USC School of Architecture
Materials and Methods in Building Construction
Arch 211
Spring 2012

Instructors:
(uber-Coordinator) Gail Peter Borden
John Frane [upper rosendin]
Aaron Neubert [lower rosendin]
(Coordinator) Eric Nulman [verle annis]
Ed Woll [watt 1]

Class Assistants:
Corey Koczarski
Kevin Reinhardt
Chris Raimondi
Danielle Saunders

Weekly Schedule:
Monday: 10:00 a.m. to 11:20 a.m.
Wednesday: 10:00 a.m. to 11:20 a.m.

Fieldtrips:
Generally from 10:00 a.m. to 6:00 p.m Wednesday
Four fieldtrips are scheduled (see course schedule). Dates and time may change due to availability of venue. Exact time and location will be announced through separate handouts and/or on the University Blackboard.

2011 Catalogue Course Description: Basic considerations and design implications of the problem of determination of the materials and construction details and processes for buildings.

Course Goals and Objectives: The class will focus on the critical role of materials and methods for the design of buildings. As first and second year studios primarily focus on the organization of form, space and program and structure, this course introduces the issues of materials in architecture. Its main emphasis will be on how building materials are manufactured and how their modular form, dimensions and intrinsic qualities influence the design process. Developing a fundamental understanding of the relationship of materiality to construction systems and techniques, this course will dovetail with the ARCH 202b studio to address the role of material in the production of meaningful and buildable designs.

The primary focus of the course is on materials and systems, their properties and connections and their intrinsic relationship to structural systems and environmental performance. You will learn about various building systems and how they can help you express your design concepts. You will see examples whose design concepts were generated by the use of specific materials and systems. You will be introduced to and get a basic overview of the CSI Master Format, the US industry standard for materials, construction and building systems. You will be introduced to the benefits and opportunities of sustainable design solutions and the crucial role building materials and construction methods are playing in the achievement of a better and more sustainable environment.

Required Textbook:
Fundamentals of Building Construction, Fifth Edition
Edward Allen and Joseph Iano
John Wiley & Sons, Inc.

[This book is available at the University bookstore or online]

Blackboard Access: http://blackboard@usc.edu
Please ensure that your USC email accounts are current and not overloaded. All communication outside the classes will go to your USC email.
National Architectural Accreditation Board (NAAB) Accreditation: The USC School of Architecture’s five year BARCH degree and the two year M.ARCH degree are accredited professional architectural degree programs. All students can access and review the NAAB Conditions of Accreditation (including the Student Performance Criteria) on the NAAB Website, http://www.naab.org/accreditation/2009_Conditions.aspx.

NAAB Student Performance Criteria (SPC) Addressed (if Bold: Course Identified on SPC Matrix for Criteria): In the context of the overall design sequence of the Bachelor of Architecture curriculum, this course contributes to the graduate attributes in the following areas. Note there are two levels of expected competence that apply to each skill: ability and understanding. Ability: skill in relating specific information to the accomplishment of tasks; students can correctly select the information that is appropriate to a situation and apply it to the solution of specific problems. Understanding: assimilation and comprehension of information; students can correctly paraphrase or summarize information without necessarily being able to relate it to other material or see its fullest implications.

B.12 Bldg Materials/Assemblies: Understanding of the basic principles utilized in the appropriate selection of construction materials, products, components, and assemblies, based on their inherent characteristics and performance, including their environmental impact and reuse.

Topical Outline: 50% of the course content will be delivered via lectures given to the entire class, typically during the Monday class session. The remaining 50% of the content will be developed through exercises in a lab environment, typically during the Wednesday class session. The class will be divided into four lab groups, with each group assigned to one instructor: NAAB SPC Time Allocation: Bldg Materials/Assemblies 100%

[1] Lectures The lectures during the Monday class sessions will discuss various materials and building methods. Heavily dependent upon case studies, the objective is to provide a comprehensive study of the fundamental building materials used by architects and develop a historical, technical and formal understanding of the relationship of materiality to design performance.

