Course Overview

The freshman foundation studio teaches fundamental architectural representation, design, and communication skills. Students work simultaneously in freehand drawing, model and digital media on exercises that develop facility with orthographic representation, analytical drawing (diagramming), and architectural design concepts (poche, transparency, frame, sequence, etc.). Studio and field drawing assignments introduce buildings by Frank Lloyd Wright, Le Corbusier, Louis Kahn and Mies van der Rohe to ground students’ work in key modern design principles and techniques.

Course Policies

Attendance  Class will meet two times a week, on M/W, or Tu/F. Class attendance and completion of all assignments are mandatory. Four absences will constitute an automatic failure, three will result in a full letter grade penalty for the course, and two may result in a partial grade deduction.

Grading  In accordance with Northeastern School of Architecture grading policy, grades will be distributed according to the scale found online here.

Assignment grade breakdown is as follows (% may be adjusted):  
A0: 5%  
A1 and A2: 15%  
A3: 20%  
A4 Exercises: 15%  
A4 Project: 20%  
Drawing exercises and sketchbook: 15%  
Readings, effort, attendance and class participation: 10%  

Recommended Texts

Required: Thinking with Type Lupton

Recommended: The Visual Display of Quantitative Information Tufte

Resources  The student is responsible for completing each assignment in a timely manner and is also responsible for the output of the work and the costs involved. The instructors rely on eMail as a form of communication with the class. Important information about class events, assignment hand-ins, and general queries will be handled in this manner. As such, the student is required to check their eMail accounts at least once a day for such information. In addition, we will be using this web site to post items such as assignment PDF’s, links to readings and other items of interest. Students should be sure to keep track of information as it is posted to the site.

In addition to course readings, you will need to become familiar with several on-line sources for information on both computer-aided design and architecture. The internet provides many directories and resources that can both inform you and answer questions in times of need. A select few of these will be linked to on this web site.

Use of Online Resources  All research done for the course should be through the various libraries that Boston has to offer. Any research done on the internet—unless explicitly encouraged by the instructor—will not be accepted in this course. Also, Instant Messaging (IM) during class time will not be tolerated, nor will viewing any kind of media that falls outside the content of the class. The time spent in class is intensive and should be spent on class assignments. If the instructor observes any IM sessions, or the like, in class, the student will initially be warned, any further reprimand will result in a grade deduction for that particular assignment. In order to facilitate this, each session will be instructed to
disable their wireless connection to the NUWave system 15 minutes into class, or after an introductory lecture.

**Software** Students are responsible for purchasing the Adobe Creative Suite, Parallels, Vista and AutoCAD (refer to the link here) and for loading the software onto their computers prior to the first week of the semester.

**Digital Storage** Any information that you create on the computer is susceptible to erasure. It is therefore in the students best interest to invest in at least two methods of backup. Northeastern’s MyFiles offers 2 GB for this use. In addition, the purchase of a USB flash drive for the storage of digital files, and transfer to the printers is recommended. Image files can be large, so the more storage space on the drive, the better. iPods can also be set to operate as external drives. Information on how to do this is here.

It is also advisable to keep a backup copy of your files on a CD or DVD. Loss of information relating to a project due to lack of backup will not be considered an acceptable excuse.

**Printing** For each assignment, you will be required to submit both paper and digital files. This course relies on a number of output options for final hand-in, but also as an ongoing requirement during the assignments. The student is responsible for the printing of your work and the costs involved. The following are the available options for printing:

Small inkject printers are a good option for day-to-day prints. Sharing the cost of a printer with fellow classmates can be a cost-effective solution to output.

There is an 11 x 17 color laser in the Ruggles Studio. You may use it on a first come, first serve basis. See the instructions here for printing information.

Northeastern University's School of Architecture partners with Service Point for large scale printing needs. Click here for more information and instructions.

**File Naming** You will be required to submit files along with prints for each assignment. These files should be named as follows: assignment number-lastname.filetype (for example: 01-yourname.pdf). Files named incorrectly will not be accepted.

