University of Southern California
School of Architecture

Arch 211: Materials and Methods of Building Construction
Spring 2017 / MW 10:00-11:30am / 3 Units

Rob Berry / Hunter Knight / Jessica Tracey / Geoffrey von Oeyen

MATERIALS + METHODS

INTRODUCTION

This course introduces the basic considerations and design implications of the materials and methods of construction for buildings. The course is organized around the study of specific materials—such as concrete, steel, and wood—with each different material examined for its particular qualities and characteristics. Lectures will introduce the material, its history, and its physical properties; offer examples of the application of the material in specific systems or methods of construction; and consider material innovations through case studies of buildings that illustrate the inherent connection between design, materials, and construction. Readings from the course textbook as well as other sources will expound upon the content covered in lectures. A series of site visits to canonical Los Angeles buildings will provide firsthand experience of materials and their assembly as spatial constructs. Based on observations from the site visits, students will produce a series of analytical drawings that communicate an explicit understanding of the design, material, and method of construction of each project.

COURSE GOALS + OBJECTIVES

Understanding the inherent characteristics and performance of construction materials; comprehension of the basic principles utilized in the appropriate selection and assembly of construction materials; recognition of the influence of a material's modular form, dimensions, and intrinsic qualities on the design process; understanding how building materials are manufactured.

EVALUATION + GRADING

Final grade evaluations will be based on the following breakdown:

Midterm Exam	20%
Drawing Exercises	25%
Final Exam	40%
Portfolio Submission	10%
Class Participation	5%

Note: Evaluation of class participation will consider both the required notebook and digital archive submissions.

EXAMS

One midterm exam and a final exam will be given; the final exam is cumulative. Exam questions will be drawn from the material covered in lectures, assigned readings from the course textbook, and site visits. Each exam may include short answer, multiple-choice, and true/false questions. During the exam you will be expected to think independently and express your knowledge in the form of writing and

hand-sketches. You may use your textbook, notebook, and portfolio to assist you during the exam, however computers, tablets, smartphones, or other devices will not be allowed.

SITE VISITS

Site visits are scheduled periodically throughout the semester (see Course Schedule). Dates and times may change due to availability of venue; exact time and location will be announced through separate handouts and/or on Blackboard.

DRAWING EXERCISES

Students will complete one analytical drawing for each site visit. Requirements for the drawing exercises will be explained in detail during lecture, including: subject matter, scope, and format.

NOTEBOOKS + WEEKLY SKETCH EXERCISES

Students are required to keep clear notes of lectures, site visits, construction observations, and material research. Lectures and site visits should be recorded in your notebook by handwriting, hand-sketching, or by the inclusion of copied/scanned details; particular emphasis will be given to the production of hand-drawn details.

Each week students will be asked to draw details in their notebook illustrating the weekly subject matter. Details and building systems should be selected from buildings located on the USC campus. Students should sketch the details and systems with an analytical understanding of how the materials come together and how the detail performs. Please note the building name on each weekly sketch.

Notebooks will be turned in at the end of the semester for a portion of your final grade.

PORTFOLIOS

Each student is required to submit a portfolio at the end of the semester. The portfolio will include revised versions of the drawing exercises that have been re-worked following initial grading/red-lining. Portfolios should be printed in landscape orientation on 11x17 paper and connected with a binder clip. The portfolio is a graded submittal and is required for the satisfactory completion of the course. The portfolio submittal will be used as a printed record of the student's drawing exercises for review, discussion, and coordination of grading.

DIGITAL ARCHIVE

The course digital submission is an archive of ALL your work as it was presented throughout the semester in its original format. The digital archive is a graded submittal and is required for the satisfactory completion of the course. The digital archive submittal generates an organized record of students' achievements during the semester for latter use in publications, promotion, personal archiving, and/or accreditation. This digital archive will not be returned to you, submit it on either a CD or flash drive [Label: write with permanent marker on the CD/flash drive itself: 211_SP-17_Your Last Name_Your First Name]. Each drawing should have its own digital file and be labelled accordingly: 211_SP-17_Drawing01_Your Last Name_Your First Name.PDF.

ATTENDANCE

Attendance at all classes is required. The School of Architecture expects attendance to be an integral part of the academic requirements. Absences have an impact on learning and therefore on a student's

progress. Being late to class will be considered an absence. More than three unexcused absences will impact your grade by at least a full letter reduction. Six unexcused absences will result in a non-passing grade.

PLAGIARISM

University guidelines pertaining to plagiarism also pertain to original design work. Assistance in the form of drawings, or the flagrant appropriation of other drawings, will be considered non-original work and will be treated as plagiarism.

