

Course Number 4.123
Semester Spring 2023
Credits 2-2-5 G
Meeting Times F 9AM – 12PM
Meeting Location 3-133

Instructor Adam Modesitt <amode@mit.edu>
Office Hours F 1PM–3PM
Teaching Assistant Yiqing Wang <yiqingw@mit.edu>
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TA Office Hours TBD

Syllabus

Architectural Assemblies

Overview

This course covers the conceptual, material, and technical logics that order building assembly. The course will address the range of building materials and products used in construction, the organizing principles of construction systems, the relationships among different construction systems, the digital technologies for managing assembly and construction, the means and methods employed on site, and the managerial frameworks that regulate construction. The course is organized into two phases. The first phase surveys the principles and techniques of building assembly, with an emphasis on small and mid-scale buildings. Lecture topics address fundamental assembly procedures: framed, layered, stacked, formed, and finished. The second phase focuses on issues relating to larger scale buildings. Lecture topics include: digital delivery, L/XL, cladding, and special topics. Lectures will be supplemented by regular guest speakers, construction site visits, workshops, and student presentations.

Course Communications

Course information, assignments briefs, and submission deadlines will be distributed via Canvas. Coursework submissions will also occur via Canvas. Updates to the course schedule and content will be issued via Canvas announcements and/or to your MIT email address (Canvas announcements should be set to email your MIT address). Students are responsible for checking email regularly throughout the course. Students are also encouraged to email the instructor and/or TA with any questions, concerns, or requests that may arise during the course.

The Canvas course homepage can be found here: <https://canvas.mit.edu/courses/19275>

Attendance Policy

A significant portion of course material will be covered in class only, through lectures, presentations, and/or onsite tours. Content presented in class will inform coursework but will not be tested directly.

Instead, students are expected to attend all classes in full. Students are expected to be attentive and respectful of presenter(s) in class.

Excused absences will be granted in all reasonable cases, but requests should be made as far in advance as possible via email. Unexcused absences will reduce the course grade by half a letter grade, at minimum. Late arrival or early departure from class will count as a partial absence. Excused absences are not an excuse for missing or incomplete coursework and do not change evaluation criteria. In cases where excused absences or outside events work ability to work effectively, students should meet with the instructor to develop work plan.

Grading & Evaluation

Grades will be based on a combination of individual work, group work, and class participation. Course grading will be allocated as follows:

Assignment 1.1	10%
Assignment 1.2	10%
Assignment 1.3	10%
Assignment 1 Final	25%
Assignment 2.1	10%
Assignment 2 Final	25%
Participation	10%

Participation will be evaluated through engagement in class discussions/workshops/presentations, responsiveness to instructor/TA feedback, and positive attendance.

Missing work will be counted as 0% and significantly impact average grade. Late work will not be accepted, except in extenuating circumstances. Specific grading criteria for each assignment will be distributed in assignment briefs.

Final assignment grades will be informed by progress in sub-assignment submissions. Excellent sub-assignment submissions may weight positively on final assignment evaluation, incomplete sub-assignment submissions may weight negatively on final assignment evaluation. Where applicable, evaluation will take into account both individual and group. In cases where group work impedes individual work, students are strongly encouraged to communicate with the instructor to address the challenges. Every student in the class will be offered equal opportunity for success. The below is quoted from <http://catalog.mit.edu/mit/procedures/academic-performance-grades/#gradestext>

- A Exceptionally good performance demonstrating a superior understanding of the subject matter, a foundation of extensive knowledge, and a skillful use of concepts and/or materials.
- B Good performance demonstrating capacity to use the appropriate concepts, a good understanding of the subject matter, and an ability to handle the problems and materials encountered in the subject.

- C Adequate performance demonstrating an adequate understanding of the subject matter, an ability to handle relatively simple problems, and adequate preparation for moving on to more advanced work in the field.
- D Minimally acceptable performance demonstrating at least partial familiarity with the subject matter and some capacity to deal with relatively simple problems, but also demonstrating deficiencies serious enough to make it inadvisable to proceed further in the field without additional work. Some departments require students with D-level performance in certain prerequisite subjects within the departmental program to do additional work, or to retake the prerequisite, before proceeding with the follow-on subject.
- F Failed. This grade also signifies that the student must repeat the subject to receive credit.

Note that the MIT internal grading system includes plus (+) and minus (-) modifiers for use with the letter grades A, B, and C for all academic subjects (except advanced standing exams). These modifiers appear only on internal grade reports. They do not appear on transcripts and are not used in calculating term or cumulative grade-point averages. The MIT grading system for external purposes does not include modifiers.

Construction Site Visits

We will be visiting active construction sites as part of this course. Please be respectful and take care to minimize disruption. Do not stray from the group, take photos only when the group is stopped (if permitted), and follow the direction of our guides. Also, these are potentially dangerous sites. All visitors must wear sturdy closed toe shoes or boots (strongly preferred). Hard hats, vests, safety glasses, and other PPE will be provided onsite.

Personal Conduct

Instructors, TAs, and students in this course are expected to act responsibly, ethically, and with respect for the dignity of all others, both within and outside the classroom. Issues relating to personal conduct, including discrimination and harassment, will be taken extremely seriously. Students should take the time to become familiar with MIT's major policies on personal conduct, which can be found here: <https://policies.mit.edu/policy-topics/conduct-and-community-standards>

Academic Integrity

Fundamental to the academic work you do at MIT is an expectation that you will make choices that reflect integrity and responsible behavior. Students should take time to become familiar with the Institute's policies regarding academic integrity, which can be found here: integrity.mit.edu.

