

# INFO-I 275

## Introduction to Human-Computer Interaction Theory

Department of Human-Centered Computing  
Indiana University School of Informatics and Computing, Indianapolis  
Fall 2021

*Section No.:* 36171 – Online Section – 3 credit hours  
*Start Date:* Monday, August 23, 2021  
*Canvas Link:* <https://iu.instructure.com/courses/2010129>  
*Instructor:* Mark Larew, PhD, Professor of Practice  
*Office:* IT 440G, Informatics and Communications Technology Complex  
535 W. Michigan Street, Indianapolis, IN 46202  
*Office Phone:* 317-278-4141  
*Email:* Canvas email (preferred) or [mlarew@iupui.edu](mailto:mlarew@iupui.edu)  
*Office Hours:* Tuesdays and Thursdays 3:00-5:00 PM by appointment (in-person or call)  
– contact via Canvas email to schedule

*Teaching Assistant(s):* To be announced via Canvas

*Prerequisites:* None (not an extension of any course)

### COURSE DESCRIPTION

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

### Required Text – Available via IU eTexts link in Canvas:

*Title:* Cyberpsychology: An Introduction to Human-Computer Interaction, 2<sup>nd</sup> Edition (2017)  
*Author(s):* Norman, Kent L.

Students can access an electronic version of the textbook via the IU eTexts link on Canvas. Students paid for access to this eText as a fee for registering for this course. For more information, please see: "[The Student Guide to IU eTexts \(Links to an external site.\)](#)".

If you want to use a hard copy of the textbook in addition to the electronic version, options include:

- You can purchase a paperback version of the textbook (ISBN: 9781107500556) via the IUPUI Barnes & Noble store (<http://iupui.bncollege.com>) or other bookseller. This textbook has been used for a few years, so you may be able to locate a used book but be sure that it is the 2<sup>nd</sup> Edition.
- The IUPUI Library has a hard cover version of the textbook on reserve for this course. This book can be checked out for 2 hours at a time to read at the library.

## Course Learning Outcomes:

On completion of the INFO-I 275 course, students will:

1. Describe the impact of the increasing levels of interactions of humans and computers on HCI theories, models, principles, and research methods.  
*Assessments: Discussion Points, Exercises*
2. Describe ways in which theories and research that address goals and motivations of humans are relevant to HCI design of applications that support a variety of activities.  
*Assessments: Discussion Points, Exercises, Test 2*
3. Describe key elements of theories and research that focus on human information processing and cognitive processes that are relevant to human-computer interactions.  
*Assessments: Test 1, Project 1*
4. Plan and execute an analysis of HCI theoretical principles relevant to an emerging HCI-related technology (e.g., augmented reality) and present a conceptual design solution using this technology to enhance the user experience for a selected activity.  
*Assessments: Exercises, Test 3, Project 2*
5. Precisely identify and define key HCI principles and research methods.  
*Assessments: Quizzes, Tests 1-3*
6. Describe potential benefits and potential negative effects of human-computer interactions.  
*Assessments: Exercises, Test 3*

## IUPUI General Education Core (GEC)

Please visit <https://due.iupui.edu/undergraduate-curricula/general-education/iupui-general-education-core/> for information about the IUPUI General Education Core. This course is approved as a General Education course that addresses the following guidelines for the Social Sciences competency domain:

- SS1. Demonstrate knowledge of major concepts, theoretical perspectives, empirical patterns, or historical contexts within a given social or behavioral domain
- SS2. Identify the strengths and weaknesses of contending explanations or interpretations for social, behavioral, or historical phenomena
- SS3. Demonstrate basic literacy in social, behavioral or historical research methods and analyses
- SS4. Evaluate evidence supporting conclusions about the behavior of individuals, groups, institutions or organizations
- SS5. Recognize the extent and impact of diversity among individuals, cultures, or societies in contemporary or historical contexts
- SS6. Identify examples of how social, behavioral, or historical knowledge informs and can shape personal, ethical, civic or global decisions and responsibilities

## IUPUI Profiles of Learning for Undergraduate Success (PLUS)

Please visit <https://profiles.iupui.edu/> to view a complete list of profiles. The course learning outcomes focus on the following profiles and activities:

- Communicator: Evaluates information; listens actively; conveys ideas effectively
- Problem Solver: Thinks critically; analyzes, synthesizes, and evaluates
- Innovator: Investigates; creates/designs
- Community Contributor: Builds community; behaves ethically

## **Program-level Learning Outcomes (PLOs)**

### ***B.S. in Informatics***

Please visit <https://soic.iupui.edu/undergraduate/degrees/informatics/learning-outcomes/> to view the complete list of the program-level learning outcomes for the B.S. in Informatics. This course is designed to address primarily the following Informatics PLOs:

