

I270: Intro to HCI

Department of Human-Centered Computing

Indiana University School of Informatics and Computing, Indianapolis

Spring 2019

Section No.: 23133

Credit Hours: 3

First Class: January 7, 2019

Class location: IT 357

Instructor: Matt Hofmann, MS in Educational Technology, Purdue University

Email: mwhofman@iupui.edu, mhofmann@gmail.com

Prerequisites: None

COURSE DESCRIPTION

This course will introduce Informatics undergraduates to the fields of Human-Computer Interaction (HCI). This focuses on the *use* of computing technology. From this perspective, we can understand how various technologies fit into users' lives more effectively and can extend users' cognitive capabilities through designing new experiences for them in HCI. The course will introduce you to the design process that accompanies software development.

The course is divided into two main activities of interaction designers. The first activity deals with the design process of software and hardware technology and the relation of our designs to the user. Examples of design include learning about our software users, sketching and brainstorming different design alternatives, and developing prototypes. The second important activity is evaluation of the generated designs. Examples of evaluation include expert evaluation, usability studies and field studies.

I hope that over the course of the semester you will gain a new understanding and appreciation for the users of your software. This appreciation then can be used to help generate design insight. This course is intended primarily for students wishing to

become designers of interactive software and media; however, it is also applicable for technical students who wish to learn more about the users of software that they develop. The course will focus on design activities including design and concept generation, user modeling, low fidelity prototyping, testing, presentation, critique, and so forth. Here is the official course description, which will be infused into our activities in the class:

Required Text:

Title: *Designing for Interaction: Creating Innovative Applications and Devices*

Author: Saffer, Dan

Edition: 2nd

Publisher: New Riders

ISBN: 0-321-64339-9

Available at bookstore and Amazon.com: http://www.amazon.com/Designing-Interaction-Creating-Innovative-Applications/dp/0321643399/ref=sr_1_1?ie=UTF8&qid=1408472205&sr=8-1&keywords=Designing+for+Interaction%3A+Creating+Innovative+Applications+and+Devices

Additional Readings: (if required)

Additional readings will be made available online.

Course Outcomes:

By the end of this course, you will be able to:

- Understand and explain a range of foundational HCI terms and topics, such as:
 - HCI basics, interaction design, and related areas
 - HCI conceptual models
 - User needs/requirements and product assessments
 - The processes/life-cycle of interaction design

- Interface design and prototyping
- A user-centered approach to interaction design
- Product evaluation/testing methods
 - Identify what tools and techniques exist for interaction designers to scaffold the process of design as well as the limitations of these techniques.
 - Collect information from potential users that give evidence to what user's needs are as well as how potential designs could fit into their daily habits.
 - Analyze user needs and requirements.
 - Prioritize values, needs, and requirements from multiple stakeholders in a design project and generate a list of viable and innovative concepts that fit the design space.
 - Apply a user-centered approach to interaction design, user profiling to interaction design, and interface design principles and processes.
 - Participate in the process of design as well as integrate design into a software development process.
 - Construct a well-reasoned argument supporting decisions in a design process and thoughtfully critique the design decisions of others.
 - Critically evaluate interactive software and system designs.
 - Use several different evaluative techniques for example conducting basic usability studies or perform a basic heuristic evaluation to evaluate software designs and appropriately examine the results to generate new, more effective design concepts.

Core Competencies:

With respect to the IUPUI Principles of Undergraduate Learning, you can expect through this class to achieve competencies in the following areas:

1. Critical Thinking

- Students will assess and identify user profiles, i.e. personas, scenarios, and insights.
- Students will analyze evaluation data from which to draw some well-supported conclusions about the interactive products they have designed.
- Students will identify, analyze, discuss and debate various topics in class discussions.
- The students will engage in critique during the presentations of other classmates and be able to respond politely and constructively when their work is critiqued.

2. Application of Knowledge

- The class will be practice-oriented, allowing students to gain a hands-on knowledge on the concepts about which they learn in HCI.
- Students will blog about HCI in their own lives and about how the principles they learn in class can help them become better designers and users of technology.
- Students will be required to comment on other students blog posts to think about how their perspective of issues in HCI matches with theirs.

