

Undergraduate Programs in Human-Computer Interaction (HCI) 2nd Major and Minor

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Human-Computer Interaction Institute

Introduction

- HCII has 307 undergraduate students enrolled in:
 - A primary major in HCI, within SCS, started in Fall 2020
 - An interdisciplinary 2nd Major in HCI
 - An interdisciplinary Minor in HCI
 - A concentration in HCI for students within SCS



Educational programs in HCI for undergraduates

HCI 2nd major (interdisciplinary)

- Formal admissions (Spring) with ~50% admissions rate
- 12 courses, including a final capstone project
- Guaranteed admission to core courses

HCI Minor (interdisciplinary)

- Formal admissions (Spring) with a higher acceptance rate than the HCI 2nd major
- 7 courses
- Guaranteed admission to core courses



The Philosophy of the HCI 2nd Major and Minor

Take excellent students with depth in one discipline relevant to HCI and give the educational opportunity to learn a set of core skills in HCI *and* to “walk in the shoes” of the other disciplines.

- Help the students become effective members of interdisciplinary teams in industry
- Prepare students for leadership in HCI-related industries



On the Philosophy...

- A second major or minor in HCI will provide students
 - Basic skills for designing and implementing user-centered software
 - Appreciation of the varied skills necessary to make useful, usable & satisfying interactive products
 - Ability to communication with specialists in other areas
- It will **not** make software developers into designers or psychologists into programmers.
- It is not a second degree.



What students like about the HCI 2nd major and HCI minor

- Interdisciplinary
 - Project focused
 - Flexible
-
- “Working with people from other disciplines “
 - “The interdisciplinary nature. I learned a lot from having courses outside my major and from working with people that have different focii”
 - “Courses were project oriented”
 - “Applying the skills I learned in classes to research projects”
-
- “Without this major, I would have never discovered my enjoyment for creatively solving problems with constraints and business needs.”
 - “The professors. I was lucky because all of the core classes ... were taught by professors who were well-respected in the field and clearly knew their stuff”



Why study HCI?

- Web services and mobile apps are the hottest start-ups in the world and HCI is in the middle of that
- HCI is *the* central topic in computing – the best way to build up some computer skills and credibility
- HCI is a good path towards being a project manager
- Agile development to understand user needs helps to create innovative products – in HCI *and* in business



Other reasons for getting an HCI 2nd Major / Minor

- CMU is the best in the world
- Interesting problems to work on
- Lots of interaction with stakeholders
- Creative expression
- Working on the parts of computers that everyone sees
- Career security, etc.



Hiring Companies in Recent Years

- Amazon
- Apple
- Applied Predictive
- Capital One
- Carnegie Mellon
- Deloitte
- eBay
- Etsy
- Facebook
- Firstborn
- Google
- Hudson River Trading
- Huge
- Idean
- McKinsey & Company
- Microsoft
- Pinterest
- Pricewaterhouse
Coopers
- Procore Technologies
- SapientNitro
- Venmo
- WillowTree
- Yext
- Zazzle



Sample Job Titles

- Business Analyst
- Business Technology
- Core Developer
- Design Development
- Designer
- Development Program
- Digital Analyst
- Experience Designer
- Front End Developer
- Front End Engineer
- Full Stack Engineer
- Information Technology
- Interaction Designer
- Product
- Designer
- Software Engineer
- Technical Product Manager
- Technology Consultant
- Usable Privacy and Security Researcher
- User Experience Designer
- UX Designer
- UX Engineer
- UX Researcher
- UX Strategist

