

Spring 2019

# CE 260-002: Civil Engineering Methods

Stephanie R. Santos

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## DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

**CE 260**

**Civil Engineering Methods**

**Spring 2019**

### **Course Description:**

Provides students with hands-on experience in computer applications in Civil Engineering. Students will learn to use AutoCAD Civil 3D and Revit through a variety of assignments and group projects.

Prerequisite – HUM 101, CE 101, CE 200, CE 200A.

### **Moodle:**

Students must use their UCID to sign in at (<http://www.moodle.njit.edu>). Some course material may be posted on Moodle. The instructor will advise when important information is uploaded.

**Instructor:      Stephanie R. Santos, P.E., P.P., CME, CM-BIM**

Office: Colton Hall 215

Office Hours: Mondays 11:30-1:00 PM & Fridays 1:30-3:00 PM or by Appointment

Email: [srr3@njit.edu](mailto:srr3@njit.edu)

### **Required Text:**

1. AutoCAD Civil 3D 2019 Fundamentals  
Published by SDC Publications  
ISBN: 978-1-63057-193-1
2. Autodesk Revit 2019 Structure Fundamentals  
Published by SDC Publications  
ISBN: 978-1-63057-200-6

### **Course Sections:**

**Section 002 – Wednesdays @ 11:30 – 2:20 PM (PC Mall 36)**

**Section 004 – Fridays @ 8:30 – 11:20 AM (PC Mall 36)**

**Section 102 – Fridays @ 6:00– 8:50 PM (PC Mall 39)**

Week	Section Dates			Topic/Assignment
	002	004	102	
1	1/23	1/25	1/25	Course Introduction <ul style="list-style-type: none"> <li>• Discussion of Civil Engineering Disciplines</li> <li>• Discussion of FE/PE Requirements</li> <li>• Introduction to BIM/Civil 3D/Revit</li> </ul>
2	1/30	2/1	2/1	Fundamentals of Civil 3D <ul style="list-style-type: none"> <li>• User Interface and Settings</li> </ul> Titleblock Setup – Printing <ul style="list-style-type: none"> <li>• Viewports</li> <li>• Layers</li> </ul>
3	2/6	2/8	2/8	Scale Review  Introduction to Surfaces and Parcels <ul style="list-style-type: none"> <li>• Importing Points</li> <li>• Creating Parcels</li> <li>• Creating Surfaces</li> <li>• Styles and Labels</li> </ul>
4	2/13	2/15	2/15	<u>CONT.</u> Surfaces and Parcels <ul style="list-style-type: none"> <li>• Importing Points</li> <li>• Creating Parcels</li> <li>• Creating Surfaces</li> <li>• Styles and Labels</li> </ul>
5	2/20	2/22	2/22	➤ <b><u>QUIZ #1</u></b>  Roadway Design, Alignments, and Profiles <ul style="list-style-type: none"> <li>• Creating Alignments</li> <li>• Creating Profiles</li> <li>• Styles and Labels</li> </ul>
6	2/27	3/1	3/1	Roadway Design, Alignments, and Profiles <u>CONT.</u> <ul style="list-style-type: none"> <li>• Creating Alignments</li> <li>• Creating Profiles</li> <li>• Styles and Labels</li> </ul>
7	3/6	3/8	3/8	Pipe Networks <ul style="list-style-type: none"> <li>• Pipe Editing and Annotations</li> <li>• Layouts</li> </ul>
8	3/13	3/15	3/15	Pipe Networks <u>CONT.</u> <ul style="list-style-type: none"> <li>• Pipe Editing and Annotations</li> <li>• Layouts</li> </ul> Utilizing Civil 3D for BIM Calculations <ul style="list-style-type: none"> <li>• Quantity Take Offs</li> </ul> <b><u>PIPE NETWORK PROJECT ASSIGNED</u></b>

Week	Section Dates			Topic/Assignment
	002	004	102	
9	3/27	3/29	3/29	<p><b><u>PIPE NETWORK PROJECT DUE</u></b></p> <p>➤ <b><u>QUIZ #2</u></b></p> <p>Introduction / Fundamentals of Revit</p> <ul style="list-style-type: none"> <li>• User Interface, Ribbon, Properties</li> <li>• Drawing / Modifying Tools</li> </ul>
10	4/3	4/5	4/5	<p>Titleblock Setup / Printing Project Setup</p> <ul style="list-style-type: none"> <li>• Levels and Grids</li> <li>• Structural Columns</li> <li>• Framing</li> </ul> <p><b><u>FINAL PROJECTS ASSIGNED</u></b></p>
11	4/10	4/12	4/12	<p>Drawing Elements</p> <ul style="list-style-type: none"> <li>• Creating and Modifying Walls</li> <li>• Creating Floors/Slabs and Roofs</li> <li>• Site Plan Design</li> <li>• Materials</li> </ul> <p><b><u>FINAL PROJECTS ASSIGNED</u></b></p>
12	4/17	4/26	4/26	<p>Drawing Elements</p> <ul style="list-style-type: none"> <li>• Footings and Foundations</li> </ul> <p>Structural Reinforcement</p> <ul style="list-style-type: none"> <li>• Adding Rebar</li> <li>• Reinforcing Walls, Floors, and Slabs</li> </ul> <p><b><u>FINAL PRESENTATIONS ASSIGNED</u></b></p>
13	4/24	5/3	5/3	<p>Utilizing Revit for BIM Calculations</p> <ul style="list-style-type: none"> <li>• Quantity Take Offs &amp; Material Schedules</li> </ul> <p><b><u>FINAL PRESENTATIONS</u></b></p> <p><b><u>FINAL PROJECTS DUE (004 &amp; 102)</u></b></p>
14	5/1	5/7	5/7	<p><b><u>FINAL PROJECTS DUE (002)</u></b></p> <p>➤ <b><u>QUIZ #3</u></b></p>

