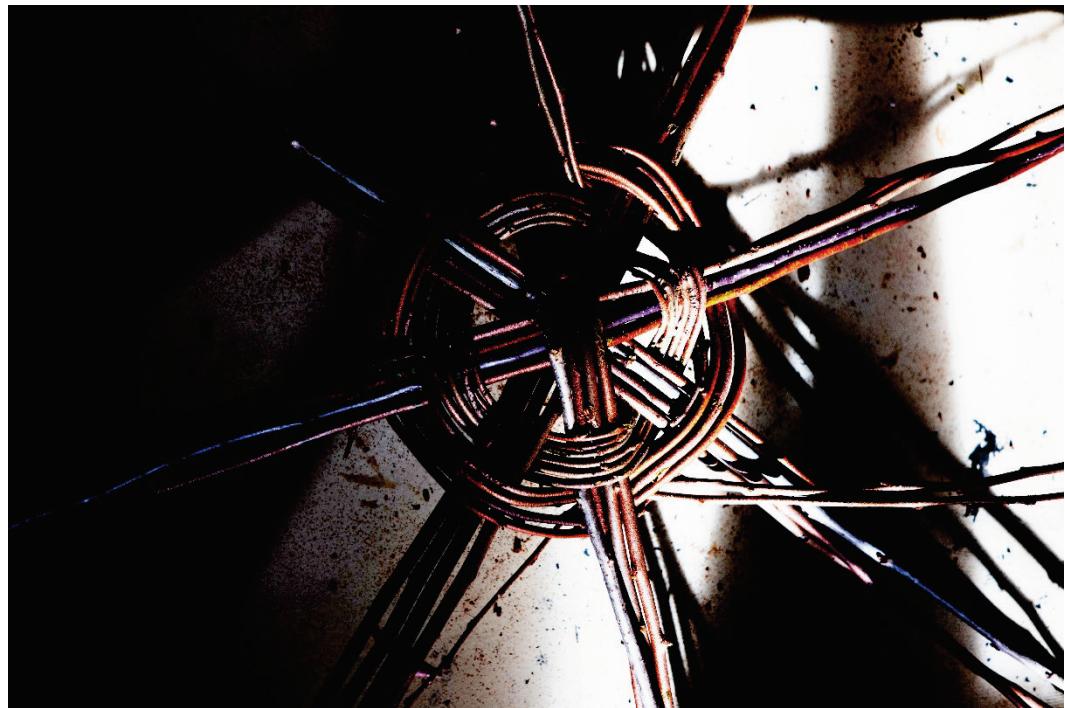


Introduction to HCI.d (Practice)

I541.M(42251),T(13032)



Instructors

Eli Blevis, PhD – Professor of Informatics

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Office hours: By appointment

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Course Description

This course offers a holistic and practice-oriented introduction to Human-Computer Interaction Design. Through discussion and creative and reflective response to a broad range of topics relating to HCI/d research and practice, participants will be introduced to different aspects of HCI and Design. The course also includes a team based project in which students take on an authentic design challenge – defined by a learning partner from industry whenever possible – and follow a creative process to achieve design outcomes.

Time:	Mondays [42251]	6:45 - 9:20 PM
	Tuesdays [13032]	6:45 - 9:20 PM
Location:	I E150	

Potential Learning Partners or Industry Presentors (All TBC)

Lutron Systems

InnovateMap

Salesforce

BestBuy

MetroStar

...

Format of Weekly Classes

Class meets in-person once a week (Monday or Tuesday) at 6:45 – 9:20 PM, for 13 weeks.

Each class will start with an *instructional session*, which includes one or more of:

1. presentation of a prompt by one of our learning partners,
2. a talk by one of our three faculty about their personal expertise in research and Design, and/or
3. instruction by one of our faculty about design techniques or theory that you will use in your projects

Each class also includes time for *studio session*. During your assigned studio session, you will present your work from the last week for critique and feedback from the other students in your studio session and the faculty in attendance. Your work that you present (individually or as a team) will be work on one of your projects, or a creative reflection on one of the research and design talks. The faculty attending your session may vary from week to week, so that you and we have an opportunity to get to know everyone. Each presentation and discussion will be allotted about fifteen minutes in total. The presenters will be assigned in a cycle that gives each participant equal opportunity to present modulo the class size. The discussion is managed to ensure that every participant is called upon to comment on one of these presentations at least once per class session. The presentation must be three minutes or less with the remainder of the time allotted to comments from the participants and instructors. During the first week, you will not have completed any work to present, so these will be introductions and discussion sessions.