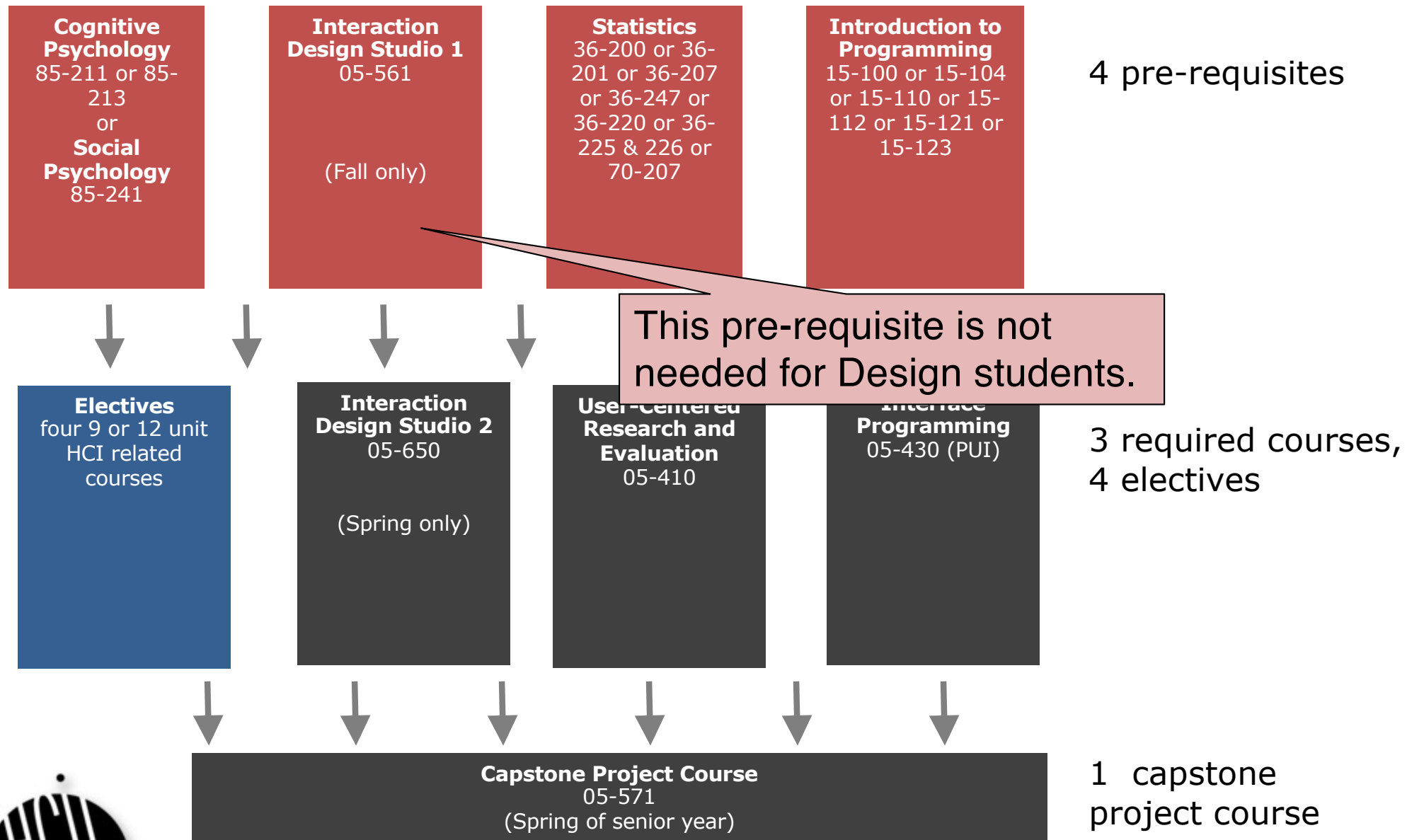


What our alumni say

- “My degree turned me into a world-class employee and significantly increased my ability to get a job that maximized my potential.”
- “It was amazing. The most intense period of my life. My colleagues are still close, ten years later.”
- “I learned a lot about UI... enough to start a startup.”



