Information Innovation
Through Design Thinking (Info 508)

College of Computing & Informatics, Drexel University

Course Syllabus, Spring 2021

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> If you knew how much work went into it,
> you wouldn't call it genius.
>
> —Michelangelo

Course Overview

Design thinking is a way of engaging with the world that emphasizes creativity and constructive change. This course introduces students to basic phases of design processes. Students will practice design thinking techniques for several key design practices: empathizing with others, framing a problem, ideation, experimentation, and storytelling. By applying these techniques in a variety of design contexts related to information, students will practice innovation in the information professions with an emphasis on understanding the social implications of design practice. This course provides an introductory overview of human-centered design processes. Techniques for the design phases introduced in this course are then examined and practiced in future courses.

Course purpose

This is one of the three foundation courses for the Masters of Science in Information degree.

Expected learning outcomes

When you have completed this course, you will be able to:

- Explain and justify design thinking and process
- Select and demonstrate appropriate techniques throughout the design process
- Produce design documents
- Compose and present design stories
- Analyze the social implications of systems designs

Course mechanics

Course structure

This is an online course that combines synchronous (live) and asynchronous (self-paced) elements. The course is organized into weeks, each running Monday to Sunday. You can find an at-a-glance view of each week's topic on the final page of this syllabus. Assignments are always due on Sunday by 9:00 p.m. Eastern. (After 9 o'clock you can do something fun or turn in for a good night's sleep.)

Each week will include readings, videos and activities that can be completed according to your own schedule. Discussion is a central component of the class; students in the asynchronous section (900) are expected to conduct their discussion via the Discussion Boards on Blackboard (a.k.a. Drexel Learn or BbL), and those in the synchronous section (001) are expected to attend the live Zoom session each Wednesday evening.

Mood of the course

Perhaps you're already excited about this course. Perhaps you're intimidated. Maybe you already consider yourself a designer. Maybe you think there's not a creative bone in your body. No matter what, this class will challenge you. It'll ask you to think differently—and work differently. You'll be expected to draw sometimes, and at other times to critically dissect ideas. Sometimes you'll work alone, and sometimes you'll work in a group. In the end, the goal is to give you the tools to be a creative problem solver. It's my belief that everyone is creative. That creativity is a skill we can build, not something that we either have or don't have. What's more, the Digital Age calls all of us to be designers, whether we like it or not. So you're a designer: you might as well learn how to do it well.

Please come with an open mind—as open as you can manage—and a taste for adventure. Be respectful of your classmates (and group mates, especially), particularly when disagreements arise (they will)—and don't forget to respect the class itself as well. Some of the assignments and activities may sound trivial, zany, icky or even impossible—but humor me. Do your best.

I like to say that taking a class is like buying a gym membership: you won't get results if you don't go; and *you* are ultimately responsible for your success or failure. But just as you don't have to go to the gym alone all the time, remember that you've got a whole class full of mates who are along for the adventure with you.

In light of the pandemic

Against all our hopes, the pandemic is still with us. (Though, dare we say, the end seems to be near.) We all wanted to be back on campus by now, but the world has not cooperated with our wants. Besides this, of course, our lives have been disrupted in so many ways.

As such, there are a few agreements I would like us to make as a class. First, remember that nobody signed up for this. We're still social distancing, we're still learning (and teaching) from home, and our lives are still being disrupted in big and small ways. At times you may be angry, frustrated or fearful. You may fall ill, as might your family members or roommates. Troubles may come up that we can't see yet. It will be difficult. But you're not alone. We're all in this together. We will help each other and do our best to get through this. Let's prioritize supporting each other. Let's do our best to be flexible and understanding when unexpected situations come up.

Time commitment

This is a graduate course in a professional school. Drexel estimates that the total workload (readings, assignments, notes, exercises) will take *12 to 15 hours per week*. Be prepared for a serious commitment of attention and effort. It will pay off!

