be devoted to breakout sessions with your group, to summarize the readings and to organize discussion points. Following a short break, each group will have approximately time to lead a discussion on one of four key points: a theoretical integration of the readings; a commentary on methodology; application of the readings to real-world problems; and future directions for research.

The remaining time in class will be devoted to final thoughts about the readings and discussion, as well as time for peer evaluation and planning for the coming week.

---

1 This syllabus was prepared with material from Anthony Faiola and Leslie Ashburn-Nardo.
Weekly Assignments:
For each weekly session the faculty will provide an assignment that best fits the readings and content. The goal of the assignment will be to give the students the opportunity to explore and reflect upon the material. All assignments are submitted through OnCourse. Students should always bring a copy of the assignment for the current week to class. There is NO final exam or project.

Class Discussion:
Student must come to class prepared to discuss that week’s reading assignment. Active participation in every class is required. Indeed, much of the learning that will take place in this course will come from sharing your thoughts and listening to the thoughts of your colleagues. The more students practice organizing and articulating their thoughts, the easier it will become. The class participation grade will be based on
a. voicing reflections on the readings (e.g., by drawing connections, generating ideas, noting positive contributions, and constructive criticisms);
b. getting others in the class involved (e.g., by posing questions, engendering stimulating debate);
c. contributing information and experiences that supplement the readings;
d. peer evaluations, both of your contributions to your smaller workgroups and of your workgroup’s contributions to the class discussion; and

e. class attendance, being on time, and being prepared. Being prepared means that you have read and thought about all of the assigned readings before the class for which they are scheduled.

Grading:
The grade for this course will be based on the mean of all weekly assignments. There is also a requirement of participation, which is 20% of your weekly grade. Class participation grades will reflect the level of student engagement.

Deduction Grading
• -10 pts. = Handed in 24 hours following the due date and time.
• -25 pts. = Handed in one week following the due date and time.

Grade Percentage Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>93-96.99</td>
</tr>
<tr>
<td>A</td>
<td>90-92.99</td>
</tr>
<tr>
<td>A-</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>B-</td>
<td>77-79.99</td>
</tr>
<tr>
<td>C+</td>
<td>73-76.99</td>
</tr>
<tr>
<td>C</td>
<td>97-100</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 effected. 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.

