instructor
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meetings:
Tues. & Thurs.
12:00-1350, LA 279

crn:
410: 10351
510: 10439

readings:
reading packet
+ IES_VE software

credits:
4cr. hr

grading:
graded or P/N

prerequisites:
- Arch 4/592, or prof. permission

format:
seminar with illustrated lectures on dynamic facade design and analysis, facades performance simulations and modelling. The seminar is devoted to creating and testing prototypes of high performance dynamic facades and shades using state-of-the-art simulation packages and physical prototypes.

course objectives:
this seminar explores theory and methods behind the making of high-performance dynamic façades (HDF) and their performance evaluation. It will introduce participants to tools and techniques of activated/dynamic facades through design, testing, simulations, and construction of full-scale mock-ups. The seminar will use a hands-on learning approach engaging students in an on-going envelope retrofit project of a LEED v.4.1 all-glass building. The seminar will mainly focus on solar control, ventilation micro flows, daylighting harvesting, thermal and visual comfort, as well as indoor air quality related to active skin buildings.

Much attention is given to the aesthetic and materiality of high performance facades but less on the process of their conception or their performance potential. Innovations in facade tectonics are of growing interest, however, less discussions are centered on the theoretical grounds that guide their application or rigorous evaluation investigating their actual environmental dynamics. The objective of this seminar is to critically investigate high performance facades and develop ideas and prototypes for active and dynamic building skins that has the capability to change according to thermal, optical, and occupants needs. Instead of viewing the facade as a static element, we will investigate how to employ it as a dynamic architectonic apparatus to manage, daylighting, shading, views, transparency, ventilation, structure, materiality, and architectural expression. This seminar will develop ideas and prototypes for re-skinning existing all-glass buildings through a series of design investigations leading to the construction of full-scale mock-ups that will be tested on the Facade Integrated Technologies (FIT) testing facility.

Background Photo: Broad Museum, Los Angeles, CA - Diller Scofidio + Renfro