

A4815 - X-Information Modeling 1

A4829 - X-Information Modeling 2

Instructors: Luc Wilson & Jason Danforth
Thursday | 9-11am | Room Avery 115

Data is the language of cities. It is used to communicate and make decisions. This data is inherently spatial. As designers and planners we are uniquely suited to generate and use spatial data in the design of better buildings, public spaces, and cities. This course will introduce students to a unique data-driven, design analysis workflow: parametric massing design -> custom tool building -> iteration -> evaluation. This course will primarily use Grasshopper for Rhino with a range of plug-ins for grasshopper.

The course will be structured in four parts:

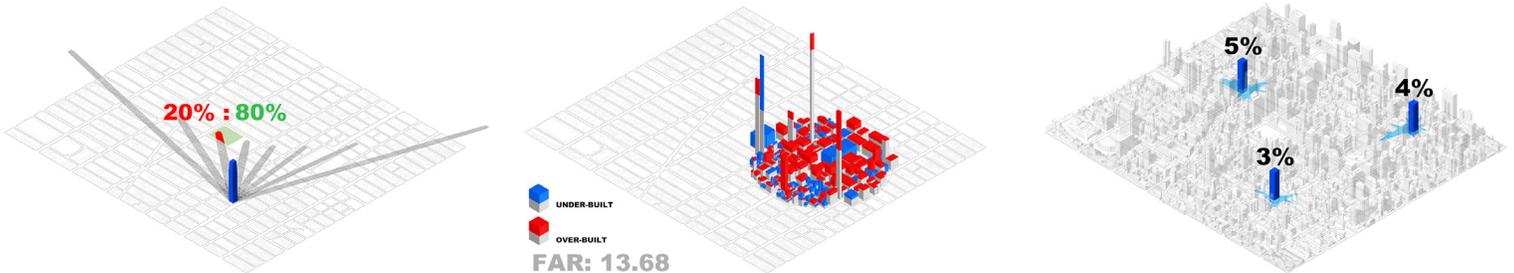
Session A: 1) Learn the workflow, 2) Develop new analysis tools,

Session B: 3) Integrate and work with urban data, and 4) Develop your own project.

The techniques and workflows introduced in this course are applicable at a variety of scales; at its core this class is about creating tools to measure performance, drawing with data, and visualization for decision making. The final project can focus on any aspect covered in the class, at either the building or urban scale: from designing new spatial metrics, to data visualization, to developing performative zoning/policy, to deploying data-driven building types across the city.

Students must know some Rhino. Grasshopper proficiency is not required, but a basic understanding will help. Session A is required for Session B unless you are a grasshopper wizard. The course is open to Architecture, Urban Planning, Urban Design, and Real Estate students, and counts towards the Urban Analytics concentration within the U.P. degree. Working in teams may be required depending on the size of enrollment..

Grading for each session will be 30% attendance, 30% weekly assignments, and 40% for the final project.



Session A

Massing, Tool Building, and Iteration

In session A students will focus on learning the fundamentals of the integrated XIM methodology. This will include building parametric massing tools, custom analysis tools, iterating hundreds to thousands of options, and ultimately, using data for design decision making.

Session A schedule

Week 1: Introduction to spatial evaluation techniques

Week 2: Basic parametric massing (building and neighborhood scale.)

