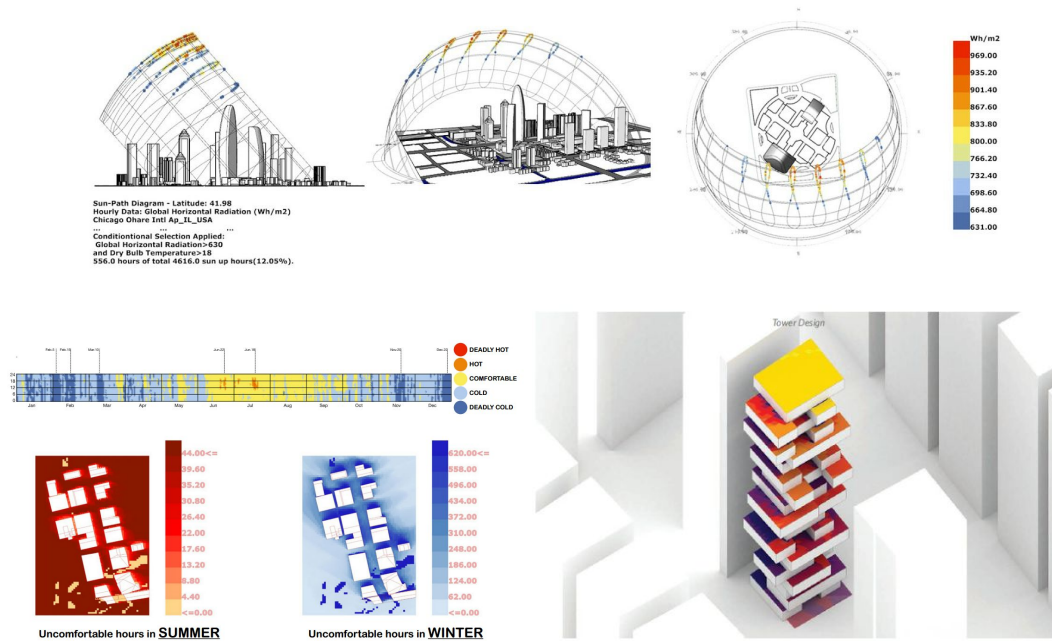


ARCH-753 - Building Performance Simulation

Fall 2015



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 methods 2) Hands-on experience in using computer simulation models and 3) Exploration of the technologies, the underlying principles, and the potential applications of a simulation tools in architecture.

State-of-the-art computer models for thermal, lighting, computational fluid dynamics are the major among other domains that will be introduced. The application of these models in architectural design will be explored.

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 computer models. No computer programming background is required for this course. However, students are assumed to have a background in using geometric modeling applications such as AutoCAD or Rhino.

LECTURER: Mostapha Sadeghipour Roudsari

Email: Sadeghipour@gmail.com

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

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

<i>Week</i>	<i>Subject</i>	<i>Remark</i>
1- 8/31	Course Overview: Introduction to Building Performance Simulation	
2- 9/07	Labor Day	No Class
3- 9/14	Weather Data Analysis	Ladybug
4- 9/21	Thermal Comfort	Ladybug
5- 9/28	Sun-Path - Shading Design	Ladybug
6- 10/05	Design Charrette I	Studio travel week
7- 10/12	Introduction to Daylight Simulation	Radiance (Honeybee)
8- 10/19	Advanced Daylighting Simulation	Daysim (Honeybee)
9- 10/26	Introduction to Energy Simulation	EnergyPlus (Honeybee)
10- 11/02	Energy Simulation	EnergyPlus (Honeybee)
11- 11/09	Indoor Thermal Comfort Simulation	EnergyPlus (Honeybee) Final project will be provided
12- 11/16	Airflow Simulation - outdoor	(DesignBuilder)
13- 11/23	Airflow Simulation - Indoor	(DesignBuilder)
14- 11/30	Design Charrette II	
15- 12/07	Final Project Due	

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at: http://www.upenn.edu/academicintegrity/ai_codeofacademicintegrity.html