**Syllabus SE 298- Designing Your Phygital World**

**Spring Semester 2025**

**Instructor: Prof. Molly Goldstein**

**Industry Mentor Instructor: Mariana Conde**

**Credit: 3 credit hours**

**Meeting Times: TBD**

**General Education Categories: Approved for Natural Sciences and Technology, Physical Sciences**

**Prof. Goldstein Office hours and location:** Wednesdays noon-1pm and immediately after class

**Course Description:**

"Designing Your Phygital World" is an interdisciplinary course that bridges the *physical* and *digital* realms to create innovative, user-centered products and services.

Over the semester, students will delve into interaction design, explore constraints, and master rapid prototyping techniques. The course will emphasize project management (i.e. agile methodologies), effective use of design tools like Figma, and the art of pitching innovative ideas. Through a series of project-based assignments, students will work in teams to develop creative solutions, fostering both analytical and creative thinking.

This course values humanity-centered design and encourages a balance of right-brain and left-brain thinking, preparing students to excel in the dynamic field of phygital product and service design.

**Text:**

“Creative Confidence: Unleashing the Creative Potential within Us All” by Tom Kelley & David Kelley;

All other readings on design topics are assigned and posted on the course LMS, Canvas

**Course Objectives:**

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

1. Understand Interaction Design *(What is the world of user experience)*
	1. Develop a comprehensive understanding of interaction design principles and how they apply to creating seamless user experiences in both physical and digital products.
2. Explore Constraints and Opportunities *(Limits and opportunities in designing for user experience)*
	1. Learn to navigate and leverage design constraints to enhance creativity and innovation.
3. Master Rapid Prototyping *(Quickly communicate a design idea)*
	1. Acquire skills in rapid prototyping techniques to quickly iterate and refine product concepts
4. Explore Agile/Flexible Methods to *Manage Projects*
	1. Apply agile best practices: an approach to project management that emphasizes flexibility, teamwork, and delivering value in small, manageable increments, allowing for constant adaptation and improv
5. Utilize Design Tools *(User Experience, UX, tools used in industry)*
	1. Gain proficiency in design tools such as Figma for creating and iterating on user interfaces and experiences.
6. Develop Pitching Skills
	1. Hone the ability to pitch design ideas effectively, clearly communicating value propositions to stakeholders.
7. Foster Interdisciplinary Collaboration
	1. Engage in collaborative teamwork, integrating diverse perspectives to enhance design outcomes.
8. Practice Humanity-Centered Design
	1. Emphasize the importance of designing with empathy, considering the human impact and ethical implications of design decisions.
9. Balance Creative and Analytical Thinking
	1. Cultivate the ability to seamlessly integrate creative and analytical thinking in the design process.
10. Deliver Real-World Solutions
	1. Create practical, innovative solutions to real-world problems through project-based learning and fast-paced team environments.

**Course Outline:**

Weeks 1-2: Introduction to Phygital Design

* Overview of phygital concepts and their significance
* Examples of successful phygital products/services
* Introduction to design thinking and human-centered design principles
* Reading Assignment Discussion

Week 3: Interaction Design Fundamentals

* Principles of interaction design and its role in creating intuitive user experiences
* User journey mapping techniques for understanding user needs
* Case studies and best practices in interaction design

Week 4: Navigating Design Constraints

* Identifying physical and digital constraints that impact design decisions
* Strategies for overcoming design limitations and turning them into opportunities
* Workshop: Constraint-based design challenges to practice problem-solving skills

Weeks 5-6: Research Methods for Design

* Introduction to research methods for gathering insights and informing design decisions
* Qualitative and quantitative research techniques
* Methods for conducting user interviews, surveys, and observational studies
* Case studies on women and minoritized groups in design

Weeks 7-8: Rapid Prototyping Techniques

* Introduction to prototyping tools and methods for quick iteration and validation
* Hands-on prototyping sessions to develop tangible prototypes
* Iterative design process to refine product concepts

Week 9:Midterm Project Development

* Dedicated time for students to work on their midterm projects
* Individual and group consultations with instructors for project guidance and support