HCI 2nd Major Requirements



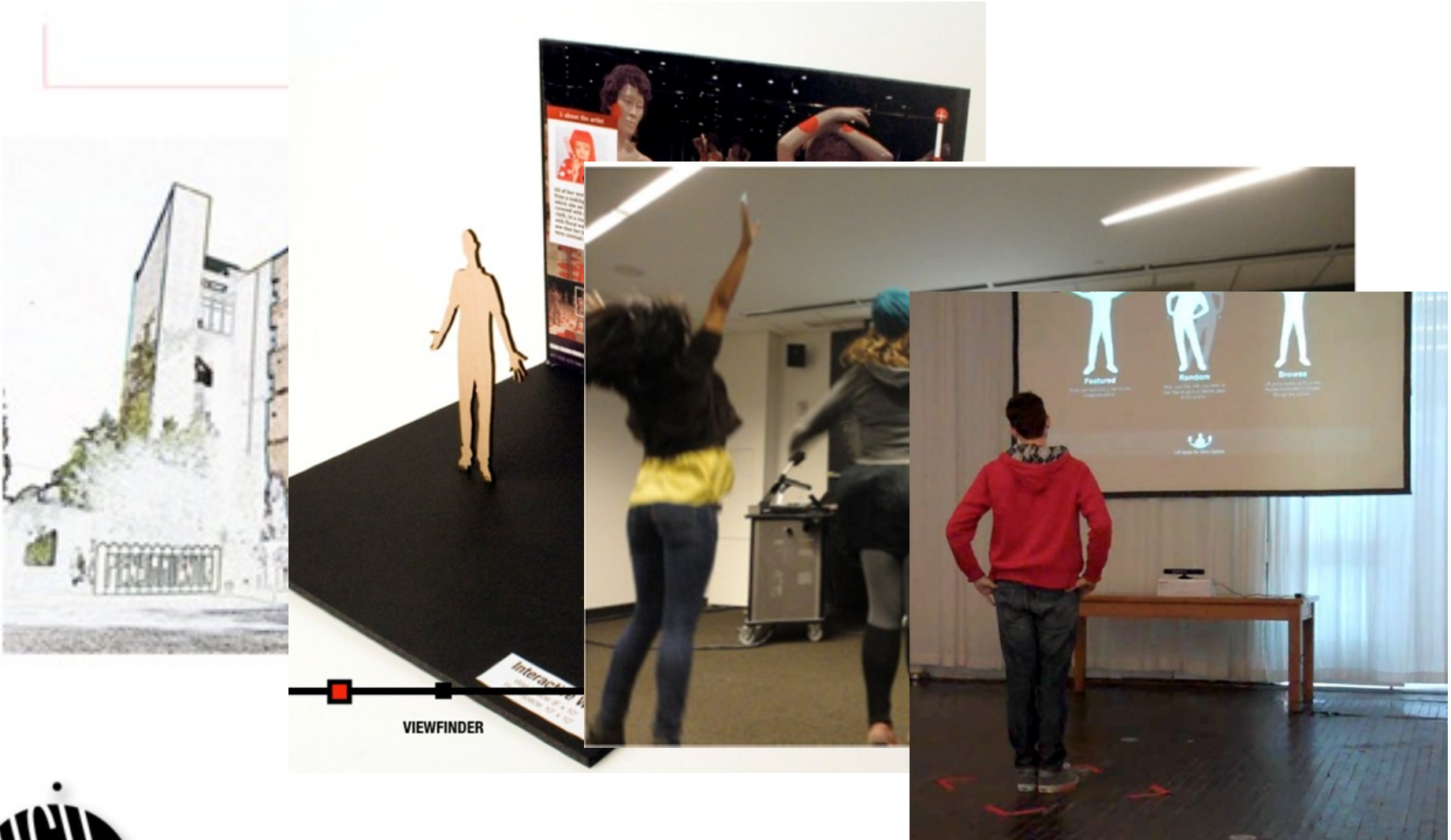
HCI Second Major

Senior Capstone Project Course Goals

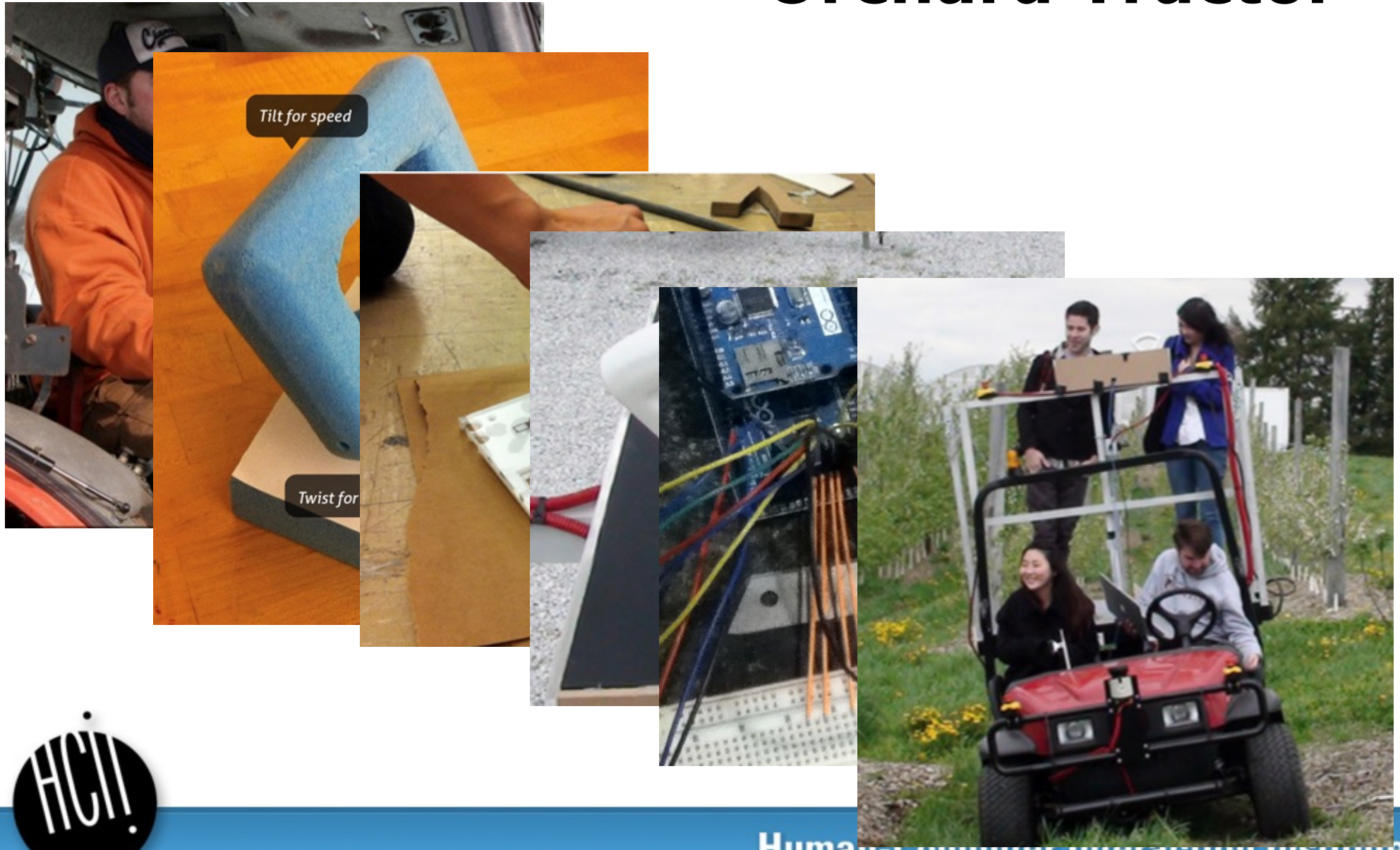
- Apply HCI skills on a semester-long project
- Work in interdisciplinary teams (3-5 people)
- Work with clients
- Integrate skills gathered over the curriculum
- Learn to write reports & give presentations