- A6. Evaluate and create interfaces by applying user experience design principles, methods, and theories
- D3. Define terms and explain principles essential to the design of IT and computing systems
- E1. Analyze the social, cultural, and organizational settings in which IT solutions will be deployed to achieve successful implementations
- E2. Interpret major societal trends affecting the development and deployment of technology, such as access, privacy, intellectual property, security, and equity
- F2. Support the ethical and appropriate design and use of technology

### ***Human-Computer Interaction Certificate***

Please visit <https://soic.iupui.edu/undergraduate/degrees/hci-certificate/> to view the complete list of PLOs for the undergraduate Human-Computer Interaction (HCI) Certificate. This course is designed to address primarily the following HCI Certificate core competencies:

- HCI-1. Understanding of human-computer interaction and usability terms, concepts, principles and practices
- HCI-5. Interface design principles and processes; including related areas of visual design
- HCI-6. Cognitive and information processing
- HCI-10. Human-computer interaction principles and a user-centered approach to interaction design as applied to software and the Web

## Alignment of I275 Learning Outcomes to GEC, PLOs, and PLUS

The table below indicates how each course learning outcome addresses guidelines for a General Education Course, the Program-level Learning Outcomes for Informatics and HCI programs, and the IUPUI Profiles of Learning for Undergraduate Success.

Course Learning Outcomes	GEC	Program-level Learning Outcomes*	Profiles of Learning for Undergraduate Success
1. Describe the impact of the increasing levels of interactions of humans and computers on HCI theories, models, principles and research methods.	SS1, SS2, SS3, SS4, SS5, SS6	D3 (I,R), HCI-1 (I), HCI-5 (I,R), HCI-10 (I,R)	<b>Communicator:</b> Evaluates information; listens actively; conveys ideas effectively <b>Problem Solver:</b> Thinks critically; analyzes, synthesizes, and evaluates
2. Describe ways in which theories and research that address goals and motivations of humans are relevant to HCI design of applications that support a variety of activities.	SS1, SS2, SS3, SS4, SS5, SS6	E1 (I), E2 (I),	<b>Communicator:</b> Evaluates information; conveys ideas effectively <b>Problem Solver:</b> Thinks critically; analyzes, synthesizes, and evaluates
3. Describe key elements of theories and research that focus on human information processing and cognitive processes that are relevant to human-computer interactions.	SS1, SS2, SS3, SS4, SS6	D3 (I,R), HCI-1 (I), HCI-5 (I,R), HCI-6 (I), HCI-10 (I,R)	<b>Communicator:</b> Evaluates information; conveys ideas effectively <b>Problem Solver:</b> Thinks critically; analyzes, synthesizes, and evaluates
4. Present an analysis of HCI theoretical principles relevant to an emerging HCI-related technology (e.g., augmented reality).	SS1, SS2, SS3, SS4, SS5, SS6	A6 (I,R)	<b>Communicator:</b> Evaluates information; conveys ideas effectively <b>Problem Solver:</b> Analyzes, synthesizes, and evaluates <b>Innovator:</b> Investigates; creates/designs
5. Precisely identify and define key HCI principles and research methods.	SS1, SS3	A6 (I), D3 (I,R), HCI-1 (I,R), HCI-5 (I,R), HCI-10 (I,R)	<b>Communicator:</b> Evaluates information <b>Problem Solver:</b> Thinks critically; analyzes, synthesizes, and evaluates
6. Describe potential benefits and potential negative effects of human-computer interactions.	SS1, SS2, SS4, SS5, SS6	F2 (I,R)	<b>Communicator:</b> Evaluates information; conveys ideas effectively <b>Community Contributor:</b> Builds community; behaves ethically

\*Indicators of level of knowledge: I = Introduce; R = Reinforce; M = Master

## EXPECTATIONS, GUIDELINES, AND POLICIES

### Participation:

A basic requirement of this course is that you will conscientiously complete all required course activities and assignments by the due dates.

Only the following are acceptable excuses for absences from participation: 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 participation 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.

### 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>

### Deliverables:

You are responsible for completing each deliverable (exercise, test, project deliverable) by its due date. Due dates are listed in this syllabus and on Canvas. In fairness to the instructor and students who completed their work on time, a grade on a deliverable may be reduced 10% if it is submitted 1 to 24 hours after the deadline and an additional 10% for each additional 24-hour period after the deadline.

### Grading Information:

The breakdown of assessed items is shown below.

