BUILDING ENCLOSURE
DESIGN / CONSTRUCTION / PERFORMANCE

Instructor  Mark Perepelitza, Adjunct Instructor
mark.perepelitza@zgf.com

Time / Place  M/W 5:30–7:30, WS Event Room
Credits  4 Credit Hours, required for professional majors in Architecture.

Course Content:
The building enclosure plays a number of essential roles: it provides shelter and weather protection, it creates architectural form and image, and it offers visual and physical connections between interior and exterior. The enclosure is also crucial in supporting occupant comfort, productivity, and well-being with the lowest possible energy consumption. In the design and construction of high-performing buildings, architects must make intelligent choices to balance trade-offs between competing functions. Effective innovative solutions can be developed from a strong understanding of enclosure performance fundamentals.

In this course we will study critical control layers which are essential in the creation of an effective and durable building enclosure. We will explore 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 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 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.
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 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 with professional architects and consultants. In addition to the projects, a midterm and a final exam will cover the content of the course.