Architectural Design and Drawing

Gropius once described architecture as a combination of "form, function, and delight." In this workshop, students are introduced to the experience of designing buildings. The first project explores the design process. Students develop diagrams and drawings, analyzing issues of form, function, technology, site, and environment in buildings by well known architects. Drafting techniques are also presented through preparation of plans, sections, elevations, and renderings. In the second project, students design residential lofts. They begin with a program and a basic design concept. Planning theories, such as function, circulation, massing, and spatial organization are discussed. Visual concepts, such as symmetry, axis, and proportion are also introduced. Methods for developing designs through models, perspectives, and isometric drawings are also presented. Prior drafting experience is helpful, but not required.

Major Projects

House Analysis

In this class, students are introduced to the major steps in the design process through an analysis of a house by a famous architect. The project begins with discussions of the concept or parti of a design and descriptions of the historical and environmental context in which various projects were built. Students create diagrams on the function, circulation, spatial organization, site planning, and materials and details. They also study relationships between environmental concepts, such as indoor and outdoor space, and planning concepts, such as public and private space, and service and served space. They also examine geometrical concepts, structural systems, and ordering systems, such as axis, symmetry, hierarchy, and massing through a sketchbook.

In developing the analysis, the class is also introduced to a basic vocabulary of design terms, taught how to read architectural plans, and create architectural drawings. Through in-depth studies of specific architects, students are also exposed to issues of history and theory in their projects, as well as in the presentations by other members of the class.

Sketch Problem

In recent years, several leading architects have designed small public structures, such as a snack bar, or an information center. The second project will be a short assignment, developing a small structure on an urban site. It will also introduce the design program, SketchUp. Students who have not used SketchUp before, will use it as a basis for learning the program. Those who already know the program will be expected to develop a more sophisticated design.

Loft Design

In the third project, students create their own designs for a loft space in New York or a small country house. This project emphasizes the experience of creating a design by applying the
theoretical issues examined in the house analysis. Each student begins with a concept or a parti that serves as a basis for their design. After identifying the parti, diagrams, architectural plans, and three-dimensional images are developed as well as a study of materials and furnishings. Issues of sustainability are also discussed and included in some of the projects. As the design progresses, the class is also introduced to the techniques of creating plans, perspective drawings, Required Reading: Ching, Francis, *Architecture: Form, Space, and Order*
Recommended Reference: Weston, Richard, *Key Buildings of the Twentieth Century*

Additional References: Bahamon, Alejandro, *Small Lofts*
Ching, Francis, *Interior Design Illustrated*
Clark, Roger H. and Pause, Michael, *Precedents in Architecture*
Field, Marcus, and Irving, Mark, *Lofts*
Frampton, Kenneth, and Larkin, David, *American Masterworks*
Molnar, Felicia Eisenberg, *Lofts: New Designs for Urban Living*

Course Objectives: This course will introduce the following experiences:

1. The design process: the steps that lead to the creation of an architectural design
2. History and theory: an exploration of the designs of major 20th century houses
3. Vocabulary of architectural terms and objectives: concepts used in design, planning, theory, and analysis
4. Drawing techniques: hand drawing, spatial planning, and design systems
5. Basic computer programs: Sketchup, used in design projects and presentations
6. Critical analysis: critiques of both historical projects and student projects
7. Basic issues of environment and sustainable design

Materials: Available at Blick Art Store, 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)

Ink Drawing Materials: 11” x 17” mylar sheets, about 6 sheets (cut from 2 larger sheets)
Inexpensive technical pens, #0, #000, could also use a larger size like #2
Optional Materials: drafting brush, adjustable triangle, additional templates, erasing shield

Criteria for Grading: The two major projects, the House Analysis and Loft Design, will comprise about 85% of the grade. The project grades will be based on the depth of analysis of design 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.

Architectural Design and Drawing: Outline of Topics

1. First Week: September 7: Introduction to the Design Process and Basic Concepts in Design
   a. Topics: Introduction to the process of design analysis, understanding architectural concepts
   b. Lecture: Important Houses in 20th Century Architecture, Parti and Historical References
   c. Film: Sequence from Sketches of Frank Gehry
   d. Reading: Read about the architect and project you’ve chosen for the first assignment
   e. Assignment: Begin the Analysis Project

   Choose a house by an architect on the list and make copies of the plans, sections, elevations and site plan. Reduce or enlarge the plans so they fit on an 11” x 17” sheet of paper. Read about the architect and history of the house and prepare a short verbal presentation on the
background of the project for next week. Buy the tools, materials, and text for the course. Trace the floor plans of the house on 11” x 17” sheets of paper. Do not label the drawings.

