Construction I
Overview

General Information

University of Texas at Austin School of Architecture

Schedule:  
Tuesday | Lecture  8:00am - 9:30am  
Thursday | Lecture 8:00am - 9:30am  
Monday | Lab  5:00pm - 8:00pm

Location:  
online

Instructor:  
Aleksandra Jaeschke, email: jaeschke@austin.utexas.edu

Teaching Assistants:  
Priscilla Goodwin, email: priscillahon@utexas.edu  
Yiwei Huang, email: ryanhuang2018@utexas.edu

Office Hours:  
By appointment

E-mails:  
Please, begin subject line of all class-related e-mails with: “Construction I: “

Prerequisites  
The following coursework with a grade of at least C in each: Architectural Interior Design 310L and 311L, or Architecture 310L and 311L; and registration for Architectural Interior Design 320K or Architecture 320D (or 320K).

Summary  
Construction I is a broad introduction to materials, systems, methods of manufacturing and assembly of buildings and their components, as well as various aspects of the trade of building and its socio-cultural and environmental impacts. Part of a series of four required courses, it is meant for students of architecture, interior design, and historic preservation.
Overview

Course Agenda

“The builder is indispensable. In fact, the project for a building is not really complete if it does not consider how it will be built, and the ways in which a building can be built have a notable power of inspiration. All viable new structures are intimately related to construction methods, and these methods are visible in the finished building.”


construction (kən-strŭk′shən) n.
- the act or process of constructing;
- the art, trade, or work of building: an engineer trained in highway construction; worked in construction for years.
- a structure, such as a building, framework, or model;
- something fashioned or devised systematically;
- the way in which something is built or put together: a shelter of simple construction;
- (grammar) an arrangement of words forming a grammatical phrase, clause, or sentence.

construct (kən-strŭkt′) tr.v.
- to form by assembling or combining parts; build;
- to create (an argument or a sentence, for example) by systematically arranging ideas or terms;
- (mathematics) to draw (a geometric figure) that meets specific requirements.

Objectives

The term “construction” comes from the Latin word constructio, which itself has roots in com- “together” and struere "to pile up." A significant portion of this course will focus on struere. We will examine materials, building elements, and systems that they form, or “pile up” into. Still, it will be equally important to investigate the ways in which these elements come together thanks to active and at times messy human-machine interactions and legal frameworks. We will look into how these interactions transform architectural projects into buildings, but also, and inevitably turn a seemingly exact and stable body of knowledge into a fascinating and ever-changing material practice. The practice of constructing buildings.

The main objective of this course is to help you become familiar with the commonly-used materials and established construction practices. Yet, the course will hopefully also help you acquire an appreciation for the open nature of the act of building, along with an awareness of its reliance on material resources, and socio-economic and cultural circumstances.
Construction is an important trade and a powerful expression of human ingenuity. Yet, it is also tightly interconnected with the natural world. It depends on available material resources and natural dynamics. At the same time, it affects environments and communities from which we extract these resources and to which we return wastes. Acquiring an understanding and an appreciation for these material interdependencies and environmental repercussions is one way to approach architecture as an ethically-driven material practice. Similarly, developing an intimate knowledge of materials and methods of construction can potentially become a way to creatively push the boundaries of architecture. That is, if we accept that architecture is essentially a material practice. While this course will not teach you everything you need to know about construction, it will hopefully reveal some of its richness and convince you to stay curious.

Structure

Two lecture sessions each week will include instructor presentations preceded by a brief quiz and followed by a short question period. The course is divided into four interconnected thematic blocks:

- The first part - **Materials and Components** - focuses on the commonly used building materials and examines their origins, forms, properties, methods of manufacturing and assembly, as well as their use as basic building components.
- The second part - **Systems** - examines various ways of classifying construction systems and scrutinizes the building as an assembly of sub-systems; foundations, structure, façade, and mechanical systems.
- The third part - **Modalities** - focuses on the various aspects of the trade of building and examines how buildings are put together, responsibilities distributed, goals communicated, and risks contained and regulated.
- The concluding part of the course - **Repercussions** - concentrates on the broad socio-cultural impacts of construction as an enabler of human well-being, culprit of environmental degradation, and last but not least, a powerful channel for creative expression.

