CE-UY 1002 Introduction to Civil Engineering
NYU Tandon School of Engineering
Fall 2017

Lecture and GIS Lab Instructor: Prof. Anne Dudek Ronan
email: aronan@nyu.edu
Telephone: (646) 997-3410
Office: RH 410
Office Hours: To be announced

AutoCAD Lab Instructor: Prof. Jose Ulerio
email: julerio@nyu.edu
Telephone: (646) 997-3178
Office: RH 412
Office Hours: To be announced

Catalog description: This course introduces the student to the profession and practice of civil engineering. The course has four primary components: (1) a review of the principal subdisciplines of civil engineering and their relationship to urban and regional infrastructure; (2) a review of professional ethics and the responsibilities of engineers to their profession and to the general public, which includes a detailed study and discussion of the American Society of Civil Engineers (ASCE) and National Society of Professional Engineers (NSPE) codes of practice, and the use of case studies for illustration and discussion; (3) the use of AutoCAD as a tool for computer-based drawings, and the use of spreadsheets to develop analytic algorithms to solve simple engineering problems; and (4) an introduction to the use of GIS. The course includes a laboratory on the use of AutoCAD, as well as on GIS. Each laboratory is 6 to 7 weeks long.

Prerequisites: None

Course status: Required for Civil Engineering and Sustainable Urban Environment BS degrees

Course structure: This two-credit class consists of a weekly 1½ hour lecture and a weekly 1½ hour laboratory section. All students meet together during lecture period and at different times with their laboratory sections. The laboratory sections will cover AutoCAD for six weeks, GIS for six weeks, and spreadsheets for one week. Students must attend the laboratory section for which they are registered.

Class Hours: Lecture (both sections): Tuesday 1:00 a.m. to 1:30 p.m. (RH 202)
Lab Section A: Thursday 9:30 a.m. to 10:50 a.m. (RH 217)
Lab Section B: Thursday 11:00 a.m. to 12:20 p.m. (RH 217)

Class handouts and Internet material as assigned.

Homework Assignments: Homework will be assigned approximately weekly in both lecture and laboratory periods, so students should expect to be working on two different assignments most weeks.

Unless otherwise noted, most lecture and GIS assignments will be due at the beginning of class one week from the date assigned. If you arrive and submit your homework after the scheduled beginning of class you are LATE and your homework will be marked accordingly. Prof. Ronan generally uses the following rule to deduct points for lateness: n-th lateness loses (n-1)*10% . Excessive lateness may lead to additional grade deductions.

With proper documentation, late lecture or GIS homework will be accepted without penalty for: (1) student emergency or (2) by prior arrangement made at least two days before the due date. For option (2), the student must first request a late submittal in person or via email, and obtain approval. If the request is approved, a “Late Homework Agreement Form” (available at the class page on NYU Classes) must be submitted on the original due date. Each student may exercise option (2) only ONCE per term – prior approval is required.

Examinations: A comprehensive final examination will be given. The first part of the exam will cover the lecture material; this brief exam will be administered during the last lecture period. The second part of the exam
Introduction to Civil Engineering

will be administered during finals week. This exam will have a written component about GIS and will also require hands-on use of both AutoCAD and ArcGIS software. The date will be determined and announced by the Registrar’s office.

**Code of Conduct:** The NYU Tandon School of Engineering Code of Conduct is enforced at all times. Please refer to the University website at: http://engineering.nyu.edu/academics/code-of-conduct. Any incidents of academic dishonesty will be reported and appropriate sanctions issued. This applies to all work, including homework assignments. Remember, you are here to learn – trying to get away with cheating does not accomplish that goal.

**Attendance:** All students are expected to attend all scheduled lecture and lab sessions, so a portion of your grade is based on your attendance. If you need to miss a class, please inform the instructor beforehand. Assignments must still be submitted on time unless prior arrangements are made. Unauthorized absence from more than five class periods can be basis for a failing grade for the course.

**Use of electronic devices:** No cell phone use is permitted during class, including for reading of text messages. Please be sure all cell phones are silenced and put away before class begins. Laptop and tablet computers can only be used for taking notes in class. Any student violating these rules will be asked to leave the classroom.

