Site, Space and Program

Course Description

This course is structured around analytical exercises and design projects intended to develop fundamental design skills – both intellectual and technical – including:

– site analysis and its application as an architectural design tool
– spatial and tectonic composition
– building typology and precedent analysis

Projects will build on the drawing, modeling and visualization skills introduced in the freshman studio curriculum. The course will stress the use of drawings and models both as investigative and communication tools, with a particular emphasis on diagramming and on the composition of plans, sections and elevations.

Prerequisites

This course requires that the following prerequisites be completed satisfactorily before you will be allowed to take this course: ARCH 1110 Fundamental Representation and ARCH 1120 Fundamental Design. If it is discovered that you have not completed these prerequisites, you may be dropped from the course at any time during the semester.

Course Requirements

Studio. You will be expected to work during studio hours so come prepared to work on your assignments with the necessary materials (laptop, drawing tools, model-making equipment, etc.). The course will require both manual and digital work as specified by the instructor for each assignment. Always have the following for desk-crits:

– drawings, prints (to scale) or models of your project to discuss with the instructor
– trace paper and drafting pencils or pens for sketching
– sketchbook (unlined) for taking notes and for making sketches and diagrams of your project

Critiques (Pin-up, Review). Requirements for each critique will be specified for each project. No work can continue during a critique unless it is designated a “working critique.” There are NO acceptable excuses for not presenting work, including digital media issues. Please produce and print your digital work well before the due date. Late work will reduce its grade.

Attendance and Participation. Three unexcused absences will automatically drop your grade by one letter-grade, i.e., from an A to a B (24 meetings; 3 absences is 12% of the course). You should be present for the entire studio time and actively engaged in project development. All students are required to participate in class discussions; dialogue is encouraged and required. You are also required to attend all the evening lectures offered during this term.
**Evaluation**

Conceptual ideas and rigorous thinking are integral to design work. In sophomore studios, it is equally important to develop drawing and model-making skills that effectively communicate one’s ideas. Students should use appropriate methods of architectural representation in both their process and presentation work.

Evaluation of projects, and by extension your evaluation for the course, will be based on the following criteria. A successful project should meet each of these criteria with competence and balance:

- Asserts a conceptual and spatial proposition that is rooted in a reading of site, program, and precedent.
- Develops ideas independently with rigor and critical analysis, and produces the physical work associated with this process.
- Shows comprehension of representational conventions and techniques for communicating spatial information.
- Demonstrates knowledge of fundamental architectural design with respect to scale, dimension, circulation systems, and program/site relationships.

Your overall course grade is a weighted average of the grades for each project. Project evaluation is based on work at reviews, as well as your process work at desk crits. Process is also a separate component of the course grade. Evaluation of your process work considers the quality of design work at each class session, your use of studio time, and consistent effort throughout the project duration:

<table>
<thead>
<tr>
<th>Component</th>
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<tbody>
<tr>
<td>Design Project 1</td>
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<tr>
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<td>Design Project 2</td>
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<td>Process</td>
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Also refer to the School of Architecture grading guidelines for Design Studio courses:

http://www.architecture.neu.edu/student_resources/grading_policy/studio_course

**Academic Honesty**

Northeastern University is committed to the principles of intellectual honesty and integrity. 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.
Site, Space and Program

<table>
<thead>
<tr>
<th>WK</th>
<th>DATE</th>
<th>STUDIO SESSION</th>
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<td>Fall Semester Begins</td>
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<td>Dec 16 F</td>
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<td>Dec 19 M</td>
<td>Grades Due</td>
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Culinary Arts School

Issued: Tuesday, September 20
Review: Friday, October 07

The diverse food culture in Boston has for years attracted people from throughout New England to neighborhood restaurants specializing in local, regional and international cuisine. Area restaurants have developed new talent and attracted chefs from around the country to start innovative restaurant concepts that have redefined the city's food scene. The South End neighborhood has seen one of the largest and most diverse concentrations of new restaurants in the last few decades, making it an important cultural space in the city.

A group of chefs from the area have joined to build a new Culinary Arts School in the South End where professionals, aspiring chefs and customers can share traditional and innovative cooking techniques through small group classes for the public, continuing education courses, and formal training in special techniques with visiting chefs.

As a way to fund this new venture and engage with the neighborhood, the chefs have applied for a special grant from the City of Boston to include a Kitchen Incubator within the new Culinary Arts School. The Kitchen Incubator is intended to share the commercial size kitchen and provide storage space for small local food start-up businesses for low daily rental fees, allowing use of the code-compliant facilities without the initial capital investment. The program will expand the typical Kitchen Incubator to include a shared vegetable garden that could provide fresh ingredients to local businesses and area restaurants.

