Material, our understanding of it and the experience we gain from using it, generates a dialogue that can put together stories. And these are the tales that I like to use to make architecture.

Carme Pinós from “Thoughts that Accompany Me”

Nevertheless we may assert that the built is first and foremost a construction and only later an abstract discourse based on surface, volume, and plan, to cite the “Three Reminders to Architects” in Le Corbusier’s Vers une architecture of 1923. One may also add that building, unlike fine art, is as much about an everyday experience as it is a representation, and that the built is a thing rather than a sign, ...

Kenneth Frampton, from Studies in Tectonic Culture

Premise

The World is physical. However ideal our architectural concepts might be, if they become buildings they are ultimately manifest through materials in an act of construction. An architect should take great delight in this reality. This course examines materials and construction in service of a critical understanding of the relationship between material, architectural concepts, building construction, and the experience of the built environment in a cultured society.

Objective

Architecture 4301/5301 is the first course in the Building Science sequence, and should be conceptualized as a foundational course to be built upon through both studio practice and subsequent Building Science coursework.

The objectives for this course include the following:

- To understand principles of materials and assembly in the context of building design and construction;
- To understand the development of material and construction strategies as integral to the conceptualization process of a building design;
- To develop an understanding and conversancy with the contemporary discourse on materials and construction in the broader context of the history of building and material culture;
- To understand the role that material and technological development of building materials has in the context of sustainability and performance;
- To develop a sense of delight, wonderment, and empowerment through the deeper understanding of materials and construction.

This course will introduce the following criteria for professional architectural programs as required by the NAAB:

B.4: Technical Documentation
B.7: Building Envelope Systems and Assemblies - Understanding
B.8: Building Materials and Assemblies – Understanding

Method

The content of the course will be examined through lectures, readings, representation and building component analysis, and the drawing and modeling of building assemblies, wall sections and details. There will be quizzes and two examinations to test the students’ retention of the content and their ability to synthesize it with design thinking.
Content

The course is organized around the materials of wood, masonry, steel, concrete, and glass, and will examine the nature and use of these materials through the lenses of historical, cultural, and technological developments. In addition to the properties and characteristics of materials, the course will examine methods and processes of construction and assembly, and put these in the context of contemporary professional design practices.

“Make This This Way” is a brief assignment that invites the student to identify a noteworthy example of an illustrated set of directions for assembly. There is an expectation that this will vary from the world of Betty Crocker cake mixes to Chilton’s car repair guides to a favorite IKEA artifact.

“The 12 days of Construction” is a building precedent study that translates the research, documentation, and analysis of the precedent into a speculation on the sequence of construction in the form of a flipbook.

“Ubiquitous in America: Drawing a Wood Frame Wall Section” is a straightforward assignment to draw a 1" = 1'-0" wood framed wall section correctly. This should contribute to the conversation regarding the architect’s knowledge and responsibilities related to the graphic description of construction. In service of this endeavor’s contribution to your material sensibilities you are expected to visit either Home Depot or Lowe’s and put your hands on each of the actual materials that exist in your drawing. In order to verify and celebrate this experience you will be asked to create a graphic portrait of this visit – think collage and diagram. This might be imagined as supplement to the wall section that describes the haptic and experiential qualities of the materials.

“Modeling Precedent: The Wall Section Comes Alive” is a detail study of a building precedent that entails the building of a precise and materially differentiated large scale (1" = 1'-0") wall section model. In the process each student will develop a body of research for the building that will allow them to generate the building section and detail drawings necessary to build the model. There is an expectation that this project extends and refines the understanding of the wall assembly begun in the wood frame wall section drawing.

Schedule

M August 21
The Beginning … no class.

W August 23
Introduction: The Materials Discourse in Architecture … Where Wonderment Can Be Discovered
Reading:

Film: “Decoding Ferran Adria” by Anthony Bourdain
Assignment Issued:
Make This This Way

M August 28
The Shifting Paradigm in the Materials Discourse: It’s Not Your Grandfather’s Wall Section
Reading:


Film Clip: “Architecture” from True Stories by David Byrne

Assignment Due:
Make This This Way

W August 30

The Master Builder Paradigm 2017?