Readings

There is no textbook for this course. (You are, however, expected to procure a blank, paper notebook of your choosing that you will use for some of the activities. See the next section.) The course will make use of numerous articles that are available on web or in scholarly publications. All readings will be provided on Blackboard.

Materials and software

By the end of the first week, you should have a Design Notebook. This can be of any size or type; the only requirement is that it must be a physical, paper notebook. Take this opportunity to find a notebook that inspires you. You can personalize it as much as you like, or leave it crisp and clean. It can be expensive or cheap; if you're interested in getting a high quality notebook, some popular brands include Leuchtturm 1917, Midori, Rhodia and, of course, Moleskine.

This course will make use of some free software, all of which will be accessible online with a personal computer. You will be introduced to a handful of digital tools, but you are free to explore other software as you like. This class involves an open-ended design project, and the hope is that you'll be interested and inspired enough to explore the use of basic image and video editors, perhaps rudimentary prototyping tools, etc.

If you haven't already learned this the hard way, you should back up your work regularly. I recommend using a syncing backup service; Drexel offers all students 5 TB of space in Drexel OneDrive. Other similar services include Dropbox, Google Drive or Box.net.

Contacting me

Student–instructor interaction is an important part of any course. I am available to you, even in this asynchronous, online setting. I want to help you succeed in this course, in your program at Drexel—and in life. Please contact me with any questions, problems, discoveries or anything else.

If your question is general and may be of interest to others in the class (e.g., syllabus, readings, schedule, etc.), please post it on the *Questions About the Course* Discussion Board so that others can benefit. With **personal or urgent questions**, you should email me directly (tjg68@drexel.edu). If you have a **technical question**, you will be better off contacting the Instructional Technology Group. See http://www.drexel.edu/irt/help/learn or call (215) 895–1224.

Feel free to email me at any time. Note, however, that I do not generally check email on nights or weekends. In our always-on society, it is important to set boundaries—firstly because healthy lives require off-time, and also because our academic activities require uninterrupted periods of time for reading, writing and thinking. Moreover, taking time for rest and pursuing leisure activities have been shown to improve productivity, creativity and accomplishment, as Alex Pang discusses in his book Rest: Why You Get More Done When You Work Less. I hope you will join me in living with more balance.

Assignments and Grading

In this course, the main assignment is a group design project (the final part of which is an individual summative essay, rather than a group effort). Besides that, you'll submit design notebook excerpts and reflections every two weeks, and you'll participate in discussion each week.

Design notebook submissions

You will be expected to maintain a design notebook throughout the term to capture ideas, thoughts, and reflections both on designs you encounter in the world and those you imagine. Five times during the term, you'll submit scanned/photographed excerpts (4 pages total) from your notebook,

accompanied by a short written reflection (about 300 words, which can be typed) about your learning in those weeks.

Discussion and participation

Learning design can be exciting and, at times, confusing or frustrating. Discussing our journeys with each other along the way will help us deepen our learning and build community. As a student, you will be expected to be present and prepared and to participate each week. You should show professionalism, open-mindedness, reflection, intellectual humility, careful preparation, punctuality, clear communication and, most especially, a willingness to learn.

Synchronous students (section 001)

At each meeting, we will discuss that week's readings. This means you should have done (this means: read, maybe read again, taken notes on and spent time thinking about) the required texts.

Our discussion of each reading will be student-led. **For each assigned reading, you should bring a discussion question to the class about that reading**. See the subsection below on Question Formulation. In addition, each student will adopt one or more readings on which to lead the discussion over the course of the term. This should include include a mini-presentation (about 5 minutes) and then a broader discussion/activity (about 20 minutes). Your presentation should include the following elements:

1. Summarize and discuss your major takeaways from the reading.
2. Choose one concept or technology mentioned in the reading to focus on for a deep dive; do some additional research into that specific topic and present what you learned.