Mattress Factory: Interactive Archive of Past Installations



Controls for a Semi-Autonomous Orchard Tractor



Playbook Training for Pittsburgh Steelers

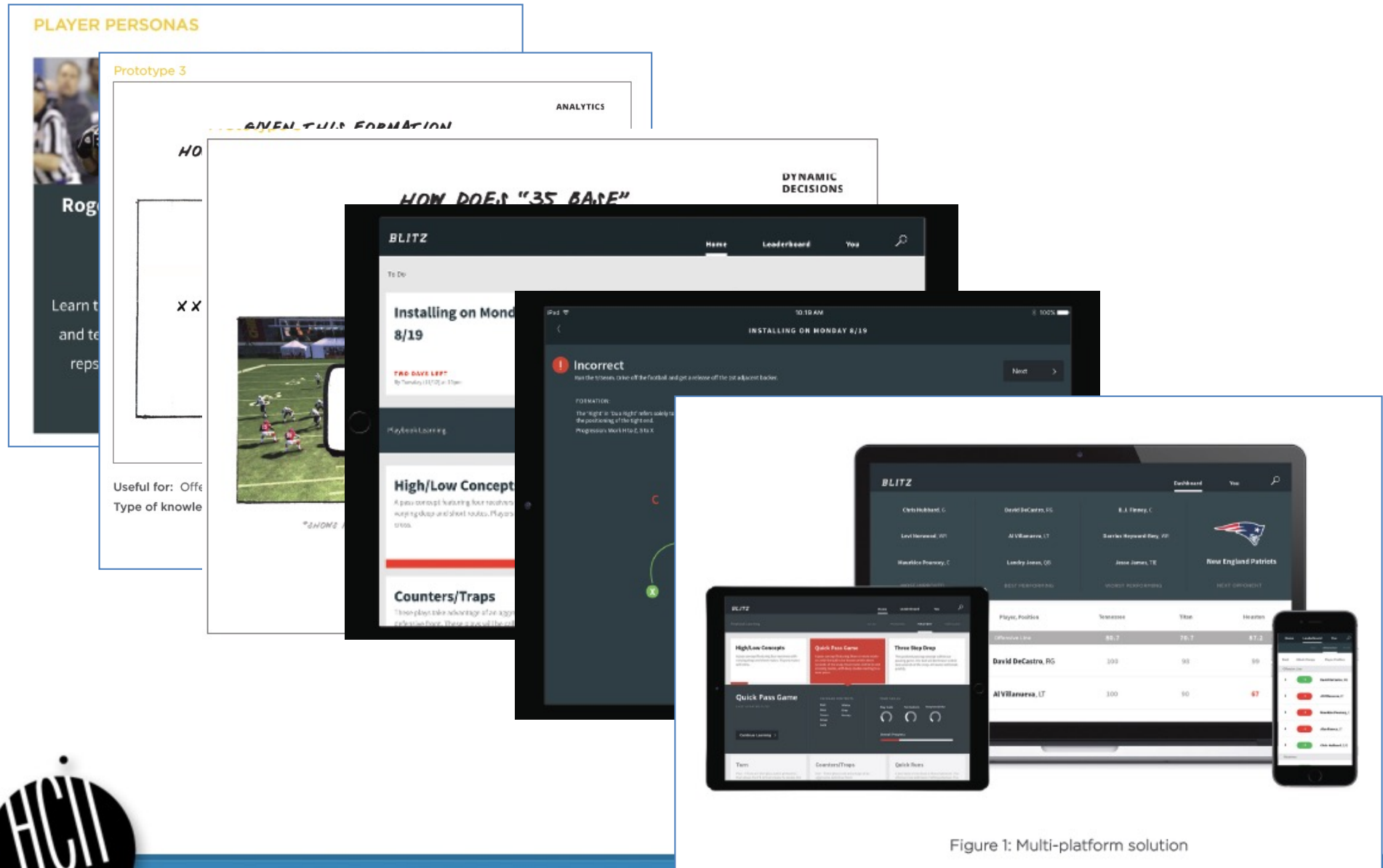
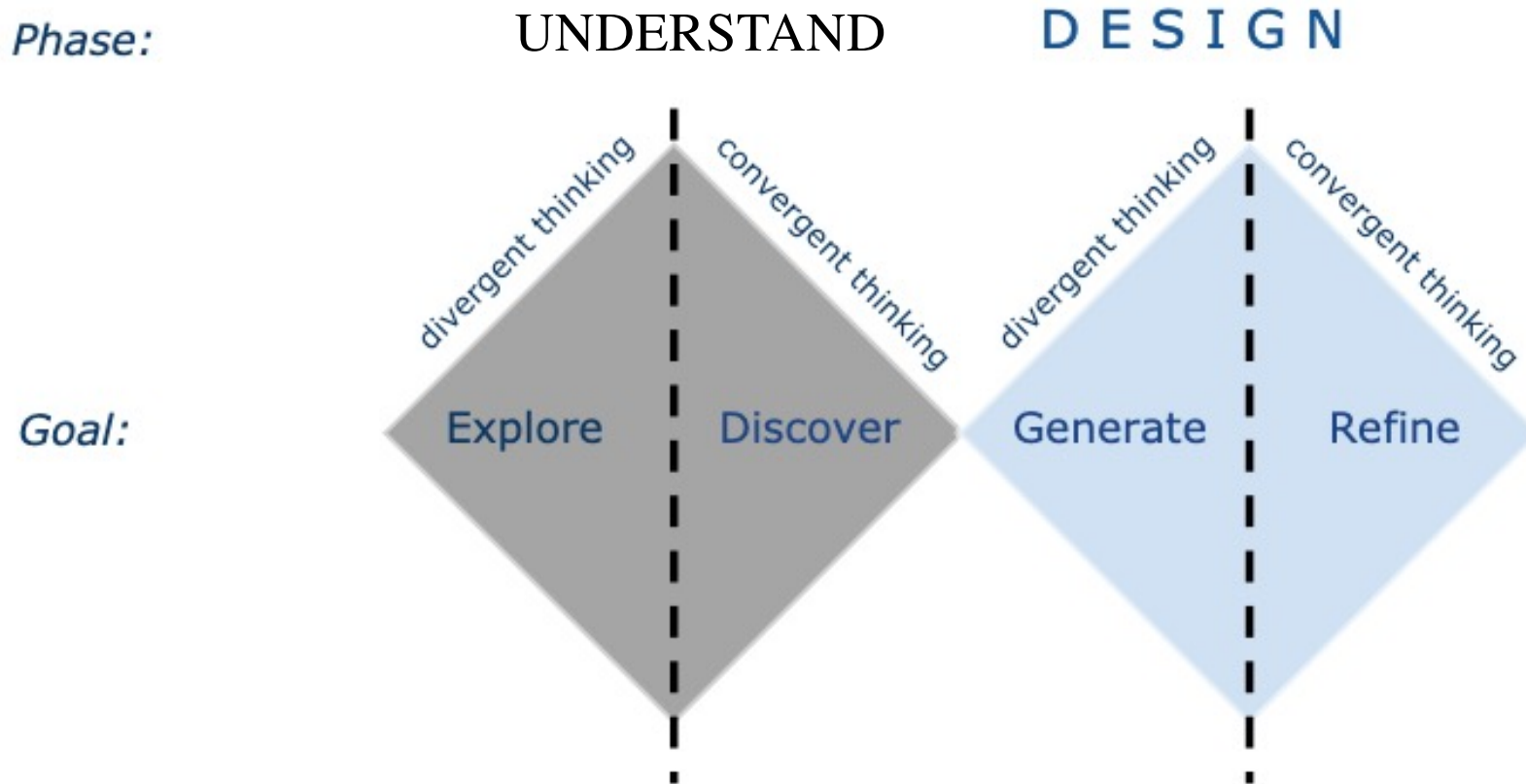
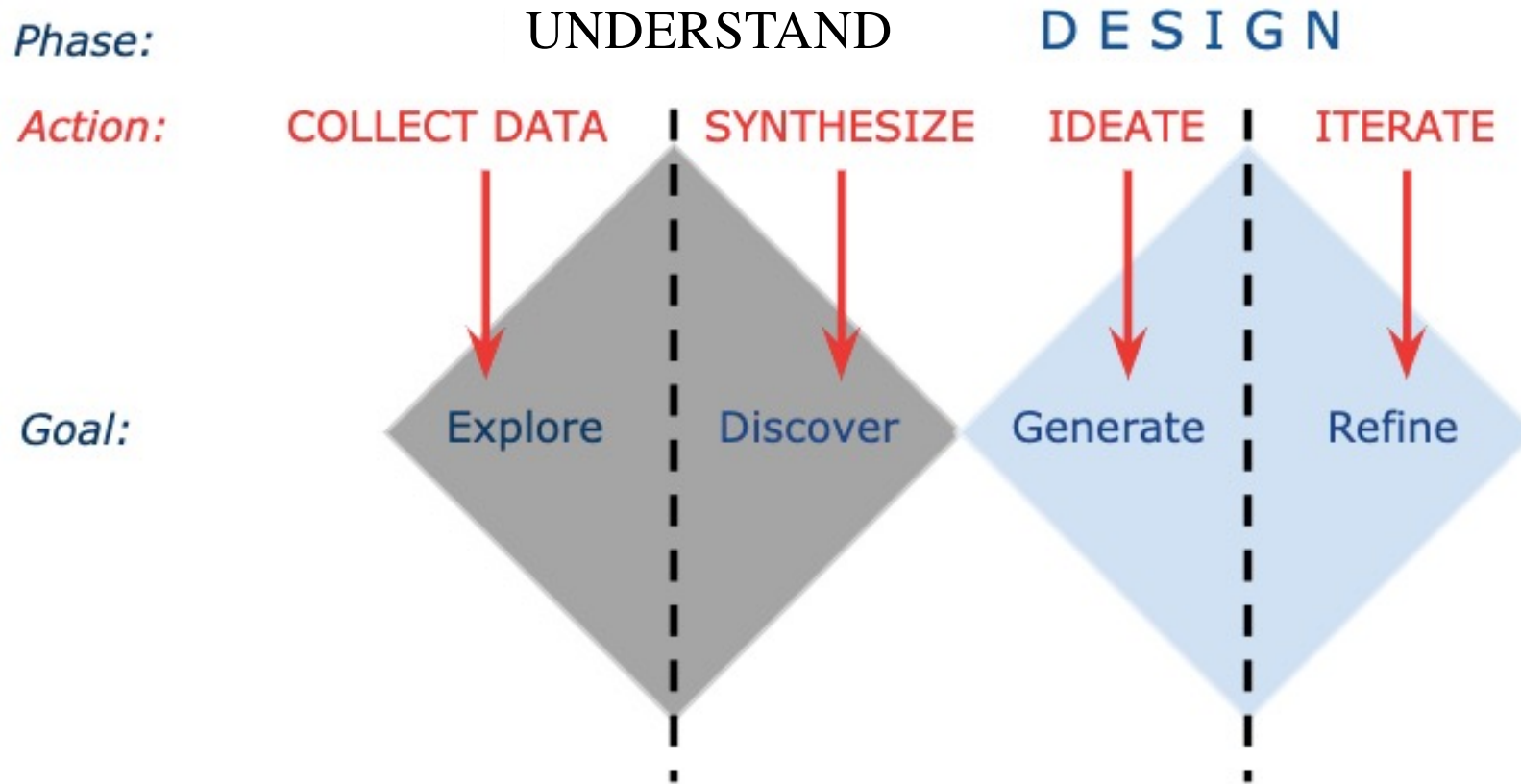