For the team project, participants will be assigned to teams of 4. Your team will meet with one or more of the Faculty and AI's during one of non-instructional sessions. **We will try to distribute students who have already taken I561 in Spring 2021 among the teams.**

Structure of Presentations and Critiques Weekly Classes [6:45 – 9:20 pm]

6:50-7:40 Instructional Session [Lecture/Discussion/Logistics/Presentations]

7:40-7:50 Break

7:50-9:00 Studio Session

 7:50-8:05 Team Presentations A/Feedback and Critique from BCDI

 Team Presentations E/Feedback and Critique from FGH

 8:05-8:20 Team Presentations B/ Feedback and Critique from CDAI

 Team Presentations F/Feedback and Critique from EGH

 8:20-8:30 Break

 8:30-8:45 Team Presentations C/ Feedback and Critique from DAB

 Team Presentations G/Feedback and Critique from EFHI

 8:45-9:00 Team Presentations D/ Feedback and Critique from ABC

 Team Presentations H/Feedback and Critique from EFGI

 9:00-9:15 Team Presentations I/ Feedback and Critique from ABC/FGH

9:15-9:20 Closing remarks

There are nine teams in each section of 4 each. The letter names for each of these teams will be rotated each week systematically in each of weeks 4-12. Instructions will be provided in class.

Schedule: Subject to Change

Week	Week of	Instructional Sessions/ Facilitator or Industry Presenter*	Assigned Project Work for Following Week	Studio Presentations and Critique of Project Work Assigned Previous Week	Resources
01	08.23	Course overview and syllabus review (Past Projects) Blevis	Basic Readings	Introductions and Discussions Form Teams: work on Social Contracts in the class, if time permits	This Syllabus Basic Readings: Wei et al. (2019); Should do, Can do, Can Know, Forms; Blevis (2012,2020); PRInCiPleS, Key Competencies; McCarthy & McCarthy (nd): Core Protocols
02	08.30	Talk One Chivukula	Creative Reflections on Talk One, Listen to recording of Talk One (Section 13032)	Continued: Form Teams: work on Social Contracts in the class	TBA
03	09.06	09.06 is Labor Day Talk Two is on 09.07 6:45-8:00 (T)13032 and 8:05-9:20 (M)42251 Heidaripour	Creative reflection on Talk Two	Creative Reflections on Talk One (not presented, but due)	TBA
04	09.13	Prompt, by Learning Partners or Blevis/Chivukula/Heidaripour Christian Beck and Jon Moore, (InnovateMap), Gabe Persons and Andy Hunsucker (Best Buy/Self),	Develop predispositions	Creative Reflections on Talks One and Two	Reed et al. (2005): Time & Travel
05	09.20	Research I Gabe Persons (Best Buy/Self)	Conduct research	Present Predispositions	UMOD:74 Secondary Research, UMOD:53 Literature Reviews, UMOD:62 Personal Inventories, Crilly & Cardoso (2017): Creativity
06	09.27	Research II Hedaripour/Chivukula	Research Findings Insights (Collage)	Present Research	UMOD:82 Storyboards, UMOD:03 Affinity Diagramming, UMOD:02 AEIOU
07	10.04	Concept Relays Blevis*	Concepts from Insights	Present Insights (Collage)	UMOD:80 Stakeholder Maps, UMOD:75 Semantic Differentials, Buxton (2007): Sketching
08	10.11	Prototyping I Jon Moore and Christian Beck (innovateMap)	Make Artifact(s) 1.0	Present Concepts	UMOD:73 Scenarios, UMOD:66 Prototyping, Buchenau & Suri (2000): Experience Prototyping
09	10.18	Prototyping II Craig Birchler and Nic True (Salesforce)	Evaluation of Artifact(s) 1.0	Present Artifact(s) 1.0	UMOD:99 Wizard of Oz, Snyder (2003); Paper, Lim et al. (2008): Prototypes
10	10.25	Iteration Elisha Hardy (MetroStar)	Make Artifact(s) 2.0	Present Evaluations of Artifact(s)	UMOD:24 Cultural Probes, UMOD:71 Role-playing, Ballard (2000): Iteration, Steve Krug (2010) Usability
11	11.02	Presentations Sihan Za (Lutron)	Prepare for final Presentations	Present Artifact(s) 2.0, Portfolio Forms	
12	11.09	Final Presentations to Learning Partners and/or Faculty			
13	11.16			Portfolio Walkthroughs (Lutron or Faculty)	