Student Support Services (S3)

If you find that something is getting in the way of your ability to attend class, complete work, or take an exam, you should contact a dean in Student Support Services (S3). The deans will provide you with support and help you work with us to determine next steps. We ask that you go to S3 so we

know you have had a chance to talk through your situation with someone and to connect with any resources you might need. The walk-in queue is open from 10-12 and 2-4 on weekdays. Appointments can be virtual or in-person, depending on your comfort and convenience. For more information or to join the virtual help queue visit studentlife.mit.edu/s3 or e-mail s3-support@mit.edu.

GradSupport

As a graduate student, a variety of issues may impact your academic career including faculty/student relationships, funding, and interpersonal concerns. Office of Graduate Education (oge.mit.edu), GradSupport provides consultation, coaching, and advocacy to graduate students on matters related to academic and life challenges. If you are dealing with an issue that is impacting your ability to attend class, complete work, or take an exam, you may contact GradSupport by email at gradsupport@mit.edu or via phone at (617) 253-4860.

Disability Accommodation and Access Services

MIT is committed to the principle of equal access and an inclusionary environment. Students who need any form of accommodation are encouraged to speak with the instructor as early as possible. Students who need disability accommodations are encouraged to speak with Disability and Access Services (studentlife.mit.edu/das), prior to or early in the semester so that accommodation requests can be evaluated and addressed in a timely fashion. If you have a disability and are not planning to use accommodations, it is still recommended that you meet with DAS staff to familiarize yourself with their services and resources. Contact Disability and Access Services with any questions at 617-253-1674 or via email das-student@mit.edu.

Reference Texts

General

Allen, Edward, and Joseph Iano. *Fundamentals of Building Construction: Materials and Methods*. Hoboken: John Wiley & Sons, 2008.

Ching, Francis DK. *Building Construction Illustrated*. John Wiley & Sons, 2020.

Watts, Andrew. *Modern Construction Handbook*. Birkhäuser, 2016.

Deplazes, Andrea, Ed. *Constructing Architecture: Materials, Processes, Structures*. Springer Science & Business Media, 2005.

Iano, Joseph, and Edward Allen. *The Architect's Studio Companion: Rules of Thumb for Preliminary Design*. John Wiley & Sons, 2022.

DETAIL Construction Manuals

Kind-Barkauskas, Friedbert, et Al. *Concrete Construction Manual*. Walter de Gruyter, 2013.

Herzog, Thomas, Et Al. *Timber Construction Manual*. Walter De Gruyter, 2012.

Hausladen, Gerhard, and Karsten Tichelmann. *Interiors Construction Manual: Integrated Planning, Finishings and Fitting-Out, Technical Services*. Walter de Gruyter, 2012.

Schunck, Eberhard, Et Al. *Roof Construction Manual*. Birkhäuser, 2013.

Kind-Barkauskas, Friedbert, et Al. *Concrete Construction Manual*. Walter de Gruyter, 2013.

Herzog, Thomas, Roland Krippner, and Werner Lang. *Facade Construction Manual*. Walter de Gruyter, 2012.

Cladding

Boswell, Keith. *Exterior Building Enclosures: Design Process and Composition for Innovative Façades*. John Wiley & Sons, 2013.

Brookes, Alan J., And Maarten Meijs. *Cladding Of Buildings*. Taylor & Francis, 2008.

Watts, Andrew. *Modern Construction Envelopes*. Birkhäuser, 2014.

MEP

Grondzik, Walter T., And Alison G. Kwok. *Mechanical and Electrical Equipment for Buildings*. John Wiley & Sons, 2019.

Course Schedule

#	Date	Time	Agenda	Due
1	2/10	9:00	Course Introduction & Syllabus Overview	
		10:30	Assignment 1 Introduction	
		11:30	Groups Assignments	
2	2/17	9:00	Site Visit 1: Metropolitan Storage Warehouse (Building W41) <i>Meet at 8:55AM at west end of the building, adjacent to Building W46. Pants and sturdy, closed-toe shoes/boots required. Do not be late.</i>	
		11:00	Group meetings	
3	2/24	9:00	Assignment 1.1 Presentations	Assignment 1.1
		10:30	Lecture 1: FRAMED	
4	3/3	9:00	Lecture 2: LAYERED	
		10:30	Guest Speaker: Building 45 Construction	
		11:30	Site Visit 2: Schwarzman College of Computing, Building 45 <i>Pants and sturdy, closed-toe shoes or boots required. Cell phone use permitted when tour stops at specific locations, not while walking.</i>	
5	3/10	9:00	Assignment 1.2 Presentations	Assignment 1.2
		10:30	Lecture 3: STACKED	
6	3/17	9:00	Guest Speaker: Music Building (Building W18) Construction Manger	
		10:30	Lecture 4: FORMED	
7	3/24	9:00	Assignment 1.2 Presentations	Assignment 1.3
		10:30	Lecture 5: FINISHED	
8	3/31		Spring Break (No Class)	
9	4/7	9:00	Lecture 6: DIGITAL DELIVERY	
		10:30	TBD	
10	4/14	9:00	Assignment 1 Final Presentations	Assignment 1 Final
11	4/21	9:00	Lecture 7: L/XL	
		10:30	TBD	
12	4/28	9:00	Assignment 1.2 Presentations	Assignment 2.1
		10:30	Lecture 8: CLADDING	
13	5/5	9:00	Lecture 9: SPECIAL TOPICS	
		10:30	TBD	
14	5/12	9:00	Assignment 2 Final Presentations	Assignment 2 Final