[2] Lab Exercises The Wednesday portion of the course will isolate specific aspects of the lectures, bridging between the studio design project and the technical lectures of 211, these projects will focus on the responsibilities of materials. Each of the 5 exercises is designed to let you experience material application and basic detailing relative to the physical performance and the conceptual and experiential implications of materiality on space. Each exercise will be given out during the Wednesday class session and is available on blackboard. Requirements and possible approaches will be discussed during the same session and the exercise will be handed in the following Wednesday when there will be a group pin-up and discussion of the solutions.

Exams: There will be a mid-term and a final exam. Exam questions will be on the material covered in the lectures, field trips and exercises. Each exam will be in essay form and not multiple-choice. You are expected to think independently and express your knowledge in form of writing and hand-sketches during the exam. These will both be “open book” exams. The final exam is not cumulative.

Notebooks: You are required to keep notebooks of lectures, field trips, construction observations and material research. Lectures and field trips will 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, scale details. This will be turned in for a portion of your final grade.

Attendance and Participation: Attendance at all classes, lectures and class activities is required. The School of Architecture expects attendance to be an integral part of the academic requirements. Absences have impact on learning and therefore on the students progress. Therefore your presence at the classes is mandatory and absence from classes can result in failing grades. 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.

Evaluation and Grading:
Lab Exercise: Material Cube [10% x 3 cubes] 30%
Lab Exercise: Unit Design 10%
Lab Exercise: Tectonic Analytique 10%
Midterm exam 15%
Final exam 15%
Meeting NAAB SPC 10%
Class participation + Notebooks + Field Trips [extra credit] 10%
Suggested Reading:

**Material Precedent: The Typology of Modern Tectonics**
Gail Peter Borden
Wiley, New York, 2010
ISBN 978-0-470-47729-6

**Matter: Material Processes in Architectural Production**
Gail Peter Borden, Michael Meredith
Routledge, 2011

**An Engineer Imagines**
Peter Rice

**Studies in Tectonic Culture**
Kenneth Frampton, edited by John Cava
The MIT Press, Cambridge Massachusetts, 2001

**Materials, Form and Architecture**
Richard Weston
Yale University Press, 2003
ISBN: 0-300-09579-1

**Constructing Architecture, Materials, Processes, Structures, A Handbook.**
Andrea Deplazes
Birkhauser, December 2005
ISBN 3-7643-7189-7

**Construction Materials Manual**
Manfred Hegger
Birkhauser, Sept. 2006
ISBN: 3-7643-7570-3

**Concrete Construction Manual**
Fiedbert Kind – Barkauskas, Bruno Khausen, Stefan Polonyi, Joerg Brandt
Birkhauser, November 2002
ISBN: 3-7643-6724-5

**Steel Construction Manual**
Helmut Schulitz, Werner Sobek, Karl J. Habermann
Birkhauser, May 2000
ISBN: 3-7643-6181-6

**Timber Construction Manual**
Thomas Herzog, Julius Natterer, Michael Volz
Birkhauser, March 2004
ISBN: 3-7643-7025-4

**Glass Construction Manual**
Christian Schnittich, Gerald Staib, Dieter Balkow, Matthias Schuler, Werner Sobek
Birkhauser, October 1999
ISBN: 3-7643-6077-1

