



Construction I : Materials and Methods

Course Information

Course Number:	ARCH 531-401 / ARCH 431-401 / ARCH 599	
Semester:	Fall 2022	
Lecture Meeting Time:	Every Thursday, 10:15am-11:45am EST In person / ZOOM online / live / recorded	
Lecture Location:	In-person instruction: Meyerson B3 Note: We will also be recording/live broadcasting lectures online via Zoom: https://upenn.zoom.us/j/91722864650	
Lab Meeting Time:	Every other Friday, 1:45pm-3:00pm EST Instruction Varies: In-person site visits, in-person lecture, online lecture, see schedule <i>Alternates time with Structures Lab every other week</i>	
Lab Location:	When in-person: Meyerson B3 When online: labs will be available at: https://upenn.zoom.us/j/94044546644	
Instructor:	Philip Ryan AIA	info@studiomodh.com
Graduate Assistant	Anna Bruce	aib1@design.upenn.edu
	Danny Jarabek	djarabek@design.upenn.edu

Course Introduction

What you will learn in this class ARCH 431/531 is the first of two courses explaining Construction Technology. The first course will introduce the student to the relationship of design and construction in the creation of buildings.

The early lectures will trace the evolution and innovation of construction technique throughout history. It will then be followed by a primer describing how design and the act of drawing establishes a vocabulary that architect's use to describe the construction of buildings. This will look at how conceptual design and communicating intent aids in the creation of a great building. The remainder of the semester will build a "light scale" building from the ground up, examining the fundamental material and construction concepts related to construction starting with excavation and ending with interior finishes. The labs will complement the lectures with site visits and more focused lessons.

The second course, ARCH 532, will explore larger and more complex buildings at the institutional and commercial scale and tie this exploration into the use of Building

Information Modeling (BIM), a tool that is utilized extensively throughout the design and construction industry. The lab component will focus exclusively on teaching the student how to marry the concepts of lecture with an actual BIM Model.

How the Lectures are structured

In Person

Live, Online and recorded

Lectures will be in-person during the scheduled meeting time. A supplemental Zoom live broadcast will accompany the lecture for students unable to be in Philadelphia.

Recordings will be available after lecture. Lectures will be one and a quarter hours long.

All students are expected to attend in person unless they inform the instructor that they will not be able to attend due to COVID related, other medical, or time-zone restrictions related to the COVID event. All lectures will be recorded and made available.

Each lecture will be organized around four elements using broad principles and case study as content:

- Core Principles of a particular system
- Systems or types available to design professionals
- How a system is executed in the field
- The historical context of a system when relevant

Drawings, imagery, text, and other tools will be used to explain these elements.

How the Labs are structured

In Person

Live, Online and recorded

Lectures will be in-person, at a physical site location, and on-line during the scheduled meeting time. A supplemental Zoom live broadcast will accompany the lecture for students unable to be in Philadelphia. Recordings will be available after lecture. The labs may include:

- Physical Site Visit: a site visit to a facility or construction site followed by a live question and answer session with a construction professional.
- Virtual Site Visit: a pre-recorded site visit (to ensure video quality and integrity) followed by a live question and answer session with a construction professional.
- Focused Lectures: a live, online lecture on a particular narrow issue with a live question and answer session
- Asynchronous Content + Live Session: an assignment may be given to view and produce content PRIOR to attendance at the lab meeting time. The lab meeting time will expand

As some of these modules will be reliant on outside consultants and guests, the scheduling and structure will be announced the week of the lab on CANVAS in the calendar and via email.

Course Workload

Weekly Workload

A student can expect a workload as follows:

- 1.5 hour lecture online
- 1.5 hour weekly lab (1.5 hour in person or online, 1 hour of worktime)
- 1 hour weekly assignment/reading or weekly quiz

At the middle and end of the semester there will be a mid-term and final exam, given online.

- Assume 1-2 days of studying notes and lecture video for preparation.

Assignments	Assignments are given and described on the CANVAS website. A rubric is included with each assignment describing the parameters the instructor or G.A. will use in grading the assignment. All assignments are submitted ONLINE.
Quizzes	Short, five question, weekly quizzes will be given during weeks when no assignment is due. The quizzes will be based on lecture content from the current week's lecture. The quiz is given on CANVAS (online). Students will have 30 minutes to complete the test once it has started. The quiz shall be completed within seven days of being given.
Exams	<p>There will be an online 90-minute midterm and a 90-minute final exam. The exams will cover each half of the semester, respectively. The exams will be three parts including:</p> <ul style="list-style-type: none"> • Multiple choice • Short answer • Visual identification with description <p>A study session will be held prior to the exam.</p>

