

Cornell University

Course Syllabus

Urban Design Studio CRP555/LA701

Designing Cities in the Electronic Age

Professor Roger Trancik

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M W - GEDDeS Lab - 1:25-4:25

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This graduate-level collaborative studio is being offered by the City and Regional Planning and Landscape Architecture departments to introduce students to urban spatial systems, their physical planning and design, and techniques for urban design graphics and visual representation. The 5-credit studio course is about urbanism and the design of public spaces and buildings in the context of a city's changing landscape. The particular emphasis is on digital techniques for urban design and the use of computer technology in a virtual space environment.

Coursework over the semester is comprised of three components. The first is a series of exercises introducing digital modeling in Form-Z as a tool for urban design. This is followed by a research study using the Layers of Rome educational software and associated readings for learning about concepts and theories of urbanism. The Rome assignment involves urban form analysis, computer design graphics, and preparation of a digital poster presentation. This module intends to introduce a basic foundation in urban design.

During the second half of the semester, a large-scale waterfront urban design project in New York City will be developed for a public-sector client using Form-Z, Adobe Photoshop, and other presentation software.

About Urban Design

Urban design is the art of giving form to the public realm - the shaping of streets, squares, blocks, and parks and their human use. Urbanism is an essential attitude in urban design favoring the spatially connected public environment over the disposition of private objects on the landscape. This approach combines the 3-dimensional aspects of site-specific projects with land-use mapping and programming at a district or neighborhood scale. The urban designer establishes long-range design controls and spatial intentions that enable coordinated private development actions to take place.

Urban design requires the facility to creatively shape both the object and the void around it. The city is made of a fabric of solids and voids often represented as figure-ground. Modern developments in cities place far greater emphasis on the freestanding object as figure, instead of making a commitment to figure-ground relationships. Consequently, the modern city has physically evolved into a landscape of private, often disconnected buildings-in-the-round, a testimony to builders who worship the object. In this process, traditional public space is either privatized or ignored and buildings float in an unformed landscape. The landscape itself becomes lost space.

Spatial interventions through urban design try to reverse this by making figural space – in other words giving more importance to the collective public realm than the private object. Attention is paid to the larger spatial framework into which the individual parts fit. Establishing this framework is a necessary step toward developing a public-space plan consisting of policies and guidelines for how the streets, squares and parklands of an urban area are designed, and how individual blocks are privately developed. Within these objectives, the studio will formulate solutions to current design problems concerning livability in public spaces, development efficiency, urban quality and sustainability.

Digital Tools for Urban Design, Form-Z: Weeks 1-4

Form-Z is an all-purpose, three-dimensional solid/surface modeling program developed for the Windows and Macintosh platforms which puts the urban designer electronically into a virtual space environment, a "3D World Grid". The digital design interface of Form-Z is sophisticated (precise), graphically intuitive and relatively easy to learn. It draws digitally the way we draw by hand. Form-Z's strong geometrical interface provides students with an opportunity to explore three-dimensional urban design projects on the computer interactively with traditional, hand-drawn design methods.

In this 4-week module, 3D digital exercises help students develop urban design and computer skills in assembling form, manipulating space in the grid, modeling solid-void strategies, creating floor area ratio designs, and modeling terrain. 3D models developed in this studio class are rendered in Form-Z's RadioZity rendering engine and exported to other digital applications (i.e. Adobe Photoshop, Adobe Premiere, 3D Studio) for special-effects scene creation, image capturing and animation.

Theories of Urbanism, Rome Project: Weeks 5-7

The second part of the studio will engage students in research and design studies centering on the physical and social elements of the city and concepts/theories of urbanism. During this period the CD *Layers of Rome* will be used to explore the use of historic and modern space as well as concepts of urban field and linkage. *Layers of Rome* will parallel readings from various sources on urban design theory (more to follow).

Digital Rome provides a method for looking at how cities can connect to their history and culture. Layers of spatial information can be experienced in Rome and understood within the context of the modern city. The design and operational characteristics of the street, urban block, and morphology of spaces will be studied. Issues of block size, open space frontage, configuration of primary and secondary spatial structures and patterns that articulate districts are investigated. Controlling "edge conditions" is critical in the formation of urban space as well as developing an understanding of how different types of urban spaces engender certain uses. Problems of 3D massing, questions of scale and building composition are addressed. Rome is an unprecedented case study of the urban condition as palimpsest, where distinctly different periods of historic urbanism are

grafted onto one another. The ways in which design principles of Rome can be intelligently applied to modern cities will be explored. The Rome studies culminate in a design analysis presentation.

These first two course modules provide some of the basic foundations of urban design including spatial planning, urban analysis, theory, digital graphics and computer modeling.

Final Project: The Last 8 Weeks

The second half of the course will involve a computer-generated urban design project for the redevelopment of abandoned industrial sites in neighborhoods along the East River in New York City. Located in Brooklyn and Queens, the neighborhoods have a working-class heritage and are rapidly gentrifying. The sites for redevelopment have dramatic views of the midtown Manhattan skyline and are prime real estate investment opportunities. NYC's department of planning and waterfront development will be our client as part of this studio's ongoing outreach efforts on the East River.

The objective of the final project is to apply the Form-Z modeling technology to a real-world condition and to develop an understanding of the process of putting together the various parts of an urban design plan. Work will include problem analysis, site conditions documentation, conceptual idea formulation, development of a program of uses, spatial design diagrams and synthesis of an urban design proposal on the computer. The work will be presented digitally at the end of the semester. Details about the final project will follow.

Grading

Grades for this studio will be compiled from assessments of work based on the following weighted distribution:

<u>Part I Urban Design Exercises</u>	
Learning Form-Z	25%
Rome Assignment	20%
<u>Part II Final Project</u>	
Analysis Assignment	20%
Design Development & Final Presentation	35%

Primary References: Purchase optional (available at Cornell Campus Store)

- Finding Lost Space: Theories of Urban Design, New York: Wiley and Sons Inc.
- Layers of Rome, CD-ROM, New York: Live & Learn Inc.

General Reference Material: Fine Arts Library Reserve

- Cornell Journal of Architecture, Urban Design Vol. 2.
- Spiro Kostof, The City Shaped, London.
- Raymond Gastil, Beyond the Edge. Princeton Architecture Press.
- Colin Rowe and Fred Koetter, Collage City, Cambridge Mass.: MIT Press.
- Peter Katz, The New Urbanism.
- Christopher Alexander, A New Theory of Urban Design, New York: Oxford Press.
- David Gissen. Big and Green. Princeton Architecture Press.
- Allan Jacobs, Great Streets. Cambridge Mass: MIT Press
- Leonardo Benevolo, History of the City. Cambridge Mass: MIT Press
- Kevin Lynch, Image of the City. Cambridge Mass: MIT Press
- Roger Trancik, Finding Lost Space. New York: Wiley and Sons Inc.
- Jan Gehl & Lars Gemzoe, New City Spaces. Copenhagen: Danish Arch. Press

Waterfront Design Reference Material for Final Project - Forthcoming

There will be no lab fee this semester but each student will be charged \$15.00 for purchase of the Form-Z tutorial book used in the class. This must be paid by check made out to Cornell University and is due no later than Monday, September 3.