In addition, the students are required to attend the lab sessions and complete assigned readings. The laboratory sessions will be dedicated to screenings, reading discussions, research projects, and analytical exercises. Participation in the lab sessions is compulsory.

The readings will be distributed in advance and are meant to help students better comprehend the issues discussed during the lectures. They will be essential in the preparation for the exams and open-book tasks. In other words, you will not be able to exclusively rely on the lectures to successfully complete this course.
Overview

Assessment

Students are expected to participate in all activities and comply with all the requirements for the length of the semester. There are three components to the grade:

**Exams:** closed-book exams 32% of final grade (16% per exam)
Two closed-book exams will test students’ ability to recall factual material and apply practical knowledge. Comprised of approx. 20 questions, the exams will require short answer, drawing, and diagramming. Except as required by University policies, make-up exams will not be offered.

**Homework:** open-book homework 32% of final grade (16% per homework)
Two open-book homeworks will challenge students to reflect upon the knowledge learned during the course and prepare for the exams. Comprised of approx. 20 questions, the tasks will require short answer, drawing, and diagramming, and will be due a week after their announcement. Late work will not be accepted.

**Lab Work:** projects, exercises 36% of final grade (3% per assignment)
Short quizzes will be distributed at the beginning of most of the sessions to test students’ comprehension of the material discussed during the previous lecture. Lab exercises and projects will require research, drawing, diagraming, and making during and outside lab time and will be announced as the semester progresses.
Overview

Course Road Map

**Block 01: Materials and Components**

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<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>W 01</td>
<td>August 27</td>
<td>Introduction - Definitions, modes of inquiry</td>
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<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
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<tr>
<td>W 02</td>
<td>September 01</td>
<td>Materials - Sites of extraction, modalities of transformation</td>
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<tr>
<td>W 03</td>
<td>September 03</td>
<td>Building Blocks - Grains, blocks, studs, panels, etc.</td>
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<td>W 04</td>
<td>September 08</td>
<td>Lab 01</td>
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<td>W 05</td>
<td>September 10</td>
<td>Lab 00 (Holiday)</td>
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<td>W 06</td>
<td>September 17</td>
<td>Lab 02</td>
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<td>W 07</td>
<td>September 21</td>
<td>Lab 03</td>
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<td>W 08</td>
<td>September 24</td>
<td>Lab 04</td>
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<td>W 09</td>
<td>September 29</td>
<td>Lab 05</td>
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<td>W 10</td>
<td>October 01</td>
<td>Lab 06</td>
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<td>W 11</td>
<td>October 04</td>
<td>Lab 07</td>
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**Block 02: Systems**

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<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
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<tr>
<td>W 12</td>
<td>October 06</td>
<td>Lab 08</td>
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<tr>
<td>W 13</td>
<td>October 09</td>
<td>Mid-term Exam</td>
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<tr>
<td>W 14</td>
<td>October 15</td>
<td>Lab 09</td>
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<tr>
<td>W 15</td>
<td>October 20</td>
<td>Lab 10</td>
</tr>
<tr>
<td>W 16</td>
<td>October 22</td>
<td>Skeleton - Stability (load-bearing structures)</td>
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**ARC 415K | UTSOA Fall 2020 | Construction I | Instructor: Aleksandra Jaeschke**

**W 10**  
18 | October 27  
Lab 08 | October 26  
Structural Organization - Comparative analysis

19 | October 29  
Skin - Environmental comfort and protection (envelopes)

Ducts, pipes, wires - Climate control (mechanical systems)