**Academic Honesty** Northeastern University is committed to the principles of intellectual honesty and integrity. All members of the Northeastern community are expected to maintain complete honesty in all academic work, presenting only that which is their own work in tests and assignments. If you have any questions regarding proper attribution of the work of others, contact your professor prior to submitting work for evaluation. More information is available here.

**A0 Warm-up Five Points**

In 1923, at the age of 36, Le Corbusier published Vers une architecture (Towards a New Architecture), a manifesto in which he praised the engineering breakthroughs of the industrial age, and concluded that like cars, airplanes, and ocean liners, a building and its details are successful when they satisfy an identified function. This rational approach to architectural design was summarized by the famous maxim: “The house as a machine for living,” and codified by a set of principles: “Five Points Towards A New Architecture”

In this warm-up exercise, you will graphically explore ideas from the Five Points. Using freehand sketching and CAD or Illustrator, develop five drawings, each one relating to the statement as indicated, and using the graphic element as identified:
Drawing 1  Principle: “Up in the air from the ground”  Element: Vertical lines

Drawing 2  Principle: “The garden is all over...”  Element: Circles

Drawing 3  Principle: “No longer superimposed... they are free”  Element: Splines (or curves) and/or Lines

Drawing 4  Principle: “They run from one end... to the other”  Element: Horizontal rectangles

Drawing 5  Principle: “Light skins”  Element: Dashed rectangles and/or Lines

Graphic & Layout rules:  • You may use up to 3 line weights  • Each drawing to be on 8.5” x 11”  • All drawings to be formatted consistently, either landscape or portrait  • All drawings to be labeled consistently including: Drawing number, Principle, Your name  • Font must be used consistently, and you may choose either Futura, Helvetica, Swiss  • You may use up to 3 font sizes

Objectives  • Become familiar with the central architectural and formal strategies developed by Le Corbusier  • Translate a formal idea into an abstract graphic representation  • Develop graphic, compositional, and presentation skills

This warm-up is a precursor to the first assignment of the semester, which will focus on Le Corbusier’s Villa Savoye, considered to be the canonical example of the Five Points.

Resources  Five Points Towards a New Architecture, Le Corbusier (PDF) from Programs and Manifestoes on 20th-century Architecture, Ulrich Conrads  Graphic Precedents (PDF)

A1 Villa Savoye Analysis

“The Villa Savoye, in Poissy, which was built by Le Corbusier between 1928 and 1931, is considered as one of his major works, and even as one of the masterpieces of 20th century architecture. The villa was designed for a rich insurer, Mr. Savoye, and was the result of several years of formal research which revolutionized the traditional codes of residential architecture. The building was constructed in the form of a white parallelepiped with a smooth exterior surface punctuated by a row of windows. It is supported by thin pillars and topped by a roof-terrace. The house sits in the middle of a field, a prime example of a new architectural vision.”  (http://villa-savoye.monuments-nationaux.fr/en/)

In this assignment, you will continue your study of Le Corbusier’s Five Points and his early-20th-century built work. After researching the Villa Savoye, you will document it using plan, section, and axonometric drawings. Building upon the work you did in Warmup Exercise A0, you will produce a series of analytical drawings that identify and communicate the architectural ideas you find in the building.

Objectives  • Become familiar with the central architectural and formal strategies and with a canonical built work Le Corbusier  • Translate architectural ideas into an abstract graphic representation  • Learn new techniques for producing three-dimensional drawings  • Develop an intellectual position – your “take” – on the Villa Savoye. This last objective will lead to a design assignment later this semester.

Research  Gather photographs, drawings, and video that document the building and its primary design ideas. Use both online and offline sources. Snell Library, the MIT
Architecture library (77 Mass Ave, second floor), and the Boston Public Library are all good resources. PDFs of the building plans are provided. Pin up what you find on your studio’s common wall.

