

I561 Fall 2019 Sections 13137 & 13138

Design Studio: Meaning & Form in HCI



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Notice

This syllabus is subject to change and amendment from time to time.

Summary

The field of Human-Computer Interaction (HCI) has developed along four successive waves¹, namely *computing*, *cognition*, *ethnography*, and *transdisciplinary design*. Knowledge of the elements of each of these waves are foundational to understanding how HCI is implicated in nearly any interaction design nowadays and in any vision of the future of interaction design.

The fourth wave—*transdisciplinary design*—holds three values as central tenets, namely *tolerance*, *openness*, and *rigor*. Nicolescu (2002) states:

“Rigor, openness, and tolerance are the fundamental characteristics of the transdisciplinary attitude and vision. Rigor in argument, taking into account all existing data, is the best defense against possible distortions. Openness involves an acceptance of the unknown, the unexpected, and the unforeseeable. Tolerance implies acknowledging the right to ideas and truths opposed to our own.”

We can easily see that understanding computing entails especially *rigor*, cognition especially *openness*, and ethnography especially *tolerance*. Thus, the transdisciplinary gaze embraces all of the essential elements of the successive waves of HCI. Of course, these tenets *transcend* all waves and all waves embrace all tenets in some and many ways.

The introduction of the waves of HCI and the tenets of transdisciplinary design will serve as the foundation that enables each designer to articulate her or his vision of what truly matters in design with the materials of digital technologies.

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In this syllabus, I refer to students as designers as I do above.

This design studio class has two sections of at most 24 designers per section—that is a maximum of 48 students in total between the two sections. Designers work in teams of 4—that is at most 12 teams between the two sections. Each team will work on a project that has been divided into one week challenges—that is 6 challenges per half-semester and 12 challenges (including interim and final videos and reports) in the entire project over the entire semester. The outcomes of each of the one week challenges will be graded, and the best will be made available to all teams to form the basis for the next design challenge. Taken in aggregate, the outcomes of the 12 design challenges are combined to produce a final semester long project for each team.

¹ The notion of three waves of HCI owes to Bødker, 2006. It was introduced into our curriculum by Jeff Bardzell. Speculation that the fourth wave is transdisciplinary design is reported in Blevis et al. (2014) and elsewhere. The learning strategy is a hybrid of Design Challenge Based Learning (Blevis, 2010), the PRInCiPleS framework (Blevis, 2012), and a transdisciplinary design framework (Wei et al., 2019).

Project Themes

In this class, there is an expectation and requirement that the design teams will chose *meaningful*—that is *socially conscious*—projects. The design of the class works best if there is more than one team per broad thematic area. Therefore, this semester’s choice of broad thematic areas is constrained to one of the following:

Human-Computer Interaction, Design, Technology and ...

- News (and Truth)
- Fashion (and Equality)
- Respect (and Peace)

As a team, please choose to focus within one these thematic areas on something you truly care about and that delivers real value to others.

This is not impractical professional advice—note that several top business leaders nowadays argue that shareholder value can no longer be considered the primary goal of corporations (Gelles & Yaffe-Bellany, 2019). This is widely reported, and you may see different sources in other classes or forums. Of course, these thematic areas extend well beyond the boundaries of corporate goals to include also general well-being and harmony.

In 541, you will have an industrial client. In 561, your free choice of scope within one of these broad thematic areas is targeted to help you create complimentary professional presence, by illustrating your ability to choose values-rich *and* materially-valuable focus. Kindly discuss your ideas for focus with the Professor and Associate Instructors.

These three themes of News, Fashion, and Respect will likely expose differences in our prior knowledge and beliefs as parts of our studio discussions. Indeed, they are not chosen to be easy, but rather to create complex design spaces. As designers, our goal is to foster and advance our understandings of others, each other, and ourselves. As designers, our goal is to refine our beliefs as matters of rigor, openness, and tolerance. Expect a lot of teachable moments. Expect a lot of learning opportunities.

