Tamkang University Academic Year 107, 2nd Semester Course Syllabus

Course Title	BUILDING INFORMATION MODELING AND CONSTRUCTION MANAGEMENT SYSTEM	Instructor	FAN, SU-LING
Course Class	TECBB3A DEPARTMENT OF CIVIL ENGINEERING-DIVISION OF CONSTRUCTION BUSINESS, 3A	Details	◆ Selective ◆ One Semester ◆ 3 Credits

Departmental Aim of Education

Ⅰ. Develop students' ability and knowledge of civil engineering to meet the requirements of employability and further education.

Ⅱ. Enable students to have management knowledge and literacy to meet challenges of workplace.

Ⅲ. Equip students with the information technology skills to strengthen their competitiveness.

Ⅳ. Develop students' literacy of Literature, Art, Language, History, Society, Politics, Futurology, International Situation, Religious Law, Nature and such general courses to have the understanding of humanity emotions and to proceed on-going development.

Departmental core competences

A. Civil Engineering Professional Proficiency.

B. Implementation and Information Processing Ability.

C. Team collaboration and Knowledge Integration Ability.

D. Globalization and Continuous Learning.

Course Introduction	In this course, students will learn Building Information Model's (BIM) use in the architecture, engineering and construction (AEC) industry, building information, quantities and properties of building components, and understand the benefit and improvement areas BIM process offers and the legal aspects of application of BIM

The Relevance among Teaching Objectives, Objective Levels and Departmental core competences

I.Objective Levels (select applicable ones) :
(i) Cognitive Domain : C1-Remembering,   C2-Understanding,   C3-Applying,
                        C4-Analyzing,   C5-Evaluating,   C6-Creating
(ii) Psychomotor Domain : P1-Imitation,   P2-Mechanism,   P3-Independent Operation,
                        P4-Linked Operation, P5-Automation,   P6-Origination
(iii) Affective Domain : A1-Receiving,   A2-Responding,   A3-Valuing,
                        A4-Organizing,   A5-Charaterizing,   A6-Implementing

II.The Relevance among Teaching Objectives, Objective Levels and Departmental core competences :
(i) Determine the objective level(s) in any one of the three learning domains (cognitive, psychomotor, and affective) corresponding to the teaching objective. Each objective should correspond to the objective level(s) of ONLY ONE of the three domains.
(ii) If more than one objective levels are applicable for each learning domain, select the highest one only. (For example, if the objective levels for Cognitive Domain include C3,C5,and C6, select C6 only and fill it in the boxes below. The same rule applies to Psychomotor Domain and Affective Domain.)
(iii) Determine the Departmental core competences that correspond to each teaching objective. Each objective may correspond to one or more Departmental core competences at a time. (For example, if one objective corresponds to three Departmental core competences: A,AD, and BEF, list all of the three in the box.)

No.	Teaching Objectives	Relevance	
		Objective Levels	Departmental core competences
1	Students will be able to use Revit to design a building project.	P3	ABC
2	Students improve their vocabulary and English speak ability and list at least 50 content-obligatory vocabulary and 50 content-compatible vocabulary .	C4	ABC
3	Students will be able to develop learn skills such as identifying, comparing and contrast, evaluation and cooperative learning.	P3	ABC

Teaching Objectives, Teaching Methods and Assessment

No.	Teaching Objectives	Teaching Methods	Assessment
1	Students will be able to use Revit to design a building project.	Lecture, Discussion	Report, Participation
2	Students improve their vocabulary and English speak ability and list at least 50 content-obligatory vocabulary and 50 content-compatible vocabulary .	Lecture, Discussion	Report, Participation
3	Students will be able to develop learn skills such as identifying, comparing and contrast, evaluation and cooperative learning.	Lecture, Discussion	Report, Participation

This course has been designed to cultivate the following essential qualities in TKU students	
Essential Qualities of TKU Students	Description
◆ A global perspective	Helping students develop a broader perspective from which to understand international affairs and global development.
◆ Information literacy	Becoming adept at using information technology and learning the proper way to process information.
◆ A vision for the future	Understanding self-growth, social change, and technological development so as to gain the skills necessary to bring about one's future vision.
◆ Moral integrity	Learning how to interact with others, practicing empathy and caring for others, and constructing moral principles with which to solve ethical problems.
◆ Independent thinking	Encouraging students to keenly observe and seek out the source of their problems, and to think logically and critically.
◆ A cheerful attitude and healthy lifestyle	Raising an awareness of the fine balance between one's body and soul and the environment; helping students live a meaningful life.
◆ A spirit of teamwork and dedication	Improving one's ability to communicate and cooperate so as to integrate resources, collaborate with others, and solve problems.
◆ A sense of aesthetic appreciation	Equipping students with the ability to sense and appreciate aesthetic beauty, to express themselves clearly, and to enjoy the creative process.

