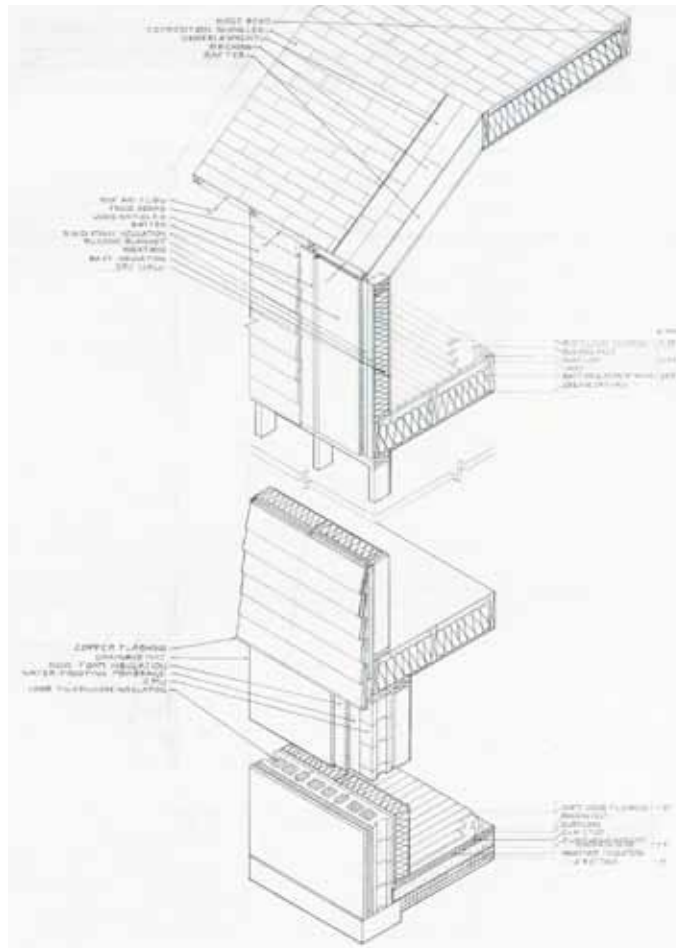


FALL 2016



**ARCH 1130 BUILDING TECHNOLOGY I  
COURSE OUTLINE**

2016 08 14

## DEPARTMENT OF ARCHITECTURAL TECHNOLOGY

### ARCH 1130

### BUILDING TECHNOLOGY I

1 classroom hour, 4 lab/studio hours, 3 credits

**Course Description:** An introduction to basic materials of construction and the fundamental principles of architectural hand drafting and system analysis. The coursework includes surveying existing conditions, development of drawings of plans, elevations, sections, and basic details from foundation to roof as well as the study of material properties and applications with an emphasis on wood and masonry and shallow foundation systems.



READING + DISCUSSION



SKETCHBOOK ANALYSIS



TECHNICAL DRAWING

**Course Context:** This is the first course in the Building Technology sequence required for both the AAS and the B'Tech degrees offered by the Department of Architectural Technology. Each course in this sequence is a prerequisite for the following course. There are four Building Technology courses.

**Prerequisites:** CUNY Proficiency in Reading  
CUNY Proficiency in Mathematics

#### **Required Texts:**

Ching, Francis. *Building Construction Illustrated*. John Wiley and Sons, 2008.

Roth, Leland M. *Understanding Architecture: Its Elements, History, and Meaning*. New York, NY: Icon Editions, 1993. Print.

#### **Recommended Texts:**

Allen, Edward. *Fundamentals of Building Construction: Materials and Methods*, 5th Edition. John Wiley and Sons, 2008.

Mark, Robert, ed. *Architectural Technology up to the Scientific Revolution*. MIT Press, 1993.