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.
## Weekly Schedule

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
</table>
| 1      | 1/14  | **Paper Reviews 1**: HRI 2010 Best Papers  
Complete the review form on the following best papers from the *ACM/IEEE International Conference on Human-Robot Interaction*:
1. Gracefully Mitigating Breakdowns in Robotic Services  
3. No Fair!! An Interaction with a Cheating Robot  
4. Robots Asking for Directions – The Willingness of Passers-by to Support Robots  
5. UAV Video Coverage Quality Maps and Prioritized Indexing for Wilderness Search and Rescue |
| 2      | 1/21  | **Literature Review 1**: The handout provides details on eight possible explanations of the uncanny valley: (1) mate selection; (2) pathogen avoidance; (3) shared circuits for empathy; (4) violation of human norms; (5) sorites paradoxes; (6) psychoanalytic explanations; (7) mortality salience; and (8) religious constructs of human identity. Prepare a literature review on one of these topics, which should cite at least five highly relevant papers. |
| 3      | 1/28  | **Literature Review 2**: TBD |
| 4      | 2/4   | **Literature Review 3**: TBD |
| 5      | 2/11  | **Methods 1**: TBD |
| 6      | 2/18  | **Methods 2**: TBD |
| 7      | 2/25  | **Literature Review 4**: Dual-Process Model of Impression Management  
1. Read the paper entitled “Using an Auditory Implicit Association Test to Investigate the Effect of Social Desirability Bias on Human Evaluations of Synthesized Speech.”  
2. In one paragraph, note any problems with the logic, support, and progression of the ideas of the paper and questions raised that are not answered by the conclusions.  
3. The paper proposes a dual-process theory of conscious vs. nonconscious impression management. The paper claims that nonconscious processing produces evidence that people manage their impressions toward computers, and that evidence that people do not manage their impressions toward computers involves conscious processing. Collect evidence to support or refute this theory. The evidence can basically be placed in a matrix with four groups: Conscious vs. Unconscious x Support Human Impression Management toward Computers vs. Oppose Human Impression Management toward Computers  
   - Group I: Unconscious Oppose  
   - Group II: Unconscious Support (e.g., the politeness study, increased adherence owing to the presence of eyes)  
   - Group III: Conscious Oppose (e.g., computer-administered telephone surveys) |
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>3/11</td>
<td>Reaction Paper 1: Trust and Persuasion with Simulated Characters. Review literature pertaining to trust and persuasion involving computer systems. Consider the processes that motivate both the decisions people make about (or with) other people using computers and the decisions people make based on the advice of computers. Goal A: Predict how seemingly irrelevant presentational factors can influence “rational” decisions in the context of an ethical dilemma featuring computer-generated human actors. Goal B: Explain why men and women would report different levels of trust in a computer-based decision-support system.</td>
</tr>
<tr>
<td>—</td>
<td>3/18</td>
<td>Spring Break</td>
</tr>
<tr>
<td>10</td>
<td>3/25</td>
<td>Reaction Paper 2: TBD</td>
</tr>
<tr>
<td>11</td>
<td>4/1</td>
<td>Literature Review 6: Nonverbal Sounds for Conveying Semantic Content. Review five papers related to the topic of how nonverbal audio information can be used to convey descriptive/semantic content.</td>
</tr>
</tbody>
</table>
| 12   | 4/8   | Reaction Paper 3: How to Communicate Brand Values through Websites. These two articles might be helpful for everybody to get started with this topic. Brand Experience and the Web: http://www.digital-web.com/articles/brand_experience_and_the_web/ Brand Experience in User Experience Design: http://www.uxmatters.com/mt/archives/2006/07/brand-experience-in-
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Assignment</th>
</tr>
</thead>
</table>
| 13   | 4/15 | Methods 3: Interactive Technologies for Reducing Obesity in Adolescents  
1. Review three-to-five key research papers on HCI-based interventions to reduce obesity in children, such as health games that increase physical activity. (Long-term HCI interventions are of particular interest.)  
2. Evaluate the strategies of each paper, such as the strategy’s effectiveness in obtaining the desired outcome.  
3. How can the strategy of each paper be improved?  
4. What alternative strategy can you propose to obtain the same or improved health outcomes?  
The key point in this assignment is to focus on the interaction between the child and the computer. |
| 14   | 4/22 | Essay 1: Evidence that Contingency Enhances Entrainment in Human-Agent or Human-Robot Interaction  
Write a five-paragraph paper. The first paragraph is the introduction. The last sentence of your introduction is your thesis statement. The next three paragraphs are supporting paragraphs that provide evidence in favor of your thesis statement and attempt to criticize evidence against your thesis statement. The fifth paragraph is the conclusion. The topic is on contingency, interactive technologies, and entrainment/engagement. You will argue for or against the claim that social robots or embodied animated agents that behave contingently will be able to entrain participants into longer interactions and engage them more fully, giving feelings of copresence, social presence, and so on.  
You will be graded on the content and logical cohesiveness of your argument. The assignment concerns finding the most relevant papers and adequately using their findings to create a logically coherent argument to advance your thesis. |
| 15   | 4/29 | Open Questions 1: Beauty in Humans and Synthetic Characters  
1. Understanding beauty and naturalness. With respect to the human form, what is beauty? What is naturalness? What parameters affect them?  
2. What is the difference between looking natural and looking “made up”? What would look sexy or sophisticated?  
3. Makeup can create high cheekbones where none exist. Is there a way to apply beauty products to escape the uncanny valley (unnaturalness) of plastic surgery? Obviously, the goal of a facelift is to flatten wrinkles, but the result can be a face that looks warped in various directions? Can makeup (i.e., adding texture, e.g., highlight and shading) unwarip it?  
4. Can we use a photograph and virtually apply makeup to render a “perfect” or as close to perfect image? What would be the technique of applying makeup (i.e., highlight and shading) to create the |
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Is there an automatic way to take a photograph of a face and determine how makeup should be applied to make it more beautiful? For example, to make it appear to be closer to the ideal ratios (Shania Twain). <a href="http://news.bbc.co.uk/2/hi/health/8421076.stm">http://news.bbc.co.uk/2/hi/health/8421076.stm</a></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>How can beauty cues be related to other factors (e.g., mate selection, hormones, orgasm strength)? What would be a new research design to explore this? The above questions could be asked with respect to different parts of the body: the face, eyes, lips, chest, and so on.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>5/6</td>
<td>TBD</td>
</tr>
</tbody>
</table>
Paper Review Form