Week 10: Agile Methodologies in Design

* Agile principles and practices for efficient project management
* Application of Scrum framework in design projects
* Collaborative team exercises to practice agile methodologies

Weeks 11-12: Mastering Figma for UX/UI Design

* Figma tutorials and exercises to develop proficiency in creating user interfaces and experiences
* Creating interactive prototypes to test and iterate on design ideas
* Peer feedback and critique sessions to enhance design skills

Weeks 13-14: Pitching Your Design Solutions

* Elements of a successful design pitch
* Crafting persuasive narratives and presentations to communicate value propositions
* Pitch practice and refinement to improve presentation skills

Weeks 15-16:Final Project Development and Showcase

* Dedicated time for students to work on their final projects
* Team presentations of final projects developed throughout the course
* Feedback from peers and instructors to encourage continuous improvement
* Course reflection and wrap-up to consolidate learning

**Evaluation Methods:**

* Active participation and engagement in class activities
* Completion of weekly reading/reflection assignments
* Mid-term project evaluation: Formative assessment of team-based design prototype
* Final project evaluation: Comprehensive phygital solution with pitch
* Formative peer and self-assessment of team collaboration and contribution

**Required Materials:**

* Laptop with internet access
* Figma (free or educational license) for design work
* Access to prototyping materials (e.g., Cardboard, markers, Arduino kits, 3D printers, etc.) for hands-on prototyping activities - provided in your course lab (ISE Product Design Lab)
* Reading:
	+ "Creative Confidence" by Tom and David Kelley

This course is designed for students who are eager to explore the intersection of physical and digital design. It provides a fast-paced, collaborative environment to foster innovation and develop practical, human-centered solutions.

**Mid-term Project: Team-Based Design Prototype (Foundation/Stepping Stone)**

Design a pilot/Minimum-Viable-Product (MVP) phygital solution that addresses a specific societal or environmental challenge. Consider how you can seamlessly integrate digital elements with physical environments to create innovative and user-centered solutions. Your mid-term project will serve as a foundation and stepping stone for your final project, allowing you to build on your initial design and research.

Instructions:

1. Form teams of 3-4 students with the assistance of the instructors.
2. Select a specific societal or environmental challenge to tackle with a phygital solution. The challenge should align with the prompt: enhancing user experiences through phygital elements in a specific context.
3. Conduct user research to understand the pain points and needs of users in the chosen context.
4. Develop a design concept that addresses these pain points and enhances user experiences through the seamless integration of physical and digital elements.
5. Create low-fidelity prototypes using rapid prototyping techniques learned in class, such as paper prototyping or digital wireframing.
6. Iterate on the prototypes based on user feedback and usability testing.
7. Prepare a 10-minute team presentation that includes an overview of the design concept, demonstration of the prototype, and a reflection on the design process.

**Final Project:Phygital Solution with Pitch (Building Upon Mid-term Project)**

Building upon the foundation established in the mid-term project, design a comprehensive phygital solution that addresses a specific societal or environmental challenge. Your final project should demonstrate an in-depth understanding of interaction design, agile methodologies, and humanity-centered design principles. Consider the ethical implications of your design decisions and aim to create a practical, innovative solution that can make a positive impact.

1. In teams of 3-4 students, continue working on the same specific societal or environmental challenge that you tackled in the mid-term project. Use the insights and feedback gained from the mid-term project to further refine and enhance your design concept.
2. Reflect on the lessons learned from the mid-term project and apply them to the development of your final project. Consider how you can build upon your initial design, incorporating user feedback and iterating on your prototypes.
3. Conduct additional research to gain deeper insights into the challenge and understand the needs of the stakeholders involved. Consider conducting interviews, surveys, and other research methods to gather relevant data.
4. Utilize design thinking and agile methodologies to ideate and develop a comprehensive phygital solution that addresses the challenge in a holistic manner. Consider all aspects of the solution, including physical and digital elements, user interactions, and potential impact.
5. Create low-fidelity and high-fidelity prototypes to visualize and test different aspects of your solution. Use rapid prototyping techniques to iterate and refine your design based on user feedback and usability testing.
6. Develop a pitch presentation that effectively communicates the value proposition, impact, and feasibility of your phygital solution. Craft a persuasive narrative that highlights the innovation and user-centered design principles behind your solution.
7. Prepare a 20-30 minute team presentation that includes an overview of the challenge, demonstration of the solution, insights from user testing, and a persuasive pitch.
8. Submit the high-fidelity prototype, pitch presentation slides, and a comprehensive written reflection on the design process. Include details about the research, ideation, prototyping, testing, and iteration phases.