Equipment used:

If you are a declared Informatics major, please visit <http://informatics.iupui.edu/technology/laptop> for information on the Laptop Initiative for Informatics majors.

You will also need sketching equipment (e.g., sketching pad, pencils, pens, or markers), access to a scanner, access to and rudimentary understanding of HTML/PowerPoint/Photoshop or Fireworks

EXPECTATIONS, GUIDELINES, AND POLICIES

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. <http://registrar.iupui.edu/incomp.html>

Deliverables:

You are responsible for completing each deliverable (e.g., assignment, quiz) by its deadline and submitting it by the specified method. Deadlines are outlined in the syllabus or in supplementary documents accessible through 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 shall be reduced 10%, if it is submitted late and a further 10% for each 24-hour period it is submitted after the deadline.

Class Participation:

Each week, there will be an activity done in class. These will be group activities that will require you to create some sort of deliverable that will need to be presented, sent in a message to the instructor, or both. You will be graded on each discussion post using the grading scale outlined in the syllabus. If you are absent from class, you will not be able to participate in this assignment and receive credit.

Quizzes:

Quizzes will be posted to Canvas based on the readings each week. You will be quizzed over the material you read in this course to determine basic mastery and participation in the subject material. You will be graded on each quiz using the grading scale outlined in this syllabus.

The quiz will be available prior to class the week *before* the reading assignment is due. You will have until 2:59 PM the next Monday to complete it. Quizzes will be open book.

If you have the proper documentation from Adaptive Services, modifications to the quizzes will be made for you.

Class assignments:

You will be assigned 4 short individual assignments throughout the semesters. These assignments will help you practice the basic skills that you will be evaluated on later in the class. Each assignment will take between 45 and 90 minutes to complete. You will have two weeks to complete each assignment.

Basic completion of the assignment will result in an 70%. Assignments that show good quality work and incorporate lesson learned from the reading will receive a 80 or 85 depending on the quality of the work. Assignments that go beyond lessons learned from the readings and take visual design into consideration will receive a 90 or 95. Exceptional work will receive a 100. The assignments are described in the calendar below and will be described in more detail when they are assigned.

Final Project:

The final project uses the skills developed throughout the semester. This final project will require choosing a design topic from a list provided by the instructor and performing the entire user-centered process to create an original design addressing an identified problem or need for your target user group.

Final deliverables:

- Submission packet, to consist of diary or report, scans, etc. The packet should leave no doubt about how your project went, what you did, how you did it, and what the final outcomes were. They will include:
 - User analysis, personas and scenarios created.
 - Sketches of design alternatives brainstormed.
 - A final design. This does not have to be large, but it does have to include user interaction. In other words, it cannot be just informational. It has to do something.
 - Paper Prototype
 - CD/DVD or digital copy on Canvas with High Fidelity Prototype.
 - Your lessons learned from testing and how these lessons were applied to the final product.
 - Final report. Much of this will be written, at least 10 pages, and probably much more including all the supporting material. The final report will include everything done in the final project, including copies of the prototypes and the final design. The final report gets EVERYTHING. Detail in here how testing was done, the actual data, and so forth. In the report, be sure to identify what part was done by each team member.

Comprehensive detail will be provided on Week 9. The final project materials will be due at 3 PM the last day of class.

Grading Information:

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|-----------------------|------|
| • Class Participation | 20 % |
| • Quizzes | 20 % |
| • Assignments | 30 % |
| • Final Project | 30 % |

Principles of Undergraduate Learning (PUL):

Learning outcomes are assessed in the following areas:

- Oral presentation (OP)
- Writing skills (WS)
- Critical thinking (CT)
- Application of knowledge (AoK)

- Intellectual depth, breadth, and adaptiveness (ID)
- Understanding of society and culture (S&C)
- Values and ethics (V&E)