**Block 03: Modalities**

**W 11**  
20 | November 03  
Lab 09 | November 02  
Environmental Performance - Comparative analysis

21 | November 05  
(Dis)Assembly, Fabrication, and Logistics - Methods and sequencing of work

Modalities of Production - Manual labor, human-machine interactions, and robotics

**W 12**  
22 | November 10  
Lab 10 | November 09  
Disassembly - Case study analysis

23 | November 12  
Knowledge Networks and Communication - Designers, managers, builders, software

Regulatory Frameworks - Zoning ordinances, building codes, and industry standards

**Block 04: Repercussions**

**W 13**  
24 | November 17  
Lab 11 | November 16  
Building Codes - Case study analysis

Experience - Well-being, pleasure, productivity

25 | November 19  
Impact - Environments, resources, and communities

**W 14**  
26 | November 24  
Lab 12 | November 23  
Material Choices 2 - Documentary screening and response

Conclusions - Construction as a form of expression

**W 17**

27 | December 10  
Final Exam Date TBC

Please, note that the distribution of lecture topics and lab content may change.
Resources

Required Textbook


Reference Manuals & Critical Texts

References Manuals


J. E. Gordon, *Structures, Or Why Things Don't Fall Down* (Da Capo Press, 2009). *
Friedbert Kind-Barkauskas, et al., *Concrete Construction Manual, Detail* (Birkhäuser, 2002). *

Critical Texts


Please, note that additional required and recommended readings will be announced in class and posted to canvas as the semester progresses.
Procedures

Evaluation & Policies

General Culture
Being on time is required. Participation is expected. Asking questions is highly encouraged. We want to have an open and engaging conversation and a productive time. Use of phones is not allowed during lectures. Eating in class is distracting and disrespectful. Drinks are fine, stay hydrated! Please, step out if you have to make an emergency call.

Communication & Submissions: Canvas & Emails
Canvas will be used for communication of the logistics and content of the course, as well as for submission of assignments, feedback, grading, and attendance. Please, set up your Canvas preferences to receive a notification as soon as a Canvas Announcement has been posted. Make sure that the email you provided on Canvas is active and that you regularly check your inbox. Zoom will be used for the regular sessions. Direct emails will be used for one-to-one communication.

Please, upload a photograph (of yourself, rather than your cat) to your Canvas and Zoom profiles. This will be very helpful as we work remotely.

Evaluation Criteria
Grades are subject to deductions for late arrivals, absences, and late or incomplete work at the discretion of the instructor. Group work requires equal participation from all members. Any individual not performing a commensurate share of the work may be eliminated from the group, but still responsible for satisfaction of the assignment requirements. A student must earn a letter grade of C or better in order for the course to count towards a degree in the School of Architecture and to progress in to the next studio. A letter grade of C- will not satisfy degree requirements.

Grade Description
- **A/A-** Excellent (A 100-94 / A- 90-93)
  Project surpasses expectations in terms of inventiveness, appropriateness, visual language, conceptual rigor, craft, and personal development. Student pursues concepts and techniques above and beyond what is discussed in class. Project is complete on all levels.
- **B+/B/B-** Above Average (B+ 87-89 / B 84-86 / B- 80-83)
  Project is thorough, well presented, diligently pursued, and successfully completed. Student pursues ideas and suggestions presented in class and puts in effort to resolve required projects. Project is complete on all levels and demonstrates potential for excellence.
- **C+/C** Average (C+ 77-79 / C 74-76)
Project meets the minimum requirements. Suggestions made in class and not pursued with dedication and rigor. Project is incomplete in one or more areas.

- **C-/D+/D/D- Poor (C- 70-73 / D+ 67-69 / D 64-66 / D- 60-63)**
  Project is incomplete. Basic grasp of skill is lacking, visual clarity or logic of presentation are not level-appropriate. Student does not demonstrate the required competence and knowledge base.