Deliverables

Three credit-hours will be granted upon successful completion of the I541 course requirements. We expect that you will spend about (6) hours per week to progress on your work outside of class. For some weeks, this will involve more hours based on milestones. Each deliverable will be evaluated based on this criteria: content, values, and originality.

Creative Reflections

These are single slides that we can assemble into digital quilts. They should be submitted in two forms, one as a pdf and the other as a high resolution jpeg (of aspect ratio 16:9, 300 dpi, ...)

Final Project

All teams are expected to present their final project to the learning partners, instructors, and fellow students, followed by critique and feedback.

The final deliverables include a video presentation (3-5 minutes), a portfolio form (PDF), and a four-fold brochure (PDF).

Grading

Creative Reflections	20%
Participation	20%
Team Project	60%

Note that there is no specific grade for attendance. If you are unwell or suspect you may be unwell, do not attend in-person.

As a matter of ensuring that all voices are heard, we will call on participants in a random but systematic order to present, comment, or ask questions. If you attend regularly and learn the names of all participants because you have listened to them carefully as well as having thoughtful things to say yourself, your participation grade should be high.

Each weekly project will be graded on a 100 point scale and used to calculate 80% of your final grade. The standard for an A grade is excellence. The standard for an A+ grade is publishable and professional in every detail.

The rubric for grading is equal parts *content quality, production values, and originality*.

Resources List

Ballard, G. (2000). Positive vs negative iteration in design. In Proceedings Eighth Annual Conference of the International Group for Lean Construction, IGLC-6, Brighton, UK (pp. 17-19).

Blevins, E. (2021). Three Key Competencies and Other Frameworks for HCI and Design Education. *IU Scholarworks Report* 2021-01-04

Blevins, E. (2012). The PRInCiPleS Design Framework. In John M. Carroll (ed.). *Human-Computer Interaction Series, 1, Volume 20, Creativity and Rationale*, Springer, Pages 143-169.

- Blevis, E. (2010). Design challenge based learning (DCBL) and sustainable pedagogical practice. *interactions* 17, 3, 64–69.
- Buchenau, M., & Suri, J. F. (2000). Experience prototyping. In Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques (pp. 424-433). ACM.
- Buxton, B. (2007). The anatomy of sketching. In Sketching user experiences: Getting the design right and the right design (pp. 105-141). San Francisco: Morgan Kaufmann.
- Crilly, N., & Cardoso, C. (2017). Where next for research on fixation, inspiration and creativity in design?. *Design Studies*, 50, 1-38.
- Steve Krug (2010). Rocket Surgery Made Easy: The Do-It-Yourself Guide to Finding and Fixing Usability Problems. **[Book: RSME]**
- Lim, Y. K., Stolterman, E., & Tenenberg, J. (2008). The anatomy of prototypes: Prototypes as filters, prototypes as manifestations of design ideas. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 15(2), 7.
- Bella Martin & Bruce Hanington (2012). Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions. **[Book: UMOD]**
- Jim McCarthy and Michele McCarthy. The Core Protocols V. 3.03.
- Tomitsch, M., Borthwick, M., Ahmadpour, N., Cooper, C., Frawley, J., Hepburn, L.A., Kocaballi, A.B., Loke, L., Núñez-Pacheco, C., Straker, K., Wrigley, C. (2021). Design. Think. Make. Break. Repeat. A Handbook of Methods (revised edition). BIS Publishers, Amsterdam, The Netherlands. **[Book: DTMBR]** See also: <http://designthinkmakebreakrepeat.com/> accessed 08.18.2021
- Christy Reed, Hui When Wang, and Eli Blevis. 2005. Recognizing Individual Needs and Desires in the Case of Designing an Inventory of Humanity-Centered, Sustainability-Directed Concepts for Time and Travel. DPPI 2005 Designing Pleasurable Product Interfaces. Eindhoven, The Netherlands. (32 pages).
- Snyder, C. (2003). Making a paper prototype. In Paper Prototyping: The Fast and Easy Way to Design and Refine User Interfaces (pp. 69-95). San Francisco, CA: Morgan Kaufmann.
- Wei, Huixin, Jeffrey C. F. Ho, Kenny K. N. Chow, Shunying An Blevis, and Eli Blevis. (2019). Should Do, Can Do, Can Know: Sustainability and Other Reflections on One Hundred and One Interaction Design Projects. In Proceedings of the Fifth Workshop on Computing within Limits (LIMITS '19). ACM, New York, NY, USA, Article 6, 18 pages. DOI: <https://doi.org/10.1145/3338103.3338109>
- Zimmerman, J., & Forlizzi, J. (2014). Research Through Design in HCI. In J. S. Olson & W. A. Kellogg (Eds.), *Ways of Knowing in HCI* (pp. 167–189). Springer New York.

