Introduction to BIM in Architecture

Homepage: `http://cat2.mit.edu/4.567`

First class meetings:

- Thursday February 9 at Room 1-246

Prerequisites: None

Instructor: Takehiko Nagakura (takehiko@mit.edu)

Teaching Assistants: Chang Liu (liuch@mit.edu)

Class hours and room: (subject to change)
- Lecture/Review Thursday, 10:00-11:30pm (1-246)
- Demo/Lab/workshop Thursday, 11:30am-13:00pm (1-246)

Requirement: Final grade is based on 2 projects and attendance (i.e., class participation). The progress of each project will be reviewed at a constant pace during the regular classes. The class ends with a final review (project 1+2) one week before the end of the last week of the class.

Project 1: Modeling/Simulation (50%) + Project 2: Parametric Design (40%) + Attendance (10%)

Primary Software Used: Revit Architecture 2017 (Free student version available)

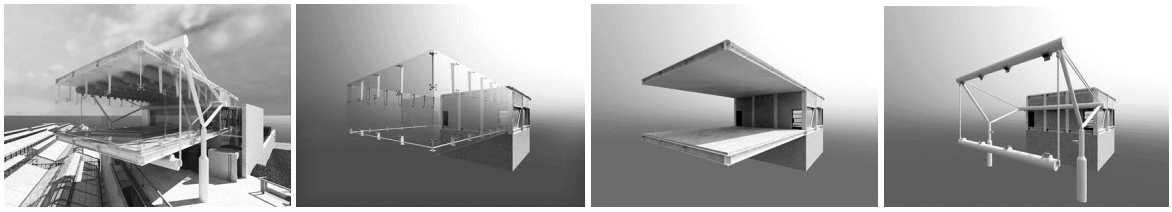
Cost: If you are not an Architecture student at MIT, there will be a fee for the use of MIT 3D printer.

Special note

The student assignment submissions (digital models and images) will be posted on the class website as a public depot of BIM database.

Introduction

This course addresses fundamental methods, theories, and practices that engage contemporary modeling tools in the context of architectural design. It introduces selected academic and professional topics through lectures, demonstrations, and assignments. Topics include component types and assembly, parametric modeling, visualization, simulations, and scripting. Students are expected to initiate intellectual explorations through the use of Building Information Modeling software (Revit) for architectural design projects, and to develop foundations to apply it to their own research projects and design practices later.



Spring 2017 MIT 4.567 **Introduction to BIM in Architectural Design**
Course Schedule (subject to change)

class 01		Project 01 out : Design Analysis/Simulation
Thursday	Introduction	Demo: Revit Basic Interface, View/Projection, Grid and Levels
2016.02.09	History: BIM vs. Geometric Modeling	Lab: working session
class 02		
Thursday	Ontology of Architectural Types	Demo: Pre-defined Parametric Types, Constraint Propagation
2016.02.16	*Progress check:* Resource compilation	Lab: working session
class 03		
Thursday	Projection and Perspective	Demo: Transformation, Group/Link, Area/Rm, Sheet/Schedule
2016.02.23	*Progress check:*Design Documents	Lab: working session
class 04		
Thursday	Image Processing, Visualization	Demo: Mental Ray, Day-lighting, Photometric Light (IES)
2016.03.02	*Progress check*: BIM model	Lab: working session
class 05		
Thursday	Integrated System	Demo: Material, Walk-through, UNITY AR tool, Topography
2016.03.09	Visual Representations	Lab: STL/DWG conversion (for 3D printing)
class 06		
Thursday	Analysis and Simulations	Demo: Green Building Studio, Robot, Navisworks
2016.03.16	Construction, Energy, and Structural	Lab: working session
class 07		
Thursday	*Presentation: Project 01*	
2016.03.23		
Thursday	Spring Vacation ----------	----------
2016.03.30		
class 08		Project 02 out : Adaptive Design (Generative/Parametric)
Thursday	Revisiting Parametric Types in BIM	Demo: Custom Types (Family), Progressive Modeling
2016.04.06		Lab: working session
class 09		
Thursday	*Review: Initial design idea*	Demo: Adaptive Component
2016.04.13		Guest : TBA
class 10		
Thursday	Visual Programming	Demo: Dynamo
2016.04.20		Guest : TBA
class 11		
Thursday	Coding Process and Knowledge	Demo: Revit API/SDK
2016.04.27		Lab: working session
class 12		
Thursday	BIM, Design and Globalization	
2016.05.04	Guest: Dennis Shelden	Lab: working session
class 13		
Thursday	*Final Presentation: Project 01 (revision) + Project 02*	
2016.05.11	(Reviewers: TN + guests)	
class 14		
Thursday	Last day of class. No class in respect of MArch studio reviews	
2016.05.18		
exam week	**No Final Exam for this class.**	