	Points	% of Total
Student Introduction	10	1%
Quizzes	100	10%
Discussion Points	150	15%
Exercises	240	24%
Projects	200	20%
Tests	300	30%

### Grading Scale:

A+	97.00-100%	Professional level work, showing highest level of achievement
A	93.00-96.99%	Extraordinarily high achievement, quality of work; shows command of the subject matter
A-	90.00-92.99%	Excellent and thorough knowledge of the subject matter
B+	87.00-89.99%	Above average understanding of material and quality of work
B	83.00-86.99%	Mastery and fulfillment of all course requirements; good, acceptable work
B-	80.00-82.99%	Satisfactory quality of work
C+	77.00-79.99%	Modestly acceptable performance and quality of work
C	73.00-76.99%	Minimally acceptable performance and quality of work
C-	70.00-72.99%	Unacceptable work (Course must be repeated for credit)
D+	67.00-69.99%	Unacceptable work (Course must be repeated for credit)
D	63.00-66.99%	Unacceptable work (Course must be repeated for credit)
D-	60.00-62.99%	Unacceptable work (Course must be repeated for credit)
F	< 60%	Unacceptable work (Course must be repeated for credit)

No credits toward major, minor, or certificate requirements are granted for a grade below C.

## SCHEDULE

An initial schedule is presented below. The schedule will be maintained and updated on Canvas. Additional reading assignments may be provided in Canvas modules. Please confirm due dates for assignments on Canvas and set reminders as needed.

Module	Dates (end dates are Wednesdays)	Instructor Presentations	Exercises, Project Deliverables, Tests	Reading/Discussion Point Assignments
Week 1	Aug 23 – Sep 1	Introduction, Syllabus Review, Historical Background	Week 1 Exercise	Chapter 1
Week 2	Sep 2 – 8	Theoretical Models, Classical HCI Theory, Research	Week 2 Exercise	Ch 3, Ch 4
Week 3	Sep 9 – 15	Human Information Processing, Learning and Memory	Week 3 Exercise	Ch 7
Week 4	Sep 16 – 22	Thinking and Problem Solving	Week 4 Exercise	Ch 8
Week 5	Sep 23 – 29		<b>Test 1</b>	
Week 6	Sep 30 – Oct 6	Second Wave HCI, Activity Theory, Contextual Inquiry, Project 1 Introduction	Week 6 Exercise	Review Section 3.5.3 in Chapter 3
Week 7	Oct 7 – 13	Motivation, Emotion and Affective Computing	Week 7 Exercise	Ch 11
Week 8	Oct 14 - 20	Social Media and Interpersonal Relations	Week 8 Exercise	Ch 12
Week 9	Oct 21 – 27		<b>Test 2</b> <b>Project 1 Report</b>	
Week 10	Oct 28 – Nov 3	Assistive Technologies, Project 2 Introduction		Ch 15
Week 11	Nov 4 – 10	Virtual Environments	Week 10-11 Exercise	Ch 6
Week 12	Nov 11 – 17	Automation and Artificial Intelligence	Week 12 Exercise	Ch 14
Weeks 13-14 (includes Thanksgiving Break)	Nov 18 – Dec 1	Video Games and Gamification	Week 13-14 Exercise	Ch 16
Week 15	Dec 2 – 8	The Future of HCI		Ch 19
Week 16	Dec 9 – 15		<b>Test 3</b> <b>Project 2 Report</b>	

## Schedule/Assignment Notes:

- Most modules are set up to start on Thursday and end the following Wednesday. There are exceptions for the start of the semester and Thanksgiving Break.
- Instructor presentations are posted to assignments on Canvas. A link to a pdf of the slides for each presentation in the instructor presentation assignments on Canvas.
- It will be helpful to complete the reading assignment for the week before viewing the instructor presentation(s) for the week.
- For weekly Discussion Point assignments related to the reading assignments, each student should post at least one significant discussion point – only 1 or 2 paragraphs but noting an implication of something you read or heard and perhaps connecting it to a specific example from your experience. A Discussion Point is expected not to be a summary of the entire reading. Instead, select a topic of interest to you and focus on that topic. After posting your discussion point, you should read other students' discussion points and post a reply to one of these discussion points. Your reply should include a significant comment – at least 3-5 sentences and perhaps an example from your experience – and not only a simple statement such as “I agree” or “nice idea.”
- Details for each assignment, including the due date(s), are posted on Canvas.
- Tests will be available on Canvas for at least 3 days prior to the due date so the student can take the exam any time within this period, which ends at midnight on the date the test is due.
- Projects will be completed by individual students (i.e., no group projects are planned).

## 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:
    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



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. **Online civility:** To maintain an effective and inclusive learning environment, it is important to be a respectful participant in online discussions and other classroom exercises. 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 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.
4. **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/>. 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.

5. **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.
6. **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.
7. **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](mailto:aes@iupui.edu), Tel. 317 274-3241). Visit <http://aes.iupui.edu> for more information.
8. **Administrative Withdrawal:** A basic requirement of this course is that students participate in all assigned discussions and conscientiously complete all required course activities and/or assignments. 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.

## 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.