WEEKLY SCHEDULE

Week	Date	Lecture Topic	Activity	Assignment Due***
1	1/7	What is HCI? UXD, ID, UCD, IA	Design Activity, involving entire UCD	
2	1/14	Who are our users and how do we understand them	Persona and Scenario activity	Read Saffer [Intro, CH1-2] Read Calabria article on personas Read Lepore article on character in personas Quiz 1 on HCI and personas
3	1/21	MLK DAY		
4	1/28	Trends in HCI	Videos of new technology in HCI. Interactivity Lab.	Read Merholz et al. on empathy. Read Harper et al. excerpt [pp. 12-51] Skim Saffer Ch3 on Design Strategy Quiz 2 on Trends in HCI
5	2/4	How to do research: Interviews and Observation	User research activity.	Assignment #1: Personas and Scenarios Read Berger excerpt on interviews and observation Read Saffer [CH 4] Read Szuc article on asking why Quiz 3 on learning about users

6	2/11	The design team, design and product lifecycle	Video on team process.	Read Merholz et al. excerpt on Agile Quiz 4 on the Agile process
7	2/18	Designing and sketching and brainstorming	Design activity. Sketching practice	Read Saffer [CH 6] Read Buxton excerpt on sketching and design Quiz 5 on design
8	2/25	Heuristic Evaluation: Coming up with good heuristics and basics in evaluation Final Project announced	Heuristic Evaluation Activity.	Read all 4 Nielsen articles on heuristic analysis Quiz 6 on heuristic analysis Assignment #2: Interaction Design Document
9	3/4	Analysis and Insights	Design activity. Affinity Diagramming Activity.	Read Saffer [CH 5] Read Ellerby article on insights Read Baty articles on analysis techniques and finding patterns in data Quiz 7 on analysis
10	3/11	SPRING BREAK		

11	3/18	Paper prototyping	Design activity. Present and Critique. Review	Read Snyder article on paper prototyping Read Saffer [CH 8] Read Modero article on paper prototyping Quiz 8 on prototyping
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12	3/25	Usability testing metrics, evaluation, and interpreting results.	Usability test on software prototype.	Assignment #3: Heuristic Evaluation Read Unger and Chandler excerpt on Usability Testing Read Snyder worksheet on usability tasks Read Nielsen article on usability metrics Quiz 9 on usability
13	4/1	High-fidelity prototyping	Building a prototype in high-fidelity prototyping tools.	Read Saffer [CH 3,CH 7] Quiz 10 on Design Strategy and Refinement
14	4/8	Discussions on the business of HCI and ethics in HCI	Discussions	Read Friedman article on design ethics Read Saffer [Epilogue] Quiz 11 on ethics, business in HCI Assignment #4: Usability Test
15	4/15	Project work week		
16	4/22	Project Presentations		
Final	4/29	Project Presentations		Final Project Submission Portfolio due.

***** Saffer Book is required text and all CH# in assignments reference the chapter number. All other articles will be available on Canvas through the files section.**

Grading Scale:

A+	100%	Professional level work, showing highest level of achievement
A	93–99%	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%	Minimally acceptable performance and quality of work
C	73–76%	Unacceptable work, does not demonstrate mastery
C–	70–72%	Unacceptable work
D+	67–69%	Unacceptable work
D	63–66%	Unacceptable work
D–	60–62%	Unacceptable work
F	Below 60	Failure

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.

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:** ^[1]_{SEP} 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.
 1. 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.
 2. 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.
 3. 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.
 4. 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.
 5. A student must not use any unauthorized assistance in a laboratory, at a computer terminal, or on fieldwork.
 6. A student must not steal examinations or other course materials, including but not limited to, physical copies and photographic or electronic images.
 7. 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.
 8. 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.
 9. **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.
 10. **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.
 1. A student must not adopt or reproduce ideas, opinions, theories, formulas, graphics, or pictures of another person without acknowledgment.
 2. A student must give credit to the originality of others and acknowledge indebtedness whenever: ^[1]_{SEP}
 1. directly quoting another person’s actual words, whether oral or written;
 2. using another person’s ideas, opinions, or theories;
 3. paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;
 4. borrowing facts, statistics, or illustrative material; or

5. offering materials assembled or collected by others in the form of projects or collections without acknowledgment
6. **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.
7. **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.
8. **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.
9. **IUPUI course policies:** A number of campus policies governing IUPUI courses may be found at the following link: http://registrar.iupui.edu/course_policies.htmlhttp://registrar.iupui.edu/course_policies.html
10. **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. Texting, surfing the Internet, and posting to Facebook or Twitter during class are generally not permitted. 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). 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.