Course Materials + Expectations

Reading	<p>The following texts will be used actively throughout the course and are the same books used in ARCH 532 Construction II:</p> <ul style="list-style-type: none"> • <i>Edward Allen's Fundamentals of Building Construction, 5th Edition</i> • <i>Instructor provided texts</i> • <i>Andrew Watts Modern Construction Handbook, 4th Edition</i> <p>Recommended Text:</p> <ul style="list-style-type: none"> • <i>Francis DK Ching, Building Construction Illustrated</i> <p>Books are available at the Book store, Architecture Library for review, as well as at Amazon.com and other online book sources.</p>
Online and In-Class Participation	<p>Students are encouraged to participate in online lecture and lab courses using audio and video if possible. It is beneficial to the learning process to see your peers. However, it is understood that particular conditions may prevent the use of video. Please note the following tips / recommendations:</p> <ul style="list-style-type: none"> • Utilize a laptop, desktop, tablet, or smart phone equipped with a webcam and audio capabilities (mic / speaker) • Students will be muted and video may be muted upon entering the class to save bandwidth and maximize conference performance • Try to find a space that is quiet and won't have distracting traffic/movement (neutral wall background is best) for the duration of your class time • Use a comfortable chair and lighting • Keep yourself muted unless you are speaking (background noise will distract from all students) • Use the chat window for questions, the instructor will keep the window open throughout class.

Course Policies

Attendance

Attendance is mandatory at both the lectures and labs. A significant amount of material is covered in each lecture and follow up labs. Attendance is registered via participation in lectures and labs through login. Attendance is also re-affirmed through a student's successful participation in assignments and quizzes.

Students are expected to attend all classes for the entire scheduled meeting time and are responsible for completing assignments and for knowing the material covered in class. Students are allowed one absence without a final course grade reduction. After the allowed absence a student's final course grade will be reduced one-half level for each additional absence (e.g. after the second absence from a seminar the final course grade will be lowered from a B+ to a B, after the third absence from a B to B-, etc.).

Grading

Grading will be tracked on CANVAS for all aspects of the class. Please note that the final "weighting" of the grades will be done near the end of the semester. Grades are weighted based on the following percentage distribution:

- 10% attendance
- 40% assignments and quizzes
- 25% Midterm Examination
- 25% Final Examination

Final letter grades will be based on the following numeric groupings:

- 99%+ A+
- 95-98 A
- 90-94 A-
- 87-89 B+
- 83-86 B
- 80-82 B-
- 77-79 C+
- 76-76 C
- 70-72 C-
- Below 69 F
- Incomplete I

Note that an incomplete is granted for medical or special circumstances only and must be arranged with the instructor and department prior to the end of the semester.

Class Website

The class will use the University of Pennsylvania CANVAS course website for the distribution of assignments, information, and all discussion regarding grades or issues related to the class. This is a secure website that is being used, in accordance with Federal and University policies, to protect your privacy.

The site is located at: <https://canvas.upenn.edu/courses/1667348>

Class Zoom Session

The online lectures at the following ZOOM link: <https://upenn.zoom.us/j/91722864650>
The online labs at the following ZOOM link: <https://upenn.zoom.us/j/94044546644>

Instructor Bio

Philip Ryan RA Instructor Bio

Philip Ryan is the principal and founder of Studio Modh Architecture (www.studiomodh.com), an AIA award winning firm in Brooklyn, NY. Prior to forming the studio, Philip Ryan worked for Tod Williams Billie Tsien Architects in New York for fourteen years in design and management leadership capacities before leaving as a Senior Associate in 2012.

His design and construction experience while at the office was extensive including notably the design and construction of the AIA Honor Award winning American Folk Art Museum in New York, the AIA Honor Award winning Skirkanich Hall at the University of Pennsylvania, and the AIA Honor Award winning Barnes Foundation in Philadelphia, PA. The experience at Tod and Billie's studio has equipped him with a deep appreciation for the capabilities of architecture to enhance place as well as a sophisticated understanding of how to innovatively use material and detail buildings of import.

Studio Modh Architecture is actively engaged in a wide variety of institutional, commercial, and residential projects across the United States. Recently completed projects include the headquarters for the Motivate / Citibike group, the new Creative and Critical Writing Centers at the University of Pennsylvania, and a conceptual design for Princeton University's Facilities Group to facilitate the future growth of nearly 300,000 square feet of space on campus.

Teaching is a critical component of the architectural process and Philip has taught graduate and undergraduate studios at the Rhode Island School of Design and City College of New York. He has been a guest critic at the University of Texas at Austin, RISD, Yale University, City College, Columbia University, and the University of Pennsylvania.

Philip is a registered Architect in the state of New York, New Jersey and Pennsylvania, a member of the American Institute of Architects, and has been certified by NCARB.