The Culinary Arts School hopes to attract high profile chefs to give lectures and offer special training for area professionals, by providing a venue for public and food industry events. This requires a multi-purpose space that can accommodate public lectures, demonstrations, and recorded shows related to the school and chefs. This space may also be leased by others for events.

The multi-purpose space will also have a smaller retail area and café that can offer food produced by local chefs and the Incubator tenants from the kitchen and garden, as well as sell and promote books and related products.

The school has very specific programmatic needs, especially concerning the technical workflow related to food preparation. At the same time, some parts are more open to interpretation, and the school is flexible with respect to how its public agenda and needs might materialize into exact spaces. Regardless of program expressions like “public”, consideration needs to be given to the relationship between workspaces and non-workspaces, as well as between any of these spaces and the larger context of the site.

Site Constraints

See attached plan for overall site dimensions. The maximum building footprint is 28’ x 43’. The height limit is 36’ measured from street level to the parapet or high point of roof. The building can step down 5’ below street level, in order to match access from the alley. Outdoors spaces can be located anywhere within the site constraints.
# Program

You should consider the size and hierarchy of these components. Consider how “service” spaces fit into a continuous workflow, but also the adjacency between any particular service area and its related served space. Urban institutions and commercial kitchens such as this one require smart planning of service and storage spaces to optimize operability. Pay special attention to the specific requirements of each area to define and integrate “poché” of support / storage spaces with related activities.

### Commercial Kitchen:
- Height = 8’ + 2’ ceiling thickness, Min 12’ long continuous chef line
  
  **300 SF**

### Walk-in refrigeration (direct access required to kitchen on same floor):
- Height = 8’ + 2’ ceiling thickness, 12” thick walls for insulation

  **100 SF**

### Dry storage:
- 8’ height, access to kitchen via dumbwaiter / elevator

  **200 SF**

### Kitchen Incubator Storage Spaces (4 @ 50 SF):  
- 8’ height, access to kitchen via dumbwaiter / elevator

  **200 SF**

### Multi-purpose space:
- Two related spaces that do not require the same floor level:
  - Retail & café with seating: Min. 10’ height
    - Must be immediately next to Commercial Kitchen on same floor
  - Event space with Demonstration Kitchen: Min. 16’ height
    - Must have access to kitchen via dumbwaiter / elevator

  **200 SF**

### Classrooms with Teaching Kitchen (2@250 SF each):
- Height = 8’ + 2’ ceiling thickness; Wet/storage wall: 24” deep
- (4) stations @ 2’x3’ + (1) 2’x10’ Instructor work table
- Must have access to food storage via dumbwaiter / elevator

  **500 SF**

### Other / Miscellaneous:
- Public Restrooms (total Male + Female)
  - ADA accessible
  
  **200 SF**

- Student / Staff Storage & Changing room
  - (20) 7’Hx12”Dx12W” lockers

  **100 SF**

- Kitchen Manager Office
  
  **50 SF**

- Mechanical Room
  
  **50 SF**

- Trash room
  
  **50 SF**

**Sub-total:**  
**2350 SF**

### Circulation (+/- 25% Floor Area)
- Egress stair [8’x14’ approx] & Elevator [8’x10’]
- Service Entry (Min dimension for doors) 10’h x 6’w
- 4X4 continuous Mechanical Chase from Ceiling of Kitchen to Roof
- 4x4 dumbwaiter connecting storage and other spaces to Kitchen

**550 SF**

### Vegetable Garden
- 2ft soil thickness + structure

**300 SF**

### Outdoor Patio with seating
- Adjacent to Café

**150 SF**
NOTE: Ground-scape can be altered in the dimensions indicated (darker hatch and 5' on Clarendon). Alley can be modified as needed. No changes to sidewalk or curb cuts.

Maximum building footprint is 28' x 43'. Projections are allowed after 10' vertical clearance above sidewalk grade. Projections are limited to 5' on east and west, and 2' on south.
Final Presentation Requirements (Review on Friday, October 07)

Orthographic drawings should be from 2D CAD and/or Illustrator (no section cuts from a digital model). You should construct the drawings with a strong emphasis on the clarity and hierarchy of lineweights. In the composition and layout of your individual drawings for presentation, the analytical and design narrative should be evident.

Model at 1/8" = 1'
Show context of adjacent buildings, sidewalk and street. Model should come apart so the inside is visible.

Partial Model at 1/4" = 1'
Section model or other part.

(2) Sections at 1/4" = 1'
Minimum, 1 longitudinal and 1 lateral. Show context in section. Include figures.

(1) Elevation at 1/4" = 1'
Warren or Clarendon street elevation. Show context of adjacent elevations as necessary.

Floor Plans at 1/4" = 1'
Show party wall and context in plan. Include sidewalk in first floor plan.

