Green Design and Planning

In recent decades, architects and planners have faced a new set of challenges. The world population has tripled in less than a century. Demand for food, water, housing, energy, products, and services has grown at an even faster pace. In response to these issues, the design professions have created new concepts for green architecture, sustainable cites, alternative infrastructure and products. They've also introduced new laws and environmental standards.

This course presents green design and planning concepts through readings, discussions, lectures, films, and projects. Students write a short paper and create three design projects. The papers examine issues such as energy, transportation, recycling, planning, and design. The projects include design of a recycled product, planning of a roof terrace or small green building, and analysis of an urban park or neighborhood. The projects are developed through maps, photographs, computer diagrams, and architectural drawings.

Major Projects

Product Design: Recycling/Reuse of an Existing Product

Create a concept for reusing a discarded object as a new product. Develop research on the specific trash problem of the original product and potential new use of the material. Also, create a plan, elevation, and a model or a three dimensional sketch.

Architectural Design: Roof Terrace Project

Create a concept for a roof terrace on a NYU building, overlooking Washington Square. Develop a program for its use, a floor plan, and a parti or design concept. Also, choose materials and develop diagrams and text, describing your concept.

Urban Planning: Analysis of an Urban Park; Critique of Problems and Proposal for Improvements

Create a masterplan of the park. Based on class discussions, develop maps, diagrams, photographs, and text to portray an analysis and critique of the functions, landscape, art, structures, and general condition of the park. Identify park problems and suggest solutions to these issues. Create an idea or a small building as a park improvement; develop drawings, text, and appropriate information on your concept for the park.

Minor Projects may also be introduced on topics such as Spatial Organization, Green Design, Pollution, and other related subjects.

Required Reading:

McDonough, William, and Braungart, Michael, Cradle to Cradle, pages 3-186
Goodman, Donna, A History of the Future, pages 229-268
**Recommended Reading:**
Dean, Angela M., *Green by Design*
Girardet, Herbert, *Cities, People, Planet*
Gissen, David, ed., *Big and Green*
Herzog, Thomas, ed., *Solar Energy in Architecture and Urban Planning*
Kunstler, James Howard, *Geography of Nowhere*
Mau, Bruce, *Massive Change*
Powell, Kenneth, *City Transformed*
Siegal, Jennifer, *Mobile Architecture*
Slessor, Catherine, *Eco-Tech*
Wines, James, *Green Architecture*

**Course Objectives:** This course will introduce the following experiences:

1. **Basic introduction:** Overview of the major issues of environment and sustainable design
2. **History and theory:** exploration of major 20th century environmental problems and solutions
3. **Vocabulary of terms and objectives:** concepts used in green design and planning
4. **Introduction to the design process:** steps leading to the creation of a design or planning project
5. **Basic computer programs:** introduction to Sketchup and its use in design and presentation
6. **Critical analysis:** critiques and development of student projects, references to historical works
7. **Visual techniques:** hand drawing, spatial planning, maps, photographs, and design techniques

**Materials:** Available at Blick Art Store, Pearl Paint, Utrecht, or most large art supply stores

- 12” roll of inexpensive white tracing paper (20 yds. or 50 yds.)
- 24” T-square, metal is better than wood or a Parallel Ruler
- House plan and Plumbing Template – Pickett 1150i or equivalent
- Inexpensive Lead or Pencil Sharpener
- Drafting Board (and board cover, if needed)
- Design and Layout Kit or the following tools:
  - Lead holder and 2 Leads (H or 2H) or Pencils with H or 2H leads
  - Pencil Eraser and Ink Eraser
  - 12” Architectural Scale (triangular) or a Ruler (in inches)
  - 2 Triangles (30, 60, 90 degrees and 45 degrees)

**Optional Ink Drawing Materials:** 11” x 17” mylar sheets, about 6 sheets (cut from larger sheets)
- Inexpensive technical pens, #0, #000, could also use a #1 or #2