Reading:


Assignment Issued:
The 12 days of Construction

Th August 31

Arch 4201/5201 (History) Paper 1A Draft

M September 4

Labor Day – No Class

W September 6

Groundworks and the Condition of Site

Reading:


M September 11

Foundations, Walls, and Roofs: Architecture in Three Easy Pieces

Reading:

Assignment Due: 12 Days of Construction research and base drawings

T September 12

Arch 4201/5201 (History) Test 1

W September 13

Who is in the Details?

Reading:

Film Clip: “Powers of Ten” by Charles and Ray Eames

Th September 14

Arch 4201/5201 (History) Paper 1A Due

M September 18

Topics in Practice: Construction Documents, Guest Presentation by David Harrison from Perkins + Will Architects

W September 20

Topics in Practice: Specifications, Guest Presentation by Dennis Hall from Dennis Hall Architects and the Construction Specifications Institute

Reading:
Hall, Dennis “Construction Documentation,” The Architect’s Handbook of Professional Practice (Hoboken, John Wiley and


M September 25

Wood 1: Wood, the Material Itself
Reading:


Materials Assignment Due: 12 Days of Construction flipbook, research, and base drawings

W September 27

Wood 2: The Ubiquitous Wood Light Frame Construction
Reading:


Materials Assignment Introduced: Drawing a Wood Frame Wall Section

Th September 28

Arch 4201/5201 (History) Paper 1B Due

M October 2

Wood 3: Heavy Timber Frame Construction and Other Legacies in Wood
Reading:


T October 3

Arch 4201/5201 (History) Test 2

W October 4

Midterm Exam

M October 9

Fall Break

W October 11

Chicago

M October 16

Wood 3: Fastening, Finishes, and Details
Reading:


W October 18

Masonry 1: Brick Masonry
Reading:


M October 23

Masonry 2: Stone and Concrete Masonry
Reading:


Assignment Due: Drawing a Wood Frame Wall Section 1st draft

W October 25
Masonry 3: Masonry Wall Construction
Reading:

M October 30
Steel 1: Steel Frame Construction
Reading:

Assignment Due: Drawing a Wood Frame Wall Section final

W November 1
Steel 2: Light Gauge Steel Frame Construction
Reading:

Assignment Issued: Modeling Precedent: The Wall Section Comes Alive

T November 2
Arch 4201/5201 (History) Test 3

M November 6
Concrete 1: Concrete Construction
Reading:

T November 7
Arch 4201/5201 (History) Paper 2 Due

W November 8
Concrete 2: Sitecast Concrete Framing Systems
Reading: TBA

M November 13
Concrete 3: Precast Concrete, Guest Presentation by Peter Finsen of the Precast/Prestressed Concrete Institute
Reading:

W November 15
Building Elements 1: Windows and Doors and Other Threshold Elements
Reading:

Assignment Due: Modeling Precedent: The Wall Section Comes Alive
drawings and detail prototypes

<table>
<thead>
<tr>
<th>Date</th>
<th>Event and Notes</th>
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<tbody>
<tr>
<td>M November 20</td>
<td><strong>Building Elements 2: Roofing and the Question of the Over-head Plane</strong></td>
</tr>
<tr>
<td>T November 21</td>
<td><strong>Arch 4201/5201 (History) Paper 3 Draft</strong></td>
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<tr>
<td>W November 22</td>
<td>Thanksgiving – No Class</td>
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<tr>
<td>M November 27</td>
<td><strong>Next Generation Facades</strong>, Guest Presentation by Mona Azarbayjani</td>
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<tr>
<td>W November 29</td>
<td><strong>Building Elements 3: Flashing and Insulation</strong></td>
</tr>
<tr>
<td>M December 4</td>
<td>Final Reviews 2101 No Class</td>
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<tr>
<td>W December 6</td>
<td><strong>Topics of Practice: Starting a Firm</strong>, Guest Presentation by Craig Kerins and Robby Johnston of The Raleigh Architecture Company</td>
</tr>
<tr>
<td>Th December 7</td>
<td>Reading Day – Holiday Lunch and the <strong>Viking Funeral</strong></td>
</tr>
<tr>
<td>M December 11</td>
<td>Materials Assignment Due: Modeling Precedent: The Wall Section Comes Alive final drawings and model</td>
</tr>
<tr>
<td>W December 13</td>
<td>Final Exam, 8:00 – 10:30 am</td>
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<tr>
<td>Th December 4</td>
<td><strong>Arch 4201/5201 (History) Test 4 and Paper 3</strong></td>
</tr>
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</table>

**Evaluation**

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Make This This Way</td>
<td>10%</td>
</tr>
<tr>
<td>The 12 days of Construction</td>
<td>15%</td>
</tr>
<tr>
<td>Ubiquitous in America: Drawing a Wood Frame Wall Section</td>
<td>15%</td>
</tr>
<tr>
<td>Precedent Research and Wall Sections Model</td>
<td>25%</td>
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<tr>
<td>Quizzes</td>
<td>5%</td>
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<tr>
<td>Midterm Exam</td>
<td>15%</td>
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<tr>
<td>Final Exam</td>
<td>15%</td>
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**Texts**

The following text is required:


Additional required readings will be provided in digital format and posted in the class Google Drive folder.