**Documentation**  As a starting point for your analytical drawings, prepare a set of three plans, two sections, and one axonometric drawing at 1/16” = 1'-0". One of the sections should cut through the ramp. Draw the plans and sections in AutoCAD. For the axonometric, you have three options:  • use AutoCAD to construct the drawing  • use 3D AutoCAD to build a simple model of the building, then produce the drawing in illustrator  • use Sketchup to build a simple model of the building, then produce the drawing in illustrator

**Analysis**  You became familiar with the Five Points during A0. Now, look for ideas that may be related to these points but are specific to this building. How do the site and the program interact with the Five Points? Are there important ideas about form, circulation, spatial zones, program, landscape, etc. that are NOT covered in the Five Points? Your analytical drawings should be precise and concise. Each drawing should express one discrete idea. Certain ideas may suggest certain graphic techniques; conversely, certain graphics may suggest new interpretations of the architecture.

**Results**  • Three plans  • Two sections (one through the ramp)  • Axonometric drawing (exploded or not)  • At least five analytical drawings; not all the same format (i.e. some are plan, some are axon, etc)

The scale of the drawings should be 1/16” = 1'-0”  Be strategic about the level of detail in each drawing  You may use up to 3 line weights  Each drawing to be on 11” x 17”  All drawings to be formatted consistently, either landscape or portrait  All drawings to be labeled consistently including: Drawing number, Title, Your name  Font must be used consistently, and you may choose Futura, Helvetica, or Swiss  You may use up to 3 font sizes

**Resources**  Photographs and Drawings  Diagramming Techniques  Villa Savoye Plans  Video of Villa Savoye  Sketchup Tips

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**A2 Carpenter Center Analysis**

**Part 1: Introduction to Field Notes**

In this warm-up exercise, you will explore the spatial and sectional relationship between our Studio space and the Ruggles train station above. This relationship will be studied in section using your sketchbook and pencil.

Observations: An understanding of the site will be necessary before diving into a final drawing. We encourage you to walk from Studio to the Station making annotations in your sketchbook. These annotations should be primarily drawing notes in the form of plans, sections or any other drawing type that might help you discover relationships.

Once you have a good notion of the primary spatial relationships, you should come up with a strategy for assessing/measuring the spaces in order to draw your section accurately. Take notes on the geometry and proportion of the spaces. Use your steps or body to measure or use visual clues present in the building (tile size, panel size on walls, structural bay, etc).
Final drawing: After making general site observations, you should have enough information to create a sectional axonometric. Begin by drawing an accurate section and build from there the axonometric projection. Test with light pencil how big the section will be in your sketchbook and plan how it will occupy the page.

Part 2: Carpenter Center

In 1958, Le Corbusier was contacted by Jose Luis Sert, then the Dean of Architecture at the Harvard Graduate School of Design, to design a new center for the School of Visual Arts. The only Corbusier building in North America, it functions as a center for learning, a gallery for rotating exhibitions, and the home of the Harvard Film Archive.

Below you will find a PDF of plans, sections and elevations of the Carpenter Center, and a reading that discusses the conceptual and architectural intentions of Corbusier. We encourage you to research the building on your own as well.

Taking the Villa Savoye A1 assignment as a basis, you will develop a series of ten iterative diagrams that explain the specific conceptual, architectural, geometrical, and material conditions that you discover through both the reading and visiting the site. Unlike the Savoye assignment, you will produce these diagrams by hand, using pencil and your sketchbook. Eventually, pen on trace or bond paper could be used for better scan resolution. Your drawings will be scanned and enhanced using Photoshop or Illustrator. A physical model will also be required; scale and materials TBD.

Graphic & Layout Rules

• Caliber line weights according to what is needed for the drawing to be expressed graphically  
• Each drawing to be on 8.5” x 11” or 11x17  
• All drawings to be formatted consistently, either landscape or portrait  
• All drawings to be labeled consistently including: Drawing number, Principle, Your name  
• Font must be used consistently, and you may choose either Verdana, Futura, Helvetica, Swiss  
• You may use up to 3 font sizes

Objectives

• Become familiar with gathering information through on site observation and sketching.  
• Develop a methodology to analytically dissect the building.  
• Translate on site observations into diagrams with a variety of drawing types.  
• Develop drawing skills using your sketchbook and pencil

Resources

Drawings (PDF)  Reading (PDF)

A3 Savoye Transformation

Four sites are described below. Each student will be assigned a site, and you will reconfigure the Villa Savoye to fit on these sites.