1. What are the main findings of the paper, what are its contributions, and why is the paper significant? (150 word maximum)

2. Write excellent, very good, good, fair, poor, or not applicable after each point below, and explain why you gave that rating.

   Originality:
   Why?

   Importance:
   Why?

   Technical soundness:
   Why?

   Theoretical contribution:
   Why?

   Newsworthiness:
   Why?

   Relevance to field (e.g., human-robot interaction):
   Why?

   Clarity of presentation and organization:
   Why?

   Overall evaluation:
   Why?

3. Does the paper contain sufficient and appropriate references?

4. Does the paper clearly state the objectives of the work?

5. List in detail the flaws, theoretical or methodological, in the paper, and discuss how they could be overcome. (300 words minimum)

6. This paper is ranked ___ among the ___ papers reviewed.

7. Explain why you gave this paper the ranking you did by comparing it to the other papers reviewed. (150 words minimum for the top ranked paper)
**Reaction Papers**

For each reading assignment in a given week the student may be asked to prepare a three-page reaction paper. Reaction papers should have four components:

1. **Major ideas, themes.** Provide an integrative summary of the most important three or four points in the readings. In particular, note major theories, how they compare and contrast, and key themes. Focus on the important principles, not the small details.

2. **Methodology.** Focus on noteworthy methods from the readings and explain how they complement those of your own discipline.

3. **Application.** Identify one empirical article (preferably a recent one) that you can link to the assigned readings in terms of application. That is, the article should be applied in nature, focusing on the application of relevant theories to solve a real-world problem.

4. **Research Idea.** In two or three sentences, describe a research question, hypothesis, and an idea for how to test it, based on the week’s assigned readings. This task will give students practice developing research ideas, gives them a starting place for their research proposals, and could potentially be turned into a publishable study.

**Suggestions for Preparing a Literature Review**

1. A literature review does not merely summarizing a paper. It may involve reading a paper from the perspective of a particular theory and looking for findings that support or refute that theory. In other words, the theory will make certain predictions, which are typically referred to as hypotheses, so you want to highlight those cases in which the findings match the predictions and those cases in which it does not match the predictions.

2. It may be useful for you to start by writing down a clear statement of the theory in question, which states relations among variables, so that predictions (hypotheses) can be made. Based on your literature review, you should devise a clear statement of the theory, which includes conceptual and operational definitions.

3. Do not be afraid to list both evidence that supports a theory and evidence that does not support a theory. The review should be balanced and just.

4. Theories may be compared and evaluated using the Lakatos’s criteria for a progressive research program: “one theory T2 is better than another theory T1 if T2 entails more true observational statements than T1. Such a comparison makes sense at least if the observation statements entailed by T1 are a proper subset of those entailed by T2” (Lakatos and Musgrave 1970).

5. Clearly separate material concerning different topics by placing it in its own properly titled major section.

6. If you find in your literature review new research methodologies for studying a phenomenon, place them in a separate section.

7. Similar papers should be grouped together. For example, papers that use similar methods to obtain similar findings that support the same theory should be grouped together. For example, if your literature review deals with different kinds of theories, the highest-level sections would correspond to the major theories. The next level in the hierarchy would
correspond to the kinds of findings that support or do not support the theory (e.g., neuroimaging, task performance, phenomenological/experiential). The next level would refer to the kinds of findings (e.g., theory of mind, simulation theory, insular cortex, amygdala). Then finally there would be pro and con evidence, first listing the pro and then the con.

8. Fresh ideas are always good.