University Code of Academic Integrity

University of Pennsylvania's Code of Academic Integrity

Since the University is an academic community, its fundamental purpose is the pursuit of knowledge. Essential to the success of this educational mission is a commitment to the principles of academic integrity. Every member of the University community is responsible for upholding the highest standards of honesty at all times. Students, as members of the community, are also responsible for adhering to the principles and spirit of the following Code of Academic Integrity.*

Academic Dishonesty Definitions

Activities that have the effect or intention of interfering with education, pursuit of knowledge, or fair evaluation of a student's performance are prohibited. Examples of such activities include but are not limited to the following definitions:

Cheating	Using or attempting to use unauthorized assistance, material, or study aids in examinations or other academic work or preventing, or attempting to prevent, another from using authorized assistance, material, or study aids. Example: using a cheat sheet in a quiz or exam, altering a graded exam and resubmitting it for a better grade, etc.
Plagiarism	Using the ideas, data, or language of another without specific or proper acknowledgment. Example: copying another person's paper, article, or computer work and submitting it for an assignment, cloning someone else's ideas without attribution, failing to use quotation marks where appropriate, etc.
Fabrication	Submitting contrived or altered information in any academic exercise. Example: making up data for an experiment, fudging data, citing nonexistent articles, contriving sources, etc.
Multiple Submissions	Multiple submissions: submitting, without prior permission, any work submitted to fulfill another academic requirement.
Misrepresentation of academic records	Misrepresentation of academic records: misrepresenting or tampering with or attempting to tamper with any portion of a student's transcripts or academic record, either before or after coming to the University of Pennsylvania. Example: forging a change of grade slip, tampering with computer records, falsifying academic information on one's resume, etc.
Facilitating Academic Dishonesty	Knowingly helping or attempting to help another violate any provision of the Code. Example: working together on a take-home exam, etc.
Unfair Advantage	Attempting to gain unauthorized advantage over fellow students in an academic exercise. Example: gaining or providing unauthorized access to examination materials, obstructing or interfering with another student's efforts in an academic exercise, lying about a need for an extension for an exam or paper, continuing to write even when time is up during an exam, destroying or keeping library materials for one's own use, etc.

* If a student is unsure whether his action(s) constitute a violation of the Code of Academic Integrity, then it is that student's responsibility to consult with the instructor to clarify any ambiguities.



Construction I : Materials and Methods

Course Schedule

Week / Lecture		Topic	Assignment / Quiz
Week 01	Lecture	History of Construction	
Sep 01	Lab	No Lab this week (structures lab)	
Week 02	Lecture	History of Construction II	Assignment 01 Due : Questions on Case Study
Sep 08	Lab	Case Study : Empire Stores, Brooklyn	Quiz 01: History of Construction
Week 03	Lecture	Why We Draw	
Sep 15	Lab	No Lab this week (structures lab)	
Week 04	Lecture	Excavation	Assignment 02 assigned: Wall Detail
Sep 22	Lab	Architectural Archives Pt 1 (tentative)	Possible site visit to Esherick House (09/25)
Week 05	Lecture	Foundations	Quiz 02: Excavation + Foundations
Sep 29	Lab	Architectural Archives Pt 2 (tentative)	
Week 06		Fall Break – No Class	
Oct 06/07			
Week 07	Lecture	Light Framing	Assignment for Lab: Video: Framing
Oct 13	Lab	No Lab this week (structures lab)	
Week 08	Lecture	Enclosure: Brick	Assignment 02 Due: Wall Detail
Oct 20	Lab	Mid-term Exam	
Week 09	Lecture	Enclosure: Siding	Assignment 03 assigned: Learning by Copying
Oct 27	Lab	No Lab this week (structures lab)	
Week 10	Lecture	Enclosure: Plaster, Panels, Stone	
Nov 03	Lab	Ext Wall Drawing/Detail Focus	
Week 11	Lecture	Enclosure: Windows	
Nov 10	Lab	No Lab this week (structures lab)	Quiz 03: Windows / Lab: Video: Windows
Week 12	Lecture	Enclosure: Roof	Assignment 03 due: Learning by Copying
Nov 17	Lab	Possible Site Visit	
Week 13	Lecture	Finishes	
Nov 22	Lab	No Lab this week (structures lab)	Quiz 04: Finishes / Lab: Video: Finishes
Week 14	Lecture	Systems: Mechanical, Plumbing	
Dec 01	Lab	Final Exam Review	
Week 15	Lecture	Systems: Fire Protection + Electrical	
Dec 08	Lab	No Lab this week (structures lab)	
Dec 12		Last Day of Classes	
Final Exam		Date to be determined	To be scheduled by University