The following books are offered as useful references on the topic of Materials and Assembly:


**General Information & Policies**

**Resources**

The SoA has identified Kate Turabian, et al. *A Manual for writers of Research Papers, Theses, and Dissertations*, 7th ed (Chicago: University of Chicago Press, 2007) as the standard guide for student research, writing, and citation style. SoA students are encouraged to purchase this guide as they will be
expected to comply with it in all courses. An abbreviated discussion of Turabian’s recommendations for formatting can be found at: http://www.religiousstudies.uncc.edu/research/writingguideformat.htm.

For assistance with research, students are encouraged to contact Research Librarian Alison Bradley at adbradle@uncc.edu or Reference Librarian Shannon Paul at spaul9@uncc.edu and ask questions via email or make an appointment to talk with one of them person. Both of these librarians are very familiar with architectural and urban subjects and are eager and willing to work with students on class or other projects.

For assistance with writing, students are encouraged to contact the UNC Charlotte Writing Resource Center for free, individual consultations on all stages of the research paper and presentation process. You can reach them by email at wrchelp@uncc.edu or stop by their offices in Fretwell 220. Additional information about the WRC can be found online at http://www.uncc.edu/writing/wrc.html.

Grading

All courses in the SoA are governed by the rules and regulations of UNC Charlotte as stated in the University Undergraduate and Graduate Catalogs. For more information about these polices, please refer to the appropriate catalog, which can be found online at:

http://www.provost.uncc.edu/catalogs/2007%2D2009/ (undergrad) and

Grading of courses conform to the following grading scales and values:

<table>
<thead>
<tr>
<th>Undergraduate Scale &amp; Values</th>
<th>Graduate Scale &amp; Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 90-100</td>
<td>A 90-100</td>
</tr>
<tr>
<td>Excellent</td>
<td>Commendable</td>
</tr>
<tr>
<td>B 80-89</td>
<td>B 80-89</td>
</tr>
<tr>
<td>Good</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>C 70-79</td>
<td>C 70-79</td>
</tr>
<tr>
<td>Fair</td>
<td>Marginal</td>
</tr>
<tr>
<td>D 60-69</td>
<td>U 69 &amp; Below</td>
</tr>
<tr>
<td>Passing</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>F 59 &amp; Below</td>
<td></td>
</tr>
</tbody>
</table>

These grades are determined according to the following criteria:

**A (Excellent / Commendable):** Meets or exceeds stated requirements of the course; exhibits significant improvement, development, and/or intellectual growth over the course of the term; exhibits research efforts from which both the instructor and students may learn; all work turned in on time and presented in a professional manner.

**B (Good / Satisfactory):** Meets the stated requirements of the course; exhibits good improvement, development, and/or intellectual growth over the semester; provides a measure for student emulation; and all work is turned in on time and well presented.

**Grad C (Marginal):** Fails to meet most requirements of the course (the work is incomplete to a significant degree); exhibits little or no improvement, development, and/or intellectual growth over the semester; and/or work is of a caliber only marginally acceptable at the graduate level.

**Undergrad C (Fair):** Meets most requirements of the course; exhibits limited improvement, development, and/or intellectual growth over the semester; and all work is turned in on time and neatly presented. An accumulation of 3 marginal C grades will result in suspension of a student’s enrollment. For Bachelors of Architecture students, a grade of C is the minimum passing grade.

