CE 101 Civil Engineering Computer Aided Design Summer 2016

Course Description:

CE-CAD is a one-credit course that will introduce students to the basics of Computer Aided Design utilizing software to produce engineering designs. The course will also provide an overview of the different disciplines in Civil Engineering including structural, geotechnical, water resources, environmental, transportation, etc.

CE-CAD will require students to work in teams to develop engineering drawings, reports, and presentations required to address course project requirements. Students will develop skills in CAD software and team interaction to enhance the Civil Engineering experience.

Students will engage in a variety of in class assignments, homework, group projects, and presentations throughout the semester.

Co-requisite FED 101, HUM 101, and MATH 108/110/111

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 and Wednesdays 12:40 – 1:10 PM in PC Mall 36, or by Appointment

Email: srr3@njit.edu

Required Text:

Introduction to AutoCAD 2015 Civil Engineering Applications - ISBN: 978-1-58503-868-8

Course Sections:

Section 011 – Mondays and Wednesdays 10:00 AM – 12:40 PM (PC Mall 36)
<table>
<thead>
<tr>
<th>Meeting</th>
<th>Section Dates</th>
<th>Topic/Assignment</th>
<th>Book Reference</th>
</tr>
</thead>
</table>
| 1       | 5/23          | ❖ Course Introduction  
❖ Syllabus Distribution  
❖ Student Introduction  
❖ Course Requirements  
❖ MBTI – Discussion  
❖ **Project #1 – Weston Hall Bridge**  
❖ Project Introduction  
❖ Group Assignment |  |
| 2       | 5/25          | ❖ Project #1  
❖ Field Visit  
❖ Project Requirements  
❖ Introduction to AutoCAD  
❖ Titleblock and Printing | **Ch. 2 – Getting Started with AutoCAD 2015** |
| 3       | 6/1           | ❖ Engineering Plan Reading  
❖ Engineering Scales  
❖ Transportation Engineering – Roadway Design  
❖ MUTCD, Traffic Plans  
❖ **Project #2 – Intersection Design**  
❖ Project Requirements  
❖ Group Assignment | **Sections 1.6-1.8  
**Pages 4-9  
**Ch. 14 – Road Design** |
| 4       | 6/6           | ❖ Structural & Geotechnical Engineering  
❖ Bridge Profile | **Ch. 11 – Contours  
Ch. 15 – Earthwork** |
| 5       | 6/8           | ❖ **Quiz #1** |  |
| 6       | 6/13          | ❖ AutoCAD Maps and Images  
❖ Importing and Scaling |  |
| 7       | 6/15          | ❖ **Project #2 – Roadway Intersection Project & Presentation Due**  
❖ Water Resources and Environmental Eng.  
❖ Flood Plains  
❖ Drainage Basins | **Ch. 12 – Drainage Basin** |
| 8       | 6/20          | ❖ Land Development  
❖ Site Layouts  
❖ Zoning Code Review  
❖ Surveying and Site Plans  
❖ Layouts  
❖ Terminology | **Ch. 10 – Land Survey  
Ch. 18 – Site Plan** |
| 9       | 6/22          | ❖ **Quiz #2** |  |
| 10      | 6/27          | ❖ **Project #3 – Infrastructure Presentation Due** |  |
GENERAL COURSE INFORMATION

Grading Policy:

- Homework Assignments: 10%
- Quiz #1: 15%
- Quiz #2: 15%
- Project #1 – Weston Hall Bridge: 25%
- Project #2 – Roadway Intersection: 25%
- Project #3 – Infrastructure Presentation: 10%

Grading Scale:

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

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:

During the 2008-2009 academic year, the NJIT Administration worked very closely with the Student Senate to enhance and improve NJIT’s Honor Code. The Committee on Academic Affairs and the NJIT Faculty approved the Student Senate’s recommendations and the approved document, “University Code on Academic Integrity” replaces the older Honors Code document. ([http://www.njit.edu/academics/pdf/academic-integrity-code.pdf](http://www.njit.edu/academics/pdf/academic-integrity-code.pdf)).

All students are responsible for upholding the integrity of NJIT by reporting any violation of academic integrity to the Office of the Dean of Students. ([http://www.njit.edu/doss/](http://www.njit.edu/doss/)). The identity of the student filing the report remains
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 piece 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. The only expectation for this requirement will be the current events article. For all other presentations, two for this semester, students must dress up as this will count toward the grade.
<table>
<thead>
<tr>
<th>Strategies and Actions</th>
<th>Student Learning Objectives</th>
<th>Student Outcomes (a-k)</th>
<th>Prog. Educational Object.</th>
<th>Assessment Methods/Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Objective 1:</strong> Enable students to learn a team approach to problem solving</td>
<td>Students will develop their team building skills and learn to work in interdisciplinary environments.</td>
<td>b, c, d, e, g, i, j, k</td>
<td>1, 2</td>
<td>Class Projects</td>
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<tr>
<td>Students will work in teams to develop engineering designs and solve problems</td>
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<td><strong>Course Objective 2:</strong> Develop the ability to perform basic functions in CAD software to communicate design concepts</td>
<td>Students will be able to use basic CAD functions to produce engineering drawings and communicate design concepts</td>
<td>b, c, d, e, g, i, j, k</td>
<td>1, 2</td>
<td>Lab Exercises, Homework Assignments, and Class Projects</td>
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<tr>
<td>Introduce CAD concepts and develop engineering drawings</td>
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<td><strong>Course Objective 3:</strong> Develop oral and presentation skills</td>
<td>Students will develop their written and oral presentation skills</td>
<td>b, c, d, e, g, i, j, k</td>
<td>1, 2</td>
<td>Discussions, Class Projects, Homework Assignments</td>
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<tr>
<td>Discuss various aspects of communication and its importance in the life of the Civil Engineer</td>
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CEE Mission, Program 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 objectives are reflected in the achievements of our recent alumni.

1 – Engineering Practice: Recent 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: Recent alumni will advance their skills through professional growth and development activities such as graduate study in engineering, professional registration, and continuing education; some graduates will transition into other professional fields such as business and law through further education.

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

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

(a) an ability to apply knowledge of math, science, and engineering

(b) an ability to design and conduct experiments, as well as interpret data

(c) an ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

(d) an ability to function on multi-disciplinary teams

(e) an ability to identify, formulate, and solve engineering problems

(f) an understanding of ethical and professional responsibility

(g) an ability to communicate effectively

(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

(i) a recognition of need for, and an ability to engage in life-long learning

(j) a knowledge of contemporary issues

(k) an ability to use techniques, skills and modern engineering tools necessary for engineering practice