**Optional Materials:** drafting brush, adjustable triangle, additional templates, erasing shield

**Criteria for Grading:** The projects will comprise about 85% of the grade. The project grades will be based on the quality of environmental solutions, research, depth of analysis of environmental issues, concepts, design development, and quality of visual and verbal presentations. The remaining 15% will be determined by class participation in discussions of texts and projects, short assignments, and individual improvement throughout the semester.
Academic Integrity

"As a Gallatin student you belong to an interdisciplinary community of artists and scholars who value honest and open intellectual inquiry. This relationship depends on mutual respect, responsibility, and integrity. Failure to uphold these values will be subject to severe sanction, which may include dismissal from the University. Examples of behaviors that compromise the academic integrity of the Gallatin School include plagiarism, illicit collaboration, doubling or recycling coursework, and cheating. Please consult the Gallatin Bulletin or Gallatin website (http://gallatin.nyu.edu/academics/policies/integrity.html )"

Policies on Plagiarism

Plagiarism is grounds for failure. Students are expected to be familiar with the School’s policy found at: https://cmsauthor.nyu.edu/cf#/gallatin/en/gateways/facultystaff/plagiarism.html.

Policies on Attendance, Late Projects, and Incompletes

Students are expected to arrive at class on time with complete assignments and are responsible for material covered during class, whether they are present or not. Excessive absences will affect not only class work, but also the final grade. Incompletes are possible in exceptional situations due to health, but must be arranged at least a week before the end of the semester. Late projects will be accepted for a week after the assignment is due with a slight reduction in the grade.

Schedule

   a. 21st Century Legacy: Overpopulation, Urban Expansion, Increased Demand for Products, Resources
   Reuse of Products & Materials
   b. Film: sequence from New York: A Documentary Film on the design of the New York City grid plan,
   sequence from the film, Objectified
   c. Reading: Develop Research on a recycled/reclaimed/reused Product Concept
   d. Assignment: Create a concept for reusing a discarded object as a new product. Develop research
   on the trash problem and potential new use of the material. Be prepared to discuss
   idea in class. If possible, draw a rough plan, elevation, and/or 3D sketch.

   a. New Industrial Systems, Cradle to Cradle Design, Local vs. Global Market Systems, Eco-Products,
   Technological Alternatives, Sustainable Design and Manufacturing
   b. Film: Sequences from the films, Koyaanisqatsi and/or The Next Industrial Revolution
   c. Reading: Goodman, pp. 7-13, 22-33, 38-50
   d. Presentation: Each student will present an informal discussion of project concept.
   e. Assignment: Complete “This is not a Pipe” exercise. Revise the design, based on critique. Illustrate
   an application. Prepare for final presentation next week. It should include 2-3 pages,
   11” x17,” with a plan, elevation, sketches, product research, and text on the design.
3. February 8: Impact of the 19th Century Industrial Revolution and Early 20th Century Proposals

a. Industrial Revolution: Railroads, Factory Conditions, Slum Housing, Pollution, Immigration, Growth of Cities, Building Codes, Parks; Howard, Garnier, Wright
b. Film: River of Steel
c. Reading: Goodman, pp. 91-94, 99-109, 119-149 electrification, industrial design, New Deal, war era
d. Presentation: Present concept for “This is not a Pipe.”
e. Assignment: Introduction to the Roof Terrace Project; create a concept for a roof terrace on an NYU building overlooking Washington Square. Develop a program for its use, create a floor plan or a model, using a parti or design concept. Be prepared to discuss your concept.

4. February 15: Mass Production and Urbanism, Impact of Automobiles on Cities and Systems

a. War and Postwar Eras, Housing Shortage, Technologies, Mass Production, Automobiles, Levittown
b. Film: sequences from New York: A Documentary Film on Robert Moses
c. Presentation: Guest Speaker on Sketchup; Informal discussion of concepts for the roof terrace.
d. Reading: Goodman, pp. 161-174, 177-182, 189-191, 195-198, 201-207, 222-226 on mid-century modernism, the space age, post-modernism
e. Assignment: Develop plan and elevation. Research and choose green furniture, lighting, materials, and landscaping. Create a page on materials, furniture, and green elements of design.