2. **Second Week: September 14:** Identifying the Main Concept or Parti & Spatial Organization

   a. Topics: Developing a parti or design concept; expressing the concept throughout the design
   b. Student Presentations: Each student will present a brief introduction to their project.
   c. Lecture: Architectural drawing techniques, Understanding architectural drawings
   d. Film: Sequence from *First Person Singular: I.M. Pei*
   e. Reading: Read about the architect and project you’ve chosen for the analysis project.
   f. Assignment: Trace an elevation and site plan. Develop pages on parti and hist. references.

Trace the site plan and elevation on 11” x 17” sheets of paper. Don’t label the drawings at this time. Choose a photograph for the cover; it should show the main elevation of the building. Bring it to the next class. Develop pages on the historical references and parti of the house.

3. **Third Week: September 21:** Rendering; Materials and Details, Overview and Introduction

   a. Topics: Introduction to basic planning concepts: Rendering by hand and by computer
   b. Lecture: Spatial concepts: centralized, linear, radial, cluster, grid; Rendering
   c. Film: Sequence from *The Architecture of Gwathmy Siegal*
   d. Reading: Ching, pp. 194-238 on spatial organization.
   e. Assignment: Create a rendering. Develop the introduction and materials and details pages.

Choose a photograph that shows the concept of the building. Create a rendering of the house, based on class discussion. Experiment with a few drawing styles before choosing technique. Create the introduction and materials and details pages. Complete any unfinished drawings.

4. **Fourth Week: September 28:** Diagrammatic Studies and Ordering Systems

   a. Topics: Each issue of analysis will be discussed in relation to the planning of the house
   b. Lecture: Analyzing the plans through diagrams to understand the architect’s intentions
   c. Film: Sequence from *Eames: the Architect and the Painter*
   d. Reading: Ching, pp. 337-365 on basic ordering systems.
   e. Assignment: Draw the diagrams of the project as discussed in class. Include the following:

   ![Diagrammatic Studies and Ordering Systems](image)

5. **Fifth Week: October 5:** Integrating Research, Diagrammatic Studies, and Project Analysis

   a. Topics: Design of public and private space, circulation, structure, site and environment
   b. Lecture: Evaluation of zoning and design principles, Preparation of final presentations
   c. Film: no film  Sequence from *Charles Rennie Mackintosh: A Modern Man*
d. Reading: Finish reading about your project to complete the final presentation

e. Assignment: Complete the diagrams. Label drawings as discussed in class. Develop any unfinished pages. Prepare for the final presentation of the booklet.

6. Sixth Week: October 12: Program Writing and Research for a Design Project

a. Student Presentations: Final presentations of the analysis project
b. Lecture: Introduction to the new project: program writing, research, initial design decisions
c. Reading: Ching pp. 44-79 on geometry and form.
d. Assignment: Define the project, site and parti/spatial concept. Research technologies, materials, and resources needed for the design. Draw a three-dimensional sketch of your initial concept of the structure. Create a floor plan with furniture and related sketches.

7. Seventh Week: October 19: Space Planning, Project Development, Digital Drawing Systems

a. Topics: Creating the spaces and circulation for the floor plan; Issues in sustainable design
b. Lecture: Sketchup; Information center planning, design, and information systems
c. Film: Guest Lecture on Sketchup
d. Reading: Study Sketchup; listen to tutorials and/or use textbook, if needed
e. Assignment: Refine the floor plan, based on critique. Draw two elevations. Begin choosing materials, digital systems, and furnishings. Collect information on furnishing, materials, and information systems. Create a page on materials and systems.

8. Eighth Week: October 26: Isometric Drawings; Furniture, Materials, Color, and Textures

a. Topics: Isometric drawing and the design process; choice of interior systems and elements
b. Lecture: Expression of parti in the selection of materials, colors, textures, and furnishings.
c. Film: Sequence from the film, Objectified, on product and furniture design
d. Reading: Ching, pp. 264-291 on circulation and pp. 185-193 on spatial relationships.
e. Assignment: Create isometric drawings of the interior and exterior of the structure.


a. Topics: Role of sketching in presentation, environmental materials and eco-products
b. Lecture: Integration of parti, landscape, materials, furnishings, and sustainable design.
c. Film: Sequence from the film, The Architecture of Renzo Piano
d. Reading: Ching, pp. 264-291 on circulation and pp. 185-193 on spatial relationships.
e. Assignment: Complete any unfinished drawings of the interior and exterior of the building. The project should include a plan, two elevations, and two isometric drawings. Also create pages on parti and historical references and materials and details. Prepare for final presentation. If possible, include a page of sketches/process.