Ramsey, Charles George, Harold Reeve Sleeper, and Bruce Bassler. *Architectural Graphic Standards: Student Edi-*

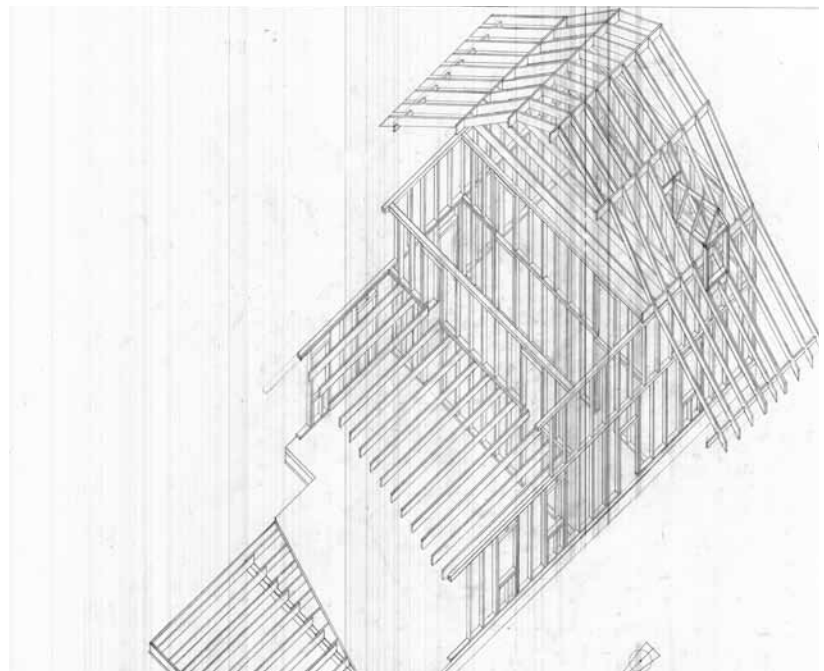
**Attendance Policy:** No more than 10% absences are permitted during the semester. For the purposes of record, two lateness are considered as one absence. Exceeding this limit will expose the student to failing at the discretion of the instructor.

**Academic Integrity:** Students and all others who work with information, ideas, texts, images, music, inventions and other intellectual property owe their audience and sources accuracy and honesty in using, crediting and citation of sources. As a community of intellectual and professional workers, the college recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and is punishable by penalties, including failing grades, suspension and expulsion.

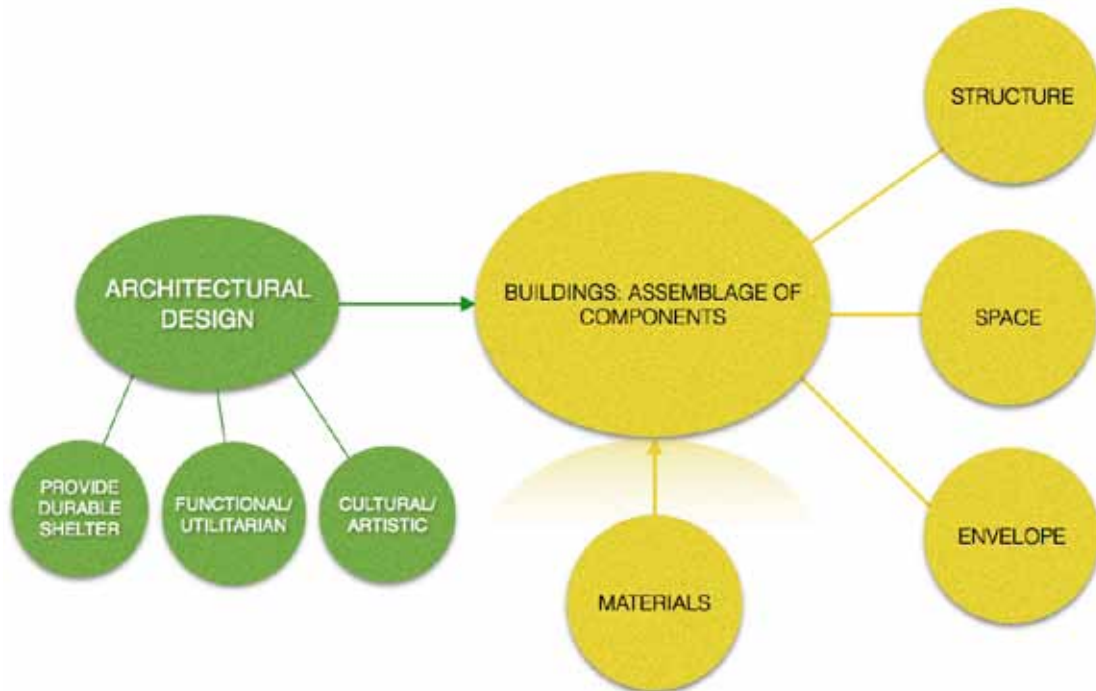
**Course Structure:** This course will combine a discussion series delving into fundamentals of architectural technology and studio lab time to develop a series of technical drawings. A portfolio will be developed to document the studio lab work as the semester progresses. Field trips will offer first hand on-site investigation of the core issues of architectural technology.

