

ARCH 673: THE SCIENCE OF THE BUILDING ENCLOSURE

"How to make buildings that work" or "How to practise architecture and not get sued"

OUTLINE

The calendar states: "The building envelope has become the single most significant and element within the contemporary economy of building. It bears much of the identity and amenity of buildings, is the site of significant expenditure, the occasion of environmental concern and attention, the object of much technological innovation, and the locus of entropy. This course provides an advanced study of the building envelope as the place where design, technology, building science, and environmental concerns converge. It discusses matters such as natural light and ventilation or the short- and long-term behaviours of building materials, and assesses the use of new generations of "smart" mechanical environmental devices." We will also briefly review site design, orientation, and massing as it relates to building performance.

The course advances beyond Arch 264 in depth and scope. The focus of this course is on the practical technical needs of the architect, i.e., the design, rehabilitation, construction and operational aspects of the building enclosure -- walls, windows, roofs, foundations etc. Interactions of the enclosure and environmental systems (lighting, ventilation, HVAC) will be covered as needed to allow for the assessment of the building as a system.

LECTURES:

Mondays 9:30 to 12:30 PM in ARC2026

FORMAT

Lectures w/case studies, slide shows, building walk throughs, physical samples, case studies. Some simple equations, mostly concepts and design principles.

INSTRUCTOR:

Dr John Straube

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TEXTBOOK

Copious handouts will be provided, and lots of info can be found at: www.civil.uwaterloo.ca/beg and follow Building Science student links, especially the one for technical resources.

Recommended: *Architectural Detailing* by Ed Allen, *Building Science for Building Enclosures*, by J Straube and E Burnett and Linda Brocks *Designing the Exterior Wall* (in library)

PROJECTS AND MARKING SCHEME

Projects: 30% three in-class design exercises

Project #2: 40% due last week of class

Exam #1: 30% Oral exam in final exam period

This may be modified by negotiation during the class