- **F Fail (F <59)**
  Project is unresolved. Minimum objectives are not met. Performance is not acceptable. Note that this grade will be assigned when students have excessive unexcused absences.

- **X Excused Incomplete**
  Can be given only for legitimate reasons of illness or family emergency. Simply not completing work on time is not an adequate cause for assigning this evaluation. It may only be used after consultation with the Associate Deans’ offices and with an agreement as to a new completion date. Work must be completed before the second week of the next semester in which the student is enrolling, according to the School of Architecture policy.

Attendance

Punctual and regular attendance is mandatory. Participation is expected. With three (3) unexcused absences, the student’s final grade for the course will be lowered by a full letter grade. The final grade will be lowered by a full letter grade for each unexcused absence thereafter. Aside from religious observances, absences are only excused with written documentation of a medical issue or family emergency. The student is responsible for completing work missed due to excused absences and initiating communication with the instructor to determine due dates.

Religious Observances

A student shall be excused from attending classes of other required activities, including examinations, for the observance of a religious holy day, including travel for the purpose. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence. University policy requires students to notify each of their instructors as far in advance of the absence as possible so that arrangements can be made.

Academic Integrity

Each student in the course is expected to abide by the University of Texas Honor Code: “As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity.” Representing the work of others as your own, including plagiarism, is taken very seriously at UT. You must cite your sources when you use the words or ideas of others; otherwise you will be guilty of plagiarism and subject to academic disciplinary action, including failure of the course. You are responsible for understanding UT’s Academic Honesty and the University Honor Code which can be found at the following web address: http://deanofstudents.utexas.edu/sjs/acint_student.php
Q Drop Policy
If you want to drop a class after the 12th class day, you'll need to execute a Q drop before the Q-drop deadline, which typically occurs near the middle of the semester. Under Texas law, you are only allowed six Q drops while you are in college at any public Texas institution. For more information, see: http://www.utexas.edu/ugs/csacc/academic/adddrop/qdrop.

Personal Pronouns
Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student’s legal name, unless they have added a “preferred name” with the Gender and Sexuality Center (http://diversity.utexas.edu/genderandsexuality/publications-and-resources/). The instructor will gladly honor your request to address you by a name that is different from what appears on the official roster and by the gender pronouns you use (she/he/they/ze, etc). Please advise the instructor of any changes early in the semester so appropriate updates may be made to their records.

Mental Health and Support Services
Taking care of your general well-being is an important step in being a successful student. If stress, test anxiety, racing thoughts, feeling unmotivated, or anything else is getting in your way, there are options available for help:

- In-house CARE counselor (see below)
- For immediate support
  - Visit/call the Counseling and Mental Health Center (CMHC):
    M-F 8am-5pm | SSB, 5th floor | 512-471-3515 | cmhc.utexas.edu
  - CMHC Crisis Line:
    24/7 | 512-471-2255 | cmhc.utexas.edu/24hourcounseling.html
- Free services at CMHC:
  - Brief assessments and referral services: cmhc.utexas.edu/gettingstarted.html
  - Mental health & wellness articles: cmhc.utexas.edu/commonconcerns.html
  - MindBody Lab: cmhc.utexas.edu/mindbodylab.html
  - Classes, workshops, and groups: cmhc.utexas.edu/groups.html

Care Program
Counselors in Academic Residence (CARE) Program places licensed mental health professionals within the colleges or schools they serve in order to provide better access to mental health support for students who are struggling emotionally and/or academically.
Abby Simpson (LCSW) is the assigned CARE counselor for the School of Architecture. Faculty and staff may refer students to the CARE counselor or students may directly reach out to her. Please leave a message if she is unavailable by phone.
Abby Simpson, LCSW | BTL 114B | 512-471-3115 (M-F 8am-5pm)
https://cmhc.utexas.edu/CARE_simpson.html
Students with Disabilities
This class respects and welcomes students of all backgrounds, identities, and abilities. Instructors are committed to creating an effective learning environment for all students, but this is possible only if you discuss your needs early. Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities at 471-6259 (voice) or 512-410-6644 (Video Phone) as soon as possible to request an official letter outlining authorized accommodations. For more information, visit http://ddce.utexas.edu/disability/about/.

