The University of Texas at Austin
Department of Civil, Architectural & Environmental Engineering

ARE 335 Materials and Methods of Building Construction – Fall 2018

UNIQUE NUMBER: 15070

INSTRUCTOR: Dr. Carlos H. Caldas
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http://www.ce.utexas.edu/prof/caldas/

MEETINGS: Mondays, Wednesdays and Fridays – 10:00AM to 11:00AM
Wednesdays – 11:00AM to 12:00PM
Please refer to class schedule for details
Room ECJ 1.322

OFFICE HOURS: Mondays, Wednesdays and Fridays – 1:00PM to 2:00 PM
or by appointment.

WEB PAGE: You will find the online materials for this course at the Canvas web site at: https://utexas.instructure.com/

GRADER: To be announced.

COURSE OBJECTIVES:

The objective of this course is to introduce students to the fundamentals of building materials and related construction methods. The class will involve lectures, videos, class discussion, group exercises, and student presentations. By taking this class you will be able to:

1) Recognize and understand the technical vocabulary related to materials and methods of building construction;
2) Identify and analyze different components, their properties, and their three-dimensional configurations;
3) Understand manufacturing/fabrication and site construction processes.

Team exercises will serve as one of the primary mechanisms for further developing problem-solving and technical communication skills.

TOPICS COVERED:

This course will cover general building material properties, codes and standards, and material properties/construction methods pertaining to soils, foundations, concrete, metals, wood, masonry, cladding systems, roofing, and finishes. In the context of buildings, emphasis is on engineered systems and materials, rather than those designed primarily by architects.

CATALOG PREREQUISITES:

Registration in this course requires admission to the ARE major course sequence, credit for CE 324P, Properties and Behavior of Engineering Materials, and credit for ARE 320K, Introduction to Design I. Accommodations are possible for Civil Engineering majors.

TEXTBOOK:

Allen, Edward and Iano, Joseph. Fundamentals of Building Construction: Materials and Methods, 6th ed., ISBN: 978-1-118-13891-5, John Wiley & Sons, Inc., New York, 2013.

Supplemental course PowerPoint lectures, announcements, and other supplemental materials will be accessible through the course *Canvas* website.

GRADING:

Grade components will be weighted as follows in the computation of the final course grade:

Midterm Exam	30 %
Final Exam	30 %
Homework Assignments	10 %
Team Exercise #1	10 %
Team Exercise #2	15 %
Attendance/ Participation/Pop Quizzes	5 %
	100 %

COURSE LETTER GRADES:

The correspondence of letter grade to numerical grade is:

A:	grade $\geq$ 93	D+:	$67 \leq$ grade < 70
A-:	$90 \leq$ grade < 93	D:	$63 \leq$ grade < 67
B+:	$87 \leq$ grade < 90	D-:	$60 \leq$ grade < 63
B:	$83 \leq$ grade < 87	F:	grade < 60
B-:	$80 \leq$ grade < 83		
C+:	$77 \leq$ grade < 80		
C:	$73 \leq$ grade < 77		
C-:	$70 \leq$ grade < 73		

The instructor reserves the right to adjust letter grades, upward only, based on individual attendance and class participation if the numerical grade warrants such consideration.

Students are expected to actively participate and contribute to class discussions and the team projects.

COURSE/INSTRUCTOR EVALUATIONS:

An evaluation of the course and instructor will be conducted at the end of the semester using the approved UT Course/Instructor evaluation forms.

POLICIES:

Exams, Quizzes, and Group Assignments:

Exam dates are listed on the syllabus. Make-up exams will only be available to those with legitimate, documented medical reasons (as verified with a note from a physician). Please note the date of the final exam - no early exams will be given.

This course, by necessity, involves the introduction of a large number of new technical terms. Exams will emphasize both concepts discussed in class and technical vocabulary. Acquiring a technical vocabulary does not come easy for most of us and doesn't result from last minute exam "cramming." Learning theory has proven that mental retention of new terms occurs best with repetitive study and usage/application. Accordingly, please read assignments prior to class, review course notes periodically, ask questions for any clarifications needed, and try to make the terms part of your class projects, presentations, and "everyday" working technical vocabulary.

The student is responsible for all reading assignments and class handouts whether or not covered in class or listed on the syllabus.