Schedule

Fall First 8 weeks

<i>Studio Session Number</i>	Lecture examples	Breakout activity (preparation for the following bi-weekly project)	Weekly, graded project component	References
1 <i>AUG 26</i>	Design space: should do, can do, can know, forms	Sketching the design space as statements of should do, can do, can know, and forms	-	Wei et al. (2019) Should do, ..., Blevis (2012) PRInCiPleS ...
2 <i>SEP 9/12</i>	Predispositions	Crafting and illustrating predispositions	Statements of should do, can do, can know, forms	Reed et al. (2005) Time & Travel
3 <i>SEP 16/19</i>	Research: Literature (dl.acm.org and other sources)	Restating research sources as diagrams; Inventory of research sources	Illustrated predispositions	UMOD:74 Secondary Research, UMOD:53 Literature Reviews
4 <i>SEP 23/26</i>	Research: Photoethnography	Photoethnography plans, techniques, and forms	Literature Diagrams and Inventory of research sources	UMOD:62 Personal Inventories, Blevis et al. (2019) All the Tea ...
5 <i>(per Labor Day)</i>	Research: Similar or competitive services	Mapping similar services, competitive services, opportunity spaces	Semantic differentials: similar services, competitive services, opportunity spaces	UMOD:75 Semantic Differential
6 <i>SEP 30/OCT 3</i>	Insights: Stakeholders and needs	Mapping stakeholders and needs	Photoethnography reports (Pictorials)	UMOD:80 Stakeholder Maps, Brath & Banissi (2016) Typography ...
7 <i>OCT 7/10</i>	Concepts	Concept relays (sketching)	Stakeholder Diagrams	UMOD:82 Storyboards
8 <i>OCT 14/17</i>	Interim reports		Concept sketches	
9 <i>OCT 21/24</i>	Review of First Eight Weeks; Concepts: System Scenarios	Forming systems of concepts (sketch or photographic storyboards)	Interim reports and 2-5 minute Videos	UMOD:73 Scenarios, UMOD:32 Elito Method

Yellow highlights indicate content which will be omitted to compensate for holidays. UMOD stands for Universal Methods of Design (Martin & Hannington, 2012).

Schedule

Fall Second 8 Weeks

<i>Studio Session Number</i>	Lecture examples	Breakout activity (preparation for the following bi-weekly project)	Weekly, graded project component	References
10 <i>OCT 28/31</i>	Prototypes: behavioral	Pushing concept boundaries	Concept system scenario illustrations (sketch or photographic storyboards)	UMOD:24 Cultural Probes, UMOD:71 Role-playing
11 <i>NOV 4/7</i>	Prototypes: Appearance	Creating look and feel	Behavioral prototype reports and updated concepts	UMOD:66 Prototyping
12 <i>NOV 11/14</i>	Prototypes: Proof of concepts I	Proving concepts	Appearance prototypes	UMOD:99 Wizard of Oz
13 <i>NOV 18/21</i>	Strategies	Discuss Formats of Final Reports and 5 minute Videos	Proof of concept prototypes and technology plan	UMOD:75 Semantic Differential, Whitney (2015) Design and the Economy of Choice ...
<i>(per Thanksgiving)</i>	Prototypes: Proof of concepts II	Evaluation and iteration	Proof of concept prototypes II	UMOD:94 Usability Testing
14 <i>DEC 2/5</i>	Final reports	Final report forms	Actionable Plans (which may include working designs if possible)	
15 <i>DEC 9/12</i>	Final presentations		Final Reports and 5 minute Videos	
16 <i>DEC 16/19</i>	Exams week (no exam, no class)			

Yellow highlights indicate content which will be omitted to compensate for holidays.

UMOD stands for Universal Methods of Design (Martin & Hannington, 2012).

Typical Schedule for Class Meeting Sections

Section 13137: Mondays I150, 6:15-8:45 PM, Section 13138: Thursdays I232, 6:15-8:45 PM

<i>Part One (1 hour)</i>	Group presentations (of prior week's project)
<i>Part Two (1 hour)</i>	Lectures, examples and presentations from my archive
<i>Part Three (30 minutes)</i>	Group break outs (start of weekly project)

Additional Opportunities to meet during Office Hours

Prof. Blevis: Mondays and Wednesdays 4:00-5:00 PM, IW 200.

Associate Instructors, by appointment.

Work Expectation

You are expected to dedicate 10 hours a week to this class. 2.5 hours are spent in class. Count on spending the remaining 7.5 hours meeting with your team or doing the work to contribute to your team. A good rule of thumb is to hold 2 * 1.25 hour team meetings per week, and work for 1 hour each week day on your individual contributions to your team's project.