After your presentation, you'll facilitate a discussion. The idea is to engage your classmates on the topics you brought up. Try to find a way to get everyone talking and sharing ideas. One simple way to do this is to prepare three open-ended questions, which you pose to the class one at a time—this tends to work better in pairs or small groups, but the format is up to you. Beyond that basic option, the sky's the limit. It doesn't necessarily have to be a straightforward Q&A! You could take volunteers to role-play a situation, lead an instructive game, present an illustrative case study, etc. Anything to help us digest and reflect on what we read. You can feel free to draw on your classmates' own questions as part of your planned activity; otherwise, we'll take the time afterwards to talk through a selection of them.

Asynchronous students (section 900)

Each week, you will take part in class discussions through the discussion boards on Blackboard. There, you'll discuss the readings, share other ideas, talk about your progress in the group project, pick up threads from previous weeks, etc. As long as it's related to the topic of this course, it's fair game.

In this class, you will create threads to pose questions that you found while engaging with the week's materials. I will expect you to make at least three posts per week—one of these as an original topic question, and two as responses to others' questions. See the subsection below on Question Formulation for guidance on posing good questions.

Your posts should be substantive but not overlong—aim for a single paragraph. Posts should reference class readings, including those from previous weeks, and they should incorporate your own analysis and perspective. You should make your topic question post by Thursday evening each week, and you should finish all the week's posts by Sunday evening.

Your original topic question should be open-ended (not to be satisfied by a one-word answer, and not being limited by only one possible answer). Your original post should include a genuine question to stoke discussion, not just be a mini-essay. When you create your original topic question, please give

it an interesting and relevant title (e.g., in the form of a question), not something like "Gorichanaz Week 3 Discussion Topic."

Question formulation

In this class, I am asking you to formulate questions based on the readings that you will bring to the class for discussion. This requirement is to help you build your skills in questioning, an indispensable design skill and a proven way to deepen your learning. Asking good questions takes practice. If you're having a hard time coming up with questions, you can draw from the following list of question types, which spell out CLOSE-UP:

- *Clarity:* What does the author mean by that? Can someone try to put this another way?
- *Linking:* How is this similar to what we read earlier? How does X's viewpoint compare to Y's?
- *Open-ended:* What's happening here? What interests you about this issue? Why did we read this? Do you have any experience with this?
- *Synthesis:* What stands out about this based on what we discussed previously or so far? How does this connect to some current event?
- *Evidence:* How did the author come to this conclusion? What experience or data is their analysis based on? Might the evidence or reasoning be insufficient in any way? Can you find any counter-examples?
- *Understanding:* Why do you think this is the case? How would you explain this situation?
- *Priority:* What matters to you most about this? What's the most important value or principle we should consider here?

Moreover, you can use this inventory of question types not just in creating new questions, but also in responding to your classmates! Thoughtful questions are a great way to get a conversation going and keep it going.

Group design project

The major substance of this class is a group design project. You will work with an assigned group to go through the design thinking process and come up with a feasible and tested solution for a problem that you identify. You will submit this project in the following phases (more details are available on Blackboard):

1. **Initial Proposal**: Before you begin, you'll identify a topic area, what we call a "problem space," within which you will find a design problem to solve.
2. **Empathize and Frame**: In this phase, you will investigate an activity that people perform or a designed object or system that people interact with. You will work to understand the context enough to identify a problem that can be solved through design.
3. **Ideate**: The goal of this phase is to use what you learned previously to develop a broad set of potential designs (25, to be precise) that address aspects of the problem you designed. This is "informed brainstorming."
4. **Prototype and Test**: In this stage, your team will "mock up" three of the designs that you started thinking about in the previous phase. This means making sketches, writing scenarios that explain what the experience is like for people using it, and investigating how a design might take shape in more detail. This is also called "lo-fi prototyping."
5. **Final Presentation**: In a 10–12-minute video presentation, you will demo and discuss one final idea in depth, including not only descriptions of the design and your rationale for why your team decided to develop it, but also how you decided on it.