5. February 22: From the Space Age to Postmodernism: Issues Leading to New Environmental Era

a. Historical Development: Hi-Tech Design, ‘50’s Futurism, Failures of Modernism, Megastructure, Postmodernism, Pop Architecture, Limits to Growth, Theme Parks, Urban Decay and Renewal
b. Film: Koyaanisqaatsi and/or Portland: A Sense of Place
c. Reading: Goodman, pp. 229-268 on the evolution of green design principles
d. Assignment: Develop the plan, elevation, axonometric and/or perspective. Create diagrams on function and spatial organization. Either work by hand or use Sketch-up program. Download the Sketch-up program and experiment with the program and first tutorial.


a. Use of Local Materials, Role of Color in Design, Integrating Plants, Furniture, and Design Details
b. Film: work session with questions for Sketchup instructor
c. Presentation: 3-D Images, Sketch-up Program, Axonometric and Perspective by hand or computer
d. Reading: McDonough and Braungart, pp. 3-44
e. Assignment: Prepare final presentation for next week. Choose materials, landscaping, and furniture; Write an introduction and complete pages on parti, historical reference, plan, elevation, axonometric and/or perspective, function, spatial organization, materials and details.


a. Introduction to the Park Analysis Project
b. Film: if time permits, Greening the Federal Government
c. Reading: McDonough and Braungart, pp. 45-91
d. Student Presentations: Final Presentation of the Roof Terrace;
e. Assignment: Create a photographic essay on Washington Square Park on the following topics:
1. People and Functions: playgrounds, chess, bocci ball, picnic tables
2. Art and Structures: buildings, statues, the arch, the fountain
3. Landscape and Design Details: signs, furniture, types of trees and plants
4. Park Problems: Crime, homelessness, garbage, bad usage of park space

**Spring Break: No Class**

**8. March 22: Strategies for Park Development**

a. Park Planning Strategies, Transformation of Expanding Urban Centers to Increase Green Space; Integrating Art Centers, Galleries, and other Activities in Parks, Financial Considerations
b. Reading: McDonough and Braungart, pp. 92-141
c. Film: sequences in *New York: A Documentary Film* on Central Park and *Urbanized* on the High Line
d. Assignment: Develop a masterplan of Washington Square Park. Make copies of the masterplan. Draw diagrams of the following planning concepts. Create a key for each map.

1. Function: Create a map of major park functions, also show seating areas
2. Landscape and Circulation: Create a map of landscaped areas and paths
3. Structures and Art: Create a map indicating structures and public art
4. Park Problems: Create a map designating park problems


a. Big and Green: Designing Large Structures, Green Mechanical Systems and Furnishings, Roof Systems, Park Structures, Indoor and Outdoor Space, Urban Planning Diagrams and Maps
b. Reading: McDonough and Braungart, pp. 142-186
c. Film: *The Art and Science of Renzo Piano*
d. Assignment: Complete the park analysis. Create a rendering from a photograph for the cover page. Write an introduction to the booklet, which describes the history of the park, and a description of the park problems. Complete the analysis project.

**10. April 5: Largescale Buildings and Urban Projects, Building Skins, Green Materials**

b. Reading: Steffen, pp. 11-26, 72-119
c. Film: *The Green Apple*
d. Assignment: Create an idea for improving the park. Draw a plan; do research on the general concept and write a short statement. Also develop a site plan and sketches, if appropriate.