Fall

<i>Event</i>	<i>Day</i>	<i>Date</i>
<i>Classes begin</i>	Monday	August 26, 2019
<i>Labor Day (classes do not meet)</i>	Monday	September 2, 2019
<i>Fall break (after last class)</i>	Thursday	October 17, 2019
<i>Classes resume after fall break</i>	Monday	October 21, 2019
<i>Thanksgiving recess begins (after last class)</i>	Saturday	November 23, 2019
<i>Classes resume after Thanksgiving recess</i>	Monday	December 2, 2019
<i>Day of last classes</i>	Saturday	December 14, 2019
<i>Days of examinations</i>	Monday–Friday	December 16, 2019–December 20, 2019

Spring

<i>Event</i>	<i>Day</i>	<i>Date</i>
<i>Classes begin</i>	Monday	January 13, 2020
<i>Martin Luther King, Jr. Day (classes do not meet)</i>	Monday	January 20, 2020
<i>Spring recess begins (after last class)</i>	Saturday	March 14, 2020
<i>Classes resume after spring break</i>	Monday	March 23, 2020
<i>Day of last classes</i>	Saturday	May 2, 2020
<i>Days of examinations</i>	Monday–Friday	May 4, 2020–May 8, 2020

Form of Typical Weekly Deliverables

Each week's deliverable must be submitted as a pdf file generated from inDesign. 4-10 pages. All of the class deliverables from both sections will be combined into a (PDF) binder, which will be distributed to all. The intent is that teams may build on the work of others with proper attribution. The header must appear on each page in the form:

<First Name><Last Name>, ..., <First Name><Last Name>. <Year> (<MM.DD>). <Component Name>:<Title>. <Semester>. *Design Studio: Meaning & Form in HCI*. <page> of <pages>

For example:

Hariprasad Chaurasia, Patricia Kopatchinskaja, Arianna Savall, and Sayaka Shoji. 2019 (10.22). Stakeholder Diagrams: Fashion Project. Fall. *Design Studio: Meaning & Form in HCI*. 1 of 4.

Form of Interim and Final Week Portfolio Form Reports

A portfolio form report is a PDF format file with at least the following parts:

- Title (*carefully crafted*)
- Your name(s) and contact information
- Key Image(s) (*concept prototype in use*)
- Executive Summary
- Vision Statement (*phrased as should do, can do, can know, and forms*)
- System Scenarios
- Process (*organized as PRICPS*)

Form of Interim and Final Week Portfolio Form Videos

Videos are 5:00 minutes in MP4 or API format. They must be exactly 5:00 minutes. They may be generated from slides or movies or a combination of both. They must use recorded narrations so that they can stand alone.

Grading

- Weekly projects: 40%
- Interim and Final Form Reports: 30%
- Attendance & contribution: 20%
- Compliance with third party materials policy: 10%

The contribution grade is based on the thoughtfulness of your comments and your support for the quality of the class as a whole. It is possible to receive a low grade for contribution if you try to dominate the discussions or otherwise demand undue attention.

Mapping I541 to I561

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

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

The columns are a simplification of “weak” transdisciplinary design theory after Max-Neef (2005). Many other attributions are possible. The rows are inspired by a private communication with Jeffrey Bardzell, as well as his slide “The Changing HCI/d Profession.” Bardzell’s version of the Double Diamond diagram appears below—the summary above is a simplification. Many other attributions are possible.

Mapping I541 to I561, Continued

Content Theory, Expanded

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		
Needs	Psychology Travel Acculturation Needs	Physical	Interactive Product Installation
		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 above. This content theory is stated in Wei, Ho, Chow, Blevis, & Blevis (2019).*

