

Course Syllabus

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This course will mix students from Real Estate Development, Architecture, Urban Design, and Urban Planning to explore data visualization and algorithmic methods as a medium for urbanistic communication. Students will bring their current educational material into the folds of other departments, and in working together interrogate their own industry's canon. Projects will link financial models with visualization and spatial analysis 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 real estate 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 creation, 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?

Teams will work with course instructors to establish projects, develop workflows to exchange data, and test proposals. Teaching assistants from the Data Science Institute will facilitate access and workability with large data sets. In developing the workflows, data analysis and visualization we will work with and test a number of techniques and softwares. This will include but is not limited to:

- [Urbane \(Links to an external site.\)](#), a 3D software platform being developed by [KPFui \(Links to an external site.\)](#) and NYU's [Visualization and Data Analytics Laboratory \(Links to an external site.\)](#) designed to integrate spatial and/or temporal data sets for analysis and visualization, spatial analysis (daylight & views,) and the ability to import new buildings to analyze impact.
- [Watson Analytics \(Links to an external site.\)](#), a web service for data exploration and analysis.
- Workflows between Excel and Rhino/Grasshopper for real estate and design analysis.
- ArcGIS techniques for matching and filtering spatial data to create new data sets.
- [Design Explorer \(Links to an external site.\)](#), a web app for exploring large design spaces

Session A will focus on using urban data sets to establish the financial model, develop the workflow between financial model and spatial analysis, data exploration & visualization, and initial spatialization of the proposal. Students will work with a NYC Sales Data and PLUTO data set from 2002 - 2016 that has been joined and processed. In addition each team will select at least one additional data set 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.

Session B will take the work developed in the previous session, apply it to investigate the prompt established in session A and to analyze the results. 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.