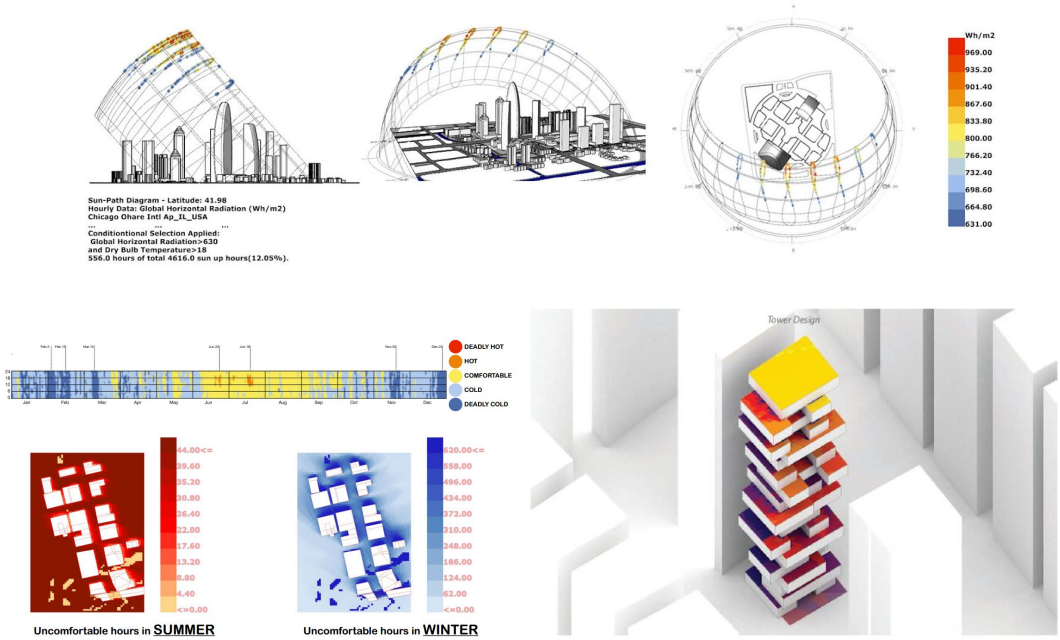
Department of Architecture
School of Design
University of Pennsylvania

ARCH-753 - Building Performance Simulation

Fall 2016



DESCRIPTION

Simulation is the process of making a simplified model of a 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) understanding of building simulation methods 2) hands-on experience in using computer simulation models and 3) exploration of the technologies, the underlying principles, and the potential applications of simulation tools in architecture.

INSTRUCTIONAL METHODOLOGY

Each class consists of a lecture on a specific topic in building simulation which follows with hands-on exercises on the topic. A series of analysis projects will be assigned to provide students with hands-on experience in using the computer models. No computer programming background is required for this course. However, students are assumed to have a background in using 3D modeling applications such as Rhinoceros.

LECTURER: **Mostapha Sadeghipour Roudsari**
Email: mostapha@ladybug.tools
Office hours: Monday (12:00-2:00pm) by appointment

TIME / LOCATION: Monday, 9:00am -12:00 / Meyerson Hall Room # 321

READINGS: Material will be provided weekly.

HOMEWORK: Weekly assignments will be provided every week. Due time for assigned homework is before the start of the next class.

GRADING: Grading will be based on 20% class participation, 40% homeworks, and 40% final project
A: Excellent, B: Good, C: Marginal, F: Fail

SCHEDULE

Week	*Subject*	Remark
2- 9/05	Labor Day	No Class
3- 9/12	**Course Overview: Introduction to Building Performance Simulation**	-
4- 9/19	**Weather Data Analysis**	Ladybug
5- 9/26	**Thermal Comfort**	Ladybug
6- 10/03	**Design Charrette I**	-
7- 10/10	**Sun-Path - Shading Design**	Ladybug
8- 10/17	**Introduction to Daylight Simulation**	Radiance (Honeybee)
9- 10/24	**Advanced Daylighting Simulation**	Daysim (Honeybee)
10- 10/31	**Introduction to Energy Simulation**	EnergyPlus (Honeybee)
11- 11/07	**Energy Simulation**	EnergyPlus (Honeybee)
12- 11/14	**Integrated Energy and Daylight simulation**	EnergyPlus (Honeybee) Final project will be provided
13- 11/21	**Indoor Thermal Comfort Simulation**	EnergyPlus (Honeybee)
14- 11/28	**Airflow Simulation**	CFD (DesignBuilder)
15- 12/05	**Design Charrette II**	-
16- 12/12	**Final Project Due**	-

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