## GRADE WEIGHTING

- 60% Studio Lab Assignments
- 20% Sketch Book Assignments
- 10% Text Book/Reading Notes
- 5% Text Book/Reading Presentations + Discussions
- 5% Assessment Packets



## KNOWLEDGE ORGANIZATION FOR COURSE CONTENT



## LEARNING OBJECTIVES

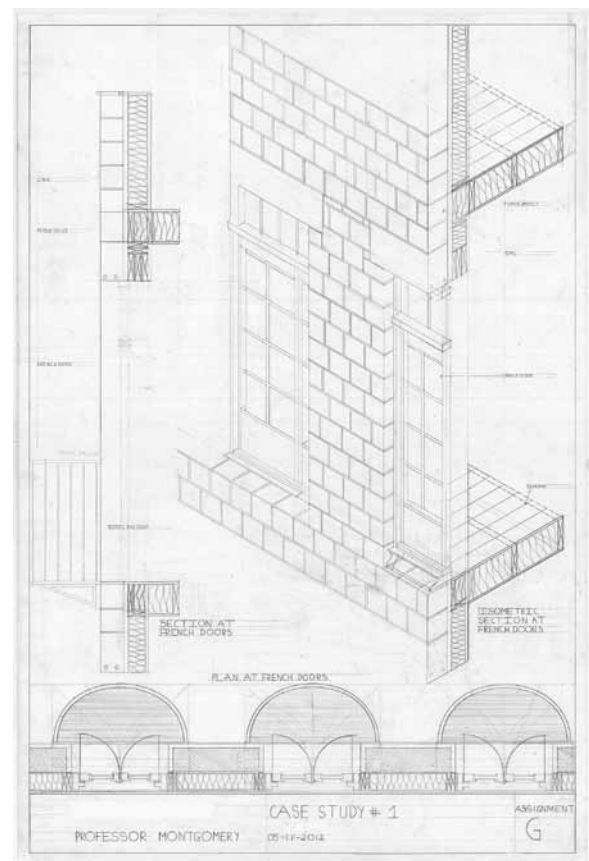
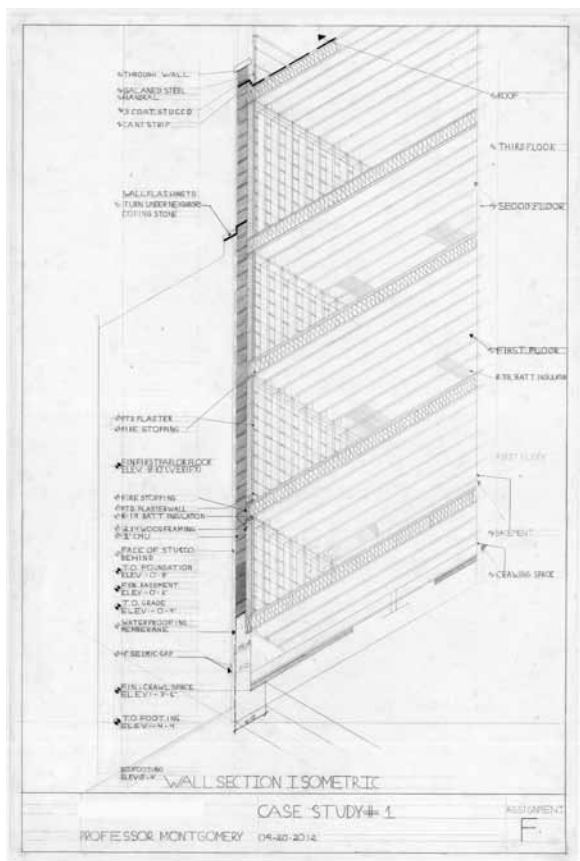
Upon successful completion of this course, the student will:

