Architectural Design and Drawing

The creative process differs for each individual. Thomas Jefferson searched for a philosophical approach that would express the goals of the emerging American democracy. Greene and Greene were influenced by the Arts and Crafts movement and the techniques of traditional Japanese architecture. Le Corbusier’s work was based on the ideas of modernism, cubism, and the grid. Frank Lloyd Wright’s designs were inspired by an understanding of the site, local materials, and organic forms.

In recent decades, the development of media and computers has inspired the projects of Jean Nouvel and Rem Koolhaus. Michael Graves has been intrigued with the classical buildings of the Renaissance. Minimalism and recycling have provided themes for the paper tube concepts of Shigiru Ban. William McDonough has focused on green design, including the green roof.

Though the artistic source of inspiration differs for each designer; there are certain basic steps that most architects take in the early stages of a project. They include an analysis of the project or problem, a study of the site and cultural context of the proposed design, and research on historical models, alternative technologies, and other relevant information.

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.

In the second project, students create their own designs for a loft space in New York or a 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. The parti leads to diagrams, architectural plans, three dimensional images, and choices in 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, isometric drawings, architectural models, and computer images. The final design decisions evolve as students create plans, drawings, and diagrams of their concepts.
Required Reading

**Architecture: Form, Space, and Order**, by Francis Ching

Recommended References

Canizares, Ana G., *Lofts DesignSource*
Ching, Francis, *Interior Design Illustrated*
Clark, Roger H. and Pause, Michael, *Precedents in Architecture*
Dean, Angela, *Green by Design*
Field, Marcus, and Irving, Mark, *Lofts*
Frampton, Kenneth, and Larkin, David, *American Masterworks*
Gissen, David, ed., *Big and Green*
Stang, Alanna and Hawthorne, Christopher, *The Green House*
Molnar, Felicia Eisenberg, *Lofts: New Designs for Urban Living*
Weston, Richard, *Key Buildings of the Twentieth Century*

Materials: Available at Blick Art Store, Pearl Paint, 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

Grades will be based on the following criteria:

- class participation in discussions
- depth of analysis of design issues
- concept and design development
- quality of visual and verbal presentations
- individual improvement throughout the semester
Architectural Design and Drawing

1. First Week: Introduction to Analysis Project
   
a. 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 additional information on the architect and history of the house to prepare a short presentation of the background of the project.

   b. Buy the tools and materials needed for the course. Trace the main plan of the house on an 11” x 17” sheet of paper. Do not label the drawing.

2. Second Week: Floor Plans and Site Plan
   
a. Trace the additional floor plans of the house on 11” x 17” sheets of paper. Do not label the drawings. Study the plans to prepare for a second presentation of the house.

   b. Continue reading about the architect and the house you have chosen.

3. Third Week: Section and Elevation
   
a. Trace the site plan and one elevation as discussed in class. Choose an elevation that shows an important view of the building. Do not label the drawings at this time. Write an introduction to the booklet, based on background material about the architect and project.

   b. Read Ching, pp. 4-32.

   c. Review the plans of the house and be prepared to discuss the planning and design concept.

4. Fourth Week: Rendering
   
a. Choose a photograph that shows the concept of the building. Create a rendering of the photograph based on class discussion. Experiment with several drawing styles, before choosing an approach to the rendering. Write a few paragraphs about the parti and historical references of the project.

   b. Read Ching, pp. 177-226

5. Fifth Week: Diagrams
   
a. Reduce your drawings and create diagrams of the project as discussed in class. The following diagrammatic images should be included:

   Parti and Design Concept
   Site Development, Arrival, and Entry
   Circulation and Movement Patterns
Function and Program Development
Proportions and Massing
Indoor and Outdoor Space
Public and Private Space or Service and Served Space
Materials, Details, and Structural Concepts
Historical References and/or Social Concepts
Ordering Systems, such as Symmetry, Hierarchy, and Axis
Spatial Organization, such as Linear, Centralized, Radial, Cluster, or the Grid

b. Read Ching, 320-370.

6. Sixth Week: Prepare Final Presentation
   a. Complete the diagrams. Label drawings as discussed in class. Develop final presentation.
   b. Read Ching, pp. 227-277.

7. Seventh Week: Introduction to Design Project
   a. Final presentation of analysis project and introduction to the loft project. Develop a concept of the client and basic program for the project. Create drawings of preliminary plans, based on class discussion. Draw two versions of the plan, if necessary.
   b. Read Ching, pp. 91-129.

8. Eighth Week: Floor Plans
   a. Continue developing the floor plans, based on critique. Draw precise furniture sizes. Make certain that the hallways, doors, and walls are properly sized and presented.
   b. Begin looking in magazines for potential furnishing concepts. Make copies of a few images.
   c. Read Ching, pp. 130-177.

9. Ninth Week: Isometric Drawing
   a. Develop an isometric or axonometric drawing of your floor plan. Be careful to measure accurate heights of furniture, walls, doors, and additional elements of the design.
   b. Continue looking for potential furnishings. Make copies of appropriate images.
   c. Read Ching, pp. 178-227.

