

West Virginia University
Department of Civil and Environmental Engineering
Syllabus CE 493G (CRN 17613) & 593G (CRN 17614) - Spring 2018

Course Name: CE 493G/593G – Civil 3D Building Information Modeling
Credit Hours: 3 Credit Hours
Contact Hours: M/W/F 12:00 PM - 12:50 PM
Instructor: Dr. Fei Dai
Email: fei.dai@mail.wvu.edu Phone: (304) 293-9940
Office Hours: Monday: 2:00 PM – 4:00 PM, Other time by appointment
Textbook: AutoCAD Civil 3D 2016 Essentials: Autodesk Official Press, Eric Chappell, Wiley.
Course Description: This course provides fundamental knowledge of building information models (BIM) for parametric design and interactive visualization of civil engineering projects. It intends to prepare civil engineering students for entry-level production use of civil 3D BIM tools through learning and practicing of small-scale near-real projects in AutoCAD Civil 3D environment.
Prerequisites: Civil Engineering Senior or Graduate Standing
Course Format: Lecture, Hands-on Exercise, Quiz and Discussion
Classroom: ESB-E G78B
Category: Special Topics

Expected Learning Outcomes:

- Be able to explain building information models (BIM) for civil engineering applications.
- Be able to apply BIM tools (AutoCAD Civil 3D in this course) for parametric modeling of civil projects (e.g., residential development) for design and construction purposes.
- Be able to effectively communicate design with aid of BIM tools and data.

Brief Topic List:

Building Information Model Concept
Navigating Civil 3D User Interface
Establishing Existing Conditions Using Survey Data
Modeling Existing Terrain Using Surfaces
Designing, Displaying and Annotating Alignments
Designing, Displaying and Annotating Profiles

Designing in 3D Using Corridors
 Creating, Displaying and Annotating Cross Sections of the Design
 Designing Boundaries Using Parcels and Displaying and Annotating Parcels
 Designing, Displaying and Annotating Pipe Networks
 Designing, Analyzing, Displaying and Annotating New Terrain

Couse	<i>Criteria</i>	<i>Percent of Grade</i>
Evaluation:	Quizzes/Exercises	10%
	Assignments	30%
	Midterm 1	15%
	Midterm 2	15%
	Final Exam	30%
	<i>Total</i>	<i>100%</i>

Grading	<i>Percentage</i>	<i>Grade</i>
Scale:	100 - 90	A
	89 - 80	B
	79 - 70	C
	69 - 60	D
	59- 0	F

Grading Policy: Late assignments may not be accepted except by prior arrangement with the instructor. Grade will depend on your assignments, exercise/quiz performance, midterms, and final exam.

Homework/ Homework assignments will be given approximately every two weeks or sooner. Quizzes/exercises will be conducted in class, which may be not announced in advance.

Academic Integrity/ Honesty Policy: West Virginia University expects that every member of its academic community shares the historic and traditional commitment to honesty, integrity, and the search for truth. Students should act to prevent opportunities for academic dishonesty to occur, and in such a manner to discourage any type of academic dishonesty. Academic dishonesty includes plagiarism; cheating and dishonest practices in connection with examinations, papers, and projects; and forgery, misrepresentation, and fraud. Complete policy

statements and definitions on academic integrity/dishonesty can be accessed at WVU student website.

Attendance Policy: Attendance is required. Consistent with WVU guidelines, students absent from regularly scheduled examinations because of authorized University activities will have the opportunity to take them at an alternate time. Make-up exams for absences due to any other reason will be at the discretion of the instructor.

Adverse Weather Commitment: In the event of inclement or threatening weather, everyone should use his or her best judgment regarding travel to and from campus. Safety should be the main concern. If you cannot get to class because of adverse weather conditions, you should contact me as soon as possible. Similarly, if I am unable to reach our class location, I will notify you of any cancellation or change before class starts using MIX emails to prevent you from embarking on any unnecessary travel. If you cannot get to class because of weather conditions, I will make allowances relative to required attendance policies, as well as any scheduled tests, quizzes, or other assessments.

