

Human-Computer Interaction, Additional Major

Additional Major in Interdisciplinary HCI

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Overview

Human-Computer Interaction (HCI) is a fast growing field devoted to the design, implementation, and evaluation of interactive computer-based technology. Examples of HCI products include intelligent computer tutors, wearable computers, social networking sites, and internet-connected personal digital assistants (PDAs). Constructing an HCI product is a cyclic, iterative process that has at least three stages: Design, Implementation, and Evaluation.

The Design stage involves principles of design and human behavior, the Implementation stage principles of computer science, and the Evaluation stage empirical research methods common to several disciplines. There are thus four topical areas to cover in this major: Human Behavior, Design, Implementation, and Evaluation.

There are many courses relevant to these areas that are offered by departments in four different colleges at Carnegie Mellon (School of Computer Science, Dietrich College of Humanities and Social Sciences, College of Fine Arts, and Tepper School of Business).

About the Additional Major

The Additional Major in Interdisciplinary Human-Computer Interaction (HCI) is available to current undergraduate students from any CMU college. Students maintain their primary major, and by adding an additional major in HCI, can explore multiple areas of study during their time at CMU. Applications to the additional major are processed once a year, in the spring (see below).

Curriculum

The following requirements are for students entering Fall 2026.

The Additional Major in Interdisciplinary Human-Computer Interaction (HCI) consists of 12 prerequisite and required courses.

Prerequisite Courses (4)

These courses do not need to be taken before applying to the additional major program. However, please note the required order sequence for three courses, listed below.

- Introductory statistics course, details below
- Psychology (details below) *must be completed before enrolling in the HCI core course 05-410 User-Centered Research and Evaluation*
- A freshman-level programming course (details below) *must be completed before enrolling in the HCI core course 05-391 or 05-380 or 05-431*
- 05-360: Interaction Design Fundamentals *must be completed before enrolling in the HCI core course 05-361 Advanced Interaction Design*

Prerequisites	Units
Psychology (Select one)	
85-110 Cognitive Psychology	9
85-150 Social Psychology	9
85-213 Human Information Processing and Artificial Intelligence	9
Design	
05-360 Interaction Design Fundamentals	12
Design majors do not need to take 05-360 as a prerequisite, since they learn similar material in other courses for their major.	
Statistics (Select one)	
36-200 Reasoning with Data	9
36-220 Engineering Statistics and Quality Control	9
36-225 Introduction to Probability Theory & 36-226 and Introduction to Statistical Inference	18
36-226 Introduction to Statistical Inference	9

70-207	Probability and Statistics for Business Applications	9
Introduction to Programming (Select one)		
15-104	Introduction to Computing for Creative Practice	10
15-110	Principles of Computing	10
15-112	Fundamentals of Programming and Computer Science	12
15-121	Introduction to Data Structures	10
02-120	Programming for Scientists	12

HCI Core Courses (4)

The HCI core courses include the following required courses: (prerequisite courses and the electives are not core courses.)

- 05-410: User-Centered Research & Evaluation (UCRE)
- An Advanced Design course (see details below)
- 05-391: Designing Human-Centered Software or 05-380: Prototyping Algorithmic Experiences (PAX) or 05-431: Software Structures for User Interfaces (SSUI)
- 05-571: Undergraduate Project in HCI (Capstone) *The Capstone course should be taken during the student's final spring semester.

Core Courses	Units
05-410 User-Centered Research and Evaluation	12
Select one (Advanced Design):	
05-361 Advanced Interaction Design	12
05-312 The AI Augmented Designer	12
05-315 Persuasive Design	12
05-317 Design of Artificial Intelligence Products	12
05-362 Transformational Game Design Studio	12
05-418 Design Educational Games	12
05-452 Service Design	12
05-470 Digital Service Innovation	12

*Some (but not all) special topics classes (05-499) might also count towards the advanced design class requirement. Please consult with an HCI undergraduate advisor.

Select one (Technical Core):	
05-380 Prototyping Algorithmic Experiences	12
05-391 Designing Human Centered Software	12
05-431 Software Structures for User Interfaces	12
Capstone	
05-571 Undergraduate Project in HCI	12

****Please note that it is highly recommended that HCI Additional Major students complete 05-410, 05-360 and the technical core course before registering for Capstone in the senior spring.**

Special Note for Design Majors

- Design majors do not need to take 05-360 Interaction Design Fundamentals as a prerequisite, since they learn similar material in other courses for their major.

Electives (4 courses)

HCI additional major students must take four HCI-related electives (9 units or more). Electives are intended to provide additional major students with advanced concepts and skills relevant to HCI or breadth of experience not available from their primary major. **Two out of the four HCI electives must be courses in HCI offered by the Human-Computer Interaction Institute, meaning they have an 05 prefix number.**

Students can take electives in the HCII or courses relevant to HCI from many other departments on campus. All external electives are approved on a case-by-case basis.

All 05-xxx courses are pre-approved as HCI electives; however, core courses cannot double count as electives. See the HCII website for a list of current pre-approved electives: <https://www.hcii.cmu.edu/academics/hci-undergrad/electives>

Double Counting

Students may double count up to two (2) of the required core and elective courses (prerequisite courses do not apply to the double-counting rule) with their primary major.

Accelerated Master's Program (AMHCI)

The HCII currently offers a three semester (12-month), 15 course Masters in HCI. Undergraduates currently enrolled in the HCI major may apply for the Accelerated Masters program in the fall semester of their senior year. If admitted, students finish the masters degree the following fall semester. For more information, see the HCII website: <https://www.hcii.cmu.edu/academics/accelerated-masters>

Admission to the Additional Major

Because space is limited in the major's required courses, enrollment in the HCI additional major is currently limited. The admissions period occurs in spring semesters. For more details, see the website at <https://www.hcii.cmu.edu/academics/hci-undergrad/additional-major-hci/admissions> (<https://www.hcii.cmu.edu/academics/hci-undergrad/additional-major-hci/admissions>).