(3) Diagrams (scale TBD).
Illustrate the major themes of your project. Plan, section or axonometric views.

The drafted drawings listed above should be in black/white or grayscale.

Freehand drawings
Any supplemental drawings you wish.

Process Materials
For the final review, pin-up your study models and any relevant process work that aid in explaining your design development and methodology.
Library Architecture: Type Analysis

Overview

This analytical assignment serves as an introduction to the second building you will design, a small public library. Using a precedent from the list below, you are asked to create a series of diagrams and models. Your precedent analysis should isolate the spatial and organizational elements that operate in specific ways to address the needs of the library program. That is, what are the characteristics of the library building type? Consider carefully how spaces and rooms are defined in section, and how views and sequences between spaces are created or controlled. Pay particular attention to the heights of the spaces and how these correlate to programmatic use.

Precedent List

1 Bibliothèque St. Genevieve: Henri Labrouste (1845-51)
2 Viipuri Library: Alvar Aalto (1935)
3 Beinecke Rare Book Library: Gordon Bunshaft, SOM (1963)
4 Library at Phillips Exeter Academy: Louis Kahn (1965-72)
5 Library of the University of Aveiro: Alvaro Siza (1988-94)
6 Public Library, Almelo: Mecanoo Architects (1993-94)
7 Phoenix Central Library: Will Bruder (1995)
8 Rome's Pontificial Lateran University, new library: King Roselli Architects (2006)
9 Des Moines Public Library: David Chipperfield (2006)

Assignment

Most of these drawings are analytical diagrams that isolate specific elements of the precedent, or choose to highlight certain relationships at the expense of others. The last drawing is a synthetic diagram: using your observations, recombine them to present a cohesive interpretation of the library as a whole.

The drawings will be supplemented by models.

You will work in a team of two. Many of the diagrams are a joint effort, and you should seek to have graphic consistency across your team's work, including the models. 2 of the diagrams are an individual effort, but your drawings should be informed by your partner's. Taken together, the individual drawings should point to a comparative and complementary approach.

The work listed below is shared by the team, unless indicated as “individual.”
Analytical Diagrams @ 1/32"=1' or 1/16"=1' (discuss scale with instructor and format for 11x17)

The first 3 diagrams in this group should all be at the same scale.

1. Circulation and program (axonometric)
   Identify the different program zones (reading areas, books, public spaces, service, office, etc.).
   Diagram the main circulation system, including elevators and egress circulation.

2. Public space, community space, reading space (axonometric or section)
   Diagram the sequence, hierarchy, and scale of public spaces and any spaces for reading. This
   might also include information on how the building is sited and exterior spaces.

3. Figure / Ground (plan and axonometric)
   This kind of diagram codes public areas in white, and other areas in black as solid “poche.”
   This is a simple series, all drawings in plan except the last one:
   A. Book stacks as white.
   B. Book stacks as black.
   C. Choose one of the above, and overlay the structural system in red.
   D. Choose one of the above, and overlay the enclosure as a red line.
      Offset the red line slightly to the outside if needed for legibility.
   E. Choose one of these drawings and translate it into an axonometric.

4. Elective (each individual produces 1 drawing)
   Diagram a subject of your choice. This could be something not included above (light, materials,
   views, etc.) or an area of detail that is not well represented at the scale of diagrams above. If you
   choose a detailed area, use a scale for this drawing like 1/4" = 1’.

Diagrammatic Model (match the scale of your first 3 diagrams)

Consider the diagrams above. Make a model of one diagram, or combine diagrams into a model.
Each individual produces 1 model. The model choices should complement each other.

Synthetic Diagram @ 1/16"=1' or 1/8"=1' (twice the scale of your first 3 diagrams)

Each individual produces 1 drawing. This will be an axonometric (exploded) that looks critically at the
first diagrams and synthesizes the information isolated in those diagrams. Use the drawing to frame
an argument about the building’s spatial and programmatic organization.

NOTE: All diagrams are interpretive but should show appropriate standards of representation. As you
devote the diagrams, carefully select the drawing views and techniques that best suit each topic and
precedent.
The siting of a building is a contextual act that responds to numerous site related conditions. Site analysis is a predesign activity that can provide a thorough understanding of these conditions, and may reveal both design constraints and opportunities. Not only may these site conditions affect the placement, orientation, and massing of a building, but they often influence the internal organization as well. A site analysis typically consists of three phases:

- Collection and inventory of site data.
- Analyzing the information through diagrams, reports, etc.
- Synthesis of information and proposal of conceptual design ideas.