All assignments **are due at the beginning of the period assigned** and those turned in late will count off **10% per day**. (no exceptions!--except those listed for the exam make-up)

Quizzes and exams will not be returned to the student. The quizzes and exams solutions will be reviewed in class. You can view your quizzes and exams during office hours.

Class Participation and Attendance:

It is important that you are familiar with the course material as the course evolves. Your ability to answer questions and discuss the material will be part of the overall participation evaluation. Therefore, you should review class material ahead of time. Regular attendance is expected and encouraged. **Your attendance will be used to evaluate your participation grade**. I consider a student missing more than one week of class lectures without excuse to be a serious participation problem. In some cases, I will petition the Office of Student Affairs to drop students from the course who have excessive absences and may withhold the entire participation grade at my discretion for participation problems. Each student is responsible for all material and administrative instructions given during the lecture period.

A student who misses classes or other required activities, including examinations, for the observance of a religious holy day should inform the instructor as far in advance of the absence as possible, so that arrangements can be made to complete an assignment within a reasonable time after the absence.

Personal Problems:

If you have illness or personal problems that will affect your performance during the course of the semester, please let me know as soon as possible. "After the fact" provides little protection unless there are extreme circumstances. I have an answering machine, a fax machine, and an e-mail address if you need to get in touch with me after hours. Do not hesitate to use them.

Scholastic Dishonesty:

IMPORTANT! Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. For further information, visit the Student Judicial Services web site http://deanofstudents.utexas.edu/sjs/, and the General Information Catalog information at http://registrar.utexas.edu/catalogs/gi07-08/app/appc03.html#Chapter-11-Student-Discipline-and-Conduct.

Students with Disabilities:

The University of Texas at Austin provides, upon request, appropriate academic accommodations for qualified students with disabilities. For more information, contact the Division of Diversity and Community Engagement, Services for Students with Disabilities, 512-471-6259 (Videophone: 512-410-6644) or http://diversity.utexas.edu/disability/.

Privacy – Web Based Class Sites:

Web-based, password-protected class sites will be associated with all academic courses taught at the University. Syllabi, handouts, assignments and other resources are types of information that may be available within these sites. Site activities could include exchanging e-mail, engaging in class discussions and chats, and exchanging files. In addition, electronic class rosters will be a component of the sites. Students who do not want their names included in these electronic class rosters must restrict their directory information in the Office of the Registrar, Main Building, Room 1. For information on restricting directory information, see the General Information Catalog or go to: http://registrar.utexas.edu/catalogs/gi07-08/app/appc02.html#Chapter-9-Educational-Records.

Dropping the Class:

Undergraduate Students: From the 1st through the 12th class day (4th class day in the summer sessions), an undergraduate student can drop a course via the web and receive a refund, if eligible. From the 13th (5th class day in the summer sessions) through the university's academic drop deadline, a student may Q drop a course with approval from the Dean, and departmental advisor.

Graduate Students: From the 1st through the 4th class day, graduate students can drop a course via the web and receive a refund. During the 5th through 12th class day, graduate students must initiate drops in the department that offers the course and receive a refund. After the 12th class day, no refund is given. No class can be added after the 12th class day. From the 13th through the 20th class day, an automatic Q is assigned with approval from the Graduate Advisor and the Graduate Dean. From the 21st class day through the last class day, graduate students can drop a class with permission from the instructor, Graduate Advisor, and the Graduate Dean. Students with 20-hr/week GRA/TA appointment or a fellowship may not drop below 9 hours.

Computer Usage:

Students are expected to be proficient on a personal computer and to be able to use CAD, word processing, and spreadsheet programs. Familiarity with the Civil Engineering Learning Resources Center (LRC) is assumed. The web-based UT Canvas system will be used extensively to coordinate class assignments and disseminate course information, including class notes.

Recommendations Regarding Emergency Evacuation from the Office of Campus Safety and Security (512-471-5767, http://www.utexas.edu/safety/)

- 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 (across the bridge).
- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you 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. Do not re-enter a building unless given instructions by the following: Austin Fire Dept., The University of Texas at Austin Police Dept., or Fire Prevention Services office.
- **Behavior Concerns Advice Line (BCAL) 512–232-5050. For more information visit the BCAL website:** http://www.utexas.edu/safety/bcal/
- Link to information regarding emergency evacuation routes and emergency procedures can be found at: www.utexas.edu/emergency

All other university policies not explicitly included on this syllabus can be found on the General Information Catalog: http://catalog.utexas.edu/general-information/

TEAM EXERCISES:

Teams comprised of up to four students will complete two different exercises on the following topics:

Team Exercise #1 – Design or analysis of engineered systems and methods.
Team Exercise #2 – Analysis of manufacturing or field installation processes.