1. **Acquire tools for lifelong learning** - how to learn, how they learn, knowledge of resources. (Gen Ed)
2. **Manipulate and apply** geometric, proportional and scale systems. (Gen Ed)
3. **Develop and apply** a professional vocabulary of architectural terminology. (Gen Ed)
4. **Understand and apply** professional etiquette to classroom situations. (Gen Ed)
5. **Analyze** assemblies and details through research and visual observation. (Skill)
6. **Sketch and draft** orthographic and 3 dimensional views of buildings and details in analogue and digital media. (Skill)
7. **Recall and recite** key terms, material properties, structural typologies, and envelope system reviewed in the discussions and readings. (Gen Ed)
8. **Carefully Observe, Survey, and Document** Existing Conditions (Skill)

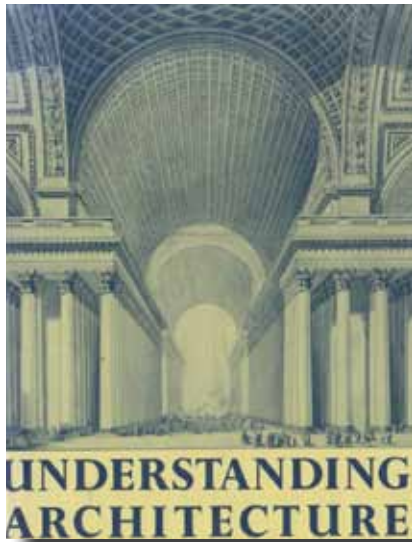
## ASSESSMENT

To evaluate the students' achievement of the learning objectives, the professor will do the following:

1. Assess student engagement with the course material through the sketchbook assignments, textbook notes and presentations, and technical drawing assignments using rubrics. (Los: 1)
2. Assess the students' ability to recall and recite the key terms and concepts during text book presentations and through review of textbook notes, and sketchbook and technical drawing annotations. (Los: 3,7)
3. Review students' technical drawing assignments where students must exhibit their understanding through accuracy, correct use of line weight and scale, and annotations. (Los: 2,5,6,7,8)
4. Assess the students' use of professional vocabulary and etiquette during discussions and oral presentations. (Lo: 3,4)
5. Review students' field notes and final drawings for careful observation and accuracy in documenting existing conditions. (Los: 2,6,8)
6. Assess the students ability to correctly match up coordinated drawings. (Los: 6)
7. Assess the students ability to identify architectural elements and to compare and contrast buildings. (Los: 3,5,6,7)







CLASS MEETINGS: 1+2

**Learning Objectives:**

Develop and apply a professional vocabulary of architectural terminology.

Manipulate and apply geometric, proportional, and scale systems.