The Sanger Learning Center
All students are welcome to take advantage of Sanger Learning Center’s classes and workshops, private learning specialist appointments, peer academic coaching, and tutoring for more than 70 courses in 15 different subject areas. More than 20,000 students use the services at the Sanger Learning Center each year to improve their academic performance. For more information, please visit http://ugs.utexas.edu/slc or call 512-471-3614 (JES A332).

Undergraduate Writing Center
http://uwc.utexas.edu

BeVocal
BeVocal is a university-wide initiative to promote the idea that individual Longhorns have the power to prevent high-risk behavior and harm. At UT Austin all Longhorns have the power to intervene and reduce harm. To learn more about BeVocal and how you can help to build a culture of care on campus, go to: https://wellnessnetwork.utexas.edu/BeVocal/.

BCAL
Concerns regarding the safety or behavior of fellow students, Teaching Assistants (TA), or Professors can be reported to the Behavior Concerns Advice Line (BCAL): 512-232-5050. Calls can be made anonymously. If something doesn’t feel right, it probably isn’t. Trust your instincts and share your concerns.

Food Pantry & Career Clothes Closet
Student Emergency Services in the Office of the Dean of Students has launched UT Outpost (UA9 Building, 2609 University Ave; ring bell for service) to support students on our campus that is equipped with a food pantry, and a career clothes closet to ensure every Longhorn has access to professional clothes for job and internship interviews. Emergencies and financial hardships can interfere with student success beyond the classroom, and this program will serve as an additional resource for students. Learn more: http://deanofstudents.utexas.edu/emergency/utoutpost.php

Title IX Reporting
Title IX is a federal law that protects against sex and gender-based discrimination, sexual harassment, sexual assault, sexual misconduct, dating/domestic violence and stalking at federally funded educational institutions. UT Austin is committed to fostering a learning and working environment free from discrimination in all its forms.

When sexual misconduct occurs in our community, the university can:

1. Intervene to prevent harmful behavior from continuing or escalating.
2. Provide support and remedies to students and employees who have experienced harm or have become involved in a Title IX investigation.
3. Investigate and discipline violations of the university’s relevant policies: https://titleix.utexas.edu/policies.

Faculty members and certain staff members are considered “Responsible Employees” or “Mandatory Reporters,” which means that they are required to report violations of Title IX to the Title IX Coordinator. Your instructor is a Responsible Employee and must report any Title IX related incidents that are disclosed in writing, discussion, or one-on-one.

Before talking with any faculty or staff member about a Title IX related incident, be sure to ask whether they are a responsible employee. If you want to speak with someone for support or remedies without making an official report to the university, email advocate@austin.utexas.edu. For more information about reporting options and resources, visit https://titleix.utexas.edu or contact the Title IX Office at titleix@austin.utexas.edu.

Security, Safety, and Sustainability

The studio is an exceptional learning environment. Since it is a place for all, it necessitates the careful attention to the needs of everyone. All spraying of fixative, spray paint, or any other substance should be done in the shop. Security is a necessary component for a studio that is accessible to you and your colleagues 24 hours a day, 7 days a week. Do not leave your studio without your studio key and do not leave your studio unlocked. Hold yourself and your studio mates accountable for the security of your shared space.

The studio is an opportunity to apply sustainability principles, being mindful to recycle and reuse to reduce material consumption at UTSOA. Recyclable materials should be placed in blue bins or any other containers with white bags. The Material Exchange, a give-and-take system for students to donate materials and take what they need for studio and fabrication coursework, is available throughout the semester to all UT students in the UTSOA Technology Lab. All unwanted, reusable materials should be brought to the Material Exchange station in the Technology Lab at the end of the semester.

