

HCI 590 Industrial Design Principles for UX (ID4UX)

Instructor

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Course Information

HCI 590 Section 720
Class Anchor Day (by which course due dates are reckoned): Tuesday, beginning 14 Sep 2021
Room: N/A
Campus: N/A
Course homepage: <https://d2i.depaul.edu/>
Last day to drop with no financial penalty: Sep 21; after Sep 21, a grade of “W” will be assigned.

Course Summary

The move away from the desktop and toward ubiquitous, anywhere computing solutions demands solving interaction design and user experience problems in the physical world, for products that are both physical and digital. This course addresses the overlap between (digital) interaction design and (physical) industrial design. After an introduction to highlights of industrial design history, the course examines five primary design principles – sensorial, thoughtful, enduring, and sustainable – with numerous case studies.

Coursework explores each of these principles both in concept and in practice. To encourage students to remain in the physical world, all drawings and diagrams must be hand-drawn – no digital diagrams or digital renderings are accepted. Students create physical prototypes of various iterations of a simple ‘smart’ product using readily-available art materials and supplies.

In order to enable OL students to participate in the course, materials requirements are kept basic so that students can obtain the supplies that they need from most art supply or hobby stores, or online. A budget of approximately \$50, in addition to the cost of any texts, should be sufficient to cover the costs for all supplies. See ‘Required & Recommended Texts and Additional Course Materials,’ following, for details.

Physical design benefits from evaluation and analysis from different perspectives. Students are expected to share their work, including sketches and physical prototype photos, with the rest of the class, and provide thoughtful evaluations of each others’ work.

Learning Objectives (LO)

1. Students demonstrate understanding and application of four primary industrial design principles by creating hand-drawn design concept sketches and physical models in a series of individual assignments. (LO1)
2. Students apply user-centered design methods in the design of physical artifacts and evaluate the suitability of these methods by reflecting on their experiences with them afterward. (LO2)
3. Students demonstrate critical thinking and evaluation skills and professional communication by constructively evaluating other students’ work. (LO3)
4. Students communicate their work in a clear and professional manner using hand-drawn sketches, written reports, and still images. (LO4)

Required & Recommended Texts and Additional Course Materials

(Required) King, S. and K. Chang (2016). *Understanding Industrial Design: Principles for UX and Interaction Design*, O’Reilly Media. ISBN-13: 978-1491920398/ISBN-10: 1491920394. Available free to DePaul students to read online through the DePaul Library *Safari* database.

(Optional) Ching, F.D.K. and S.P. Juroszek (2019). *Design Drawing 3rd Edition*, Wiley. ISBN-13: 978-1119508595/ISBN-10: 1119508592. This text is recommended if you wish to refine and expand your technical drawing skills.

Additional selected readings are assigned throughout the quarter.

The required and optional non-textbook supplies for the course include:

- *(Required)* Pen & ink sketchbook, about 6"×8", A5, or larger (up to about 9"×12") if you prefer. If you have a favorite, use it. If not, the Stillman & Birn Epsilon Series is the best available, but costly. Canson, Strathmore, Borden & Riley, and Bee all have excellent ink/marker sketchbooks. The Whitelines 9"×12" inch spiral-bound notebook has decent paper and also has a companion app that makes image capture with a mobile phone exceptionally easy. I use all of these, but the Whitelines 9"×12" and A5 dot-grid notebooks are my go-to tools for everyday use so I can do quick scans of my notes to Dropbox. I use markers cautiously with these, however. Their less-expensive paper tends to 'pill' with heavy marker application.

Working in pencil is an acceptable option if you prefer to do so. There are dry-media alternatives to all of the notebooks described above. Stillman & Birn's Alpha Series is the best available, with a medium grain surface and clear white paper shade. The Whitelines options noted above are also well-suited to pencil.

JetPens.com has an excellent guide to sketchbooks here: <https://bit.ly/3h09eaW>.

- *(Required)* Fiber-tip or gel water-resistant black ink pens, in fine and medium widths. If you have a favorite, use it. If not, the standard is the Faber-Castell PITT India Ink pen, color code 199: waterproof, dark, and outstandingly well-behaved on every paper type. The four-pen pack is the best deal; the XS and S sizes are most useful. Copic Multiliners are a good option, but do bleed through on some papers, since they are alcohol-based. For gel pens, the best are the Pentel EnerGel or Zebra Sarasa pens in 0.3 mm, 0.5 mm, and 0.7 mm tip widths. I use all of these, though the PITTs and Zebras are my most-used.