**Course Introduction:**

Knowledge Organization: Architectural Design, Buildings, Structure and Envelop + Baseline Assessment

**Lab Assignment:**

TECHNICAL DRAWING ASSIGNMENT #1: Plan Drawing

**Homework:**

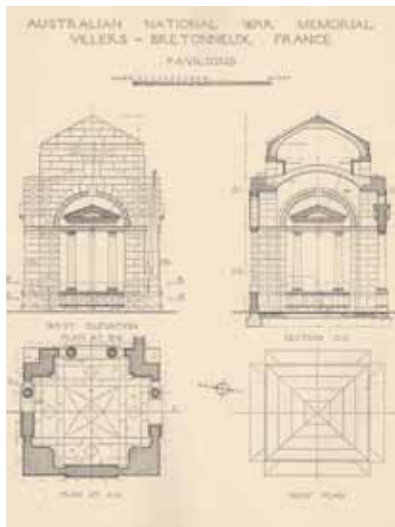
Complete Technical Drawing Assignment #1

Set Up ePortfolio

Sketch Book #1: Diagrams for a Shelter

**Text Book/Reading and Notes:**

Selection of readings from *Understanding Architecture*



CLASS MEETINGS: 3+4

**Learning Objectives:**

Develop and apply a professional vocabulary of architectural terminology.

Manipulate and apply geometric, proportional, and scale systems.

Sketch and draft orthographic and 3 dimensional views of buildings and details in analogue and digital media.

**Lab Assignment:**

TECHNICAL DRAWING ASSIGNMENT #2: Plan + Axon Drawing

**Homework:**

Complete Technical Drawing Assignment #2

Sketch Book #2: Studies of Architectural Plans

**Text Book/Reading and Notes:**

Selection of readings from *Understanding Architecture*



CLASS MEETINGS: 5+6

**Learning Objectives:**

Carefully Observe, Survey, and Document Existing Conditions

Develop and apply a professional vocabulary of architectural terminology.

**Text Book/Reading Presentation + Discussion:**

ARCHITECTURAL DESIGN

**Lab Assignment:**

Park Pavilion Site Visit / Field Documentation

Sketch Book #3: Annotation of Pavilion Details and Parts

**Homework:**

Sketch Book #3: Annotation of Pavilion Details and Parts



CLASS MEETINGS: 7+8

**Learning Objectives:**

Analyze Assemblies and details through research and visual observation.

Sketch and draft orthographic and 3 dimensional views of buildings and details in analogue and digital media.

**Lab Assignment:**

TECHNICAL DRAWING ASSIGNMENT #3: Park Pavilion Plan, Axon, Section

**Homework:**

Continue Technical Drawing Assignment #3

Sketch Book #3: Annotation of Pavilion Details and Parts

**Text Book/Reading and Notes:**

Ching, Building Construction Illustrated,

Materials pp. 12.02-12.03, Wood pp. 12.11-12.14, Wood Joists pp.4.26-4.27



CLASS MEETINGS: 9+10

**Learning Objectives:**

Analyze Assemblies and details through research and visual observation.

Sketch and draft orthographic and 3 dimensional views of buildings and details in analogue and digital media.

**Lab Assignment:**

TECHNICAL DRAWING ASSIGNMENT #3: Park Pavilion Plan, Axon, Section

**Homework:**

Continue Technical Drawing Assignment #3

Sketch Book #3: Annotation of Pavilion Details and Parts

**Text Book/Reading and Notes:**

Ching, Building Construction Illustrated, Masonry pp. 12.06-12.07, Stone p. 12.10, Masonry Walls 5.14-5.19 Masonry Details 5.20-5.21, Masonry Wall Sections 5.23-5.25, Masonry Bonding 5.26-5.27 Stone Masonry 5.33-5.34



CLASS MEETINGS: 11+12

**Learning Objectives:**

Recall and recite key terms, material properties, structural typologies, and envelope system reviewed in the discussions and readings.