**Grading:** Grading will be based on the following breakdown.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Lecture</td>
<td>30%</td>
</tr>
<tr>
<td>AutoCAD Lab</td>
<td>35%</td>
</tr>
<tr>
<td>GIS Lab</td>
<td>35%</td>
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Homework grades count for approximately 50% of overall grade. Course letter grade basis as follows:

- >90% = A, A-
- >80% = B+, B, B-
- >70% = C+, C, C-
- >60% = D+, D
- <60% = F

**Course objectives:** At the end of the semester, students in this class should be able to:

1. List the subdisciplines of civil engineering, identify types of projects that engage each, and understand the multidisciplinary nature of most large infrastructure projects;
2. Explain the overall role of civil engineers in design and operation of urban infrastructure, with understanding of the range of typical day-to-day tasks and responsibilities;
3. Discuss the ethical responsibilities of engineers to their profession and to the general public;
4. Use improved computational and communication skills to present technical information;
5. Use AutoCAD and ArcGIS to make engineering drawings and maps.

**ABET Competencies:**

- Understanding of professional and ethical responsibility.
- An ability to communicate effectively.
- The broad education necessary to understand the impact of engineering solutions in a global, environmental, and societal context.
- Recognition of the need for, and an ability to engage in life-long learning.

**Moses Center Statement of Disability:**

If you are student with a disability who is requesting accommodations, please contact New York University’s Moses Center for Students with Disabilities 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.
### Tentative Lecture Schedule – Fall 2017:

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>HW (more detail will be provided)</th>
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</thead>
</table>
| 1    | Sept. 5  | • Course overview  
          • Student introductions via Name Game  
          • Civil Engineering subdisciplines | • Essay: Why selected CE (or SUE) as major?  
          • CE Magazine: explore feature articles and ads; relate to CE subdisciplines |
| 2    | Sept. 12 | What do CEs do?  
          • types of employers (consultant, government, builder)  
          • roles (plan, design, manage, supervise construction) | • CE Magazine: explore types of jobs and types of employers in news items  
          • Prepare questions for the panel next week |
| 3    | Sept. 19 | Panel of young alumni discuss their jobs – different subdisciplines, types of employers, job duties | • Essay: reflection on the panel discussion |
| 4    | Sept. 26 | • Professional development (prof. societies, licensing, lifelong learning)  
          • Engineering ethics - introduction | Read Code of Ethics; answer assigned questions |
| 5    | Oct. 3   | Engineering ethics – case study discussions | Evaluate ethics case studies |
| 6    | Oct. 10  | Urban Infrastructure – definition, role of CEs, case studies | Design issues for a proposed infrastructure project. |
| 7    | Oct. 17  | Engineering calculations - spreadsheets | Spreadsheet (assigned in lab) |
| 8    | Oct. 24  | Engineering calculations – units, significant figures, accuracy, precision, reasonable expectations, writing up calculations (state problem, make a sketch, state assumptions, equations with variables first, show units, organized) | Write up engineering calculation |
| 9    | Oct. 31  | Engineering calculations – estimation | Estimation problem on the back of an envelope |
| 10   | Nov. 7   | Engineering communication (oral, written, graphical) | MetroTech Commons assignment |
| 11   | Nov. 14  | Engineering drawings | |
| 12   | Nov. 21  | In-class movie | Movie feedback |
| 13   | Nov. 28  | • New directions in Civil Engineering (sustainability, LEED, BIM, new materials, sensors, climate adaptation)  
          • Course recap | |
| 14   | Dec. 5   | • Brief exam on lecture material  
          • More about the CUE Department | |
|      | Dec 12   | MONDAY class schedule – CE-UY1002 does not meet | |

### Tentative Lab Schedule - Fall 2017:

- Lab periods 1 to 6, Sept. 7 to Oct. 12: AutoCAD – Prof. Ulerio  
- Lab period 7, Oct. 19: Spreadsheets – Prof. Ronan  
- Lab periods 8 to 13, Oct. 26 to Dec. 7: ArcGIS – Prof. Ronan  
- Lab period 14, Dec. 14: Review of AutoCAD and ArcGIS – Profs Ronan and Ulerio