UPDATE: Another excellent pen choice is the Ohto Graphic Liner Needle Point Rollerball Drawing Pens. These are exceptionally smooth-writing and put down a crisp, dark, high-contrast line. They are available at JetPens. The 'Set of 6' pack is the best deal.

If you choose to work in pencil, please use a lead grade of HB or darker to ensure images will have sufficient contrast when photographed or scanned. I typically use B or 2B, depending on the brand. My favorite mechanical pencils are the Pentel GraphGear 1000 in 0.3 and 0.4 mm sizes and the Pentel Orenz Nero 0.3 mm. My preferred leads are the Pilot Neox and Uni NanoDia.

JetPens.com has an excellent guide to mechanical pencils here: <https://bit.ly/3bnJUdX>; and to mechanical pencil leads here: <https://bit.ly/3br8Jpl>.

- *(Optional)* These are not required, but brush-tip markers are useful for adding presence and shading to your design sketches. Light greys are the most versatile, since, on higher-quality papers, you can layer these to get lighter or darker shades. There are multitudes of markers available, but my favorites are the Faber-Castell Warm Greys (color codes 270 & 272) and the Copic Neutral Greys (color codes N0 & N2). Note that if you'd like to use markers for shading, you are best off going with a better-quality sketchbook, rather than the Whitelines or similar, as noted above.
- *(Required)* No-hardening modeling clay. If you have a favorite, use it. If not, my favorite is Van Aken Plastalina. It is readily available, comes in lots of colors, and is soft enough to be able to work with for long periods without hand fatigue. Sculpture House Roma Plastilina Modeling Clay is also highly recommended. No. 2 grade is general-purpose, but stiffer than the Van Aken.
- *(Optional)* Armature wire is only needed if your design requires a wire skeleton for support. Given the small scale we will be using, 11.5 or 14 gauge armature wire should be adequate. I use Blick 11.5 gauge (<https://www.dickblick.com/products/blick-armature-and-sculpture-wire/>) on occasion.
- *(Optional)* A 12" wooden manikin. If your product is something a person wears or is otherwise large enough, a manikin will allow you to scale, proportion, test, and photograph your models in

context properly. The Blick Hardwood Manikin (<https://www.dickblick.com/products/blick-hardwood-manikin/>) is what I use.

Reliable sources for supplies are JetPens (jetpens.com) for paper, pens, pencils, and leads, and Blick Art Supply (dickblick.com) for anything. JetPens has an extensive library of text and video guides, including those for sketchbooks and just about every type of stationery supply imaginable.

We will discuss more about materials and supplies during our first class. You will not need the above supplies until the second assignment, which will be discussed and assigned on Week 2, in order to give you plenty of time to gather materials and do the assignment.

Prerequisites

The following requirement is listed as a prerequisite:

- HCI 440; completion of HCI 450 or equivalent human factors and psychology coursework is recommended.

Please contact the instructor if you have any questions or concerns about the prerequisite requirement.

Class Format

This course and arranged office hours via phone or Zoom, are delivered entirely online. There may be some scheduled virtual meetings of all or part of the class, based on student availability. All lectures are delivered as downloadable MP4 screencasts via D2L. Individual or groups of students may schedule in-person or virtual meetings with the instructor, as needed.

Evaluation & Grading

Coursework includes the following components. Note that percentages do not sum to 100% due to rounding errors.

Coursework	Grade Points	Grade Percentage (%)
Participation	10 points	~5
Individual Assignments	125 points	~67
Reading quizzes	25 points	~14
Student-to-Student Design Evaluations	27 points	~15
Total	187 points	~100

Participation

Academic integrity quiz. All students must review available academic integrity resources and complete a short online affirmation of their awareness of these resources. This coursework component is mandatory.

Personal introduction. All students must post a brief personal introduction at the start of the quarter. This helps provide a starting point for relationships to develop for the peer-to-peer design evaluations.

