



A4841 Algorithms & Urbanisms

Slender Tower Sites (In-Development)

- 1 250 South Street
- 2 50 West Street
- 3 115 Nassau Street
- 4 161 Maiden Lane
- 5 80 South Street
- 6 626 First Avenue
- 7 One Madison Avenue
- 8 516-520 Fifth Avenue

Slender Towers (In-Progress)

Instructor: Luc Wilson - ui.kpf.com
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This course will mix students from Architecture, Real Estate Development, Urban Design, and Urban Planning to explore data visualization and algorithmic methods as a medium for urbanistic communication, analysis and speculations. Students will bring their current educational material into the folds of other departments, and in working together interrogate their own industry's canon with respect to urban data analysis. Through data exploration, visualization and spatial analysis students will develop projects to investigate new methods of design and development in New York City.

Projects will be proposals to intervene in the process of city building, with students integrated creating planning, financial and design models informed by data and vetted through testing and their own expertise. For example, what if every park had to pay for itself through the property tax from adjacent buildings? What densities does that require? What are the qualitative aspects of this development, both to maximize economic and social value cre-

ation, while mitigating potential negative externalities of dense development? How would you create the regulations that shape the new development? Were those assumptions responsible? What is an extreme outcome? How would the city change?

This course will introduce students to a range of data analysis, exploration and visualization techniques. Workflows and techniques introduced will be packed so that they are easy to learn and deploy regardless of students' individual technical backgrounds. Students will work in teams, each with a planner, design and developer. Together we will explore and develop technical methods of collaboration using data as a common language. Invited guests will come throughout the semesters to present on a range of urban data centric topics and providing feedback on student projects. Confirmed speakers: Department of City Planning (DCP,) We-Work, the New York Times, the Economic Development Corporation of New York (EDC,) and the Real Estate Board of New York (REBNY.)

Teams will work with course instructor to establish projects based on prompts from the diverse range of guest speakers, develop workflows to exchange data, and test proposals. In developing the workflows, data analysis and visualization we will work with and test a number of techniques and softwares, linking techniques the students are currently fluent in to new ones as needed for their projects.

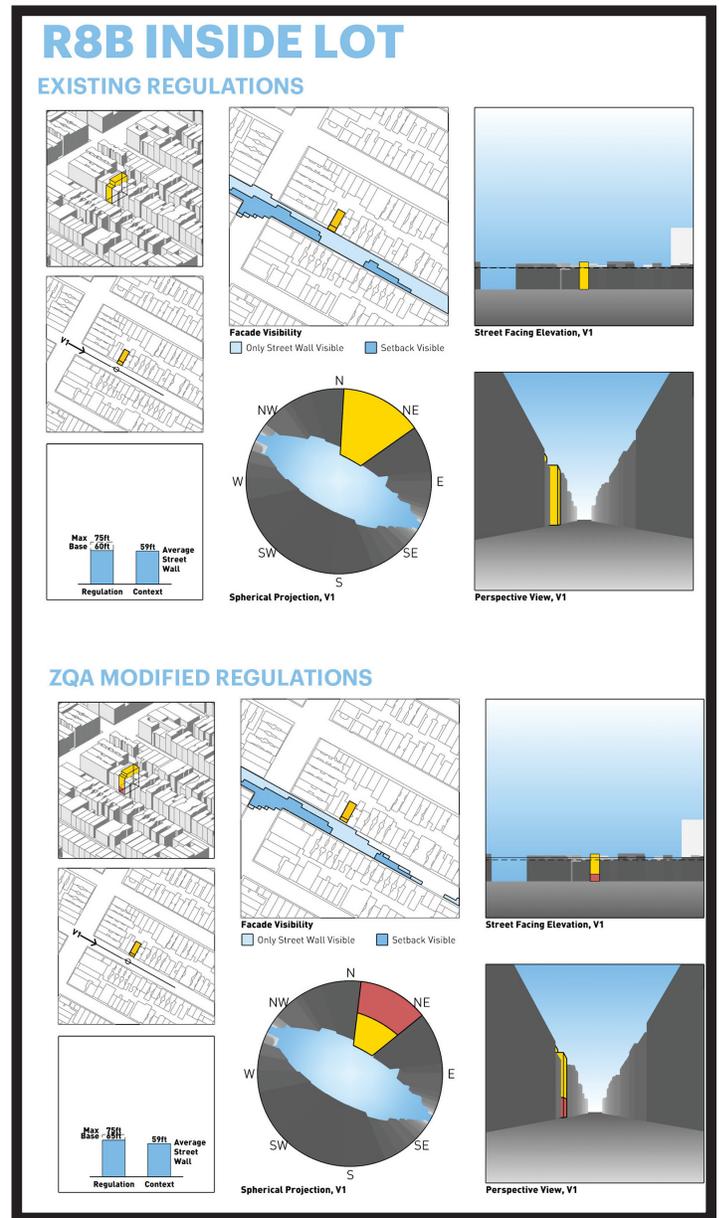
This course will introduce a workflow that links spatial and urban analysis models to financial models via google sheets which will stream to online data visualization and mapping tools for real time display of analysis results. Roles and expectations will be established based on students program and skill set, however, roles can shift based on individual interests and projects. Initial roles: planners - urban data analysis, designers - spatial analysis, developers - financial modelling.