Each of the sites requires radical modifications to the plan, section and elevations of the house. Still, the reconfigured house should preserve the critical design concepts, elements and organizing principles discovered through your research and diagrams. Concepts may be drawn from both the Villa Savoye and the Carpenter Center. Your design must accommodate all the programmatic elements of the existing house. While the area of all rooms should be as close to original as possible (within 10%), the proportion of the rooms
may be changed.

Objectives: Use your research and analysis of two existing buildings (done in A1 and A2) to identify key design concepts. Use these key design concepts to reconfigure the Villa Savoye to fit a new set of site constraints. Work with drawings and study models to develop your scheme.

Requirements: Site model at 1/8" = 1'-0". Study models at 1/16". Plans, sections, axonometric at 1/16" = 1'-0". Analytical drawings of both precedent buildings AND your project - number and scale TBD.

Suggested Procedure: Site model - construct a chipboard site model in such a way that you can test your ideas on it and it can also accommodate the final model. Space inventory - using the Savoye plans and sections you did for A1, figure out the programmatic elements of the existing house and their respective areas. Organizing principles - propose several ways to transform the Villa based on your analysis from A1 and A2. Scheme development - never losing sight of these organizing principles, develop one scheme into a well-considered building design.

On each of the sites described, pay careful attention to adjacent buildings, which will limit the location of windows and determine the possibility for light and views. All sites will require vehicular access, located either from the road to the west or as indicated in the image below.

**Timeline** 1.5 weeks (2 working class sessions, 1 review session)

**Intent** 1) Use freehand perspective sketching as a tool to explore space and sequence. 2) Use diagramming as a tool to explore, identify and articulate architectural principles. 3) Introduce the work of Mies van der Rohe.

**Process** Using the image and reading below, you will investigate the spatial and architectural characteristics of a Mies van der Rohe Courtyard House.

Begin by reading the essay below and diagramming the key points in your sketchbook. Additionally, explore the Courtyard House illustrated below by drawing a series of freehand perspectives and analytical drawings. Use the perspectives and diagrams to articulate your own argument and point-of-view about the house.

Next, using the drawings below, construct a digital model of the Courtyard House. Using the digital model and your freehand diagrams, further develop your perspectives and diagrams in digital format. Work back-and-forth between digital and freehand drawings in order to develop your ideas and explore alternative options.

**Final Requirements** Five 11x17 sheets, each with one perspective and one analytical diagram that articulate a total of five key spatial or architectural characteristics of the house.

**Reading** Mies Courtyard Houses

**Resources** Kerkythea free renderer Sketchup exporter plugin Some helpful tips

**A5 Translation and Transformation**: An Outdoor café and landscape transformation of the
Christian Science Center

Despite the formal strength of the rows of linden trees and the reflecting pool that align with Huntington Avenue at the Christian Science Center, the space is usually empty and forlorn. In order to invite more people to congregate on the Huntington Avenue edge of the complex, the Church has decided to explore the possibility of building a small seasonal café. The intent is to create a second gathering place to balance the popular circular fountain at the north-east end of the site.

This café will have primarily exterior seating, with a small glass enclosed interior seating area and service counter. In addition to the design of the café structure, the landscape of the site will need to be transformed to better accommodate outdoor café seating. These transformations will include both additive strategies (new structures, planter and seat walls, and pavements) and subtractive strategies (removal of trees, planter and seat walls) to affect the larger setting for the café.

The location of the café, its form, and the landscape transformations should be considered within the framework of the following design intentions:
1. To open up views
2. To encourage people watching for those who do not elect to sit at the café
3. To create alternative movement patterns across the site
4. To encourage other kinds of public activities around the structure.

SITE

Under or adjacent to the bosque of linden trees located along Huntington Avenue. The café structure must be located at least 10’ from the street curb line and must maintain the pedestrian access along the edge of the pool (slight detours are possible).