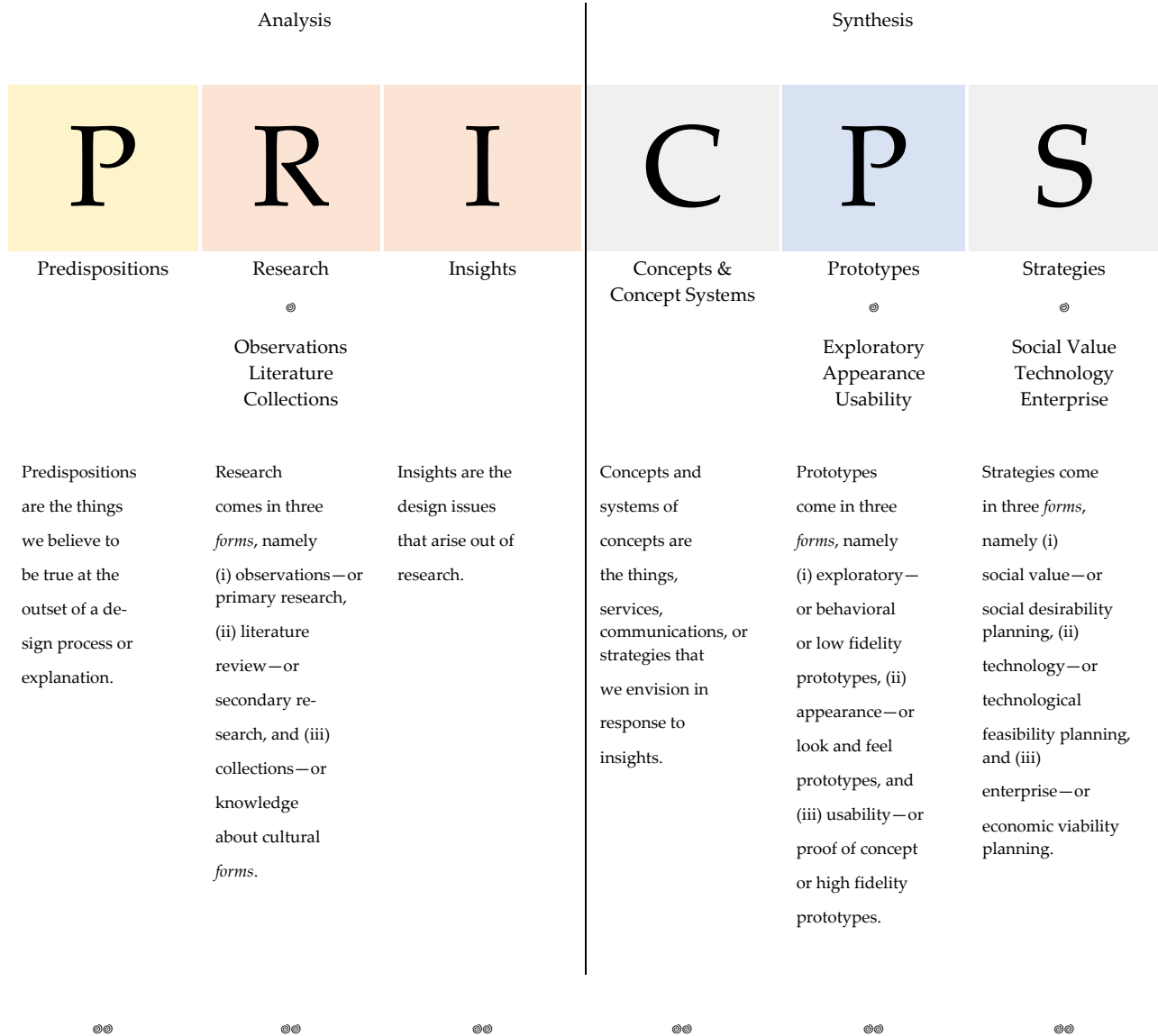
Methods: A-L

<i>Design Component</i>	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>					●	