Week 3: Introduction to iteration, data collection, and evaluation

Saturday Help Session

Week 4: Review assignment 1a

Week 5: Data visualization and metric dashboards

Week 6: Data exploration tools

Week 7: Review assignment 1b



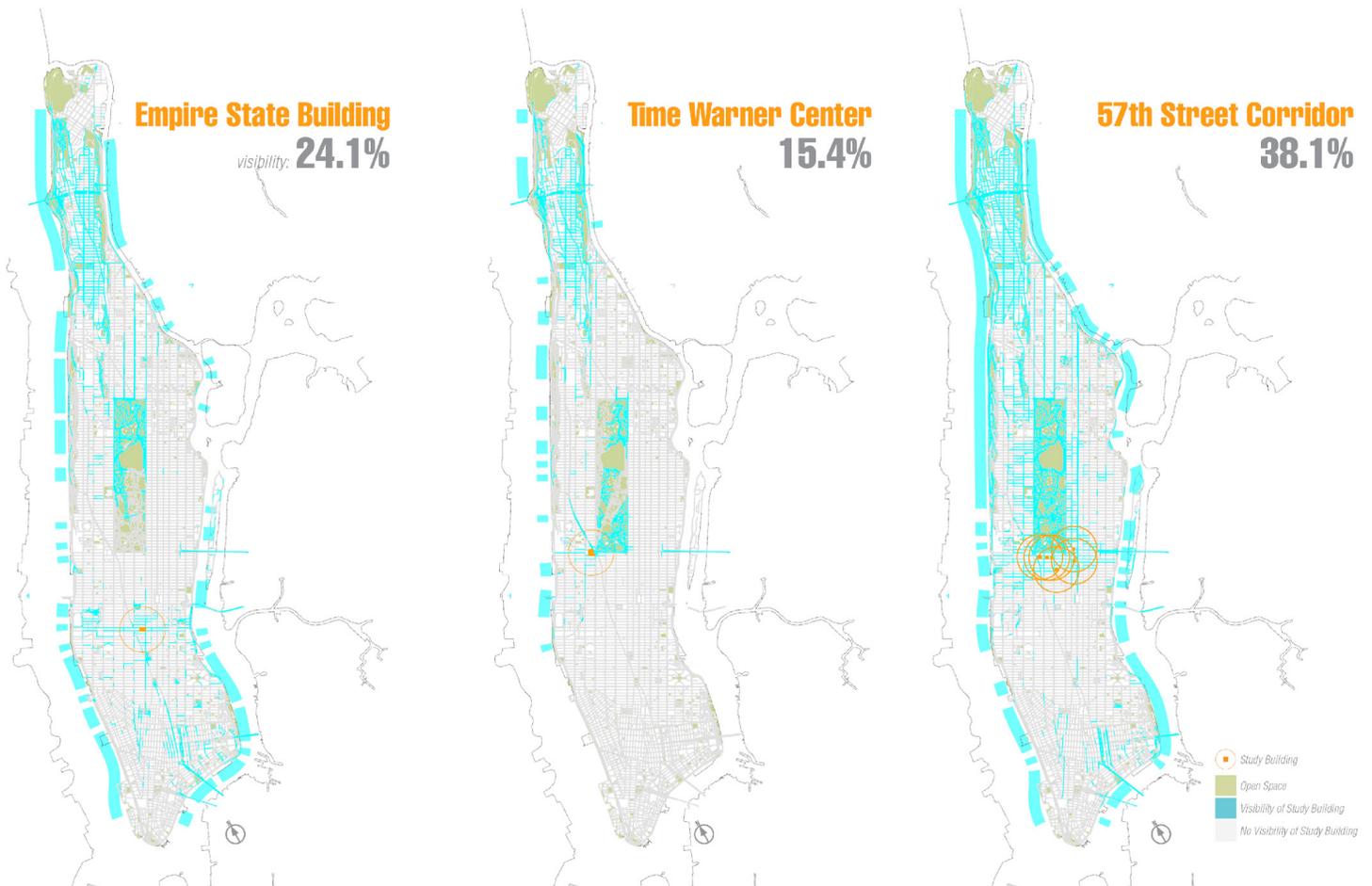
Session B

Urban Data & Final Project

The first half of session B will advance the topics of session A (evaluative metrics, parametric massing and iteration) and introduce grasshopper techniques for managing large urban data sets such as GIS, PLUTO, 311, Twitter, and NYC Open Data. From there, students will develop a final project out of any aspect covered in the course.

Session B Schedule:

- Week 1: Pairing external geo-located data sets with evaluation tools
- Week 2: Urban filtering, evaluation and urban parametric massing
- Saturday Help Session - November 5th
- Week 3: Review assignment 2 and final project proposal
- Week 4: Advanced visualization techniques
- Thanksgiving
- Week 5: Custom workflows
- Week 6: Individual project desk crits - coordinated around final reviews
- Week 7: Final Review



Final Project

In this class, you will be exposed to an arsenal of information modeling strategies, logics, and techniques. Any combination of these tools can be applied to architectural and urban challenges across a range of scales. For the final assignment, you will propose and carry out your own implementation of information modeling as presented in this class. Below are example techniques and project types reference as the framework for formulating your own design challenge. All projects are required to have a thesis or be guided by a clear scenario that reflects the assumptions about metrics and data that are ultimately used. Your project will be the culmination of the judgements you make.

Techniques and Concepts

Project Types