Suggested and Recommended Readings for All of our Community

About the HCI and Design Literatures

Since HCI and Design are dynamic areas of scholarship and practice, there is not a strict canon of classic literature that one can read, once and for all. It is better to read current sources and to keep reading throughout your career. I suggest allotting 2 hours a day to reading from the sources described below and others in addition to the curricular content.

Places to Look First

Check these first:

- * <https://dl.acm.org/>
- * <https://www.semanticscholar.org/>
- * <https://scholar.google.com/>

Places to Browse: ACM Best Papers List

One strategy is to be sure to read the best papers listed here:

Jeff Huang's List of Best Papers

ACM Exemplary Papers

Each of the ACM conferences lists exemplary papers. I recommend looking at these exemplary papers which are constantly being updated in order to be sure your reading about HCI is up to date. ACM SIGCHI conferences are listed here:

<https://sigchi.org/conferences/upcoming-conferences/>

ACM CHI Exemplary Papers by Thematic Areas

ACM CHI conference papers are grouped by thematic areas called sub-committees that represent a broad view of HCI. Check each of the links to see the exemplary areas for each subcommittee:

- * *User Experience and Usability*
- * *Specific Applications Areas*
- * *Learning, Education, and Families*
- * *Interaction Beyond the Individual*
- * *Games and Play*
- * *Privacy and Security*
- * *Visualization*
- * *Health*
- * *Accessibility and Aging*
- * *Design*
- * *Interaction Techniques, Devices, and Modalities*
- * *Understanding People: Theory, Concepts, Methods*
- * *Engineering Interactive Systems and Technologies*
- * *Critical and Sustainable Computing*
- * *Computational Interaction*

Technology in Practice

In some ways, keeping up with the technology and other sections of major high integrity new sources is the best way to be current. It is important to triangulate these readings—that is, to read from a great variety of sources in order to see what is important to different constituencies.

Notwithstanding, reliable and high integrity sources are key. Here is a list:

- * *Technology Section of The Economist*
- * *Technology Section of the New York Times*
- * *Technology Section of the Guardian*
- * *Technology Section of Reuters*
- * *Technology Section of the Atlantic*
- * *Technology Section of NPR*
- * *Technology Section of the Wall Street Journal*
- * *Technology Section of the Washington Post*
- * *Technology Section of the BBC*
- * *The Conversation (A cross between Journalism and Academic Scholarship)*

Pictorials

At the intersection of HCI and Design are pictorials. These are a good source for design inspirations that bridge between scholarship and practice:

- * *C&C 2017, 2019*
- * *DIS 2014 to 2019*
- * *TEI 2020*

Design

There are a number of good **open source** journals about Design:

- * *She Ji: The Journal of Design, Economics, and Innovation*
- * *IJD: International Journal of Design*

