INSTRUCTOR: Yun Kyu Yi, Ph.D.

TIME: Wednesday, 9:30am -12:20pm

DESCRIPTION
Simulation is the process of making a simplified model of some complex system and using it to predict the behavior of the original system. During the past decade, advancements in computer technology made it possible for building simulation to be part of the design process. This course will provide students with 1) An understanding of building simulation tools 2) Hands-on experience in using computer simulation tools and 3) Exploration of the technologies, the underlying principles, and the potential applications of a simulation tool in architecture.

State-of-the-art computer models for thermal, lighting, computational fluid dynamics (CFD) are the major among other domains that will be introduced. The application of these models in architectural design will be explored. A building will be analyzed throughout the semester in the following areas:

- Energy and Passive Solar Systems
- Lighting and Daylighting Systems
- Computational Fluid Dynamics (CFD)
- Design Integration

INSTRUCTIONAL METHODOLOGY
Classroom lectures will be given on specific topics each week. A series of analysis projects will be assigned to provide students with hands-on experience in using the computational simulation tools. No computer programming background is required for this course. However, students are assumed to have a background in using CAD modeling applications such as AutoCAD or Rhino.

POSSIBLE COMPUTATIONAL TOOLS
- ENERGY: eQuest, EnergyPlus, Honeybee
- Daylight: Diva4Rhino, Radiance, Ladybug
- CFD: ANSYS Fluent, Butterfly