Final essay

To cap off the group project, you will individually write an essay of about 1,000 words. In this essay, you will discuss your group's design process. This should be a reflection from your personal perspective on how your project unfolded. You should make reference to course readings to

demonstrate mastery of the material. For instance, you might use some concepts from the readings to analyze your group design project work and to reflect on the issues that your project confronted.

A note on group work

As you've seen, the group project will constitute a large portion of this class. You may not like group projects. Still, there are at least two reasons—one pedagogical, and one professional—for doing them in class. First, the discussion and negotiation that occurs in teams will support your learning. The more you discuss your view and the views of your fellow group members, and the more you challenge them, the better you will come to understand them. Not only that, but interaction design is about skill and technique just as it is about knowledge, and getting the chance to apply what we discuss in class is vital to learning it. By the end of the course, each group will have a tested, medium-fidelity prototype. (I.e., a portfolio piece!)

Second, teams are a common feature of the workplace, in virtually every industry, and the information professions are no exception. Many of you will have been, or currently are, involved in work teams, either formally or informally. In both face-to-face and remote contexts, team members have to practice good communication and collaboration. Job descriptions routinely ask for these skills, and I hope this class will help you to develop and reflect on these skills. (E.g., on a job interview, you might be asked about a successful, or perhaps failed, group project.) Learning to work online with distributed teams is going to be a boon to you, particularly in a post-pandemic world.

All team members should take part in all project activities, although responsibilities may be divided so that different members take the lead in different activities. No activity should be done exclusively by a single person. While the volume of work of each group member on each project component may not be equal, their contribution to the overall project should even out. You will need to meet with your group multiple times a week, whether that's face to face or online (video chat, Microsoft Teams, Slack, WhatsApp, etc.). If your team is not functioning well, this could negatively impact your learning. If you find you cannot resolve an issue on your own, let me know and I will offer some help.

Here are some suggestions for achieving good teamwork:

- **Choose a team leader**. (Note: not a tyrant.)
- Discuss your individual skills and strengths (graphics, programming, writing, etc.) and see where each of you can best contribute.
- Notify each other as soon as possible of travel, illness, schedule conflicts (including other class assignments), etc.
- Be explicit: In face-to-face, synchronous communication, we can leave a lot of things unsaid. That doesn't work online. Text is ripe for misinterpretation. You should strive to over-communicate. **Explain what you mean, and say why you're saying it**.
- Relatedly, be explicit about who is doing what and when, and what's next.
- Be proactive: don't just do "what I was told," but also actively look for ways you might contribute that everyone else has overlooked.
- **Set agendas and time limits for your meetings**. It may be a good idea to begin each group meeting with a brief report from each member on their progress.
- Don't try to hold long meetings online—use a strategic mix of synchronous and asynchronous, putting technology to its best use.
- Schedule very brief daily check-ins to keep everyone in the loop (maybe synchronous, maybe not)
- Make every effort to ensure that all team members feel comfortable about other members' contributions. Be open about inchoate grievances.
- Find more advice in this Forbes article.

Grading

Research has demonstrated that grades diminish students' learning, decrease students' interest in the subject matter, and prevent students from taking creative risks. Moreover, many students experience anxiety about grades. In this class, we are here to learn, to become interested in design, and to take some creative risks by trying new things (not just following a rubric)—and we certainly don't need more anxiety in our lives. So in this class, we will take a different approach to assessment.

My intention with this class is to help you to work in an organic way, as you will after graduation. So while you will get a final grade in the class, I will not put quantitative grades on individual assignments. Rather, when I review your work, I will ask questions and make comments meant to engage your work rather than simply evaluate it. You, too, will reflect deeply on your work and that of your peers throughout this quarter, and we will discuss your learning and effort as the course progresses. We will do this throughout the course, but there are three things I will ask you to do as anchors for this process:

- **Goal-Setting**: During Week 1, we will set goals for our learning this quarter to give us each a concrete place to aim for in addition to the general course learning outcomes listed above.
- **Midterm Reflection**: During Week 4, I will provide you with a link to an online form that will guide you through a reflection on your work thus far—particularly with respect to the goals you set for yourself. At the end, you'll be asked what letter grade you would give yourself for your work to date. This is your chance to assess yourself realistically and challenge yourself to improve in the second half of the term. I will respond to your reflection, and we'll have a conversation if our respective assessments do not match.
- **Final Reflection**: During Exam Week, I will provide you with another link to an online form where you'll complete your final self-reflection for the term. Again, I'll ask you what grade you would give yourself. I prefer to give everyone the grade they would give themselves, I do reserve the right to make adjustments.

