BUILDING ENCLOSURE
DESIGN / CONSTRUCTION / PERFORMANCE

Instructor  Mark Perepelitza, Adjunct Instructor
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GTF  TBD

Time/Place  TBD

Credits  4 Credit Hours, required for professional majors in Architecture

Course Content:
The enclosure provides the fundamental essence of buildings—shelter and protection. As the outer skin, it also plays an integral role with building form to create the exterior architectural image. And as the layer that mediates between the exterior and interior environments—we call on it to simultaneously protect and connect—through transparency and physical openings. As design teams strive to optimize building performance, the building enclosure offers multiple opportunities to significantly reduce energy use as well as improve occupant comfort, productivity, and well-being. Because optimizing performance often requires balancing competing functions, a strong understanding of enclosure performance fundamentals allows architects to make intelligent design decisions.

In this course we will study building science fundamentals and control layers which are critical to the creation of an effective and durable building enclosure. We will explore common enclosure materials and assemblies including metal and wood framing, weather control membranes, various types of insulation, a broad range of cladding materials, historic and modern mass wall assemblies, window systems, below grade assemblies, roof terraces, vegetated roofs, and standard roofing assemblies.

We will engage these topics in the context of the design and documentation process. The emphasis will be on developing assemblies and the interfaces between systems in drawings and details from initial 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 focus on current best practices, but will also discuss building enclosure trends and emerging technologies.
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 range of exterior wall, roof, and foundation materials and assemblies.
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, projects and readings. Two technical design projects will provide 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 pin-up reviews with professional architects and consultants. In addition to the projects, a midterm and a final exam will cover the content of the course. An optional field trip will also be scheduled.

Canvas:
Course information will be posted on Canvas. Reference materials supporting projects 1 and 2 as well as PDFs of lectures will be posted.

Texts:
Optional: Brock, Designing the Exterior Wall, Wiley, 2005
Additional materials will be on hold in the library and/or posted on Canvas.