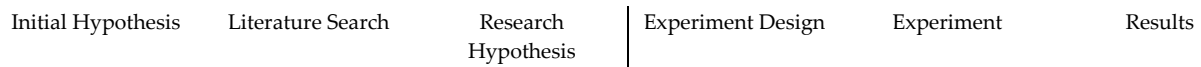
Methods: M-Z

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

The PRInCiPleS Design Framework



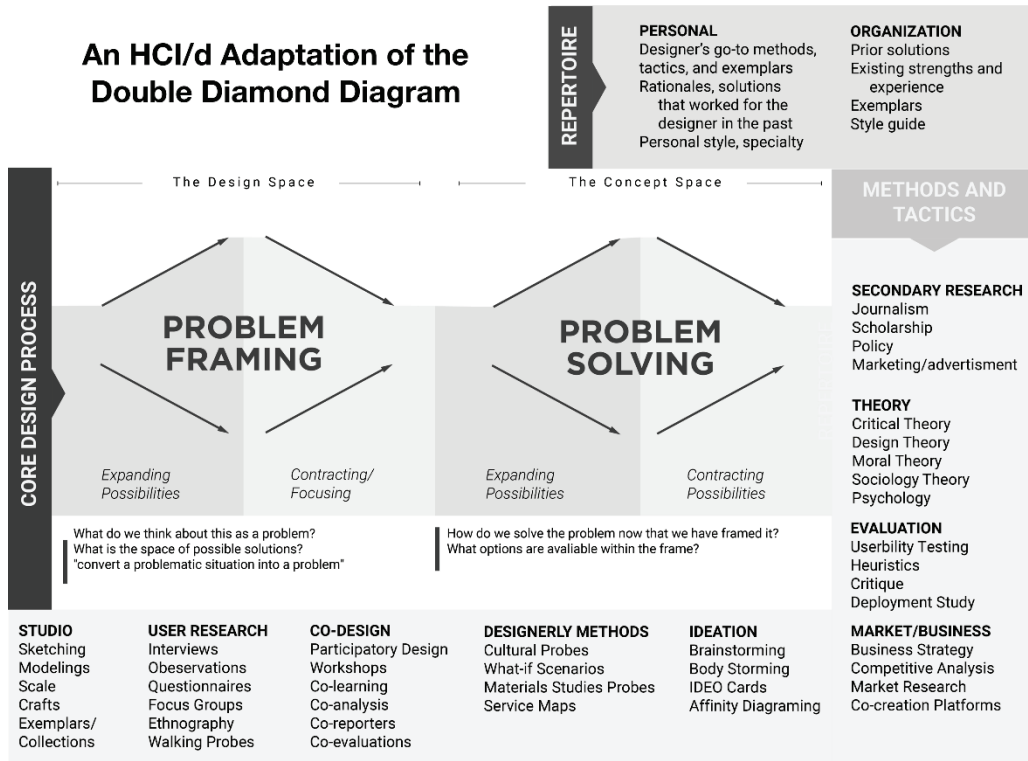
An analogous Scientific Framework



From Blevis (2012).

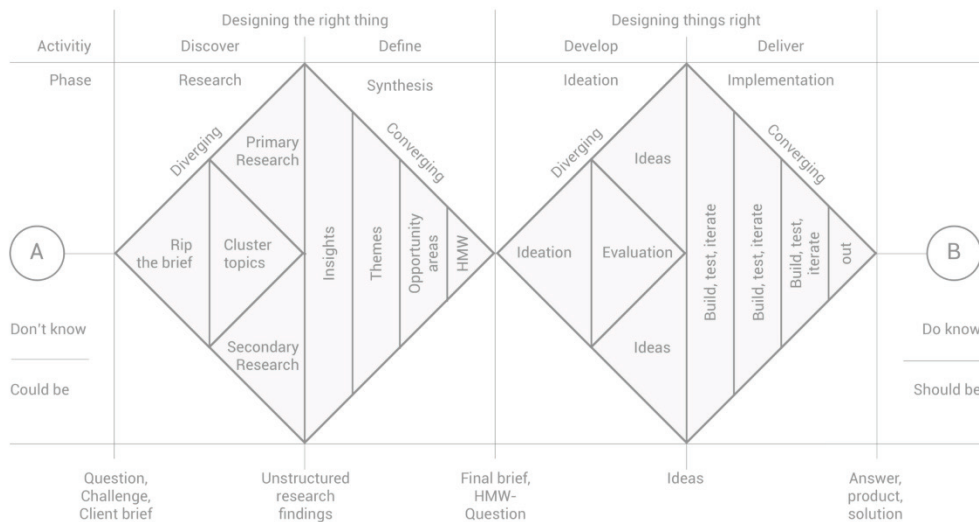
Jeff Bardzell's Version of the Double Diamond Diagram

From I541



Adaptation of Design Council's "Double-Diamond" Design Diagram

source unknown!



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

Sample permission request letter

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 studio 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>

Example Projects from Prior Years

This is the first year for this course and deliverables format. Some projects from other design classes may be presented as needed.

Additional Important Information

Absences and Disengagement

The use of digital devices to look up references or work on projects in class is encouraged. The use of digital devices to engage in social media or similar forms of disengagement may result in an unexcused absence at the discretion of the associate instructors.

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

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.

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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* Required