For reference, here is my interpretation of the letter grades:

- *A – Excellent:* Original and creative thinking, and strong writing. Goes above and beyond in effort and participation, and demonstrates mastery of the course content through application. Supplements required coursework with additional readings, reflections and observations.
- *B – Good:* Demonstrates understanding of the facts and concepts presented in class with few misapprehensions. Most writing is well done with well supported arguments.
- *C – Acceptable:* Meets most expectations. Some learning is shaky or ignored. Not fully present.
- *D – Poor:* Shows flawed understandings of course content. Little participation or effort.
- *F – Failing:* Deep misunderstandings, poor attention, very low participation.

I know this process is quite different from how we usually think about grades. If any of this causes more anxiety than it alleviates, contact me at any time to discuss your progress in the course. As the course goes on, you'll be able to track your progress in the My Grades section on Drexel Learn.

If you are worried about getting a good grade in this class, your best strategy should be to do the readings, dedicate yourself to your group's success, ask questions often, complete the assignments diligently and on time, and engage earnestly with all your classmates.

Policies

Academic integrity

You are expected to conduct yourself in a respectful manner as befitting the university environment. This includes academic integrity. In this course, as with any Drexel course, cheating will not be tolerated. This includes plagiarism (using others' intellectual work without reference) and cheating. All work you submit must be your own work, with sources properly cited. Any plagiarism or other academic dishonesty will result in a sanction that may extend to failing the course. I am obligated to report incidents of cheating (including plagiarism) to Drexel administration. A student who is found in violation twice (even if in two

different courses) will be expelled from the university. For more information, please refer to the Provost academic integrity policy or to resources regarding Student Conduct and Community Standards.

Changes to the syllabus

I reserve the right to make changes to this course or its syllabus during the quarter if circumstances warrant such a change. Topics, readings and dates are subject to change, but only if necessary. Additional topics may be discussed as issues and ideas arise in the news and in discussion. All changes will be provided to students in writing as far in advance as possible.

Dropping the course

If you are considering whether to continue your enrollment in the course, please refer to the Course Add/ Drop Policy and the Course Withdrawal Policy.

Student conduct

Drexel University adopted a student conduct policy requiring that all students have the responsibility to be aware of, and abide by, the University's policies, rules, regulations, and standards of conduct. The Student Conduct and Community Standards policy information is available in the Official Student Handbook.

Appropriate use of course materials

It is important to recognize that some or all of the course materials provided to you may be the intellectual property of Drexel University, the course instructor, or others. Use of this intellectual property is governed by Drexel University policies, including the Acceptable Use Policy. Briefly, this policy states that course materials, including recordings, provided by the course instructor may not be copied, reproduced, distributed or re-posted. Doing so may be considered a breach of this policy and will be investigated and addressed as possible academic dishonesty, among other potential violations. Improper use of such materials may also constitute a violation of the University's Code of Conduct.

Participating in course evaluations

Student evaluations are a required element of every course. Evaluation forms are completely anonymous. They are confidentially used to make improvements in our curriculum and teaching. They are also used by administration in evaluating faculty performance, and in decisions about promotion, tenure and retention. Please take part in course evaluations.

Time management

Drexel University assumes that each credit-unit requires four hours of work per week (i.e., a 3-unit course means a student will spend 12 hours per week on that course), including reading, participation and completing assignments. This is a three-credit course. Please plan accordingly.