Information that is collected for site analysis may be extensive, and often encompasses a wide range of scales, from on-site (micro) to regional (macro). However, not all information is equally relevant for every site, thus requiring a careful weighting based on the nature of the project. A traditional analysis may investigate the following types of information, and more:

- Geographic location and relationship to other places.
- Neighborhood context (massing of nearby buildings, solid-void relationships, density, local uses)
- Patterns of buildings and urban fabric, consistency and objects
- Traffic flow patterns (pedestrian, vehicular, public transit)
- Climate and solar orientation
- Sensory (views to and from the site, noise, odors, light)
- Natural physical features (topography, vegetation, hydrology, geology)
- Man-made physical features (walls, buildings, hardscape, signage)
- Legal (zoning, envelope and height restrictions, parking)
- Human and cultural (demographics, crime, population density)

Assignment

For Friday, October 28:

1. Revisit the site and identify 3 categories of data that you feel are instrumental to develop strategies for building orientation, volumetric massing, the finding of “fronts” and “backs,” addressing the street(s), and internal solid/void relationships. Record data that has been gathered through observation, sketching, photographs, research, etc.

2. Provide (1) diagram per category @ 1/32”. Format for 11x17.

3. Construct a conceptual diagram model @1/32” exploring building orientation, “fronts” and “backs”, or how the building presents itself to the street(s) and neighborhood. Include site context.

For Tuesday, November 1: (site model due, and revise prior analysis work based on criticism)

Assume the building is 14,000sf total, with 5000sf of reading spaces at 15’ height, and 5000sf of books at 10’ height. The remainder is service, bathroom, offices, circulation, etc., also at 10’. Half of the site must be open exterior space. The building will need to be multiple floors; height should be context appropriate. The available site includes the air-rights over the T station.

4. Construct a conceptual diagram model @ 1/16” that explores locations of “poche” and open interior spaces within the building, and resulting spatial conditions. Include site context. Note that the “poche” and open spaces do not each need to be a single large piece.

5. Construct a massing model @ 1/16”, to fit into the group site model. This should be derived from, and build upon, the concepts explored in the preceding diagram models.
The South Boston Branch of the Boston Public Library system is undergoing an expansion. With increasing local residential population, the existing collection is scheduled for a 20% expansion over five years, and a near 50% expansion in twenty years. These changes will require a significant overhaul, and the branch library is making plans for a new facility on a new site.

As part of this new facility, the branch library would also like to provide the open flexible spaces that are typical of the contemporary library program, where users may be very likely not to need books. Computer facilities and wireless networking are both important to the new project, and the library has promised to expand its technological offerings to the general public and its changing demographic.

Growth in the South Boston population has been driven, in part, by condo sales, and a growing population of professionals has changed the dynamics of the previously working class neighborhood. The current library, located at 646 East Broadway, is highly valued and well used by the population of long time local families. There is some tension in the midst of the population growth, and the library finds itself in the position of catering to several generations of South Boston residents, while seeking ways to adapt its offerings to a young population of professional newcomers.

The collection consists of a comprehensive adult fiction library, including best sellers and many recently published listings. As well, there is a popular collection of historical materials on South Boston. A large periodical listing and subscriptions to several daily newspapers are included.

The proposed site is adjacent to the Broadway Red Line subway stop, on Dorchester Avenue and Broadway Street. The city would like to locate the new branch library there along with an outdoor space for public use.

Proposals should consider the many community roles of the branch library, as well as the potential users and constituents of this new facility. Proposals should also help the client clarify the program – how do the different reading spaces relate to books, or do they focus on other uses?

**Documentation:**

- Site diagrams.
- Site plan.
- Model in site model.
- All floor plans.
- Two sections, minimum.
- One elevation.
- Model.
- Building diagrams.

Perspectives, one interior and one exterior, minimum.
Program

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<td>Bookbinding/Work Room</td>
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<td>Conference Room (10 Seats)</td>
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| SUBTOTAL:  | 11,000 |

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<td>IT/Telecom Closet</td>
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<tr>
<td>Bathrooms</td>
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| Exterior Loading Dock:  | 500 |

| TOTAL GROSS SQ FT:  | 14,500 |

Constraints

OPEN SPACE REQUIREMENT: 6,700 SF (minimum, 50% of site)

Open space should be “unconditioned” and accessible from street level. Part of open space may be “private” to library. Service and loading area is included in the open space calculation. Building height should address context. Proposal can build 12’ below grade. The available site includes the air-rights over the Broadway T station. Modify T station as req’d.

Two means of egress are required from every floor. Passenger elevator must be included. Building design should be accessible. Ramps should slope no greater than 1:12.

Library Design Reference:

Book-stack reference standard: 84” high x 12” deep per side, 5’-0” to 5’-6” O.C.

ADA book-stack aisle width: 36” min. / 42” strongly recommended

Periodicals: Require both display shelves and storage shelves