As the semester progresses, more detail will be provided on each of these assignments as well as associated evaluation criteria.

IMPORTANT DATES:

No classes on November 21st and 23rd due to Thanksgiving. September 14th is the last day to drop a class for a possible refund. November 1st is the last day an undergraduate student may, with the dean's approval, withdraw from the University or drop a class except for urgent and substantiated, nonacademic reasons. November 1st is the last day an undergraduate student may change registration in a class to or from the pass/fail basis. November 1st is the last an undergraduate student may, with the dean's approval, withdraw from the University or drop a class except for urgent and substantiated, nonacademic reasons. December 10th is the last day a graduate student may, with the required approvals, drop a class or withdraw from the university.

- Midterm: Wednesday, October 17th, 10:00 am - 12:00 pm.
- Final Exam: Monday, December 17th, 9:00 am – 12:00 pm. (To be Confirmed)

SCHEDULE:

The course schedule is subject to changes. Any changes in the course schedule will be communicated in advance and posted in the course Canvas web page.

Week	Date	Class Time	Topic	Reference Material	Major Assignment Due
1	Aug 29	10-12	Introduction; Course Overview; Building Big: Skyscraper Video		
	Aug 31	10-11	Design and Contracting Requirements	Chapter 1	
2	Sep 3		LABOR DAY		
	Sep 5	10-11	Design and Contracting Requirements	Chapter 1	
	Sep 7	10-11	Design and Contracting Requirements	Chapter 1	
3	Sep 10	10-11	Design and Contracting Requirements	Chapter 1	
	Sep 12	10-12	Existing Site Conditions	Chapter 2	
	Sep 14	10-11	Earthwork	Chapter 2	
4	Sep 17	10-11	Earthwork; Foundations	Chapter 2	
	Sep 19	10-11	Foundations	Chapter 2	
	Sep 21	10-11	Foundations	Chapter 2	
5	Sep 24	10-11	Concrete	Chapter 13	
	Sep 26		NO CLASS		
	Sep 28	10-11	Concrete	Chapter 13 and 14	
6	Oct 1	10-11	Concrete	Chapter 14 and 15	
	Oct 3	10-12	Concrete; Building Construction Video	Chapter 15	
	Oct 5		NO CLASS		
7	Oct 8	10-11	Metals	Chapter 11	
	Oct 10	10-12	Metals	Chapter 11	
	Oct 12	10-11	Metals	Chapter 12	
8	Oct 15	10-11	Metals	Chapter 12	
	Oct 17	10-12	MIDTERM EXAM		
	Oct 19	10-11	Building Construction Video		
9	Oct 22	10-11	Wood	Chapter 3	
	Oct 24	10-11	Wood	Chapter 3 and 4	
	Oct 26	10-11	Wood	Chapter 4	
10	Oct 29	10-11	Masonry	Chapter 8	
	Oct 31	10-11	Masonry	Chapters 9 and 10	
	Nov 2	10-11	Masonry	Chapters 10	
11	Nov 5	10-11	Roofing	Chapter 16	
	Nov 7	10-12	Roofing	Chapters 16	
	Nov 9	10-11	Glass and Glazing	Chapters 17	
12	Nov 12	10-11	Windows and Doors	Chapter 18	
	Nov 14	10-11	Cladding Systems	Chapter 19	
	Nov 16	10-11	Cladding Systems	Chapters 20 and 21	
13	Nov 19	10-11	Finishes	Chapter 22	
	Nov 21		THANKSGIVING		
	Nov 24		THANKSGIVING		
14	Nov 26	10-11	Team Exercise - Presentation Period #1		Team Exercise #2
	Nov 28	10-11	Team Exercise - Presentation Period #2		
	Nov 30	10-11	Team Exercise - Presentation Period #3		
15	Dec 3	10-11	Team Exercise - Presentation Period #4		
	Dec 5	10-11	Team Exercise - Presentation Period #5		
	Dec 7	10-11	Team Exercise - Presentation Period #6		
16	Dec 10	10-11	Review		
	Dec 17	9-12	FINAL EXAM (To be Confirmed)		