PROGRAM

1. Indoor seating: 400 sq. ft. Indoor seating should have at least one wall of glass that opens up to the exterior.

2. Outdoor seating for 50 patrons The outdoor seating area(s) should be clearly defined (garden walls, landscape elements, changes in level or material of ground plane, etc.) The proposed location of the seats should give visitors the option to sit in either the shade or sun. Shade can be accomplished with trees, roof overhangs, or freestanding structures.

3. Food service area: 200 sq. ft Food preparation will be offsite; food service area will consist of a 3’ deep service counter. Service area should be clearly visible from the exterior and easily accessed from exterior seating areas.


5. Trash room: 50 sf

6. Mechanical room: 75 sf

7. Restrooms: Two at 110 sf each

Refer to Architectural Graphic Standards – a standard architectural reference book – to get an idea of the appropriate scale and layout of the kitchen service area and the café seating. You need not worry about the precise arrangement of equipment in the kitchen.
MATERIALS

You can choose from the following list of materials. No other materials or finishes will be accepted.


Rules for transforming the existing landscape:

Linden trees can be removed from the grid (subtractive operation). Additional trees can be added.

Sections of the seating and planters can be removed to provide a site for the café (subtractive operation). In addition to removing sections of existing planter walls and benches, new architectural elements (including extensions of benches and planter walls) can be grafted onto existing conditions (additive operation).

New walls, benches, and other landscape elements may have different profiles and details than existing elements but should be complimentary.

Please pay special attention to resolving the interface with the existing landscape elements and paving when manipulating the site to accommodate the café building.

Small changes in level are encouraged but not required. Changes in elevation of the ground plane can be no more than 30” from the dominant elevation of the general site. All changes in plane require ramp access. Ramps can be no steeper in pitch than 1:12 (a ramp has to be 12’ long for every 1’ change in grade). Ramps require handrails at 36” from the ground (guardrails are not necessary). Ramps that are less than 1:20 do not need railings.

It is strongly encouraged that all new architectural and landscape elements be on the same orthogonal (right-angle) grid as the existing site elements. Exceptions can be made with approval from the instructor, but they must be a relatively small part of the overall design.

Flat roofs are recommended.

Timeline: Six weeks    Final review M/W: 9am-12pm, April 28, 2010    Final review T/F: 9am-12pm, April 27, 2010


Number of each requirement to be determined by your studio instructor.

A1 - Savoye

“The Villa Savoye, in Poissy, which was built by Le Corbusier between 1928 and 1931, is considered as one of his major works, and even as one of the masterpieces of 20th century architecture. The villa was designed for a rich insurer, Mr. Savoye, and was the result of several years of formal research which revolutionised the traditional codes of residential architecture. The building was constructed in the form of a white parallelepiped with a smooth exterior surface punctuated by a row of windows. It is supported by thin pillars and topped by a roof-terrace. The house sits in the middle of a field, a prime example of a new architectural vision.”

You have been given an archicad .pln file of the Villa Savoye, complete with a worksheet set up for use as an underlay. You are to build an archicad model of the house by setting up the appropriate stories and using the plans and sections provided. In order to complete the drawings and diagrams, you will need to research additional photos, drawings and text. Research should be done offline, and although Northeastern’s Snell Library is nearby, the Boston Public Library, MIT’s Rotch or Harvard’s Loeb are excellent resources, the latter two being dedicated solely to architectural subject matter. This being one of the most iconic houses of the twentieth century, there is a wealth of reference material available to augment your exploration of the house.

RESOURCES

Savoye Plan Archicad file.
Savoye Images
Orthographic Projection
Orthographic Projection 2
Diagrams
Diagram Template
Frank Lloyd Wright designed a series of small, affordable houses from the 1930’s through the 1950’s, collectively known as Usonian Houses. Rather than approach the problem of affordability by designing a single house that could be replicated for various clients on different sites, Wright instead developed a building system that would allow for design variety—the house could respond the demands of its site and client—while maintaining design economy. This economy was achieved by employing a standard set of planning concepts, materials, dimensions and details for each house. Underlying this design strategy is a rigorous three-dimensional grid that organizes the space of each house and determines the precise location of each element—wall, window, door, clerestory, and ceiling plane. This grid will be the starting point for this assignment.