**Building Skins**
Christian Schittich (Editor)
Birkhauser: September 2001
ISBN: 3-7643-6465-3

**Building Construction Illustrated**
Francis D. K. Ching and Cassandra Adams

**Informal**
Cecil Balmond with Januzzi Smith
ISBN 3-7913-2400-4

**The Turning Point of Building: Structure and Design**
## Course Schedule:

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Days</th>
<th>Critical Dates</th>
<th>Content</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Week 01</td>
<td>Mon Jan. 09</td>
<td>Classes begin</td>
<td><strong>Lecture 01</strong>: Borden/Woll/Neubert Materials, Building Systems Overview + Introduce cube / paper (read textbook chapter 1: Making Buildings).</td>
<td>Watt 1</td>
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<td></td>
<td>Wed Jan. 11</td>
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<td><strong>Lab 01</strong>: Project 01 - Paper Cube Pin-up: 6&quot;x6&quot;x6&quot; model Plan/section/elevation Assembly diagram</td>
<td>jury space</td>
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<td>Week 02</td>
<td>Mon Jan. 16</td>
<td>Martin Luther King Day No class</td>
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<td></td>
<td>Wed Jan. 18</td>
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<td><strong>Lab 02</strong>: Project 01 - Paper Cube Final Review: Model + Board</td>
<td>Harris Courtyard</td>
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<tr>
<td>Week 03</td>
<td>Mon Jan. 23</td>
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<td><strong>Lecture 02</strong>: Frane Wood Timber Frame Systems (read textbook chapter 3: wood, 4 heavy timber construction, 5 wood light frame construction).</td>
<td>Watt 1</td>
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<td></td>
<td>Wed Jan. 25</td>
<td>1/30 last day to register and add classes. 1/30 last day to drop a class without a mark of “W”</td>
<td><strong>Lab 03</strong>: Project 02 - Wood Cube Pin-up: 6&quot;x6&quot;x6&quot; model Plan/section/elevation Assembly diagram CD PAPER CUBE DUE</td>
<td>jury space</td>
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<td>Week 04</td>
<td>Mon Jan. 30</td>
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<td><strong>Lecture 03</strong>: Frane Masonry Load-bearing Masonry Systems (read textbook chapter 16: masonry load bearing wall construction).</td>
<td>Watt 1</td>
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<td></td>
<td>Wed Feb. 01</td>
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<td><strong>Lab 04</strong>: Project 02 - Wood Cube Final Review: Model + Board</td>
<td>Harris Courtyard</td>
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<td>Week 05</td>
<td>Mon Feb. 06</td>
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<td><strong>Lecture 04</strong>: Woll Wood light frame and light -gauge steel frame construction (read textbook chapter 5: chapter 12)</td>
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<td>Wed Feb. 08</td>
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<td>Field Trip: ORCO Masonry</td>
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<td>Week 06</td>
<td>Mon Feb. 13</td>
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<td><strong>Lecture 05</strong>: Neubert Concrete - Cast in place, Pre-cast Preparatory reminder for casting (read textbook chapters 13, concrete construction, 14: site-cast concrete, 15, precast concrete framing systems). CD WOOD CUBE DUE</td>
<td>Watt 1</td>
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<td>Wed Feb. 15</td>
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<td><strong>Lab 05</strong>: Project 02 - Concrete Cube Pin-up: 6&quot;x6&quot;x6&quot; model Plan/section/elevation Assembly diagram</td>
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<td>Week 07</td>
<td>Mon Feb. 20</td>
<td>President’s Day No class</td>
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<td>Wed Feb. 22</td>
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<td><strong>Lab 06</strong>: Cast Concrete Cube</td>
<td>shop yard</td>
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<td>Weeks</td>
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<td><strong>Week 08</strong></td>
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<td>Mon</td>
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<td><strong>Lab 07:</strong> Project 03 - Concrete Cube</td>
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<td>Final Review: Model + Board</td>
<td>Lawn adjacent shop</td>
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<td>Wed</td>
<td>Feb. 29</td>
<td><strong>Midterm exam</strong></td>
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<td><strong>Lecture 06:</strong> Woll Material Steel Steel Frame Systems (read textbook chapters 11: steel frame construction, 12). CD CONCRETE CUBE DUE</td>
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<td>Wed</td>
<td>Mar. 07</td>
<td><strong>Lab 08:</strong> Review Project 04 - Unit Design</td>
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<td>Spring break</td>
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<td><strong>Week 11</strong></td>
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<td><strong>Lecture 07:</strong> Nulman Plastics (read handout) REVIEW MIDTERM</td>
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<td><strong>Lecture 08:</strong> Neubert Foundations, Grading and Excavation (read textbook chapter 2: Foundations).</td>
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<td>Wed</td>
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<td><strong>Lab 10:</strong> Review Project 05 - Tectonic Analytique [Enclosure + Skin]</td>
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<td><strong>Week 13</strong></td>
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<td><strong>Lecture 09:</strong> Neubert Building Envelope: Systems (read textbook chapter 6, exterior finish for wood light frame construction, chapter 16, roofing, chapter 20, cladding with masonry and concrete, chapter 21, cladding with metal and glass).</td>
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<td>Wed</td>
<td>Apr. 04</td>
<td>4/11 last day to withdraw</td>
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<td>Field Trip: Testing Laboratory</td>
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<td><strong>Lecture 10:</strong> Nulman Building Envelope: Glass, Curtain Walling (read textbook chapter 17, glass and glazing, chapter 18, windows and doors).</td>
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<td><strong>Lecture 11:</strong> Nulman Digital technology + Fabrication (read handout)</td>
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<td><strong>Lecture 12:</strong> Neubert Emerging Materials</td>
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<td>NO CLASS</td>
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<td>Wed</td>
<td>Apr. 25</td>
<td>Project 05 Due</td>
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<td>NO CLASS - 202b turn in 4PM</td>
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<td><strong>Week 17</strong></td>
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<td>Mon</td>
<td>April 30</td>
<td>12:00 noon</td>
<td>Notebook hand-in deadline</td>
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<td><strong>Week 18</strong></td>
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<td>Mon</td>
<td>May. 07</td>
<td>11:00 - 1:00</td>
<td>Final Exam</td>
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Rehabilitation Act (Section 504) and the Americans with Disabilities Act (ADA): The University of Southern California is committed to full compliance with the Rehabilitation Act (Section 504) and the Americans with Disabilities Act (ADA). As part of the implementation of this law, the University will continue to provide reasonable accommodation of academically qualified students with disabilities so those student can participate fully in the University’s educational programs and activities. Although USC is not required by law to change the "fundamental nature of essential curricular components of its programs in order to accommodate the needs of disabled students,” the University will provide reasonable academic accommodations. The specific responsibility of the University administration and all faculty serving in a teaching capacity is to ensure the University's compliance with this policy.