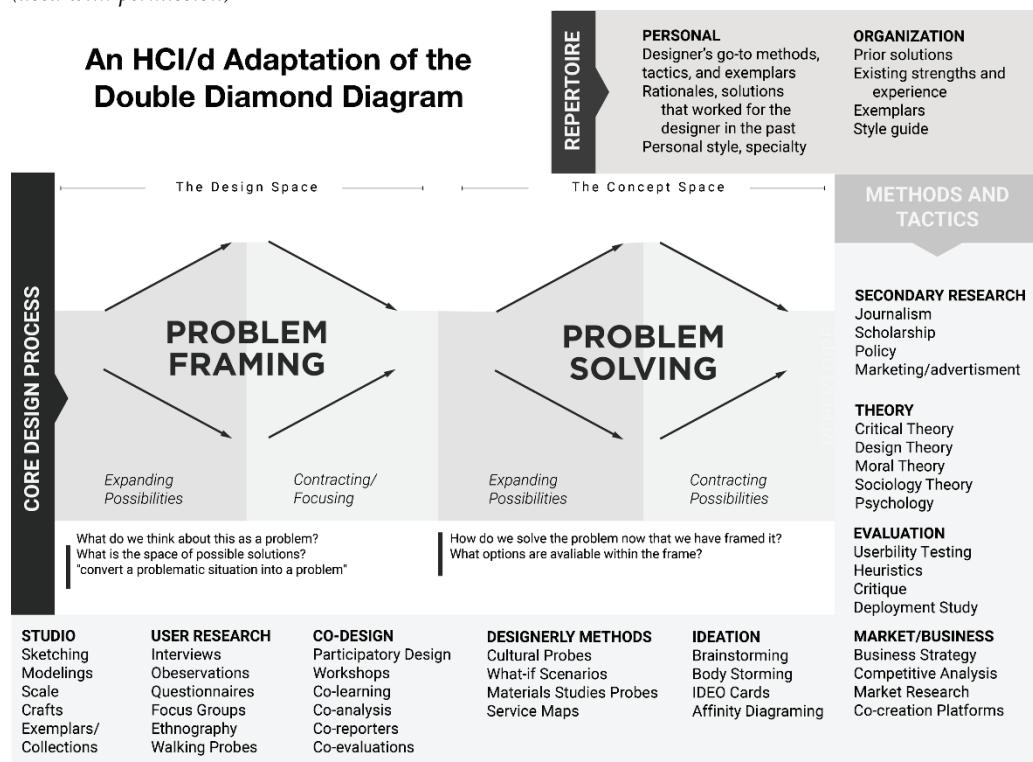
Additional Resources

Here are some additional useful links:

- * *NN/g UX research reports*
- * *PHD-Design Listserv*

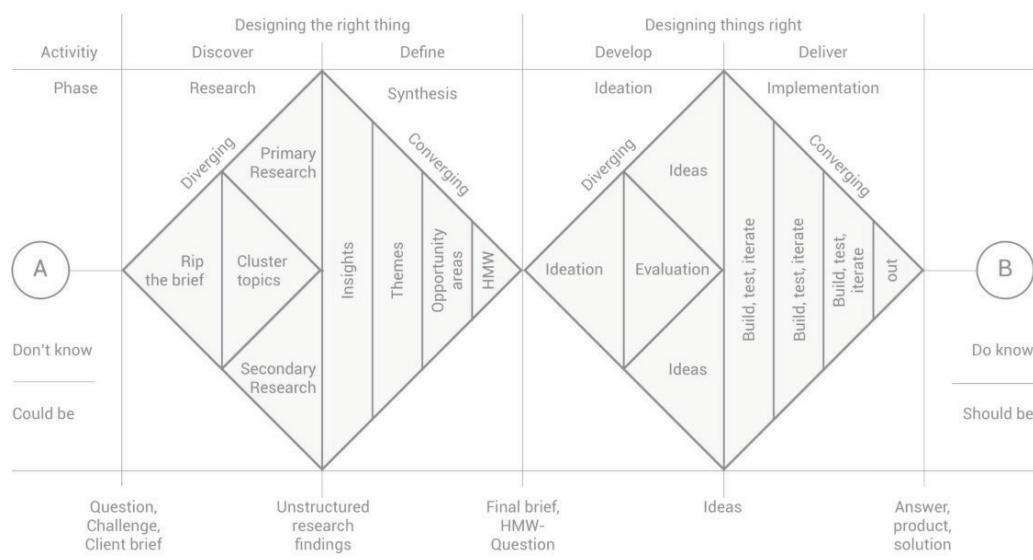
Jeff Bardzell's Version of the Double Diamond Diagram