Individual Assignments. In the course of completing the individual assignments, students create hand-drawn design concept sketches and physical models demonstrating their interpretations of each

industrial design principle. The series of individual assignments has as its goal the creation of a final design model combining and demonstrating a balanced interpretation of all the covered industrial design principles. Five (5) assignments. *Note: The instructor does not preview homework assignments.* (LO1, LO2, & LO4)

Reading Quizzes. Students complete a short quiz on the assigned textbook reading for each week to ensure that they have full, broad understanding of each principle before encountering the more-focused class discussion. Five (5) quizzes. (LO1)

Student-to-Student Design Evaluations. Design evaluations provide the student with the opportunity to receive constructive feedback on their assignment efforts by sharing them with other students in the course. Students are required to share elements of each assignment. Students earn credit for this coursework item by providing thoughtful and substantive evaluations of these assignment elements. Evaluations must include both positive and negative evaluation feedback. Three (3) evaluations. (LO3)

Time Budget

HCI 590 Industrial Design Principles for UX is a time-intensive course, since extensive creative physical making activities are involved. Students should allow for a minimum of 10-15 hours of work on individual assignments each week, with additional time allowed for reading quizzes, participation in design evaluations, and other class coursework.

Grading Scale. Final letter grades will be given based on the following minimum percent of total points earned:

If the final numeric grade is less than:	and greater than or equal to:	the final letter grade is:
-	93	A
93	90	A-
90	87	B+
87	83	B
83	80	B-
80	77	C+
77	73	C
73	70	C-
70	67	D+
67	60	D
60	0	F

The maximum number of coursework points possible is 164 points. Grades and approximate corresponding point totals are:

Points	Normalized Numeric Grade	Letter Grade
174	93	A
155	83	B
134	73	C
112	60	D

Grade Responsibility. Every effort is made to provide the student with the resources and support needed to succeed in the course. Grades are assigned fairly and impartially based on the coursework submitted by the student, without regard to external circumstances such as GPA goals or employer tuition reimbursement minimum grade requirements. It is the student's responsibility to earn his or her final grade. Please do not ask for a grade which you have not earned.

Student Support & Communication. Support for students is provided through weekly office hours dedicated to the course and through online question-and-answer discussion forums on D2L. Online discussion forums are available to all students for posting general coursework questions and comments. The instructor makes every effort to respond to postings within 24 hours. However, due to schedule issues, it occasionally may take longer to receive an instructor response. Email should be used only for personal issues or for student-specific coursework questions. Make all questions clear and specific.

Please include the course number (e.g., HCI 590) in the email *Subject:* field and include your full name in the *body* of the email.

Note: The instructor does not perform preliminary evaluation of assignments.

Class Schedule

This course is subject to on-going revision. The assignment schedule in the D2L Checklist will be updated as the quarter progresses and should be used as the definitive assignment schedule.

Policies & Expectations

*An asterisk ** following a heading indicates an instructor-specific policy*

COVID-19 Health and Safety Precautions

Since the COVID-19 situation changes frequently and DePaul University's guidelines adjust accordingly, please refer to go.depaul.edu/covid for COVID-19 updates and guidance.

General Guidelines for Course Behavior

- Take an active role in class discussions and activities.
- Practice professionalism in your communications with the professor and fellow students.

Attitude

A professional and academic attitude is expected throughout this course.

Civil Discourse

DePaul University is a community that thrives on open discourse that challenges students, both intellectually and personally, to be [Socially Responsible Leaders](#). It is the expectation that all dialogue in this course is civil and respectful of the dignity of each student. Any instances of disrespect or hostility can jeopardize a student's ability to be successful in the course. The professor will partner with the Dean of Students Office to assist in managing such issues.

Exceptional Circumstances (including COVID-19-related issues)*

Every effort is made to accommodate students who encounter exceptional personal circumstances during the quarter. Students who experience unanticipated personal, work, health, or family emergencies should notify the instructor by email or phone as soon as possible after the emergency with a brief explanation of the circumstances and any anticipated impact these might have on coursework. Students who have anticipated exceptional circumstances such as secular or religious holiday observances, medical treatment, or travel should notify the instructor as early as possible of these circumstances and any anticipated impact these might have on coursework. In both unanticipated and anticipated cases, a suitable plan for dealing with the coursework impact is agreed upon by the student and instructor. In some cases, suitable documentation of the exceptional circumstances may be requested by the instructor.