The general definition of a student with a disability is any person who has "a physical or mental impairment which substantially limits one or more of such person’s major life activities,” and any person who has "a history of, or is regarded as having, such an impairment.” Reasonable academic and physical accommodations include but are not limited to: extended time on examinations; substitution of similar or related work for a non-fundamental program requirement; time extensions on papers and projects; special testing procedures; advance notice regarding book list for visually impaired and some learning disabled students; use of academic aides in the classroom such as note takers and sign language interpreters; early advisement and assistance with registration; accessibility for students who use wheelchairs and those with mobility impairments; and need for special classroom furniture or special equipment in the classroom.

Obtaining Accommodations: For assistance in how to provide reasonable accommodations for a particular disability, course instructors are encouraged to consult with Disability Services and Programs (DSP). Students requesting academic accommodations who do not have DSP documentation should be referred to that office. Disability Services & Programs contact: (213) 740-0776.

Physical Accommodations: Students with physical disabilities should contact Disability Services and Programs (DSP) prior to or during the first week of class attendance or as early in the semester as possible. The office will work with classroom scheduling, the course instructors and their departments, and the students to arrange for reasonable accommodations.

Academic Accommodations: Students seeking academic accommodations due to a physical or learning disability should make the request to the course instructor prior to or during the first week of class attendance, as well as registering with DSP as early in the semester as possible. Course instructors should require that a student present verification of documentation when academic accommodations are being requested.

Religious Holidays: The University of Southern California recognizes the diversity of our community and the potential for conflicts involving academic activities and personal religious observation. The University provides a guide to such observances for reference and suggests that any concerns about lack of attendance or inability to participate fully in the course activity be fully aired at the start of the term. As a general principle students should be excused from class for these events if properly documented and if provisions can be made to accommodate the absence and make up the lost work. Constraints on participation that conflict with adequate participation in the course and cannot be resolved to the satisfaction of the faculty and the student need to be identified prior to the drop/add date for registration. After the drop/add date the University and the School of Architecture shall be the sole arbiter of what constitutes appropriate attendance and participation in a given course.
USC School of Architecture
Materials and Methods of Building Construction
ARCH 211
Spring 2012

Project 01: Paper Cube

Objective: The task of this exercise is to design and build an 18"x18"x18" inch paper cube.