Course Schedule

Week	Date	Subject/Topics	Note
1	108/02/18～ 108/02/24	Coursera BIM Fundamentals for Engineers WEEK 1:Initiation: Prepare for the Class 4.Reading: Revit Installation Coursera BIM Fundamentals for Engineers WEEK 2: Fundamental BIM Knowledge 1.Video: Definition of BIM 2.Video: From CAD to BIM 3.Video: Necessity of BIM 4.Video: BIM Benefits 5.Video: LOD in BIM	
2	108/02/25～ 108/03/03	Coursera BIM Fundamentals for Engineers WEEK 3: View & Retrieve Information from BIM Models 1.Video: Revit: View controls - pan, zoom, rotate, and arrange views 2.Video: Revit: Visibility of elements 3.Revit: Section a 3D view 4.Revit: Retrieve information from schedules 5.Revit: Measure distance in BIM models	
3	108/03/04～ 108/03/10	Coursera BIM Fundamentals for Engineers WEEK 4: Modeling a BIM model 1.Video: Revit: Use the Grid tool to place grid lines 2.Video: Revit: Use the Level tool to define a vertical height 3.Video: Revit Use the Toposurface tool to create topographic surface	
4	108/03/11～ 108/03/17	4.Video: Revit: Use the Column tool to place a column 5.Video: Revit: Use the Beam tool to place a beam	

5	108/03/18~ 108/03/24	6.Video:Revit: Use the Floor tool to create a floor 7.Video:Revit: Use the Wall tool to create a wall	
6	108/03/25~ 108/03/31	8.Video:Revit: Use the Door tool to place a door 9.Video:Revit: Use the Window tool to place a window 10.Video:Revit: Use the Stair tool to create a stair 11.Video:Revit: Use Ramp tool to create a parking ramp	
7	108/04/01~ 108/04/07	Coursera BIM Fundamentals for Engineers WEEK 5: Closure 1.Video: Review for "BIM Fundamental 2.Video: Preview for "BIM Application"	
8	108/04/08~ 108/04/14	Alternative Arrangement	
9	108/04/15~ 108/04/21	Alternative Arrangement	
10	108/04/22~ 108/04/28	Midterm Exam Week	
11	108/04/29~ 108/05/05	Coursera BIM Fundamentals for Engineers WEEK 1: Initiation 1.Video: Course overview 2.Video: BIM applications in building lifecycle	
12	108/05/06~ 108/05/12	BIM Fundamentals for Engineers WEEK 1:Modeling of a Building. 1. Revit exercise: set up the project 2. Revit exercise: model the foundation 3. Revit exercise: model the structural elements and walls 4. Revit exercise: place doors and windows 5. Revit exercise: model stairs 6. Revit exercise: model decorations 7. Revit exercise: place equipment 8. Revit exercise: use the Join tool to join elements	
13	108/05/13~ 108/05/19	Coursera BIM Fundamentals for Engineers WEEK 2:Model Integration and Clash Detection 1. Introduction to Model Integration and Clash Detection 2. Revit exercise: use the Interference Check tool for clash detection 3. Navisworks exercise: use the Clash Detective tool for clash detection	
14	108/05/20~ 108/05/26	Coursera BIM Fundamentals for Engineers WEEK 3:Quantity Takeoff 1. Introduction to quantity takeoff for construction 2. Revit exercise: a quick look at Revit schedules 3. Revit exercise: create quantity schedules 4. Revit exercise: customize settings for schedules 5. Revit exercise: create material takeoff schedules 6. Revit exercise: export and compile schedules	

15	108/05/27 ~ 108/06/02	Coursera BIM Fundamentals for Engineers WEEK 4:4D Simulation 1. Introduction to progress planning for construction 2. Navisworks: get started 3.Navisworks exercise: add parameters to Revit model elements 4. Navisworks exercise: import models and tasks 5. Navisworks exercise: set task types	
16	108/06/03 ~ 108/06/09	WEEK 4: 4D Simulation 6. Navisworks exercise: save selection sets 7. Navisworks exercise: attach model elements to tasks	
17	108/06/10 ~ 108/06/16	WEEK 4: 4D Simulation 8. Navisworks exercise: add overlay text 9. Navisworks exercise: export TimeLiner simulations WEEK 5:Closure Course review	
18	108/06/17 ~ 108/06/23	Final Exam Week	

Requirement	
Teaching Facility	Computer, Projector
Textbook(s)	
Reference(s)	https://www.coursera.org/learn/bim-fundamentals https://www.coursera.org/learn/bim-application
Number of Assignment(s)	**5** (Filled in by assignment instructor only)
Grading Policy	◆ Attendance：　　　　%　◆ Mark of Usual：　　%　◆ Midterm Exam：　　　% ◆ Final Exam：　　　　% ◆ Other〈〈Participation〉：100.0 %
Note	This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php . **※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**