

Instructor: Andrzej Zarzycki

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## Parametric Structures/Concepts + Structures

### PROJECT:

The project focuses on the integration of structural systems with an architectural envelope. Particularly, we are interested in establishing interdependencies between and exterior façade and the structural system, and their mutual contribution to the architectural tectonic expression.

The purpose of the assignment is twofold. Students will study the existing precedent and test it as a three-dimensional BIM (Building Information Modeling) model and will also learn about the spatial coordination of various element and system components, including interconnectivity and interdependencies. Students will be able to manipulate and experiment with parametric components as well as interactively follow through the design alteration(s) to allow observation of impacts that result from design modifications.

Later in the project students will explore the parametric possibilities of BIM models. Three-dimensional parametrically resolved architectural detail can serve as speculative, idea-generating devices for design. Students are expected to document their parametric explorations through images, models, and text.

The objectives of the assignment include (1) facilitating material, dimensional, and construction detail investigations in the context of contemporary architectural design, (2) addressing the integration of building systems and their appropriateness to design intent, and (3) providing additional exercises and applications in the use of information technology and Building Information Modeling as part of both the design generation and design analysis processes in the context of the design development component of architectural design services.

### DELIVERABLES:

- a series of BIM models in digital format
- high resolution digital images/renderings
- a series of sequential images showing parametric variations
- final report including initial research, process documentation, and final outcomes (portrait orientation, 8 ½ " x 11", PDF)

### PRECEDENTS/EXAMPLES (partial list):

Aalto – Saynatsalo Town Hall  
Abalos and Herreros – Library of Usera, Madrid  
Alsop – Ontario College of Art, Toronto  
Calatrava – Milwaukee Museum, Milwaukee, WI  
Coop Himmelblau – BMW World, Munich  
Diller Scofid Renfro – Institute of Contemporary Art, Boston, MA  
Foster – London City Hall, London  
Gaudi – Casa Mila, Barcelona  
Gehry – Bilbao Guggenheim, Bilbao; Stata Center at MIT, Cambridge, MA  
Herzog & DeMeuron – DeYoung Museum, San Francisco, CA  
Holl – Simmons Hall at MIT, Cambridge, MA  
Jahn – Illinois State Office Building, Chicago, IL  
Kahn – Exeter Library, Exeter, NH and Salk Institute, LaJolla, CA  
Meier – Getty Museum, Los Angeles, CA  
Moneo – Cathedral of Angels, Los Angeles, CA  
Morphosis – Diamond Ranch High School, Pomona, CA  
Piano – New York Times Building, New York, NY  
Rogers – Madrid Airport and Lloyds of London, London  
Stirling – History Faculty Library at Cambridge University, Cambridge  
Wyman – Bradbury Building, Los Angeles, CA