Selecting one of the following materials:
- paper
- cardstock
- chipboard
- corrugated cardboard
- paper tubes
- homosote

The cube should be produced with this one material and a fastening system [glue, nails, screw, rope etc.] at the student's discretion. The function of the cube is to define the volume of an 18"x18"x18" inch space. This does not mean to fill or to entirely engulf the volume simply define it.

Issues to consider are:
Module of material and waste
How to work with a material
How to turn a corner
How to join materials
How to express a material
How the intrinsic forms, limitations and boundaries of a material factor in a design process

Assessment: The cube will be graded based upon:
- Craft 25%
- Modularity 25%
- Adherence to dimensions 25%
- Design + Ingenuity 25%

Reviews: There will be two reviews of the cube. The first will be a working pin-up review. Its requirements will be a 6"x6"x6" study model and a working analytique board 18"x18" containing:
- plan 4"=1' scale [6"x6" drawing]
- section 4"=1' scale [6"x6" drawing]
- elevation 4"=1' scale [6"x6" drawing]
- assembly diagram [sequence] scale to be determined

The second will be the final project review. Its requirements will be the final full scale cube exquisitely fabricated and an analytique board [mounted on rigid board]18"x18" containing:
- plan 4"=1' scale [6"x6" drawing]
- section 4"=1' scale [6"x6" drawing]
- elevation 4"=1' scale [6"x6" drawing]
- assembly diagram [sequence] scale to be determined

A CD - MARKED WITH THE PROJECT AND STUDENT NAME - CONTAINING A PDF OF THE BOARDS AND 3 HIGH RES, CLEANED UP PHOTOS OF THE FINAL CUBE AND ONE PHOTO OF THE PROCESS CUBE(S) WILL BE DUE 1/25 AT THE BEGINNING OF CLASS.
USC School of Architecture  
Materials and Methods of Building Construction  
ARCH 211  
Spring 2012  

Project 02 - Wood Cube  

Objective: The task of this exercise is to design and build an 18"x18"x18" inch wood cube.  

Select one of the following materials:  
2x2  
2x4  
2x8  
2x12  
4x4  
OSB  
plywood  
MDF  
masonite  

The cube should be produced with this one material and a fastening system [glue, nails, screw, rope etc.] at the student’s discretion. The function of the cube is to define the volume of an 18"x18"x18" inch space. This does not mean to fill or to entirely engulf the volume simply define it.  

Issues to consider are:  
Module of material and waste  
How to work with a material  
How to turn a corner  
How to join materials  
How to express a material  
How the intrinsic forms, limitations and boundaries of a material factor in a design process  

Assessment: The cube will be graded based upon:  
Craft 25%  
Modularity 25%  
Adherence to dimensions 25%  
Design + Ingenuity 25%  

Reviews: There will be two reviews of the cube. The first will be a working pin-up review. Its requirements will be a 6"x6"x6" study model and a working analytique board 18"x18" containing:  
plan 4"=1’ scale [6"x6" drawing]  
section 4"=1’ scale [6"x6" drawing]  
elevation 4"=1’ scale [6"x6" drawing]  
assembly diagram [sequence] scale to be determined  

The second will be the final project review. Its requirements will be the final full scale cube exquisitely fabricated and an analytique board [mounted on rigid board] 18"x18" containing:  
plan 4"=1’ scale [6"x6" drawing]  
section 4"=1’ scale [6"x6" drawing]  
elevation 4"=1’ scale [6"x6" drawing]  
assembly diagram [sequence] scale to be determined  

USC School of Architecture
Materials and Methods of Building Construction
ARCH 211
Spring 2012

Project 03 - Concrete Cube

Objective: The task of this exercise is to design and build an 18”x18”x18” inch concrete cube.

The cube should be produced with concrete as the primary the material. Consider the tectonic of formwork, the possibility of admixtures, and the integration of reinforcement for strength and self stability. These additional issues are at the student’s discretion. The function of the cube is to define the volume of an 18”x18”x18” inch space. This does not mean to fill or to entirely engulf the volume simply define it.

