ARCH 471/571: BUILDING ENCLOSURE

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Lectures: M/W 5:30–7:30, WS Event Room
No laptops, phones, etc in lectures please.

Credits: 4 Credit Hours, required for professional majors in Architecture.

Course Content:
This course focuses on the building enclosure which plays a number of important roles: it provides shelter and protection from the weather, it creates architectural form and image, and it offers visual and physical connections between interior and exterior. The enclosure is also a crucial component in supporting occupant comfort, productivity, and well-being with the lowest possible energy consumption. Often these functions compete, which forces the design team to balance trade-offs and innovate.

In this course we will study the critical control layers which are essential in the creation of an effective and durable building enclosure. We will explore the most common enclosure materials and systems including metal and wood framing, weather and vapor control layers, insulation, a broad range of cladding materials (including masonry, metals, and wood), historic and modern mass wall assemblies (masonry and concrete), window systems, below grade assemblies, roof terraces, “green” roofs, and conventional roofing assemblies.

We will engage these topics in the context of the design and documentation process including tools and techniques. The emphasis will be on developing assemblies and the interfaces between systems in overall drawings and details from sketches through construction drawings. We will also touch on rules of thumb and analysis methods that support decision-making in technical design.

Building performance and sustainable design are important factors in the design and making of buildings and will be themes that weave through the course topics. We will primarily consider current best practices, but we will also touch on building enclosure trends and innovations.

Course Objectives:
1. Build on the students understanding of the multiple roles of the building enclosure.
2. Study the building science concepts at play in building enclosures and the control layers required to manage them.
3. Explore a wide range of exterior wall, roof, and foundation materials and systems including their material properties.
4. Engage the design, analysis, and documentation process in the creation of a complete and effective building enclosure.

Course Format:
The course will include lectures, guest presentations, and readings. Two technical design projects will provide students with an opportunity to explore and apply the principles covered in the lectures and readings through design, drawing, and detailing. For each project, one class period will be devoted to desk crits including professional architects and consultants. In addition to the projects, one (or more) quiz(es) and a final exam will cover the content of the course.

Texts:
Brock, Designing the Exterior Wall, Wiley, 2005