10. Tenth Week: Elevation and Section
    a. Create an elevation, based on the plans and isometric drawing. Choose the main view of
the balcony for the elevation. Isometric should also show a main view of the space.

b. Begin thinking about materials for the space. Collect some images of potential materials.

11. Eleventh Week: Perspective Drawing

a. Develop a one-point perspective, based on class discussion. If you have prior experience in perspective drawing, you may develop a two point perspective instead. If you are unable to create this drawing, detail a piece of furniture, build a model, or draw a second elevation.

b. Develop a materials and details page, based on class discussion.

c. Read Ching, pp. 278-372

12. Twelfth Week: Diagrams and Labels

a. Create the following diagrams of the project:

Parti and Concept Development (one half page)
Historical Reference (one half page)
Function and Program Development (one page)
Public and Private Space (one half page)
Circulation or Proportions or Spatial Organization (one half page)
Materials and Details (one page)

b. Write labels on the drawings, as discussed in class, and complete the presentation.

13. Thirteenth Week: Complete the Final Presentation

a. Complete any unfinished drawings and create a booklet on the design.

b. Prepare a short verbal presentation of the project. Print a copy of the project for presentation in class.
List of Houses

Alvar Aalto: Villa Madeira: built in Noormarkku, Finland; 1938-39

Arquitectonica: Pink House: built in Key Biscayne, Florida; 1978

Charles and Ray Eames: Eames House: built in Pacific Pallisades, California, 1949

Peter Eisenman: House IV: built in Cornwall, Connecticut; 1973-75

Frank Gehry: Schnabel Residence, built in Los Angeles, California; 1989


Greene and Greene: Gamble House: Pasadena, California; 1908

Charles Gwathmey: Gwathmey Residence: built in Amagansett, New York; 1967

Steven Holl: Stretto House: built in Dallas, Texas, 1989-92

Thomas Jefferson: Monticello, Charlottesville, Virginia, 1769-1809

Philip Johnson: Glass House: built in New Canaan, Connecticut; 1949

Katsura Imperial Villa: built in Kyoto, Japan

Le Corbusier: Villa Savoye: built in Poissy, France; 1928-31

Charles Rennie Mackintosh: Hill House: built in Helensburgh, Scotland; 1902-03


Smith House: built in Darien, Connecticut; 1965-67

Ludwig Mies van der Rohe: Farnsworth House: built in Plano, Illinois; 1950

Charles Moore: Moore House: built in Orinda, California; 1961

Richard Neutra: Kaufman House: built in Palm Springs, California; 1946

Andrea Palladio: Villa Rotunda: built in Vicenza, Italy; 1566-71

Eliel Saarinen: Saarinen House: built in Bloomfield Hills, Michigan; 1928-29

Frank Lloyd Wright: Kaufmann House: built in Connellsville, PA (Fallingwater); 1936-37

Robie House: built in Chicago, Illinois; 1908-09
Loft Design: seven week project

A young couple has decided to purchase and renovate a loft in Soho. They’ve chosen a raw space, except for the columns, windows, and architectural details. One member of the couple is an artist, who works in the loft. The other person works outside of the space, but needs a small work area at home. The couple would like to keep the loft as open as possible, but have decided to include a balcony area in the design, which should not cover more than 33% of the loft. The design will be based on the following program:

Program

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

First Week Assignment:

1. Develop the concept of the client and program. What kind of artist lives in this space? Create a concept for each room. Include a list of the requirements for the room.
2. Develop a floor plan for the space, based on the program. Create a parti for the design.
3. Visit Soho, and look at lofts that have been converted into stores, galleries, and restaurants.
4. Begin writing an introduction that describes the loft concept, site, client and program.

Second Week Assignment:

1. Refine the floor plan. Layout the furniture, kitchen, bathroom, and important elements.
2. Begin choosing photographs of furniture and materials that support the parti

Third Week Assignment:

1. Draw an axonometric of the space, based on the class criticism.
2. Think about the design of the elevation, as the axonometric is being drawn.

Fourth Week Assignment:

1. Complete the axonometric and the floor plans.
2. Develop a section or an elevation of the space.
Fifth Week Assignment:

1. Create a series of diagrams to describe the following concepts:
   a. Parti and historical references
   b. Circulation and spatial organization
   c. Function
   d. Public and Private Space or Geometry

2. Choose some furniture and materials for the space.

Sixth Week Assignment:

1. Draw a perspective, based on class discussion, or design a piece of furniture.
2. Complete the diagrams, based on class discussion.
3. Complete the writing of the introduction

Seventh Week Assignment:

1. Complete the drawings, in pencil or ink, for the final presentation.
2. Build a model of the design at the scale of $1/4'' = 1\text{-0.}'$. The upper level of the model should be removable, to show the lower level of the design. Use cardboard and wood columns.