**Material Lab**

Masonry and Stone Site Walk / Field Documentation

Sketch Book #4: Masonry Construction Field Documentation



**Material Lab:**

Wood Site Walk / Field Documentation

Sketch Book #5: Wood Construction Field Documentation

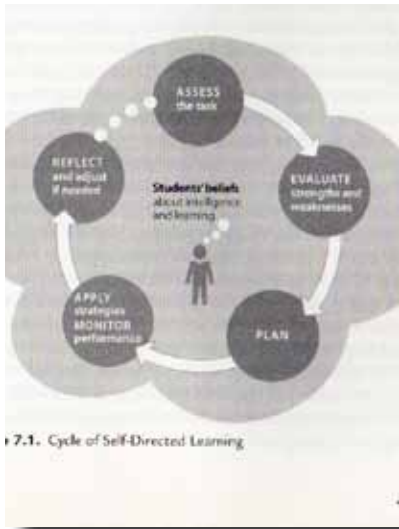


**Homework:**

Complete Technical Drawing Assignment #3

**Text Book/Reading and Notes:**

Ching, Building Construction Illustrated, Wood Stud Framing 5.41-5.45, Wood Rafter Framing 6.16-6.19, Wood Plank-and-Beam Framing 6.24-6.27



CLASS MEETINGS: 13+14

**Learning Objectives:**

Acquire tools for lifelong learning - how to learn, how they learn, knowledge of resources.

Recall and recite key terms, material properties, structural typologies, and envelope system reviewed in the discussions and readings.

**Text Book/Reading Presentation + Discussion:**

MATERIAL PROPERTIES, WOOD, MASONRY, AND STONE

**Assessment/Review:**

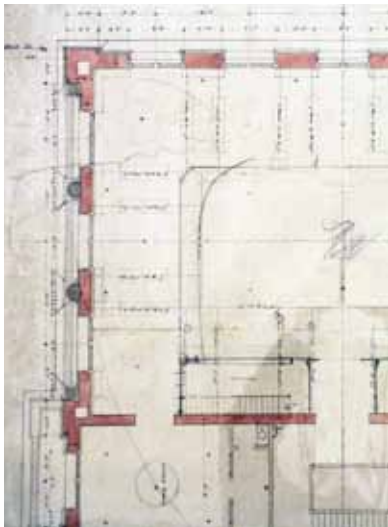
CYCLE OF SELF-DIRECTED LEARNING + PROGRESS ASSESSMENT

**Homework:**

Reflection on Self-Directed Learning  
Sketch Book Catch Up

**Text Book/Reading and Notes:**

Ching, Building Construction Illustrated, Buildings pp. 2.02-2.03 Loads on Buildings pp. 2.08-2.17 Structural Units pp. 2.19-2.21 Arches and Vaults p. 2.25



CLASS MEETINGS: 15+16

**Learning Objectives:**

Survey Existing Conditions

Sketch and draft orthographic and 3 dimensional views of buildings and details in analogue and digital media.

**Lab Assignment:**

Case Study Site Visit / Field Documentation  
Sketch Book #6: Case Study Field Notes and Diagrams  
TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation

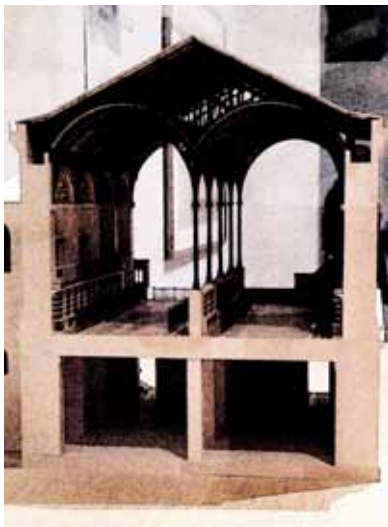
**Homework:**

Continue TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation  
Sketch Book #6: Case Study Field Notes and Diagrams

**Text Book/Reading and Notes:**

Ching, Building Construction Illustrated, Floor Systems pp. 4.02-4.03 Wall Systems pp. 5.02-5.03 Roof Systems pp.6.02-03,

Mark, Architectural Technology, Walls and Other Vertical Elements pp. 52-74



CLASS MEETINGS: 17+18

**Learning Objectives:**

Analyze Assemblies and details through research and visual observation

Recall and recite the key terms, properties, and fabrication techniques of the materials reviewed in the lectures and readings.