(used with permission)



Adaptation of Design Council's “Double-Diamond” Design Diagram

source unknown!



Selected Tables from Blevis (2021): Three Key Competencies ...

Table 1. Layers of Framings

	Should do	Can do	Can know	Forms	Source
<i>How to (process, framework, principles)</i>	Predispositions (A)	Concepts (D), Strategies (F)	Research (B), Insights (C)	Prototypes (E)	Blevis (2012), after Fahnstrom, Prygrocki, & Whitney
	Design Space (Expand)	Concept Space (Expand)	Design Space (Focus)	Concept Space (Focus)	Bardzell's version of Double Diamond
	Be People-Centered	Use an Activity-Centered Systems Approach	Understand and Address the Core Problems	Use Rapid Iterations of Prototyping and Testing	Norman (2019)
	Empathize (A)	Ideate (B)	Define (C)	Prototype & Evaluate (D)	Stanford D-School
<i>Why do (rationale)</i>	Values & Vision (desirability)	Opportunity (viability)	Research (feasibility)	Possibility Trends including Futurism and Retro-futurism	Multiple Perspectives Analysis (MPA), Linstone (1981), Bowonder (1987), followed by Others
	Tolerance	Openness	Rigor	Transdisciplinarity	Transdisciplinary Design, after Nicolescu (2002), Max-Neef (2006)
<i>Tell (presentation, argument, explanation, plan, story, proof)</i>	Values & Vision	Concepts & Strategies	Domain Knowledge*	Names/brand, Products, Services	General
<i>Content Meta-theory</i>	Themes Everywhere (Global) Near (National, Community) Here (Local, Personal)	Approaches Organize Connect Persuade Disrupt	Measures Measurements Collections Needs	Forms Virtual Physical Strategic	Wei, Ho, Chow, Blevis, & Blevis (2019).

* (From Research literature, Observations, Collections, & Evaluations)

Sustainability and Other Reflections on One Hundred and One Interaction Design Projects." In *Proceedings of the Fifth Workshop on Computing within Limits* (LIMITS '19). (New York: ACM, 2019), Article 6, 18 pages; Eli Blevis and Erik Stoltzman. "FEATURE: Transcending disciplinary boundaries in interaction design." *Interactions* 16, 5 (New York: ACM, September 2009), 48-51.

Table 2. Content Theory, Expanded¹¹.

