**CP255 – Urban Informatics and Visualization**

Fall 2014

Tue/Thu 11:00-12:30 in 214 Wurster Hall

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**Course overview:**

This is a hands-on course that trains students to analyze urban data, develop indicators, and create visualizations and maps using the Python programming language, open source tools, and public data. The course will first introduce the fundamentals of programming in Python before moving on to a survey of data analysis/visualization tools and technologies. Classroom sessions will include lectures and workshops. A series of assignments will reinforce the skills and topics being presented.

This course is designed to provide future city planners with a toolkit of technical skills for quantitative problem solving. It requires some tolerance for experimentation, self-directed trial and error, and an interest in learning to write code. If you are willing to roll up your sleeves and embrace some uncertainty, you will learn the fundamentals of urban spatial analysis and visualization, and might discover an entirely new lens through which to study, plan, and design neighborhoods, cities, and regions.

**Topics to be covered include:**

* Fundamentals of programming with Python and IPython notebooks
* Cleaning, manipulating, and analyzing urban data with Python’s pandas library
* Visualizing data in Python with charts, graphs, and tables
* Accessing public data from the web with scraping and APIs (including Twitter, Google, and census data)
* Analyzing location accessibility and building simple regression models
* Developing spatial indicators and mapping urban data with open source GIS tools, d3, Mapbox, and TileMill

**Pre-requisites:**

Some prior coursework (such as CP 204c) or basic experience using a GIS is required. Students are not required to have prior programming experience, although it will be beneficial. Python is an accessible language and the course will emphasize learning by doing. Prior or concurrent course work in statistics and data analysis (e.g. CP 204A or 204D) is encouraged as this course will not provide the theoretical foundations of statistical analysis.

This course is open to students from across campus, but priority enrollment will be given to students in the Master of City Planning program.