Course Goals

- Literacy with Urban Data
- Techniques for Exploration and Visualization
- Constructing Data Driven Narratives
- Collaborative data models for Policy, Planning, Finance and Design
- Understanding the relationship between NYC zoning, development and the built environment.

Technical Workflow

- Data collection, Studying MetaData
- Cleaning , Pairing, and Data Field Calculation
- Data Exploration
- Create new data set(s) based on data exploration and project goals
- Explore new data set to establish project, Visualize Data to guide narrative. (Statistical Historiography.)
- Develop and Vet Impact Models (Making the Rules)
- Linking financial models to spatial models
- Test spatial impact of scenarios in Urbane. (Following the Rules)



Techniques

- Data collection, cleaning and merging: python, grasshopper, ArcGIS and excel.
- API querying: Google Places, Twitter and Flickr
- Spatial Analysis: ArcGIS, Rhino/Grasshopper
- Visualization: ArcGIS, Rhino/Grasshopper, and Tableau.

Course Structure

The first half of the course will focus on learning new techniques and using urban data sets for spatial analysis, data exploration & visualization, and initial spatialization of the proposal. Students will work with a NYC Sales Data and PLUTO data set that has been joined and processed. In addition each team will select at least one additional data set (either open or generated spatially) to include as part of their project. The additional data set should flesh out the potential correlation between qualitative aspects of urban form and real estate value. Potential data sets include open data sets such as noise or taxi data, but also data sets that have been curated by the instructors, such as 8 million geo-located tweets and streeteasy data.

Next, the initial data merging and analysis will be used for speculative scenario testing. Projects can range for planning to design to policy, but all must propose and test changes within the framework of the initial analysis. This will include identifying sites for application, testing the impact of new development, and establishing performance based rules for new development. Students will develop real proposals for how the city might approach new development in the future from cost and value creation, to infrastructure, to zoning and land use policy, to massing and urban form.



Partial List of Data Sources

Open Data Sets

- PLUTO Data
- Department of Finance Sales Price Data
- Uber Data
- 311 Complaint Data - Has 2010 to present as well as data for 2004 - 2009.
- Building Energy Data - From 2011 - 2015
- Subway Station Locations
- Subway Entrance Locations
- Building Permit Filing - Current and historic data
- Restaurant Inspection Results.
- DOB Job Application Filings
- DOB Permits Issued
- DOB Stall Construction Sites
- Citi Bike Data - Based on trips taken
- MTA Bus Stop Locations
- Perceived safety
- DOF Tax Document Info, including rent stabilized Apartments
- AirBnB Data
- Liquor Licenses
- Weather Data by Zip Code
- Inclusionary Housing Zones (shapefile)
- Housing Development and Preservation (HPD) data on affordable units
- Rent Stabilized Apartments

Custom Data Sets

- 2015 Combined Department of Finance Sales Data + Pluto Data
- All Streeteasy Data up to Fall 2016
- NYC Twitter Data - 2015
- NYC Google Places Data - 2018

