

## The Undergraduate 2<sup>nd</sup> Major and Minor in HCI

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## CMU... a Computer Science Legacy

“the study of all phenomena  
surrounding computing machines”

Alan Newell & Herb Simon  
1975 Turing Award Lecture



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## Educational programs in HCI for undergraduates

### HCI 2<sup>nd</sup> major

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

### HCI Minor

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



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## The Philosophy of the HCI undergraduate programs

Take excellent students with depth in one discipline relevant to HCI and give them the educational opportunity 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



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## On the Philosophy...

- Undergrad education 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.



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## What students like about the program

- 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 foci”
  - “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”



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## Why Study HCI?

- We're surrounded by computers – therefore, good HCI is about what is happening now!
- If your business is developing interactive software, then good HCI gives you a great competitive edge
- Same for if your business depends on a great web presence
- If your business is an innovator in service design, then HCI is indispensable



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## 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



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## 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.



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## Hiring Companies Past 2 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



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## 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



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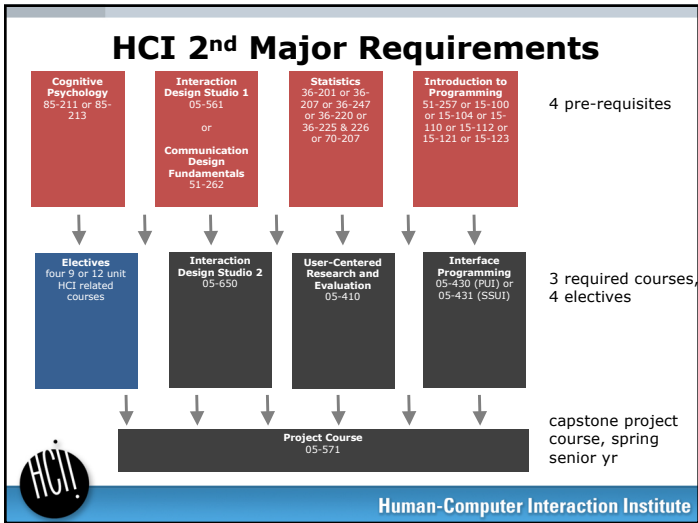
## Salaries from 2015 & 2016 Graduating Classes

- Mean salary offer: \$100,525
- Range: \$65,500-\$110,000
- Some offers had signing bonus and stock options
- N = 44 responses

Based on 14 data points



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- ### 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
- HCI**
- Human-Computer Interaction Institute



## Playbook Training for Pittsburgh Steelers

Figure 1: Multi-platform solution

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## 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.”

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## HCI Minor Requirements

1 pre-requisite

2 required courses, 4 electives

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## Relationship btw HCI Major & Minor

	BHCI Major	BHCI Minor
Admission	Application and admissions required	Application and admissions required
Prerequisite	<ul style="list-style-type: none"> <li>Freshman-level programming (51-257 or 15-110 or 15-112 or 15-121 or 15-123)</li> <li>Statistics (introductory)</li> <li>Cognitive psychology (85-211)</li> <li>Interaction Design Studio I (or Communication Design Fundamentals) (05-650 or 51-261)</li> </ul>	<ul style="list-style-type: none"> <li>Freshman-level programming (51-257 or 15-110 or 15-112 or 15-121 or 15-123 or 15-104)</li> </ul>
Core courses	<ul style="list-style-type: none"> <li>Interaction Design Studio II (ixDS) (05-651 or 51-422)</li> <li>User Centered Research &amp; Evaluation (UCRE) (05-410)</li> <li>HCI Programming (PUI/SSUI) (05-490 or 05-431)</li> <li>BHCI Project (05-571)</li> </ul>	<ul style="list-style-type: none"> <li>Interaction Design Overview (ixDO) 05-392</li> <li>Designing Human Centered Software (DHCS) 05-391</li> </ul>
Electives	4 electives	4 electives
Double counting	2 courses with primary major	2 courses with primary major

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## How can you explore whether HCI is for you?

- Enroll in one of the core courses
  - Designing Human-Centered Systems is a great intro course
- Enroll in an elective
- Pick a course you can double count
- Become involved in HCI research (internship or independent study with HCII professor)



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## Most popular electives

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



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## Application Process: HCI 2<sup>nd</sup> major

- Submit statement
  - Show writing ability & knowledge of the area
- Submit transcript
  - GPA is probably the most important factor
  - GPA ranges from 3.0 to 4.0, with 3.5 typical
- Optional: recommendation letter, portfolio
- Very small numbers of freshman accepted
- Timeline
  - March 14: Applications accepted
  - April 2, midnight: Applications due
  - April 17: Notifications of acceptance
  - April 24: Fall registration begins



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## Application Process: HCI Minor

- Submit transcript
- Optional: Portfolio
- Admissions is limited by enrollment caps on the two required courses
- Timeline
  - March 14: Applications accepted
  - April 2, midnight: Applications due
  - April 17: Notifications of acceptance
  - April 24: Fall registration begins



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## Who can apply?

- Any major can apply
- You do not need to have the pre-requisites completed before you apply
- Minimum GPA
- Typically sophomores apply
  - Small numbers of freshmen with very high GPA
  - Upperclassman if they can complete the major in time remaining



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## More Information

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## Questions?



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