You each have been given the plan of one of Wright’s first Usonian houses from which you will produce sections and analytic diagrams to illustrate the fundamental architectural concepts of the Jacobs House.

In order to complete the drawings and diagrams, you will need to research additional photos, drawings and text. We have provided an initial text regarding the Jacobs’ House, in an essay by Michael Caldwell entitled *The Jacobs House: Burning Fields*. Additional research should be done offline, and although Northeastern’s Snell Library is nearby, the Boston Public Library and MIT’s Rotch Library are excellent resources, the latter being dedicated solely to architectural subject matter. You should also use the Avery Architectural Index—a online resource that searches architectural journals and magazines.

**Plans and Sections**

Plans and sections are types of drawings that architects and other designers use to transmit their thoughts to a specific audience. These types of drawings are referred to as orthographic projections, where the location of a cutting plane is projected onto a parallel surface. Plans are typically cut at 4’ above the floor that they are on, while sections are be placed at their most advantageous location to explain a spatial idea or concept. For further information refer to *Architectural Graphics*.

**Process**

You will draw two sections of the house using AutoCAD. Do not trace the drawing. Instead, begin your drawing with grid lines. Since each of the houses were designed using a rigorous grid system, beginning your drawing with this grid will result in dimensionally and proportionally accurate plans. Once you have completed the sections, you will choose elements of the house to diagram.

Once the plans have been completed in AutoCAD, you will export them into Illustrator to produce analytical drawings. All final section drawings will be printed at 1/8” = 1’-0” scale, centered on Tabloid (11” x 17”) paper, diagrams will be at the discretion of the student. For this assignment, you will be using the laser printer in the computer lab. It is your responsibility to obtain printing credits for test and final prints.

**Resources (links)**

Jacobs House Autocad file
Plotting Screencast
Analytical Drawing
**Lineweights**

For this exercise you will use three lineweights. In AutoCAD, lineweights are typically specified by their color. The heaviest line you will use will be green at 0.30mm, blue at 0.15mm and grey at 0.05mm. These colors will correspond to the following layers: GRID (red), DARK (green), MEDIUM (blue), and LIGHT (grey). In a CAD program you typically draw objects at full scale (i.e. actual size), drawings are formatted to print at a specified scale (e.g. 1/4'=1', 1/8''=1', etc.).

**Class Schedule**

Week xx Assignment Handed Out. Tutorial: Intro to Autocad, Plan and Section lecture.

Week xx Preliminary Section complete. Plotting from Autocad Tutorial.

Week xx Section Complete.

Week xx Tutorial: Importing to Illustrator. Diagram lecture.

October xx/October xx Assignment Due.
A3 ThickThin

In this assignment you will explore two fundamental architectural issues: the delineation of space and the occupation of that space.

On a defined field, you are to use the kit of wall elements to define at least three spaces on that field. You are to carefully consider the relationships between these spaces, the quality of these spaces, and the sequence of movement through them.
The Field

The field is defined as a 27' x 42' upon which a 3' x 3' grid has been placed to define location and placement of walls.

Kit of Walls

Use the following kit of 6” walls to define space on the field:

In addition, you can use 6” roof planes at 9’ and/or 15’

The Rules

Use as many or as few wall elements from the kit as necessary.