Figure 1: Multi-platform solution

The Human-Centered Design Approach



The Human-Centered Design Approach

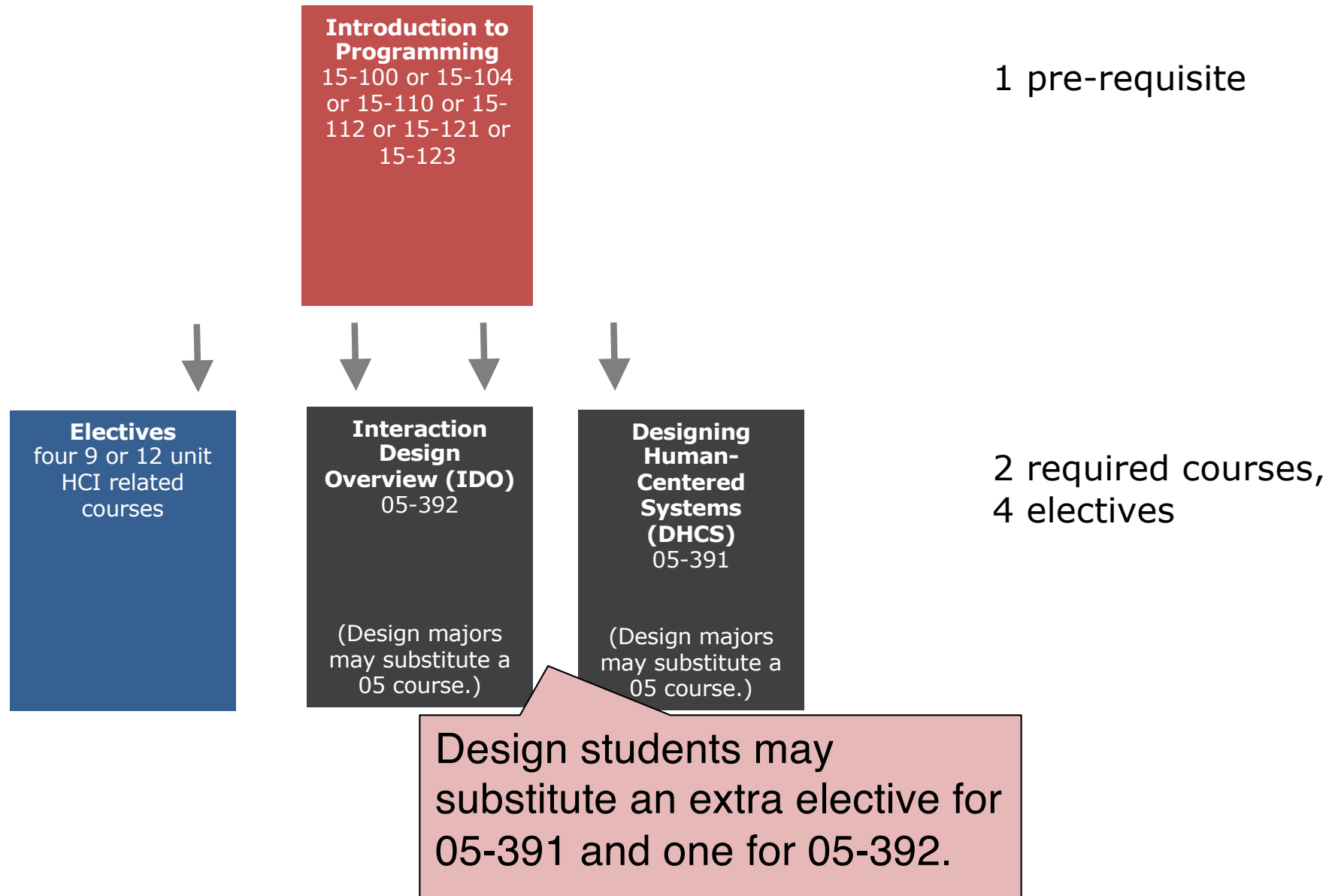


Quote by a student about the capstone project

“I had the chance to use HCI methods and understand the basis for them. We had to constantly test and change things based on the very specific needs of our users. Things that seemed so simple to us were like a foreign language to them. It really helped drive the entire point of HCI home to me.”