COURSE TEXTBOOK

Fundamentals of Building Construction, Sixth Edition
Edward Allen and Joseph Iano
John Wiley & Sons, Inc.

It is recommended that you acquire a hardcopy version of the textbook in order to use the book as a resource during exams.

COURSE COMMUNICATION + BLACKBOARD

http://blackboard.usc.edu

Blackboard will be used to disseminate course information throughout the semester, including assignment handouts, schedule updates, and submission requirements.

Please ensure that your USC email accounts are current and not overloaded. All communications outside normal class meeting times will go to your USC email.

FACULTY CONTACTS + OFFICE HOURS

Rob Berry	berryr@usc.edu
Hunter Knight	hunter@weather-projects.com
Jessica Tracey	jessicalaurentracey@gmail.com
Geoffrey von Oeyen	vonoeyen@yahoo.com

Office hours by appointment.

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COURSE SCHEDULE

Week 1	M	1/9	Lecture 01 Reading	Introduction Ch 1 – Making Buildings	Faculty
	W	1/11	Field Trip	Walking Tour of USC Campus	
Week 2	M	1/16		University Holiday: Martin Luther King, Jr. Day	
	W	1/18	Lecture 02 Reading	Foundations Ch 2 – Foundations	Berry
Week 3	M	1/23	Lecture 03 Reading	Stone + Masonry Ch 8 – Brick Masonry Ch 9 – Stone and Concrete Masonry Ch 10 – Masonry Wall Construction	Tracey
	W	1/25	Site Visit 01	Frank Lloyd Wright – Freeman House	
	F	1/27		Last Day to Add or Drop	
Week 4	M	1/30	Lecture 04 Reading	Cast-in-Place Concrete Ch 13 – Concrete Construction Ch 14 – Sitecast Concrete Framing Systems	von Oeyen
	W	2/1	Workshop	Drawings: Details + Analytiques	
Week 5	M	2/6	Lecture 05 Reading	Wood Light Frame Construction (Type V) Ch 3 – Wood Ch 5 – Wood Light Frame Construction Ch 12 – Light Gauge Steel Frame Construction	Berry
	W	2/8	Field Trip	Mayne House	
Week 6	M	2/13	Lecture 06 Reading	Heavy Timber Ch 4 – Heavy Timber Construction	von Oeyen
	W	2/15	Site Visit 02	R.M. Schindler – Kings Road House	
Week 7	M	2/20		University Holiday: Presidents' Day	
	W	2/22	Lecture 07 Reading	Steel Ch 11 – Steel Frame Construction	Knight

Week 8	M	2/27	Lecture 08 Reading	Pre-Cast Concrete Ch 15 – Precast Concrete Framing Systems	Tracey
	W	3/1	Pin-Up	Drawing Exercise 01 – Freeman House Drawing Exercise 02 – Kings Road House	
Week 9	M	3/6		Guest Lecture	
	W	**3/8**	**Exam**	**MIDTERM EXAM**	
				SPRING RECESS (March 12-19)	
Week 10	M	3/20	Lecture 09	Cladding: Introduction to Building Envelopes	Berry
	W	3/22	Site Visit 03	Charles + Ray Eames - Eames House	
Week 11	M	3/27	Lecture 10 Reading	Cladding: Glass Ch 17 – Glass and Glazing Ch 18 – Windows and Doors Ch 21 – Cladding with Metal and Glass	Knight
	W	3/29	Pin-Up	Drawing Exercise 03 – Eames House	
Week 12	M	4/3	Lecture 11 Reading	Cladding: Metal + Wood + Stucco Ch 6 – Exterior Finishes for Wood Light Frame Ch 16 – Roofing Ch 21 – Cladding with Metal and Glass	Tracey
	W	4/5	Site Visit 04	Michael Maltzan Architecture - One Santa Fe	
	F	4/7		Last Day to Withdraw	
Week 13	M	4/10	Lecture 12 Reading	Cladding: Concrete + Masonry Ch 20 – Cladding with Masonry and Concrete	Knight
	W	4/12	Pin-Up	Drawing Exercise 04 - One Santa Fe	
Week 14	M	4/17	Lecture 13	Cladding: Polymers + Membranes	von Oeyen
	W	4/19	Field Trip	To Be Determined	
Week 15	M	4/24	Lecture 14 Turn-In	Conclusion Class Notebooks	Faculty
	W	4/26		No Class – All-School EXPO Installation	
				STUDY DAYS (April 29-May 2) FINAL EXAMS (May 3-10)	
	M	**5/8**	**Exam**	**FINAL EXAM 8:00-10:00am (Location TBD)**	

Schedule subject to revision. Updates will be handed out in class and/or issued on Blackboard.