1) All walls must be positioned along the 3’ grid. The inside or outside edge of the wall (not the center of the wall) is to align with this grid.
2) At least one edge of each wall must touch the outside edge of the field. Walls cannot extend outside the field and must be located within 6’ of the edge of the field.
3) One wall may violate the rule above. This wall need not touch the edge of the field and can be located anywhere on the field. It must, however, remain within the edges of the field.
4) Wall elements may touch. One edge of each wall element may be no more than 6’ from an adjacent wall element.
5) Roof planes must cover at least two-thirds of the field. Roofs can be at 9’ or 15’. Roof planes must share an edge (touch) and may overlap. Roof planes cannot extend beyond the field.
6) Walls must support the roof plane and must be at least 9’ tall. Walls may be no taller than 15’.
**Relationships**

Explore at least one of the following spatial or compositional concepts in your design:

- **Space within a Space**
- **Interlocking Spaces**
- **Adjacent Spaces**
- **Spaces Linked by a Common Space**

**Sequence**

A narrative should describe the movement through and occupation of the spaces you've defined. Because the space has no program or function, this will be an abstract narrative. Think about the quality of the spaces you are creating: scale, light, degree of openness, etc. How does each space prepare you for the experience of the next?
Software and Tactics

We will use AutoCad and Illustrator for this assignment. In addition, you will be asked to use freehand sketches and diagrams as a design tool. These should be created in your sketchbook or as a series of well kept trace sheets.

Physical Modeling

This assignment will require a series of sketch models and a final model to explain the narrative. For this you are asked to refer to the Modelbuilding Basics book, and the instructors will inform you of any materials that are to be purchased for each class session.
A4 MUSEUM STAIR

Part 1

In this assignment, you will begin to explore the spatial implications and types of perspective drawing. You will study two paintings and carefully analyze the spaces created by each artist:

Rogier van der Weyden, Flemish. ca. 1400-died 1464
Oil and tempera on panel; 54 x 43 in.

John Singer Sargent, American 1856-1925
Oil on canvas; 87 x 87 in.

Using those perspectives as a base, you will create a series of analytic diagrams that illustrate the spatial and perspectival concepts that you have discovered. These diagrams can address any of the following concepts—singularly or combined.

LIGHT
OVERLAP
FRAME
DIRECTION
MATERIAL
ELEMENTS
POSITION
SURFACE
LAYERING
PATTERN
FORM
GEOMETRY
SCALE
PROPORTION

Part 2

Plan and Section

The attached plan and section diagrams represent three spaces in a small university art museum. A new stair will be added to connect the spaces and serve as the major vertical circulation route for the museum. Your assignment is to design the stair that connects the two levels depicted in the drawings. The stair must be a subtractive spatial volume that runs up into either of the upper level galleries. In addition to the design of the stair, you will need to locate the various openings, windows, and skylights that will allow the only light into the rooms. Options for the placement of these elements are included in the attached drawings. You will also need to locate two paintings in the spaces linked by this stair.

An important decision that will need to be made is the location of the two (or more) entries into this particular sequence of spaces (other galleries exist on both levels of the museum that are not included in this design assignment). Pay attention to the intended ‘perceptual performance’ of your design proposal. For example, ‘how does the stair first present itself to the visitor,’ ‘how can light be used as a design tool,’ or ‘how do views of the paintings unfold as I move through the stair and rooms.’ Precise decisions linked to movement and views should be emphasized over symbolic or metaphorical narratives. Decisions about the arrangement of spaces and the elaboration of elements will build from a single (but not simplistic) story line.
General Rules

Minor transformations to the plan and section are possible if they are supported by decisions that grow out of development of the design. The following rules apply:

1) The volume of the stair can penetrate spaces on the first floor that are not included in the plan and section diagram (within the zone qualified in the attached drawings).
2) The design of the thresholds between the three spaces is a matter of design interpretation (i.e. you can design these connections).
3) At least one door must be provided ‘out of the system’ on each level of the project (therefore at least two doors must be provided).
4) The main entrance to the museum is on the first floor.
5) All new architectural elements should be primarily organized on the rectilinear grid of the existing spaces.
6) Assume that a handicap accessible elevator is located in a space immediately adjacent to the double-height space depicted in the attached drawings.

Stair Rules

1) The rise of the stair should be between 4” and 6”, the tread width should be between 12” and 17”.
2) Stairs that transverse more than 12'-0" in elevation require an intermediate landing. Landings typically need to be at least as deep as a stair is wide (for example, a stair that is 4’ wide should have a landing that is at least 4’ x 4’). For stairs that are wider than 5’, landings do not need to be deeper than 5’.
3) Handrails on stairs need to be 34” high. Guardrails at stairs, landings, and balconies need to be 42” high.
4) Guardrails must meet the ‘baby-head rule’, which means that a 4” diameter ball cannot fit through any opening in the guardrail. In addition, guardrails cannot create a ‘ladder effect’, ruling out horizontal railings.