HCI Minor Requirements



Comparison of HCI 2nd Major & Minor

	BHCI Major	BHCI Minor
Admission	Application and admissions required	Application and admissions required
Prerequisite	<ul style="list-style-type: none">• Freshman-level programming (15-110 or 15-112 or 15-121 or 15-104)• Statistics (introductory)• Cognitive psychology (85-211)• Interaction Design Studio I (or Communication Design Fundamentals) (05-651)	<ul style="list-style-type: none">• Freshman-level programming (15-110 or 15-112 or 15-121 or 15-104)
Core courses	<ul style="list-style-type: none">• Interaction Design Studio II (IxDS) (05-650)• User Centered Research & Evaluation (UCRE) (05-410)• HCI Programming (PUI/SSUI) (05-430 or 05-431)• BHCI Project (05-571)	<ul style="list-style-type: none">• Interaction Design Overview (IxDO) 05-392• Designing Human Centered Software (DHCS) 05-391
Electives	4 electives	4 electives
Double counting	2 courses with primary major	2 courses with primary major



How can you explore whether HCI is for you?

- Enroll in an elective
- Pick a course you can double count
- Become involved in HCI research (internship or independent study with HCII professor)
- Enroll in one of the core courses (though hard to get in)
 - Designing Human-Centered Systems is a great intro course
- Take 05-300 HCI Undergraduate Pro Seminar (2 units) – many HCII faculty present their work
- For SCS students interested in the HCI Primary Major: 05-120 Introduction to Human-Computer Interaction



Popular electives

05-589	Independent Study	05-418	Design Educational Games
05-413	Human Factors	05-395	Applications of Cognitive Science
51-327	Intro to Web Design	51-359	Tools for UX Design
05-320	Social Web	36-309	Experimental Design for Behavioral and Social Sciences
05-833	Gadget, Sensors and Activity Recognition in HCI	05-438	Technology and Learning in the 21st Century
51-385	Designing for Service	15-390	Entrepreneurship for CS
05-899	Design of Educational Games	05-341	Organizational Communication
70-643	Publishing to the World Wide Web	51-831	Methodology of Visualization
15-437	Web Application Development	36-202	Introduction to Statistic
15-462	Computer Graphics	70-415	Introduction to Entrepreneurship
51-328	Advanced Web Design	85-310	Research Methods in Cognitive Psychology
70-311	Organizational Behavior		
05-434	Applied Machine Learning		



Application Process: HCI 2nd major

- Personal statement
 - Show writing ability & knowledge of the area
 - Highlight HCI experience
 - Relate HCI to personal interest and/or career goals
- Transcript
 - QPA ranges from 3.0 to 4.0, with 3.5 typical
- Schedule for taking courses
- Optional (but helpful): recommendation letter(s), link to online portfolio (include with other materials)
- Admission is limited by enrollment caps on the required courses (acceptance rate ~50%)



Application Process: HCI Minor

- Submit transcript
- Submit schedule for taking courses
- Optional: Link to online Portfolio (include with schedule, e.g., on separate page)
- Admission is limited by enrollment caps on two required courses (acceptance rate has been close to 100% in recent years)



Timeline for Applying to the HCI 2nd Major and Minor (Spring 2022)

- March 4: Applications open
- March 21, 11:59pm: Applications due
- April 11: Notifications of acceptance
- April 18: Fall registration begins



Who can apply?

- Any major can apply
- You do not need to have completed any pre-requisites before you apply
- Typically sophomores apply
- Freshmen may apply, but the bar is higher (due to limited info)
- Juniors may apply if they can complete the program in the time remaining
- Repeat applications are welcome



Applying to both programs

- If you want to be considered for both the 2nd major and the minor (in case you do not get into the 2nd major) you need to apply to both.
- If you apply to the HCI 2nd major only, you will not automatically be considered for the HCI minor if you do not get in. You have to apply to the HCI minor in order to be considered.



Important!!!

- If you want to be considered for both the 2nd major and the minor, apply to both.



HCI Major (School of Computer Science)

- Started fall 2020
- Has 11 enrolled students, and 2 graduates
- One of the first majors in the country in Human-Computer Interaction
- Students admitted to SCS declare their major in their first year
- Students in SCS and in other colleges may transfer to the HCI Major



Graduates - After three semesters!



Mansi Agarwal
(S2021)



Tianyou (Sidney)
Zhang (F2021)



Philosophy of the HCI Major

- Grow HCI specialists who understand and create innovative interactive services, systems, and applications that serve humans
- Strong grounding in CS and superior technical skill
- Holistic understanding of how digital interactive products and services impact people, groups, societies
- Will enable them to explore new design spaces



Rationale of the HCI Major

- HCI is now its own field
- There is a need for technically accomplished HCI specialists
 - E.g., Human-AI interaction
- Builds on CMU strengths



More Information

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Questions?