Inclusivity Statement: The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Accessibility Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>.

Tentative Class Schedule

Week	Day	Date	Topics ¹	Readings ²	Homework ³	Note
1	Mon	1/8	Introduction			¹ Topics and dates are not binding and modifications are expected. Speed of coverage is subject to class feedback. ² Numbers indicate chapters of the textbook. If extra reading materials are provided, they will be uploaded on eCampus. ³ Homework issuance and due dates. As with additional readings, they will be made available on eCampus. All due dates and exam dates are fixed, unless otherwise noted in class.
	Wed	1/10	Basic Concepts to BIM			
	Fri	1/12	Navigating the Civil 3D User Interface	1		
2	Mon	1/15	Martin Luther King's Birthday Recess			
	Wed	1/17	Leveraging a Dynamic Environment	2	Out: HW1	
	Fri	1/19	Establishing Existing Conditions w/ Survey Data	3		
3	Mon	1/22	Establishing Existing Conditions w/ Survey Data	3		
	Wed	1/24	Modeling Existing Ground Using Surfaces	4	Due: HW1	
	Fri	1/26	Modeling Existing Ground Using Surfaces	4		
4	Mon	1/29	Designing in 2D Using Alignments	5	Out: HW2	
	Wed	1/31	Designing in 2D Using Alignments	5		
	Fri	2/2	Displaying & Annotating Alignments	6		
5	Mon	2/5	Displaying & Annotating Alignments	6	Due: HW2	
	Wed	2/7	Discussion & Review			
	Fri	2/9	1 st Midterm Exam			
6	Mon	2/12	Designing Vertically Using Profiles	7		
	Wed	2/14	Designing Vertically Using Profiles	7		
	Fri	2/16	Displaying & Annotating Profiles	8		
7	Mon	2/19	Displaying & Annotating Profiles	8		
	Wed	2/21	Discussion & Review			
	Fri	2/23	Designing in 3D Using Corridors	9	Out: HW3	
8	Mon	2/26	Designing in 3D Using Corridors	9		
	Wed	2/28	Creating Cross Sections of the Design	10		
	Fri	3/2	Creating Cross Sections of the Design	10	Due: HW3	
9	Mon	3/5	Displaying & Annotating Sections			
	Wed	3/7	Displaying & Annotating Sections	11		
	Fri	3/9	Discussion & Review	11		
10	Mon	3/12	Spring Recess			
	Wed	3/14	Spring Recess			
	Fri	3/16	Spring Recess			
11	Mon	3/19	Designing & Analyzing Boundaries w/ Parcels	12	Out: HW4	
	Wed	3/21	Designing & Analyzing Boundaries w/ Parcels	12		
	Fri	3/23	Displaying & Annotating Parcels	13		
12	Mon	3/26	Discussion & Review		Due: HW4	
	Wed	3/28	2 nd Midterm Exam			
	Fri	3/30	Friday Before Easter Recess			
13	Mon	4/2	Designing Gravity Pipe Networks	14		
	Wed	4/4	Creating Pressure Pipe Networks	15	Out: HW5	
	Fri	4/6	Displaying & Annotating Pipe Networks	16		
14	Mon	4/9	Displaying & Annotating Pipe Networks	16		
	Wed	4/11	Discussion & Review		Due: HW5	
	Fri	4/13	Designing New Terrain	17		
15	Mon	4/16	Designing New Terrain	17		
	Wed	4/18	Discussion & Review		Out: HW6	
	Fri	4/20	Analyzing, Displaying, & Annotating Surfaces	18		
16	Mon	4/23	Analyzing, Displaying, & Annotating Surfaces	18		
	Wed	4/25	Discussion & Review		Due: HW6	
	Fri	4/27	Discussion & Review			