Emergency Evacuation

In the case of emergency evacuation:

- Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.
• Students should familiarize themselves with all exit doors of each classroom and building they may occupy. Remember that the nearest exit door may not be the one used when entering the building.
• Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class. In the event of an evacuation, follow the instruction of faculty or class instructors.
• Reentry into a building is prohibited unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services offices.
• Information regarding emergency evacuation routes and emergency procedures can be found at: www.utexas.edu/emergency.

Build Lab Policy
All students, faculty, and staff who wish to use the UTSOA Build Lab must take the EHS’s online training. As this training is supplemental to UTSOA’s Build Lab training, no one is excluded or grandfathered from the requirement; both are required in order to use the Build Lab’s tools and equipment. The Build Lab has a card reader installed at the entrance. Those who have taken the online EHS training will be able to gain access during operating hours by swiping their UT ID cards at the door. More information can be found at: https://wikis.utexas.edu/display/SOABuildLab/Build+Lab+Access+and+Training.

Safety and Class Participation/Masks
We will all need to make some adjustments in order to benefit from in-person classroom interactions in a safe and healthy manner. Our best protections against spreading COVID-19 on campus are masks (defined as cloth face coverings) and staying home if you are showing symptoms. Therefore, for the benefit of everyone, this is means that all students are required to follow these important rules.
• Every student must wear a cloth face-covering properly in class and in all campus buildings at all times.
• Students are encouraged to participate in documented daily symptom screening. This means that each class day in which on-campus activities occur, students must upload certification from the symptom tracking app and confirm that they completed their symptom screening for that day to Canvas. Students should not upload the results of that screening, just the certificate that they completed it. If the symptom tracking app recommends that the student isolate rather than coming to class, then students must not return to class until cleared by a medical professional.
• Information regarding safety protocols with and without symptoms can be found here: https://www.healthyhorns.utexas.edu/images/pdf/HANDOUT_SocialDistancingToIsolation_COVID-19_2020.pdf
• If a student is not wearing a cloth face-covering properly in the classroom (or any UT building), that student must leave the classroom (and building). If the student refuses to wear a cloth face covering, class will be dismissed for the remainder of the period, and the student will be subject to disciplinary action as set forth in the university’s Institutional Rules/General Conduct 11-404(a)(3). Students who have a condition that precludes the wearing of a cloth face covering must follow the procedures for obtaining an accommodation working with Services for Students with Disabilities: https://diversity.utexas.edu/disability/
Covid Caveats
To help keep everyone at UT and in our community safe, it is critical that students (and faculty and staff) report COVID-19 symptoms and testing, regardless of test results, to the HealthPoint Occupational Health Program (OHP) as soon as possible. Please see this link: https://hr.utexas.edu/current/services/occupational-health-program to understand what needs to be reported. In addition, to help understand what to do if a fellow student in the class (or the instructor or TA) tests positive for COVID, see this University Health Services link: https://healthyhorns.utexas.edu/coronavirus_exposure_action_chart.html

Sharing of Course Materials is Prohibited
No materials used in this class, including, but not limited to, lecture hand-outs, videos, assessments (quizzes, exams, papers, projects, homework assignments), in-class materials, review sheets, and additional problem sets, may be shared online or with anyone outside of the class unless you have my explicit, written permission. Unauthorized sharing of materials promotes cheating. It is a violation of the University’s Student Honor Code and an act of academic dishonesty. I am well aware of the sites used for sharing materials, and any materials found online that are associated with you, or any suspected unauthorized sharing of materials, will be reported to Student Conduct and Academic Integrity in the Office of the Dean of Students. These reports can result in sanctions, including failure in the course.

Class Recordings
Class recordings are reserved only for students in this class for educational purposes and are protected under FERPA. The recordings should not be shared outside the class in any form. Violation of this restriction by a student could lead to Student Misconduct proceedings.