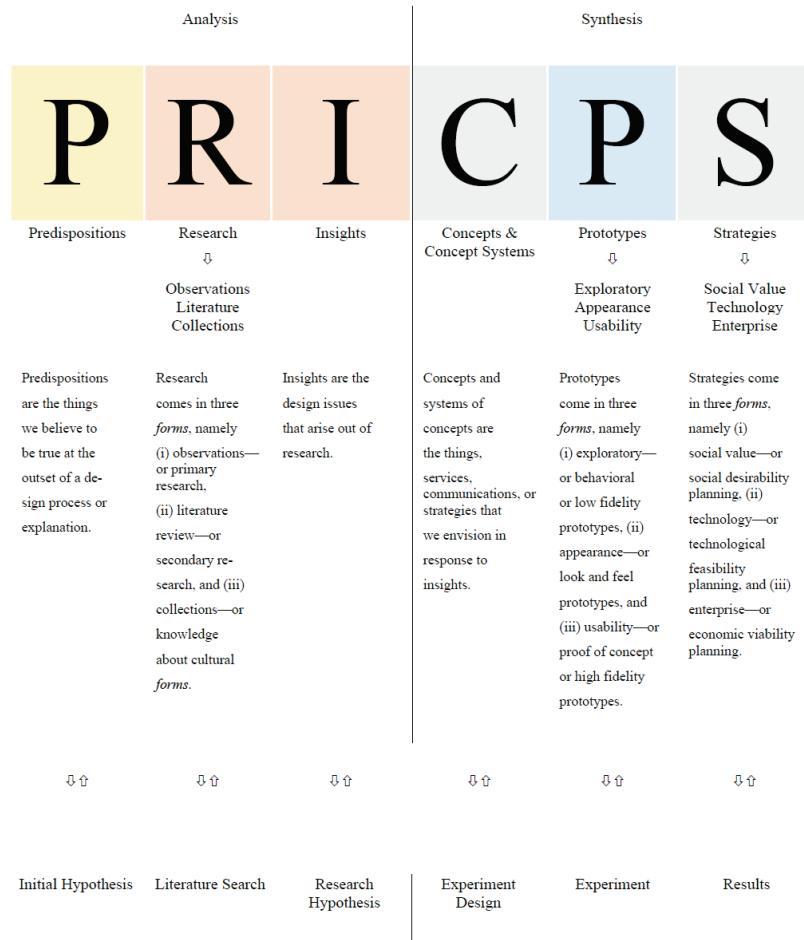
Should do Themes		Can do Approaches		
Everywhere (Global)	Sustainability Preserve Cultural Heritage	Organize	Itinerary Annotate & Link	
Near (National, Community)	Inclusivity Maintain Social Order Connecting People	Connect	Combine With Utility Distance Collaboration Match Interests	
Here (Local, Personal)	Improving Health Personal Development	Persuade	Scaffold Behaviors Motivate With Metaphor Gamification Promote Awareness	
		Disrupt	Redirective Practice Subscription Services	

Can know Measures		Forms	
Measurements	Amount And Quality	Virtual	Mobile App Desktop App Web Site Tablet App Virtual Reality App Mobile Game
Collections	Inventory Cultural Artifact	Physical	Interactive Product Installation
Needs	Psychology Travel Acculturation Needs	Strategic	Service

* This content theory illustrates some of the kinds of should do themes, can do approaches, can know measures, and forms that can instantiate the abstract how to, why do, and tell frameworks in Table 1.

¹¹ From Huaxin Wei, Jeffrey C. F. Ho, Kenny K. N. Chow, Shunying An Blevis, and Eli Blevis. "Should do, Can do, Can know: Sustainability and Other Reflections on One Hundred and One Interaction Design Projects." In *Proceedings of the Fifth Workshop on Computing within Limits* (LIMITS 19). (New York: ACM, 2019), Article 6, 18 pages.

Table 3. The PRICPS design framework¹².



¹² From Eli Blevis, "The PRInCiPeS Design Framework." In John M. Carroll, Ed. *Human-Computer Interaction Series, 1, Volume 20, Creativity and Rationale*, (Springer, 2012), 143-169.

Table 4A. Methods mapped to PRICPS, A-L

Design Component	Design Space			Concept Space		
	Predesign	Research	Insights	Concepts	Prototypes	Strategies
<i>AEIOU</i>			●			
<i>Affinity diagram</i>			●			
<i>Annotated photograph</i>	●	○	●	○	●	
<i>Appearance prototype</i>					●	
<i>Behavioral prototype</i>					●	
<i>Collection</i>		●				
<i>Competitive intelligence</i>		●				
<i>Cultural Probes</i>	●				●	
<i>Design fiction</i>				●		●
<i>Disposable Camera study</i>		●				
<i>Enterprise plan</i>						●
<i>Exploratory prototype</i>					●	
<i>High fidelity prototype</i>					●	
<i>Hypothesis</i>	●					
<i>Interview study</i>		●				
<i>Iteration</i>				●	●	
<i>Journey map</i>			●	●		●
<i>Literature report</i>	●					
<i>Look and feel prototype</i>					●	
<i>Low fidelity prototype</i>					●	