Issues to consider are:
Module of material and waste - formwork and concrete
How to work with and prepare a material - formwork and concrete
How to turn a corner
How to join materials - formwork and concrete
How to express a material - formwork and concrete
How the intrinsic forms, limitations and boundaries of a material factor in a design process

Assessment: The cube will be graded based upon:

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<th>Category</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Craft</td>
<td>25%</td>
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<tr>
<td>Modularity</td>
<td>25%</td>
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<tr>
<td>Adherence to dimensions</td>
<td>25%</td>
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<tr>
<td>Design + Ingenuity</td>
<td>25%</td>
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</table>

Reviews: There will be three meetings [review/casting/review] of the cube. The first will be a working pin-up review. Its requirements will be a 6”x6”x6” study model and two working analytique boards 18”x18” containing:

1. cube plan 4”=1’ scale [6”x6” drawing]
   cube section 4”=1’ scale [6”x6” drawing]
   cube elevation 4”=1’ scale [6”x6” drawing]
2. formwork plan 4”=1’ scale [6”x6” drawing]
   formwork section 4”=1’ scale [6”x6” drawing]
   formwork elevation 4”=1’ scale [6”x6” drawing]
   formwork assembly diagram [sequence] scale to be determined
   formwork disassembly diagram [sequence] scale to be determined

The second will be a collective casting day. Meeting in the woodshop area promptly at 10 - we will use the mixer and oversight of the faculty to ensure a quality pour. Each student is responsible for:

- a 6’x8’ blue tarp [standardized to ensure visual consistency]
  This will be laid out for the work area and will wrap the cube for curing
- well prepared, braced and lubricated formwork
  think about how it will come apart and how it will be cast
- quickcrete ready-mix concrete
  enough to fill your cube volume
- mixing bucket
  a specially made flat open face mixing bucket [2’x3’x6’] for the transport of concrete
- tools
  any necessary tools for working, moving the concrete

The third will be the final project review. Its requirements will be the final full scale cube exquisitely fabricated and two analytique boards [mounted on rigid board] 18”x18” containing the refined iterations of the first review requirements.

THIS PROJECT WILL BE DONE IN TEAMS OF 3 STUDENTS.

USC School of Architecture  
Materials and Methods of Building Construction  
ARCH 211  
Spring 2012

Project 04 - Concrete Masonry Unit Design: Sustainable Concrete Products for Structures & Hardscapes

Objective
To understand the relationship between a specific material and a form made using that material. There are no preconceived “ideal” solutions to this project. Instead, the emphasis is placed on understanding the implications of your decisions and on making a series of related decisions about a form and its material. Explore alternatives and try to understand the tradeoffs of each decision.

Concrete masonry or hardscape units are an abundant but underutilized part of the designer’s palette. This product is a durable material that can be used to carry weight, enclose space, and perform a variety of utilitarian functions in buildings and the built landscape. Because it is a manufactured material, its texture, color, shape and size are controllable features. A wide variety of concrete masonry or hardscape products are available and new ones can be proposed.

This project will be part of a student design competition in unit design. Your work will be evaluated by the faculty in this course as one of your exercises. In addition, you are also expected to submit your project for review by the competition jury. The winning team from the unit design competition will go on to compete on a national level. The project grade for this course is not affected by the outcome of the competition jury.

Team size: 4 people

UNIT DESIGN: A Concrete Masonry or Hardscape Unit: Design a new concrete masonry or hardscape unit. The unit you design is to be conceived as a mass produced unit with potential architectural or landscape applications. What are concrete masonry or hardscape units? What do they want to be? What could they be used for? Your design should capitalize on the advantages offered by concrete masonry or hardscape as a material, a fabrication process and a use, while accommodating for the associated weaknesses. The design of the unit should conform to the following practical considerations:

1. ‘Box’ size: The ‘box’ that concrete masonry or hardscape units are molded in measures 16” wide x 24” long x 8” high. It is important that the unit or units you design can be cast in this box.