**11. April 12: Special Issues of China and Emerging Nations, New Towns and Megacities**

a. Urban Theories for Emerging Areas; Multiple Transportation Systems, Vitality of the Slums, Reinvigorating Depressed Urban Areas, Reducing Carbon Emissions, Zoning through Time
b. Reading: Steffen, pp. 121-189 on green systems, energy grids, and buildings
c. Film: Guest Speaker
d. Assignment: Project Development of the Park Proposal: Define the problem and the proposal; create an introduction, information on materials and details, parti and diagrams. If it’s a design concept, create a plan, elevation, site plan, and a three dimensional drawing or a model. If it’s a planning concept, create sketches and text and utilize maps, photographs, and diagrams to describe the concept.
12. April 19: Disaster Relief, Concepts for Areas Damaged by Poverty, War, Natural Disasters
   a. Refugee Housing, Mobile Design, Portable Schools and Medical Facilities, Kit-of-Parts Systems,
   b. Reading: Steffen, pp. 366-381 on individual responsibility and business practices and
      pp. 305-349 on emerging communities and disaster relief
   c. Film: Energy for a Developing World
   d. Assignment: Develop design or plan for park improvement through drawings, diagrams, and text

13. April 26: Urban Design: Applying Art and Political Activism to Transform Urban Spaces
   b. Reading: Steffen, pp. 191-251 on cities and mobility
   c. Film: China: From Red to Green Bogota
   d. Assignment: Create a final presentation. The booklet should include a cover rendering, introduction,
      photographic study, map study, critique of park problems, and park proposal.

   b. Final Presentations and Discussion of Park Projects
   c. Film: sequence from Who Killed the Electric Car?

Note: The schedule may change, depending on availability of the films and guest speakers.

PROJECTS:

THIS IS NOT A PIPE

The Dadaists, particularly Marcel Duchamp, created controversial art, by taking objects out of their usual
context and displaying them as art in an exhibition. A chair was no longer a chair, but a work of art. An
ordinary brush was no longer a brush, but a work of art.

In 1926, Rene Magritte made a painting of a pipe, but then added the words, "This is not a pipe," to the
bottom of his painting. His words raised several questions. If it’s not a pipe, what else can it be? Is it a
well-designed object appropriate for another use?

In the current context, this concept could be applied to the idea of recycling. Millions of products are
discarded each year without any consideration of their potential reuse. In this exercise, “This is not a pipe,”
serves as a basis for suggesting that most products could be redefined as something else, rather
than discarded after their initial use has been completed.

Assignment

1. You have just been hired to design a product for recycling. Choose an object that is well-designed and
   invent another use for this object, after it has been discarded. Write a few paragraphs describing how the
   object can be reused. Include a brief analysis of the relationship between the old design and function of
   the object and the new design and function. Describe how the object would be altered to prepare it for
   reuse; also describe the materials, colors, and details of the design.
2. Create at least two pages of sketches and written material. The first page should describe the existing object; it could include a photograph or a sketch, descriptions of its use, information on the materials and the manufacturing process, and statistics on the number of products discarded each year. The second page should describe the new use of the object and should include drawings of the new product, showing a plan and an elevation of the object. Also include a sketch of the object being used in the manner your proposal has described. Use two 11” x 17” sheets of paper to present your work.

ROOF TERRACE

You have been asked to create a design for a roof terrace on an NYU building, overlooking Washington Square. The new facility should provide a place for students to enjoy a view of the park and work or relax in an outdoor environment. The program allows the designer to create a small indoor snack bar on the roof or another type of small indoor space in addition to the outdoor facilities. The outdoor space should include sitting areas, plants, and other appropriate elements.

First Week: Create a concept for the roof terrace. Is it a quiet space for study, a lively space for social events, or space dedicated to a particular use, such as a sculpture garden or a special type of planted area. Develop a parti or design concept for the terrace; it could be based on the spatial organization concept, the use of the new space, or a design idea. Write a short introduction to the project. Describe the site, program, and basic concept of the design. Draw a floor plan of the concept at ¼” = 1'-0.” Include a parapet wall, which is 3.5’ high.

Second Week: Rework the plan, based on the critique. Draw an elevation and an axonometric or perspective drawing of the space. Begin research on materials, plants, and furniture for the roof terrace. Explore new concepts online for green elements and materials.