**Undergrad D (Passing):** Fails to meet most requirements of the course (the work is incomplete to a significant degree); exhibits little or no improvement, development, and/or intellectual growth over the semester; and/or work is of a caliber only marginally acceptable at the university level. For Bachelor of Arts in Architecture students, a grade of D or worse in studio requires repetition of the course before advancement. For Bachelor of Arts in Architecture students, one grade of D is permissible, however, a grade of D in a subsequent studio requires repetition of the course before advancement. Courses may not be repeated more than once. Academic suspension occurs for BA students with their third studio grade of D or worse and for BArch students with their second grade of D or worse.
Undergrad F (Failing): Fails to meet the requirements of the course; and/or the work is incomplete or of a caliber unacceptable at the university level. A grade of F in a studio requires repetition of the course before advancement. Academic suspension occurs for BA students with their studio third grade of D or worse and for BArch students with their second grade of D or worse.

Grad U (Unsatisfactory): Fails to meet the requirements of the course; and/or the work is incomplete or of a caliber unacceptable at the graduate level. A grade of U will affect eligibility for continued enrollment and will not apply towards degree requirements.

Policies

Academic Integrity: All written and graphic submittals, in-class presentations, and other academic tasks should be your individual and original work unless specifically noted as group projects. No cheating. No plagiarism. It is assumed that you are aware of and will comply with the spirit and specifics of the UNC Charlotte Code of Student Academic Integrity, which is available online at: http://www.legal.uncc.edu/policies/ps-105.html.

Disability: If you have a diagnosed disability which influences your ability to learn or have your work assessed in the classroom, all efforts will be made to accommodate your needs. Please provide a copy of your Letter of Accommodation from the UNC Charlotte Office of Disability Services by the end of the second week of classes. Their office is located in 230 Fretwell and more information is available online at: http://www.ds.uncc.edu/. All information about your disability and accommodations will remain confidential. Please see the instructor if you are interested in being an official scribe (note taker) for this course. Your notes will be made available to others in the class with special needs (including students for whom English is a second language and/or students with learning disabilities).

Attendance: In order to fully benefit from and participate in this course, attendance is required. Two (2) unexcused absences automatically lower your final grade one letter grade. More than two (2) unexcused absences will constitute grounds for automatic failure of this course. Documentation of excused absences must be submitted in writing and show evidence of the medical or family emergency. When possible, notify your instructor as early as possible in advance of a potential absence.

Workload: This 3-credit course requires 3 hours of classroom or direct faculty instruction and 6 hours of out-of-class student work each week for approximately 15 weeks.

Late Work: Late work will not be accepted, and will not receive credit. A printed hard copy of each submittal is due at the beginning of the class period on the due date indicated in the class schedule. If you are unable to complete an assignment due to an excused absence, notify the professor on the due date and turn in the assignment at the next class meeting. Failure to turn in two assignments on their due dates is grounds for automatic failure of the course.

Religious Holy Days: Students whose religious beliefs prohibit class attendance or the completion of specific assignments on designated dates may request an excused absence. If the student notifies the instructor of the classes to be missed due to religious holy days by the end of the second week of classes, the student will be excused. (Eligible religions are those whose places of worship are exempt from property taxation.)

Diversity and Respectful Interaction: All perspectives and opinions are welcomed and will be respected in this classroom or studio, as long as they are presented in manner that is respectful. Intolerance will not be tolerated. Be mindful of your conduct when engaged in experiences and discourses with those who differ from you in appearance, race, ethnicity, beliefs, gender, sexuality, style, politics or intellectual position. If you feel personally uncomfortable or alienated, or that diversity in general is any way stifled in this class, please let the instructor know so that the situation can be remedied.

Be especially aware that studios are a public place, so be sensitive to images and other materials around your desk, including on your computer, which might be offensive to others. In addition, all students are required to abide by the spirit and the specifics of the UNC Charlotte Sexual Harassment Policy, which can be found online at: http://www.legal.uncc.edu/policies/ps-61.html.

Culture: Students and instructors alike share responsibility for the collective culture of all SoA courses, all participants are expected to enhance its intellectual life by being present, pro-active, and
respectful. All courses actively comply with and promote the SoA and CoAA culture policies, with which it is assumed you are aware. The SoA culture policy is available online at:
http://www.coaa.uncc.edu/Academics/School-of-architecture/About.

**Electronics:** At all time during class cell phones, computers and other devices should be switched off and put away, unless permission to use those devices has been explicitly given by the instructor. All students are required to abide by the UNC Charlotte policy on Responsible Use of University Computing and Electronic Communication Resources, which can be found online at:

Remember that harassment, as defined in the UNC Charlotte Sexual Harassment Policy, is prohibited, even when carried out through computers or other electronic communications systems, including course-based chat rooms or message boards.