Requirements

To be determined
An Outdoor café and landscape transformation of the Christian Science Center
Despite the formal strength of the rows of linden trees and the reflecting pool that align with Huntington Avenue at the Christian Science Center, the space is usually empty and forlorn. In order to invite more people to congregate on the Huntington Avenue edge of the complex, the Church has decided to explore the possibility of building a small seasonal café. The intent is to create a second gathering place to balance the popular circular fountain at the north-east end of the site.
This café will have primarily exterior seating, with a small glass enclosed interior seating area and service counter. In addition to the design of the café structure, the landscape of the site will need to be transformed to better accommodate outdoor café seating. These transformations will include both additive strategies - new structures, planter and seat walls, and pavements - and subtractive strategies - removal of trees, planter and seat walls to affect the larger setting for the café.
The location of the café, its form, and the landscape transformations should be considered within the framework of the following design intentions:
- To open up views, to encourage people watching for those who do not elect to sit at the café, to create alternative movement patterns across the site, and perhaps to encourage other kinds of public activities around the structure.

**SITE**
Under or adjacent to the bosque of linden trees located along Huntington Avenue. The café structure must be located at least 10’ from the street curb line and must maintain the pedestrian access along the edge of the pool (slight detours are possible).

**PROGRAM**

**Indoor seating 400 sq. ft.** Indoor seating should have at least one wall of glass that opens up to the exterior in good weather.

**Outdoor seating for 50 patrons**
The outdoor seating area(s) should be clearly defined (garden walls, landscape elements, changes in level or material of ground plane, etc.) The proposed location of the seats should give visitors the option to sit in either the shade or sun. Shade can be accomplished with trees, roof overhangs, or freestanding structures.

**Food service area 200 sq. ft**
Food preparation will be offsite; food service area will consist of a 3’ deep service counter.
Service area should be clearly visible from the exterior and easily accessed from exterior seating areas.

**Storage/prep room 200 sq. ft.**
Adjacent to food service area. Provide delivery and employee entrance.

**Trash room 50 sf**

**Mechanical room 75 sf**

**2 Restrooms 110 sf**

Refer to Architectural Graphic Standards – a standard architectural reference book – to get an idea of the appropriate scale and layout of the kitchen service area and the café seating. You need not worry about the precise arrangement of equipment in the kitchen.

**MATERIALS**

You can choose from the following list of materials. No other materials or finishes will be accepted.
- Concrete
- Masonry
- Metal
- Wood (unfinished)
- Glass

**Rules for transforming the existing landscape.**

Linden trees can be removed from the grid (subtractive operation). Additional trees can be added

Sections of the seating and planters can be removed to provide a site for the café (subtractive operation). In addition to removing sections of existing planter walls and benches, new architectural elements (including extensions of benches and planter walls) can be grafted onto existing conditions (additive operation).

New walls, benches, and other landscape elements may have different profiles and details than existing elements but should be complimentary.

Please pay special attention to resolving the interface with the existing landscape elements and paving when manipulating the site to accommodate the café building.

Small changes in level are encouraged but not required. Changes in elevation of the ground plane can be no more than 30” from the dominant elevation of the general site. All changes in plane require ramp access. Ramps can be no steeper in pitch than 1:12 (a ramp has to be 12’ long for every 1’ change in grade). Ramps required handrails at 36” from the ground (guardrails are not necessary). Ramps that are less than 1:20 do not need railings.

It is strongly encouraged that all new architectural and landscape elements be on the same orthogonal (right-angle) grid as the existing site elements. Exceptions can be made with approval from the instructor, but they must be a relatively small part of the overall design. No pitched roofs, mansard roofs, domes, cupolas, etc. Flat roofs are recommended.