New York University Tandon School of Engineering

Department of Civil Engineering
Course Outline CE 8243 CONSTRUCTION MODELING TECHNIQUE
SPRING 2018

Professor Hyunchul Choi, PhD
Thursday 6:00 PM to 8:30 PM;
Room: TBD (announced week by week)

To contact professor: hc881@nyu.edu

Course Description
The course will focus on utilizing Building Information Modeling (BIM) for the construction project. Building Information Modeling is a virtual model of a building that can be used for design decisions, quantity take offs, interference checking, construction document generation, rendering and presentation. Students will learn about BIM, its use in the industry, examine geometry, special relationships, geometric information, quantities and properties of building components, benefits and improvement areas and as the impetus for the paradigm shift in building project management and lifecycles.

Course Objectives
• Provide familiarity with the current BIM technologies
• Provide understanding of the shift from representation to simulation
• Provide understanding of new means of coordination of construction documentation
• Provide understanding of the linking of vital information, such as vendors for specific materials, location of details and quantities required for estimation, bidding and scheduling, into the model

Course Structure
A combination of: lectures, case studies and discussions. Additional out of class time required for directed learning, class assignments and reviewing relevant material. There will be reading material in addition to your practical homework each week and I expect each student to be prepared to discuss the topics in the class.

Readings
Reading material will be provided during each class.
Suggested readings:
2. BIM HANDBOOK: A guide to Building Information Modeling, Chuck Eastman, Paul Teicholz, Rafael Sacks, Kathleen Liston, Willey, 978-0470-185285
Evaluation

Class Participation: 10%
Homework: 30%
Midterm exam: 30%
Final Project: 30%

Hardware

Civil Department computer lab will have the adequate hardware needed for this course

Software

Revit 2018, Navisworks 2018, AutoCAD, Tekla, Digital project, Microstation

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lesson plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, Traditional Construction Process. Basic understanding of BIM, Progression from 2D to 3D, 4D and BIM</td>
</tr>
<tr>
<td>2</td>
<td>Overview to various BIM &amp; Construction standards, BIM Execution Plan, IFC, Uniformat, Master format, OMNI class (<a href="http://www.omniclass.org/">http://www.omniclass.org/</a>)</td>
</tr>
<tr>
<td>3</td>
<td>Potential Capabilities of BIM, Review the current BIM trend (Designer, Contractor and Owner) and Discuss about the future shape of BIM</td>
</tr>
<tr>
<td>4</td>
<td>Revit Architecture, Understanding Revit overview, User Layout of Revit, Model Preparation Task, and Grid</td>
</tr>
<tr>
<td>5</td>
<td>Revit Architecture, Revit Modeling: Families, 3D Geometry Development for Model</td>
</tr>
<tr>
<td>6</td>
<td>Revit Architecture, Exporting the BIM Database to Other Formats, Nongraphic Data—Schedules &amp; Quantities and Drawing Generation</td>
</tr>
</tbody>
</table>

1 Regardless of the above percentages, any student who completes less than 80% of the assignments will receive an "F" for the course.
2 Missing more than two classes with a legitimate excuse would result in “F” grade. If you cannot participate in the class for any reason, you should discuss the matter with you graduate advisor.
3 You will not receive any points for late homework.
4 Revit (suggested) may be downloaded at: http://www.students.autodesk.com
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Revit Structure</td>
<td>Revit Structure Modeling Practice and Detailing of Structure Model</td>
</tr>
<tr>
<td>9</td>
<td>Midterm Exam</td>
<td>Exam</td>
</tr>
<tr>
<td>10</td>
<td>Model Usage in Construction industries</td>
<td>Overview of Model Usage with Navisworks (3D Visualization, Coordination, 4D modeling &amp; Etc)</td>
</tr>
<tr>
<td>11</td>
<td>4D modeling &amp; Quantities Evaluation</td>
<td>4D modeling and Quantities Evaluation with Case Study</td>
</tr>
<tr>
<td>12</td>
<td>BIM Model Coordination</td>
<td>Understanding of BIM Coordination Process and its Practice</td>
</tr>
<tr>
<td>13</td>
<td>Final Project Introduction</td>
<td>Final Project Discussion</td>
</tr>
<tr>
<td>14</td>
<td>Introduction to Integrated Project Delivery</td>
<td>Final Project Discussion &amp; BIM Case Presentation (Guest Lecture /TBA)</td>
</tr>
<tr>
<td>15</td>
<td>Final presentation or exam</td>
<td>Final Presentation</td>
</tr>
</tbody>
</table>
Moses Center Statement of Disability

If you are a student with a disability who is requesting accommodations, please contact New York University’s Moses Center for Students with Disabilities (CSD) at 212-998-4980 or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.

NYU School of Engineering Policies and Procedures on Academic Misconduct

A. Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School’s rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School’s Policy on Academic Misconduct.

B. Definition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:

1. Cheating: intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person’s work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.

2. Fabrication: including but not limited to, falsifying experimental data and/or citations.

3. Plagiarism: intentionally or knowingly representing the words or ideas of another as one’s own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.

4. Unauthorized collaboration: working together on work that was meant to be done individually.

5. Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.

6. Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.