

Syllabus

(Version Feb 1, 2011)

HCI 574X - Computational Implementation & Prototyping in HCI (Spring 2011)

- **Instructor:** Chris Harding (email: charding@iastate.edu, please put HCI 574 in the header)
- **Credits:** 3 (mixture of lecture and practical exercises)
- **Reference number** for HCI 574X section A (on-campus section): 9226005
- **Reference number** for HCI 574X section XE (off-campus section): 9226600.
- **Prerequisites:** **not** a comp. sci., comp. eng. or similar "tech" major; new to software programming
- **Time:** MWF 2:10-3:00 in 1344 Howe - on-campus students bring a laptop!
- **Teaching Assistant:** Ritika (ritika@iastate.edu)
- **Web:** WebCT, additional info on course blog: <http://hci574.blogspot.com/>
- **Schedule:** <http://goo.gl/4TWp> or <https://spreadsheets.google.com/pub?key=0AmRCGxwefuugdGhmZYA2Ny1PRTVSTmUVZ0c2Y0hVb0F&hl=en&single=true&gid=0&output=html>
- **Lecture notes and code:** <http://goo.gl/cObhh> or http://www.vrac.iastate.edu/~charding/HCI574_lecture_notes/
- **Office Hours:** virtual office hour (time TBA) via Adobe Connect

This course teaches fundamental concepts of software programming and the practical use of the Python programming language to support computational thinking and rapid system prototyping in the context of human computer interaction (HCI).

The course is meant to teach non-technical HCI students (background in psychology, business, design, sociology, education, journalism, etc.) to "think like programmers" and to develop solutions of problems common in HCI. Python is a good starter language; its high-level concepts support the rapid implementation of computational HCI tools, such as user interface design, and information visualization.

This instructor-lead "first programming course" teaches fundamental programming concepts and practical skills. The lectures will feature practical examples and exercises, students will develop and run software during class running Python on a personal laptop (Windows, Mac, Linux). The course will include homework assignments, midterm exam and a class project.

HCI 574 counts as an "Implementation" core HCI course.

Course content/major topics to be addressed:

- Creating, editing and running Python programs on different operating systems.
- Using the python shell and integrated development environments.
- Python basics: Statements, syntax, expressions, control structures, classes, functions, modules, numbers, strings, lists, dictionaries.
- File I/O operations.
- Exception handling.
- Debugging, documentation, software engineering basics.
- Data mining & internet scripting.
- Design of graphical user interfaces (GUIs)
- Data conversion and exchange
- Information visualization
- 2D graphics and image processing

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Textbook:

Learning Python, Mark Lutz, O'Reilly Media, paperback

preferred: Third Edition (for Python 2.5), Oct. 2007, 746 pages, ISBN 9780596513986)

(also OK: Fourth Edition (for python 2.6/3.0), Sept. 2009, 1216. pages, ISBN:978-0-596-15806-4

see my blog entry [Python books \(course textbook and supplemental material\)](#) for more

Grading:

Home work assignments (60%) :

10 homework assignments, time: 1 week, hand in via WebCT

good documentation counts (explain what you did and why)

Midterm (30%): take-home assignment (5 days), covers all topics up to this point

Participation (10%)

asking/answering questions in class

feedback (via WebCT) after each class: good/bad, take-home message, confusing?

Optional Class project (extra credit):

find a topic: Browse the python package index , flag interesting packages

think about glueing together 1-2 packages (input-processing-output-visualization)

Example: Take GPS points text file, process, plot path/speed/etc. in pyplot, export as KML file for Google Earth, wrap a UI around it

get familiar with the packages (run a simple example to make sure it works)

write a paragraph describing the project idea (mini project proposal) + links

Form groups of 2-3 students per project (can be a mix of on/off campus students),

Put the pieces together, document (how-to, screenshots), wikki, create download package, test it, show test results

Legal Stuff

Non-Discrimination Policy: Iowa State University is “dedicated to fostering an environment in which differences in people such as nationality, race, gender, religion, cultural background, physical ability, and sexual orientation, are respected and mutual understanding is promoted.” (from the ISU Bulletin)

Disability Accommodation: Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Disability Resources Office at 515-294-6624 in room 1070 Student Services Building to coordinate reasonable accommodations for students with documented disabilities.

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Academic Dishonesty: I expect students to follow the ISU rules regarding Academic Dishonesty (see www.iastate.edu/~catalog/2007-2009/geninfo/dishonesty.html)

Class schedule: <https://spreadsheets.google.com/pub?key=0AmRCGxewfuugdGhmZXA2Ny1PRTVSTmVVZ0c2X0hVb0E&hl=en&single=true&gid=0&output=html>