11. **Bringing children to class:** To ensure an effective learning environment, children are not permitted to attend class with their parents, guardians, or childcare providers.
12. **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> for more information.
13. **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.

OTHER POLICIES

1. **IUPUI course policies:** A number of campus policies governing IUPUI courses may be found at the following link: http://registrar.iupui.edu/course_policies.htmlhttp://registrar.iupui.edu/course_policies.html
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private conversations and other unrelated activities. Texting, surfing the Internet, and posting to Facebook or Twitter during class are generally not permitted. 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). 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.

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Important Supplement for IUPUI Syllabi

IUPUI Policy on Disability Accommodations

Students needing accommodations because of disability will need to register with Adaptive Educational Services and complete the appropriate forms issued by AES before accommodations will be given. The AES office is located in Taylor Hall, UC 100. You can also reach the office by calling 274-3241.

IUPUI Policy on Religious Holidays

IUPUI respects the right of all students to observe their religious holidays and will make reasonable accommodation, upon request, for such observances. Students seeking accommodation for religious observances must submit a request in writing to the course

instructor by the end of the second week of the semester and should use the Request for Course Accommodation Due to Religious Observance Form. More information on the IUPUI Policy on Religious Holidays is available here:

<http://registrar.iupui.edu/religious.html>.

IUPUI Policy on Academic Integrity:

The IU Code of Student Rights, Responsibilities, and Conduct states that students must uphold and maintain academic and professional honesty and integrity; the code defines academic misconduct as any activity that tends to undermine the academic integrity of the institution. Students engaging in academic misconduct may therefore receive penalties from their course instructor and disciplinary action from the university. Policies against academic misconduct apply to all course-, department-, school-, and university-related activities. Academic misconduct may involve human, hard-copy, or electronic resources and includes but is not limited to the following: cheating, fabrication, plagiarism, interference, violation of course rules, and facilitating academic dishonesty. For definitions of these activities, visit

<http://studentcode.iu.edu/responsibilities/academicmisconduct.html>. For information on how faculty and students are expected to handle cases involving academic misconduct, visit <http://registrar.iupui.edu/misconduct.html>. Additional information about the rights and responsibilities of IU students is available at <http://studentcode.iu.edu/>.

IUPUI Policy on Sexual Misconduct

As your instructor, one of my responsibilities is to help create a safe learning environment on our campus. Title IX and our own Sexual Misconduct policy prohibit sexual misconduct. If you have experienced sexual misconduct, or know someone who has, the University can help.

If you are seeking help and would like to speak to someone confidentially, please visit <http://stopsexualviolence.iu.edu/help/index.html> (Links to an external site.) for contact information.

It is also important that you know that federal regulations and University policy require me to promptly convey any information about potential sexual misconduct known to me to our campus' Deputy Title IX Coordinator or IU's Title IX Coordinator. In that event, they will work with a small number of others on campus to ensure that appropriate measures are taken and resources are made available to the student who may have been harmed.

Protecting a student's privacy is of utmost concern, and all involved will only share information with those that need to know to ensure the University can respond and assist. I encourage you to visit stopsexualviolence.iu.edu (Links to an external site.) to learn more about available resources on campus and in the community.

Education and Title VI

Title VI of the Civil Rights Act of 1964 protects people from discrimination based on race, color or national origin in programs or activities that receive Federal financial assistance.

Programs and activities that receive ED funds must operate in a non-discriminatory manner. These may include, but are not limited to: admissions, recruitment, financial aid, academic programs, student treatment and services, counseling and guidance, discipline, classroom assignment, grading, vocational education, recreation, physical education, athletics, housing and employment, if it affects those who are intended to benefit from the Federal funds.

<http://www2.ed.gov/about/offices/list/ocr/docs/hq43e4.html>