Support and Recommendations

If you are experiencing anxiety, depression or other issues

Drexel offers free and confidential support for anxiety-related problems, depression, family concerns, relationship issues, adjustment issues, eating disorders, alcohol- and drug-related problems, and questions about gender and sexual identity, all through the Drexel Counseling Center. The Counseling Center is located at Suite 201 in the Creese Student Center at 3210 Chestnut. The

telephone number is (215) 895–1415. **For emergencies, or to reach an on-call counselor after regular business hours, please call (215) 416–3337**. Learn more on the Counseling Center website.

If you need technical support

Get 24/7 technical support for Blackboard Learn from the Instructional Technology group online or by calling (215) 895–1224. For any other technical support (email, logins, etc.), Drexel University IT is here for you. You can contact them through email at consult@drexel.edu, by phone at (215) 895–2020, or by submitting the online Problem Report Form.

Support for equality and diversity

Drexel University strives to promote an environment of equality of opportunity and compliance with university policies and federal, state and local laws prohibiting discrimination based upon race, color, religion, gender, marital status, pregnancy, national origin, age, disability and veteran status. If you have a question or complaint concerning discrimination, harassment, and/or retaliation, contact the Office of Equality and Diversity online or at (215) 895–1405.

Coaching, mentorship and tutoring

The Center for Learning and Academic Success Services (CLASS) serves as the organizing department for a variety of programs and services that promote coaching, peer mentoring and tutoring at Drexel. The Center is located on campus at the Creese Student Center (3210 Chestnut Street), Suite 050.

Campus activities and community

Find the Student Handbook, conduct and community standards, and the Counseling Center at on the Student Life website. Consult this site for information on campus activities and student programs.

English help

The English Language Center offers English language instruction and support services to students, especially those who speak English as a second language. They are located at 229 N. 33rd Street. The telephone number is (215) 895-2022.

If you have a disability or are facing other challenges

Students requesting accommodations due to a disability at Drexel University need to request a current Accommodations Verification Letter (AVL) in the ClockWork database before accommodations can be made. These requests are received by Disability Resources (DR), who then issues the AVL to the appropriate contacts. For additional information, visit the DR website, reach them by phone at (215) 895–1401, or by email them at disability@drexel.edu.

Free health services

The Student Health Center is located at 3401 Market St, Ste 105. You can call them at (215) 220–4700.

Career counseling

CCI Career Services offers help with job placement, job postings and credentialing. Outside our college, the Steinbright Career Development Center (SDLC) offers individualized career counseling, career fairs, career programs and resume workshops. The office is located at 3201 Arch Street, Suite 250. The telephone number is (215) 895–2185.

Course Schedule

In this course, the weeks run Monday to Sunday. Remember, assignments are always due on Sunday at the end of the given week by 9:00 p.m. Eastern. (After 9 o'clock you can do something fun or turn in for a good night's sleep.) In the schedule below, GP denotes stages of the Group Project.

Wk	Dates (M–Su)	Meeting	Topics		Assignments
1	Mar 29–Apr 4	**Mar 31**	Introduction		
2	Apr 5–11	**Apr 7**	Information and Design		Design Notebook & Reflection
3	Apr 12–18	**Apr 14**	Empathizing		
4	Apr 19–25	**Apr 21**	Framing the Problem		Design Notebook & Reflection Midterm Reflection
5	Apr 26–May 2	**Apr 28**	Ideation	GP	Empathize & Frame
6	May 3–9	**May 5**	Prototyping		Design Notebook & Reflection
7	May 10–16	**May 12**	Testing	GP	Ideate
8	May 17–23	**May 19**	Design and Values		Design Notebook & Reflection
9	May 24–30	**May 26**	Speculative Design	GP	Prototype & Test
10	May 31–Jun 6	**Jun 2**	Wrap-up	GP	Final Presentation Design Notebook & Reflection
Ex	Jun 7–13	—	—		Final Individual Essay Final Reflection