Note: The final project builds upon the foundation established in the mid-term project. It provides an opportunity to further refine and enhance your phygital solution, incorporating feedback and insights gained from the mid-term project. The final project should showcase a deeper level of proficiency in design thinking, interaction design, and agile methodologies. It should demonstrate your ability to iterate and improve upon your initial design, creating an innovative phygital solution that effectively addresses the specific societal or environmental challenge.

**Book Discussion guiding questions**

As a guide, consider the following reflections questions. You may answer some or all.

* + How did the reading connect to your own experiences?
	+ What stood out to you as important, surprising, provocative, etc.?
	+ How does this challenge your current experiences or thoughts?
	+ Is there anything you are struggling with?

**Grading:**

**40%**  Final Design Project (30% Team, 10% Individual)

**20%**  Reading reflection activities - *completion* of weekly assignment and written reflection of ~150 words (Students get full credit for every assignment completed) - One drop allowed

**40%** Participation in class discussions and in-class activities - One drop allowed

**Academic Integrity:** We will follow Articles 1-401 through 1-406 of the *Student Code* (beginning at [http://studentcode.illinois.edu/article 1\_part4\_1-401.html](http://studentcode.illinois.edu/article%201_part4_1-401.html)). This rule defines infractions of academic integrity, which include but are not limited to cheating, fabrication, and plagiarism. You are responsible for following these guidelines. If you have any questions about whether something would be an infraction, consult with the instructor before proceeding.

*In this course, you will submit both individual and team assignments. While team assignments are understood to be the work of a team, individual assignments you submit* ***must be your own work****.*

The instructional team periodically checks student work for various forms of academic dishonesty. This check is performed manually and via automated similarity checkers. If academic dishonesty occurs, consequences may include:

· A zero on the entire assignment or exam in question

· Forwarding your name to the Office of the Dean of Students via FAIR (Faculty Academic

Integrity Report)

· A lowered or failing grade in the course

**Request for Special Accommodations:**

University of Illinois and this course strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please discuss options with your instructor. You are also encouraged to contact the Disability Resources & Educational Services (DRES) Center (contact information below). If you are eligible for academic accommodations because you have a documented disability that will affect your work in this class, please schedule an appointment with Professor Goldstein as soon as possible to discuss your needs. At these meetings, bring your “Letter of Accommodation” that you obtained from DRES so that I can make proper accommodations for you.

To obtain disability-related adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES, you may visit 1207 Oak St., Champaign, call 217.333.4603, email disability@illinois.edu or go to the DRES website.

Please also schedule a private meeting with the course instructor to discuss your needs and requirements. All accommodations will try to be met once you self-identify. Please note accommodations are not retroactive to the beginning of the semester but begin the day you contact your professor with a current letter of accommodation from DRES.

**Diversity Statement:** UIUC is committed to equal opportunity for all persons, regardless of race, ethnicity, religion, sex, gender identity or expression, creed, age, ancestry, national origin, handicap, sexual orientation, political affiliation, marital status, developmental disability, or arrest or conviction record. We value diversity in all of its definitions, including who we are, how we think, and what we do. We cultivate an accessible, inclusive, and equitable culture where everyone can pursue their passions and reach their potential in an intellectually stimulating and respectful environment. We will continue to create an inclusive campus culture where different perspectives are respected, and individuals feel valued.

Note: "Sharpen.design" is a tool that generates random design challenges to inspire creativity and problem-solving. Students can visit the website (<https://sharpen.design/>) and click on "Generate a Design Challenge" to receive a unique challenge prompt. The generated prompt should align with the overall project prompt and encourage innovative thinking in the context of enhancing user experiences through the seamless integration of physical and digital elements in a specific context.

Thinking hats decision making tool: <https://untools.co/six-thinking-hats/>