Table 4B. Methods mapped to PRICPS, P-Z

Design Component	Design Space			Concept Space		
	Predesign	Research	Insights	Concepts	Prototypes	Strategies
Persona	○	○		●		
Personal inventory		●				
PRICPS						●
Primary observations		●				
Proof of concept prototype					●	
Research hypothesis			●			
Research through Design (RtD)	●				●	
Semantic differential			●			
Shadow study	●					
Should do, Can do, Can know	●		●			
Sketch				●		
Social value plan						●
Stakeholder diagram			●			●
Storyboard				●		
Survey study	●					
Technology development plan						●
Think aloud protocol	●					
Usability prototype					●	
Use case diagram					●	●
Vision statement	●		●			
What-if scenario			●			
Wizard of Oz prototype					●	
Working prototype					●	

Important Note about Third Party Materials

In this class, your use of third party materials must conform to ACM policy:

Third party material Fair use

<https://www.acm.org/publications/authors/guidance-for-authors-on-fair-use>

Sample permission request letter

<https://www.acm.org/binaries/content/assets/publications/permissionsformtemplate.odt>

The reason for this policy is to underscore the goal of producing professional quality, publishable work, as you will be expected to produce in real-world practice. In your professional career, you will be expected to adhere to copyright laws. It is also a matter of ethics and respect for the work of others.

Moreover, since this class emphasizes visual thinking, most of your evidence of such thinking must be your own original work.

Reference Formats

You must use ACM referencing formats: <https://www.acm.org/publications/authors/reference-formatting>

English

If English is not your native language or you are otherwise shy about speaking in class, please do not worry. You will not be penalized in any way for making contributions to the class in less than perfect English or for taking time to compose your answers. You are welcome to say what you want to say in your language of choice first and then ask for help from others to translate to English. I will frequently emphasize to the class the need for all of us to be supportive of each other when it comes to contributing to the discussions. There is no need to feel rushed when responding to questions in class—an important part of the class is the construction of a feeling of community with the faculty and your peers.

Mask Wearing

Indiana University currently requires all students, faculty, and staff to wear a mask that fully covers the wearer's nose and mouth. Everyone who participates in our class is expected to follow the University policies on face masks. Masks are available at the entrance of university buildings. There will be no exceptions for the mask rules. Therefore, if a student is present in class without a mask, the student will be required to put on a mask. If a student refuses to put a mask on after being instructed to do so, the instructor may end the class immediately, and will report the student to the Division of Student Affairs: Office of Student Conduct. Violation of the mask rule is a threat to public safety within the meaning of the Summary Suspension Policy.

If a student refuses to wear a mask twice, the student's final grade will be reduced by one letter (e.g., from an A to a B, for instance) and the student will be reported to the Office of Student Conduct.

If the student refuses to wear a mask three times, the student will be withdrawn from the class without refund of tuition and reported to the Office of Student Conduct.

If Student Conduct receives three cumulative reports from any combination of instructors or staff members that a student is not complying with the requirements of masking, the student will be summarily suspended from the university for the semester.

Accommodations & Feedback

We welcome your feedback. We will do our best to accommodate specific requests if they are reasonable and have merit.

Academic Misconduct

The class is morally and procedurally bound by IU's policies on academic misconduct, the details of which you can read about at the following website: www.indiana.edu/~code/code/index.shtml

Religious Observance

In accordance with the Office of the Dean of Faculties, any student who wishes to receive an excused absence from class must submit a request form available from the Dean of Faculties for each day to be absent. This form must be presented to the course professor by the end of the second week of the semester. A separate form must be submitted for each day. The form must be signed by the instructor, with a copy retained by instructor, and the original returned to the student.

Information about the policy on religious observance can be found here:

www.indiana.edu/~vpfaa/holidays.shtml

Important Notice

As your instructor, one of my responsibilities is to help create a safe learning environment on our campus. Title IX and our own Sexual Misconduct policy prohibit sexual misconduct. If you have experienced sexual misconduct, or know someone who has, the University can help. I encourage you to visit <http://stopsexualviolence.iu.edu/> to learn more. If you are seeking help and would like to speak to someone confidentially, you can make an appointment with a Mental Health Counselor on campus. Contact information available at <http://stopsexualviolence.iu.edu/employee/confidential.html>

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

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