2. Shape must be extruded when molded: After the units are cast, the mold lifts up vertically, leaving the units behind on the table. The units are only in the mold for a few seconds. This means that the shape you are casting is basically extruded vertically. To be extruded, it must have a consistent cross section in the z (vertical) axis when being cast. Protrusions or holes in the x and y axes are very difficult to make.

3. Efficiency: The manufacturers have invested a lot of capital in this equipment, and want to make a few dollars off of each cycle of the molding machine. To do so, either the units must have a high profit margin, or they must make a lot of units in each cycle. Preferably both. Try to make it so that your units occupy at least 90% of the “box” each cycle.

4. Stable shapes: Concrete masonry or hardscape units are strong when cured, but are weak for the first few hours. To avoid the unit crumbling or cracking while it is being handled, make the minimum thickness of the unit at any point about 1”. Avoid acute angle shapes of less than about 60 degrees, because the corners tend to not get filled in the mold and are vulnerable to getting broken later in transit.
Submission: To clearly illustrate the design intentions the following drawings are required for course grading and during review for competitive judging (scale 1" = 1’0”):

Overall view of an assembly using the masonry unit(s) you designed, as well as non-masonry components such as adjoining materials, masonry accessories, etc. This drawing should show how the masonry units would be used in a plausible architectural application. This should be a series of perspectives, axonometric or isometric drawings, using color to represent the appearance of the materials. Include notes to briefly explain your proposal and its intended application.

Prototype Model of the unit or units you design. This may be made of any material. It should be made to represent accurately the colors and textures of the units you propose. It is important to make a minimum of 4-6 so the interplay of units may be physically explored. The models should be full scale.

General note: all drawings must be mounted on 11” x 17” board. Use color to represent those of the materials. You must restrict identifying remarks in your submission to the back of the board; do not put your names or other identifying marks on the front of the boards or on the prototype models. All competition entries will be anonymously judged.

Assessment - The drawings and the prototypes will be evaluated in terms of the following ranked criteria:
use of modular coordination innovation technical performance (potential stability, weathering resistance)
quality of craft and presentation (clear drawings, well constructed prototype, graphic appeal, etc.)

LOCAL COMPETITION: Organized by the State Association & Local Producers.

Judges: Local Architect
Local Landscape Architect
Local Mason Contractor
Local Producer

Prizes: 1st $250 & Certificates
2nd $150 & Certificates
3rd $100 & Certificates
Honorable Mention Certificates

NATIONAL COMPETITION: 1st Place team members and professor from each participating university competition will be provided transportation and lodging to present at the:

Judges: Local Architect
Local Landscape Architect
Local Mason Contractor
Local Producer

Prizes: 1st $250 & Certificates
2nd $150 & Certificates

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ARCH 211  
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Project 05 - Tectonic Analytique

Objective: The task of this exercise is to design and draw a detailed wall section of your studio project. The specific location of the wall section should be identified in conjunction with your studio instructor.

Using Graphic Standards, Fundamentals of Building Construction, Detail Magazine and various precedents and sources of technical information, each student should thoroughly and formally draw a technical design wall section. Materials should be labeled and systems noted and explained.

In considerable development at this point in your studio semester, the sophistication and technical competency of your section relative to your design is essential. It will serve as a landmark of competency and technical development in both ARCH 202 – Design Studio and ARCH 211 – Materials and Methods of Construction.

Requirements: The extended focus of this project requires an in depth drawing study. The intention is the representation of making. Explicating through drawing the method of making requires a detail of scale and clarity of intention.

The following drawings - laid out with adjacencies and connections are required:

- vertical section [wall]
- horizontal section [plan]
- elevation [fragment]
- connection/joint detail [3 dimensional or axonometric]

The scale of all base drawings should be 1” = 1’. Blow up connection/joint drawings may be larger.

Assessment:

- Graphic Presentation 33%
- Technical Information 33%
- Design + Ingenuity 33%

A CD - MARKED WITH THE PROJECT AND STUDENT NAME - CONTAINING A PDF OF THE ANALYTIQUE, IN ADDITION TO A PLOTTED VERSION WILL, BE DUE 4/26 AT THE BEGINNING OF CLASS.