**Text Book/Reading Presentation + Discussion:**

STRUCTURAL SYSTEMS

**Lab Assignment:**

TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation

**Homework:**

Continue TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation

**Text Book/Reading and Notes:**

Ching, Building Construction Illustrated, Moisture & Thermal Protection pp. 7.02, 7.39-7.47





CLASS MEETINGS: 19+20

**Learning Objectives:**

Sketch and draft in orthographic and 3 dimensional views in analogue and digital media.

**Lab Assignment:**

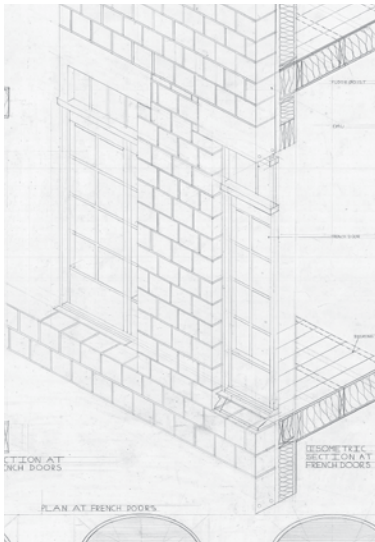
TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation

**Homework:**

Continue TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation

**Text Book/Reading and Notes:**

Ching, Building Construction Illustrated,  
Thermal Comfort pp. 11.03-11.04 Heating & Cooling Loads p. 11.09 Window  
Elements pp. 8.22-8.23, Insulating Glass p. 8.30 Site and Climate Impacts  
pp. 1.14-1.22



CLASS MEETINGS: 21+22

**Learning Objectives:**

Develop analog and digital models of construction assemblies.

**Text Book/Reading Presentation + Discussion:**

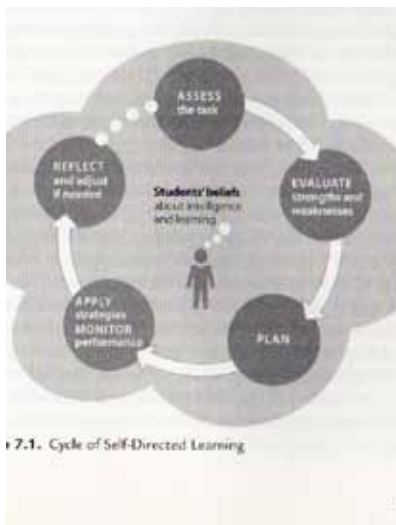
EXTERIOR ENVELOPE

**Lab Assignment:**

TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation

**Homework:**

Continue TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation



CLASS MEETINGS: 23+24

**Learning Objectives:**

Acquire tools for lifelong learning - how to learn, how they learn, knowledge of resources.

**Assessment/Review:**

COURSE REFLECTION + CYCLE OF SELF-DIRECTED LEARNING  
PROGRESS ASSESSMENT

**Lab Assignment:**

TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation

**Homework:**

Reflection on Self-Directed Learning  
Continue TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation



CLASS MEETINGS: 25+26

**Learning Objectives:**

Sketch and draft in orthographic and 3 dimensional views in analogue and digital media.

**Lab Assignment:**

TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation

**Homework:**

Continue TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation



CLASS MEETINGS: 27+28

**Learning Objectives:**

Sketch and draft orthographic and 3 dimensional views of buildings and details in analogue and digital media.

**Lab Assignment:**

TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation

**Homework:**

Complete TECHNICAL DRAWING ASSIGNMENT #4: Plan+Section+Elevation

Sketch Book Portfolio Compilation

E-portfolio Cleanup and Organization



CLASS MEETINGS: 29+30

**Learning Objectives:**

Develop and apply a professional vocabulary of architectural terminology.

**Lab Assignment:**

Drawing Set Compilation and Coordination

Oral Presentation of Drawing Set

**Assessment/Review:**

COURSE REFLECTION + FINAL ASSESSMENT