Third Week: Redevelop the plan, elevation, and axonometric or perspective drawing, based on the critique. Review ideas for green furniture, art, lighting, materials, plants, and other landscaping. Create a page on materials and furnishings that includes information on green principles and techniques.

Fourth Week: Complete the booklet. Finalize the architectural drawings, introduction, and pages on parti or design concept, historical references, materials and furnishings, function, and spatial organization. Assemble the booklet. Prepare for a final presentation. If possible, use the Google program, Sketch-up, to create additional drawings.

ANALYSIS OF AN URBAN PARK

The Parks Commission is interested in improving a New York City park. They have asked for proposals, examining the existing conditions and providing ideas for improvements. They may want to add a kiosk, a work of art, or landscaping. Proposals must begin with an analysis of current conditions. The analysis will include some historical research, a photographic study of current conditions, maps and diagrams of the park, drawings, and a critique of park problems. The proposal can be a small structure to introduce a new facility, a landscape concept, or a general planning proposal that improves park services.

First Week: Create a photographic essay of the park. Develop one 11" x 17" page with 4-8 photographs on each topic listed below. Write a title and a few paragraphs of text on each issue.

1. Art and Structures: art, buildings, fountains, major spaces
2. Landscape and Paving: trees, grass, hedges, bushes, flowers, stones, paving, seating
3. People and Functions: playground, chess, dog run, general seating, other activities
4. Issues and Problem Areas: the homeless, areas not being used, awkward signs or fences
Second Week: Develop a masterplan of the park. The plan can be created by walking through the park or looking down at the park from a building along the perimeter of the park, which allows public access to an upper floor. Since the layout is somewhat symmetrical, some areas of the plan can be reproduced from a template of one side. Make 6 copies of the basic plan. Draw diagrams of the following planning concepts. Create a key for each map.

1. Function: Create a map of major park functions, also show seating areas
2. Landscape and Circulation: Create a map of landscaped areas and paths
3. Structures and Art: Create a map indicating structures and public art
4. Park Problems: Create a map designating park problems

Third Week: Write an introduction to the booklet, which describes the history of the park and provides a description of its current use and significance. Choose a photograph that best expresses your idea of the park environment for the cover of your booklet. Create a rendering from your photograph or a freehand drawing of the park, based on class discussion. The drawing can be developed by tracing a photograph of the park and developing the image in pencil or ink. Color may be added after the black and white drawing is complete. Photoshop can be used for the image if a student is uncomfortable with drawing. To create the rendering:

1. Print a copy of a photograph of the park.
2. Create a line drawing in either ink or pencil. Make several photocopies of the line drawing for the purpose of conducting experiments.
3. Do several short experiments, in ink or pencil, to determine which medium you will use. Create a “slice of the rendering” to explore the development of light and shadow. Express black, white, and at least three shades of gray, if using pencil. If using ink, show various degrees of light and dark areas through dots or lines.
4. Experiment with various methods of depicting a tree, grass, sky, water, and other elements in the photograph. Choose a style of drawing that best expresses the concept.
5. Optional: To try color; experiment on another copy with colored pencils or markers.

Fourth Week: Create a proposal for improving the park. Write a description of your concept and draw a plan of the concept. Indicate the location of your proposal on an unused map. You can choose to either create a new structure in the park, like a small outdoor theater, a snack bar, a pavilion, or a bicycle storage area. If you don’t wish to design a structure, you can introduce a work of art, improve a system, such as signage, lighting, or trash collection, or work on a paving and landscaping issue.

Fifth Week: Choose materials, develop details, diagrams, and historical references as discussed in class. Refine the plan and site plan, based on critique. Draw an elevation.

Sixth Week: Create a three dimensional image of the concept, either an axonometric, a model, or a perspective sketch. As an alternative, create a more extensive information page on green design systems. Complete the booklet for final presentation next week.