**Spring Break 3/17-3/24 & Good Friday 4/19**  
**Last Day 5/7 Tuesday follows Friday Schedule**

## **GENERAL COURSE INFORMATION**

### **Grading Policy:**

Homework and In-Class Assignments	20%
Instagram Participation	5%
5 Points = 25+	
4 Points = 24-20	
3 Points = 19-15	
2 Points = 14-10	
1 Point = <9	
Quiz #1	10%
Quiz #2	15%
Quiz #3	15%
Civil 3D Project	10%
Final Presentation	10%
Final Project	15%

### **Grading Scale:**

<b>A:</b>	<b>100-90</b>
<b>B+:</b>	<b>89-85</b>
<b>B:</b>	<b>84-80</b>
<b>C+:</b>	<b>79-75</b>
<b>C:</b>	<b>74-70</b>
<b>D:</b>	<b>69-60</b>
<b>F:</b>	<b>Below 60</b>

### **Attendance Policy:**

Students are expected to attend every class and sign in. In the event that you cannot attend class, you may request to attend one of the other sections as a make-up, however this is limited to availability and permission from the instructor. Students are responsible for submitting all homework, projects, assignments, etc. on the due date (during class time). Students who miss assignments due to attendance must contact the Dean of Students to be excused for absences. Students who miss class with no valid excuse (as determined by the Dean of Students) will not be given any accommodations to complete work.

### **Withdrawals:**

In order to insure consistency and fairness in application of the NJIT policy on withdrawals, student requests for withdrawals after the deadline will not be permitted unless extenuating circumstances (e.g., major family emergency or substantial medical difficulty) are documented. The course Professors and the Dean of Students are the principal points of contact for students considering withdrawals.

### **NJIT Honor Code:**

The NJIT Honor Code will be upheld; any violations will be brought to the immediate attention of the Dean of Students. The Honor Code can be found at (<http://www5.njit.edu/doss/policies/honorcode/index.php>).

### **Assignment Policy:**

Late assignments will NOT be accepted. Homework received after the due date will NOT be graded and a ZERO will be counted for that assignment.

***\*\*\*ANY ASSIGNMENT THAT IS COPIED WILL RECEIVE A ZERO AND THOSE STUDENTS INVOLVED WILL BE SUBJECT TO DISCIPLINARY ACTION IN ACCORDANCE WITH THE NJIT HONOR CODE\*\*\****

All assignments are to be submitted in class on paper, unless otherwise requested, on the due date, or via email to srr3@njit.edu ON OR BEFORE the beginning of class on the due date. Email is only to be used if you will be absent from class and shall not be the primary form of submission.

### **Syllabus Information:**

The dates and topics of the syllabus are subject to change; however, students will be consulted with and must agree to any modifications or deviations from the syllabus throughout the course of the semester.

### **Email Policy:**

When emailing the instructor, you must provide your course and section number in the subject line. Also, although most email addresses will display your name, you must sign off with your full name at the bottom of each email. If you do not provide these two critical pieces of information, your email will not be responded to.

### **Items Required for this Course:**

1. Textbook
2. Engineering Scale
3. Flash drive
4. Notebook

### **Dress Policy:**

Students are required to dress professionally for all oral presentations.

### **AutoCAD/Revit Download Website:**

Students may download free versions of the AutoCAD/Revit programs at:

<https://www.autodesk.com/education/home>

## Outcomes Course Matrix – CE 260 - Civil Engineering Methods

Strategies, Actions and Assignments	ABET Student Outcomes (1-7)	Program Educational Objectives	Assessment Measures
<b>Student Learning Outcome 1: Develop communication skills to function as civil engineers including written, oral, and computer based techniques.</b>			
Indicate importance of communication skills in the life and functions of the civil engineer.	3	1, 2, 3	Discussions, group presentations and paper.
Develop techniques for speaking (public speaking) and writing.	3	1, 2, 3	Oral and written Feedback.
Practice speeches and write papers.	3	1, 2, 3	Graded presentations and papers feedback
<b>Student Learning Outcome 2: Use CAD as a tool for selected civil engineering problems.</b>			
Introduce CAD concepts.	7	1	Lab exercises.
Apply CAD to site project.	7	1	Lab exercises.
<b>Student Learning Outcome 3: Develop an understanding of the importance of effective communications in all phases of the life of the civil engineer.</b>			
Discuss various aspects of communication and its importance in the life of the civil engineer.	3	1, 2, 3	Discussions, individual comments and written papers
Simulate presentation modes such as job interview, project presentation, planning of presentation.	3	1, 2, 3	Grading on presentations, written feedback, grading on written assignments.

### CEE Mission, Program Educational Objectives and Student Outcomes

The mission of the Department of Civil and Environmental Engineering is:

- to educate a diverse student body to be employed in the engineering profession
- to encourage research and scholarship among our faculty and students
- to promote service to the engineering profession and society

Our program educational objectives are reflected in the achievements of our recent alumni:

1 – Engineering Practice: Alumni will successfully engage in the practice of civil engineering within industry, government, and private practice, working toward sustainable solutions in a wide array of technical specialties including construction, environmental, geotechnical, structural, transportation, and water resources.

2 – Professional Growth: Alumni will advance their skills through professional growth and development activities such as graduate study in engineering, research and development, professional registration and continuing education; some graduates will transition into other professional fields such as business and law through further education.

3 – Service: Alumni will perform service to society and the engineering profession through membership and participation in professional societies, government, educational institutions, civic organizations, charitable giving and other humanitarian endeavors.

Our Student Outcomes are what students are expected to know and be able to do by the time of their graduation:

1. an ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors

3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Revised: 2/13/18