10. Tenth Week: November 9: Presentations of Sketch Problem, Introduction to New Project

a. Student Presentations: Final presentations of the sketch problem
b. Lecture: Introduction to the final project, a loft design
c. Reading: Ching 239-263 on entrance & approach and pp. 80-91 on corners & surfaces.

d. Assignment: Develop a concept of the client and basic program for the project. Develop a preliminary plan and parti based on discussion. Create two versions, if needed.

Background information: A young couple has decided to purchase and renovate a loft in Soho. It’s a raw space, except for the columns, windows, and architectural details. One member of the couple is an artist, who works in the loft. (You can choose the type of artist.) The other person works outside of the space, but needs a small office at home. The loft should be kept as open as possible. It can include a balcony over a maximum of 33% of the floor area.

Basic Program (should be refined to suit the client you’ve created)

1. A large living and dining area
2. A kitchen
3. An artist's studio
4. A master bedroom
5. Two bathrooms
6. A desk or workspace for the person who works outside of the loft
7. A sleeping area for a guest
8. Closets and storage space, as needed

11. Eleventh Week: November 16: Collaboration & Practice, Minimalism vs. Post-Modernism

   a. Topics: Introduction to the development of larger scale projects and aspects of the process.
   b. Lecture: Integrating images for a presentation, Design collaboration, Project development
   c. Film: Sequence from How Much Does Your Building Weigh, Mr. Foster?
   d. Reading: Read about parti & historical references for your design; write a statement
   e. Assignment: Refine plan as discussed in critique. Continue working on digital images; perspectives and isometric drawings.

12. Twelfth Week: November 23: No Class, Thanksgiving


   a. Topics: Creation of small buildings in emerging areas, disaster relief, urban redevelopment
   b. Lecture: Refugees and low income housing, reinvigorating a neighborhood
   c. Film: on a challenging design topic, such as urban redevelopment or disaster relief
   d. Reading: Research loft neighborhoods; write a brief introduction to the project with a description of your site, client, program and neighborhood history
   e. Assignment: Redevelop drawings as discussed for final presentation. Refine the elevation and, if possible, create a perspective. Explore the use of sustainable materials.

14. Fourteenth Week: December 7: Perspective Drawing, Completing a Final Presentation

   a. Topics: Final Presentation format, Refining images for a presentation
   b. Lecture: Developing a perspective drawing, framing an image, color, light and shadow
c. Film: if time permits, film on Frank Lloyd Wright or Charles Rennie Mackintosh
d. Reading: Finalize materials, art, and furniture; write the final text on materials and details
e. Assignment: Complete the booklet. It should include a pages on Materials and Furnishings, Sustainable Design, an Introduction page on Site, Client, and Program, and Parti and Historical References, a plan, elevation, and isometric, a page on Design Development, and if possible, a perspective.

15, Fifteenth Week: December 14: Final Presentations

a. Topics: Presentations and critiques of design projects
b. Film: if time permits

Note: The schedule of film screenings may be changed based on availability.

House List for Analysis Project

1. Alvar Aalto: Villa Mairea: built in Noormarkku, Finland; 1938-39
3. Mario Botta, House at Riva San Vitale, Ticino, Switzerland, 1973H
5. Frank Gehry: Schnabel Residence, built in Los Angeles, California; 1989
7. Walter Gropius: Gropius House, Lincoln, Massachusetts, 1937
8. Greene and Greene: Gamble House: Pasadena, California; 1908
12. Thomas Jefferson: Monticello, Charlottesville, Virginia, 1769-1809
14. Katsura Imperial Villa: built in Kyoto, Japan
15. Le Corbusier: Villa Savoye: built in Poissy, France, 1928-31
20. Richard Neutra: Kaufmann House: built in Palm Springs, California; 1946
21. Andrea Palladio: Villa Rotunda: built in Vicenza, Italy; 1566-71
25. Frank Lloyd Wright: Storer Residence, built in Los Angeles, California; 1923