Incomplete Grades

An incomplete grade is a special, temporary grade that may be assigned by an instructor when unforeseeable circumstances prevent a student from completing course requirements by the end of the term and when otherwise the student had a record of satisfactory progress in the course. CDM policy requires the student to initiate the request for incomplete grade before the end of the term in which the course is taken. Prior to submitting the incomplete request, the student must discuss the circumstances with the instructor. Students may initiate the incomplete request process in MyCDM.

- All incomplete requests must be approved by the instructor of the course and a CDM Associate Dean. Only exceptional cases will receive such approval.
- If approved, students are required to complete all remaining course requirement independently in consultation with the instructor by the deadline indicated on the incomplete request form.
- By default, an incomplete grade will automatically change to a grade of 'F' after two quarters have elapsed (excluding summer) unless another grade is recorded by the instructor.
- An incomplete grade does NOT grant the student permission to attend the same course in a future quarter.

Withdrawal

Students who withdraw from the course do so by using the Campus Connection system (<http://campusconnect.depaul.edu>). Withdrawals processed via this system are effective the day on which they

are made. Simply ceasing to attend, or notifying the instructor, or nonpayment of tuition, does not constitute an official withdrawal from class and will result in academic as well as financial penalty.

Retroactive Withdrawal

This policy exists to assist students for whom extenuating circumstances prevented them from meeting the withdrawal deadline. During their college career students may be allowed one medical/personal administrative withdrawal and one college office administrative withdrawal, each for one or more courses in a single term. Repeated requests will not be considered. Submitting an appeal for retroactive withdrawal does not guarantee approval.

College office appeals for CDM students must be submitted online via MyCDM. The deadlines for submitting appeals are as follows:

- Autumn Quarter: Last day of the last final exam of the subsequent winter quarter
- Winter Quarter: Last day of the last final exam of the subsequent spring quarter
- Spring Quarter: Last day of the last final exam of the subsequent autumn quarter
- Summer Terms: Last day of the last final exam of the subsequent autumn quarter

Coursework Grade Review Requests*

Every effort is made to grade in a fair and consistent manner. Should a disagreement arise about a coursework grade, the student may submit a grade review request in writing via email to the instructor. The request must be submitted within 48 hours after the assignment grade has been posted. The request must include the student's argument for a different grade evaluation, based on verifiable evidence presented by the student. The instructor handles grade review requests and responds to the student with a review decision as soon as possible.

Academic Integrity Policy and Plagiarism

This course will be subject to the academic integrity policy passed by faculty. More information can be found at <http://academicintegrity.depaul.edu/>.

The university and school policy on plagiarism can be summarized as follows: Students in this course should be aware of the strong sanctions that can be imposed against someone guilty of plagiarism. If proven, a charge of plagiarism could result in an automatic grade of 'F' in the course and possible expulsion. The strongest of sanctions will be imposed on anyone who submits as his/her own work any assignment which has been prepared by someone else.

Instructor Policy Extensions: Academic Integrity Policy and Plagiarism*

Students must complete a short *Academic Integrity Awareness Quiz* before submitting their first assignment. If you have any questions about what constitutes an academic integrity violation or what its consequences might be, please be sure to have these questions answered before submitting your first assignment.

Resources for Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential.

To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at:

Student Center, LPC, Suite #370
 Phone number: 773-325-1677
 Fax: 773-325-3720
 TTY: 773-325-7296

Online Instructor Evaluation

Instructor and course evaluations provide valuable feedback that can improve teaching and learning. The greater the level of participation, the more useful the results. As students, you are in the unique position to view the instructor over time. Your comments about what works and what doesn't can help faculty build on the elements of the course that are strong and improve those that are weak. Isolated comments from students and instructors' peers may also be helpful, but evaluation results based on high response rates may be statistically reliable (believable). As you experience this course and material, think about how your learning is impacted. Your honest opinions about your experience in and commitment to the course and your learning may help improve some components of the course for the next group of students. Positive comments also show the department chairs and college deans the commitment of instructors to the university and teaching evaluation results are one component used in annual performance reviews (including salary raises and promotion/tenure). The evaluation of the instructor and course provides you an opportunity to make your voice heard on an important issue – the quality of teaching at DePaul. Don't miss this opportunity to provide feedback!

Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under *News* in D2L and sent via email.