(re)SKIN_Kinetic Envelopes
ARCH 4101 Topic Studio Fall 2017 Prof. Kyounghee Kim [kkim33@uncc.edu, Rm 227]

[Premise] Construction debris generates nearly 60% of municipal wastes. The embodied energy of a building accounts for 10~20% of the total building energy consumption. Old buildings are a large contributor to the disproportionate energy use in USA. Inherent sustainability benefits derive from adaptive reuse rather than replacement.

[Problem] Building envelopes in contemporary buildings play an important role as a micro-climate controller and an aesthetic performer. One of primary problems of contemporary building enclosures is its “static” nature in relation to its “dynamic” environment. The studio focuses on kinetic building envelopes that correspond to dynamic environments in space, program, time, and occupancy to balance multi-faceted design requirements.

[Studio Project] The studio project is to design a New Museum addition located in midtown Manhattan. The project focuses on the institution’s expanding role as a center for a design, art, and technology incubator. Kinetic facades further add creative energy into the city’s cultural life. The project should create a compelling narrative for promoting the triple bottom line of sustainability for the city.

[Learning Objectives and Activities] This research-based studio focuses on the design of a sustainable building integrated with kinetic façade systems. The studio activities consist of desk survey, parametric modeling, performativity measurements, prototyping, discussions, lectures, pin-ups, and reviews to maximize three learning objectives:

1. To implement performative design strategies;
2. To learn integrated design process using parametric modeling and performativity analysis tools;
3. To develop a kinetic façade system addressing its performativity, programmability, and commodification potentials.

[Studio Requirements and Grading] Studio requirements consist of four reviews.

1. Interim review I: Concept + site work + design work (4-week study):
   Site and program analysis; pre-schematic design work; preliminary analysis work.
2. Interim review II: Integrated design work I + kinetic façade design (4-week study):
   Integrated design work between site, building, and kinetic facades developed in Stage 1; performativity analysis.
3. Interim review III: Integrated design work II + kinetic façade development (4-week study):
   Integrated design work and the development of kinetic facades developed in Stage 2; performativity and programmability analysis of kinetic facades.
4. Final review: Detail work (4-week study):
   Design revision of previous work and system details development; performativity, programmability, commodification of kinetic facades.

Student work is evaluated in terms of design process and methodology, which must be explicitly recorded, and in terms of the quality of execution of the work. Grades will be awarded on the following basis:

1. Interim review I: 20%
2. Interim review II: 20%
3. Interim review III: 20%
4. Final review: 40%

[Bibliography]
- Detail Manual Books