



SYLLABUS

ADVANCED TECHNOLOGY + BARCELONA DATA, ARCH 410/510

Fine-Grained Urbanism Smart Construction

Instructor Philip Speranza, with guests Gonzalo Alonso, Juan Rey or Sergi Sebastia

Instruction in English with Spanish and Catalan terms and content

3.0 Credits

40 Contact Hours

40+ total hours of student engagement in all course activities

Barcelona, Catalunya, Spain

COURSE DESCRIPTION

New data collection and computation techniques provide the opportunity for open, experiential and systematic understanding of site. The use of handheld mobile technology and new inexpensive microprocessors and sensors provides opportunity to bring the power of information to the lowest user level without the influence of larger economic and political forces. These research methods have been published with the *Journal of Urban Design*, *Journal of Urbanism* and several book chapters and tested in professional urban design projects.

In-situ urban sensing methods include the advanced cross-platform methods to record data on site. Methods taught in this class may include the use of survey software and associated interface design including GSP, photos, time and other data types. Careful attention will be made coding information into binary 0/1, 1 to 5, numerical, word match and other qualitative to quantitative transformation. Other workflow platforms may include mobile app software ODK, Excel formulation, mobile sensor applications and physical robotic development of custom Arduino microprocessor and custom sensor devices. Software syntax and robotic assembly may be included to create custom sensors to measure targeted urban characteristics. These urban robotic techniques will test theories from the urban design seminar course and provide new data for analysis and design in the media for design development course.





COURSE OBJECTIVES

The courses teach the following objectives:

- **Principles of Mass Timber Construction:** History and Contextualization of USA, European and Spanish CLT Construction methods
- **On-site CLT factory and tree species:** Students will visit Sebastia SOLID CLT factory to learn first hand from 3rd CLT factory in Spain and how that industry relates to ecology, economics and politics in Catalunya.
- **Application to Studio Project:** Testing application of mass timber principles for application for studio project in Marina del Prat Vermell studio project
- **Feedback:** Students will learn to iteratively test feedback regarding studio projects.

INSTRUCTIONAL METHODOLOGY

Students will be presented with principles and case studies in Barcelona and Catalunya of Mass Timber Construction. Context will be provided with projects in Catalunya, Spain, Europe and the USA. Student will then do a factory visit to Rialp and meet with the factory owners to understand the history and current construction approach in Catalunya. Examples of projects will be provided in Barcelona to study. Integration and implication with buildings heating and cooling, assembly time, exposed materials, structural implications, materials sustainability, and thermal enclosure will be introduced. Students will then report on the application of these principles to their studio's projects. Project based critiques will be provided for their projects.

METHOD OF EVALUATION (GRADING)

Evaluation will include a report of findings from the principles and factory visits. Application of Mass Timber as application for studio projects will include a description, diagrams, context / precedents, structural plans, 3D modeling and renderings to explain the use of the material related to the building occupancy. Students will have to demonstrate a response to critique linking the applied principles, goals and integration into building design.

COURSE OUTLINE

Principles and Context

Sebastia SOLID Rialp factory visit and hike through forest of related tree species and ecology

Guest lectures

Definition of goals, objectives and description toward application in studio project

Evaluation of application in studio project

Critique of Mass Timber Structural system in studio project

Reflection of application

Accessible Education Statement

(see <https://aec.uoregon.edu/best-practices-faculty> for more information): *The University of Oregon is working to create inclusive learning environments. Please notify me if there are aspects of the instruction or design of this course that result in disability-related barriers to your participation. You are encouraged to contact the Accessible Education Center in 360 Oregon Hall at 541-346-1155 or uoaec@uoregon.edu.*

Academic Misconduct Statement

(see <https://dos.uoregon.edu/academic-misconduct> for more information): *The University Student Conduct Code (available at conduct.uoregon.edu) defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students' obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a common form of academic misconduct, plagiarism, is available at researchguides.uoregon.edu/citing-plagiarism.*

Reporting Obligations:

I am a [designated reporter/student-directed employee (select one)]. For information about my reporting obligations as an employee, please see [Employee Reporting Obligations](#) on the Office of Investigations and Civil Rights Compliance (OICRC) website. Students experiencing any form of prohibited discrimination or harassment, including sex or gender-based violence, may seek information and resources at safe.uoregon.edu, respect.uoregon.edu, or investigations.uoregon.edu or contact the non-confidential Title IX office/Office of Civil Rights Compliance (541-346-3123), or Dean of Students offices (541-346-3216), or call the 24-7 hotline 541-346-SAFE for help. I am also a mandatory reporter of child abuse. Please find more information at [Mandatory Reporting of Child Abuse and Neglect](#)."