Syllabus CENG 4380: Engineering Senior Design  
Section 010  
Fall Semester 2018

1: Instructor

Dr. Azadeh Bolhari
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Office: VIN 274
Office Hours: Fridays 10am-11am; Wednesdays 9:00 am-11:00 am
Lecture: Wednesdays 8:00-9:50 am, VIN 162
Studio: Fridays 11:00 am-12:50 pm, HSEL 104

2: Prerequisites

Senior standing within one semester of graduation. Departmental permission.

3: Course Description

Engineering concepts integrated from topics taught in sequences of upper-division courses to produce practical, efficient and feasible solutions of civil engineering problems. Computer applications are included. Final oral and written reports are required. Intended to be taken in the final semester.

4: Course Learning Outcomes

When you complete this class you should be able to:
1. Expand knowledge and understanding of civil engineering within the framework of a realistic major design project
2. Advance proficiency with use of specifications, planning and scheduling tools, estimating tools, site investigation techniques, and sustainable design
3. Apply geotechnical, structural, pavement, environmental and materials design
4. Develop an appreciation for the role of professional and ethical responsibility in civil engineering and management practice

5: ABET Criteria 3 Student Outcomes

Course outcome mapping

Mapping of the course outcomes to the ABET Criterion 3 student outcomes is shown in Table 1.

Table 1. CENG 4380 course outcome mapping

<table>
<thead>
<tr>
<th>Course Learning Outcomes</th>
<th>1 Problem Solving</th>
<th>2 Design</th>
<th>3 Communication</th>
<th>4 Professional Ethics</th>
<th>5 Team-work</th>
<th>6 Experimentation</th>
<th>7 New Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X</td>
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<td>3</td>
<td>X</td>
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<td>X</td>
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Where,

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

6: Course structure and communication

There will be very little lecture during class. Instead of in-class lectures, you will report on weekly basis on the progress of your design project. We will be using Blackboard to communicate during this course. This course is focused on building upon your existing knowledge of structural, construction, geotechnical, materials and environmental engineering. Selected topics are chosen for detailed lectures by an invited speaker, as given below. Lectures may not be held in the exact order listed. The number of lectures on each topic may vary slightly, to accommodate the schedule of the invited lecturer(s). Lecture topics may be deleted, modified or added at the discretion of the instructor.

- Foundations (Dr. Kitch)
- Earthwork and Excavation (Dr. Kitch)
- Hydraulics/hydrology of the site (Erica Carter, Carter-Fentress Engineering)
- Site surveying (Erica Carter, Carter-Fentress Engineering)
- Green Building and Construction (LEED)
- Construction management planning tools

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Deadlines</th>
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</thead>
<tbody>
<tr>
<td>Scope determination</td>
<td>September, 14</td>
</tr>
<tr>
<td>Options analysis</td>
<td>October, 5</td>
</tr>
<tr>
<td>Final submittal</td>
<td>November, 30</td>
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</tbody>
</table>
7: **Calculator policy**

Most courses use the calculator policies associated with the Fundamentals of Engineering (FE) and Professional Engineering (PE) exams. Only these calculators are allowed in exams and quizzes. Please refer to the National Council of Examiners for Engineering and Surveying (NCEES) calculator policy for the list of acceptable calculators (http://ncees.org/exams/calculator-policy/). Computers, tablets, smart phones, l-pads and similar electronics are not allowed on quizzes.

8: **Professionalism**

One of the goals of this course is to teach students about professionalism, including the standards and expected behavior of your chosen profession. With this in mind, students are expected to demonstrate a behavior consistent with the conduct of an individual practicing in the engineering profession. Students are expected to: (1) come prepared for class; (2) respect faculty and peers; (3) demonstrate responsibility and accountability for your own actions; (4) sensitivity and appreciation for diverse cultures, backgrounds, and life experiences; (5) offer and accept constructive criticism in a productive manner; (6) demonstrate an attitude that fosters professional behavior among peers and faculty; (7) be punctual to class meetings; (8) maintain a good work ethic and integrity; and (9) recognize the classroom as a professional workplace.

9: **Graded Material**

9.1: **Class Attendance, Participation, Timeliness and Teamwork (APTT)**

**Class Attendance & Participation:** The number one complaint of engineering clients is the timeliness of deliverables (reports, drawings, specifications, etc). As a professional engineer you will be expected to arrive at scheduled meetings (class and team meetings) on time and prepared. Late assignments will not be accepted. Professional engineering standards apply in this course.

**Timeliness:** You are expected to arrive at every class meeting on time and prepared. Attendance will be taken. Arriving late or leaving early will be counted as an absence. Should you find it necessary to miss a class for any reason, you are expected to notify your instructor as early as the absence is known—preferably before the absence. Please refer to the email sample for professionally addressing all email communication with your professors.

Unless otherwise specified, assignments are due at the beginning of the class period on the specified due date.

**Teamwork:** Nearly all worthwhile accomplishments from raising a family to landing a rover on Mars are the work of teams. Engineering is no exception. All significant engineering projects are completed by teams. You will be assigned to various teams during the semester. The purposes of these teams is to give you practice working in teams and to provide a support group for you within the class.
9.2: Journal
You are required to keep a written journal for this class. You are expected to make journal entries at least once a week. Your journals will be graded based on completeness and quality of the entries.

9.3: Grades:
The following weighting system will be used in determining final grade for the course. Details of each deliverable will be posted on Blackboard.

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Percentage of final grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>APTT</td>
<td>5 %</td>
</tr>
<tr>
<td>Journals</td>
<td>5 %</td>
</tr>
<tr>
<td>Scope determination</td>
<td>20 %</td>
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<tr>
<td>Options analysis</td>
<td>20 %</td>
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<tr>
<td>Final submittal</td>
<td>50 %</td>
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</tbody>
</table>

10: Classroom and University Policies and Student Support

10.1: Academic Integrity
Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is contained in both print and web versions of the Student Handbook.

10.2: Student Disability Services
ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation. Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student’s responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the Student Disability Services website at www.angelo.edu/ADA. The employee charged with the responsibility of reviewing and authorizing accommodation requests is: Dallas Swafford, Director of Student Disability Services, Office of Student Affairs  325-942-2047 dallas.swafford@angelo.edu, Houston Harte University Center, Room 112.
10.3: Religious Holy Day

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.

11: Professional Email Sample

An important part of this course is learning how to communicate professionally as an engineer. Below are sample emails for communicating with your professors.

11.1: When you need to miss class

To: Professor Bella
Subject: Dominic Ram September 16 Absence

Professor Bella,
My name is Dominic Ram (CID 8135550). I will not be in class on September 16, 2018 because [reason].

[Pick one of the following]
• I will visit you during your office hours on Wednesday, September 14 to collect any class work that I will miss and to turn in all my assignments due that day.
• I would like to make an appointment with you to collect any missing work from class and to turn in home work that is due that day. I am free at these times:
  o Monday, September 12 from 9am to 3pm
  o Tuesday, September 13 from 8am to 12pm

Thank you for your assistance,
Dominic Ram
(CID 8135550)

11.2: When you have a question about class

To: Professor Bella
Subject: Dominic Ram ENGR 1201-010 Question

Professor Bella,
My name is Dominic Ram (CID 8135550). I am in your ENGR 1201 section 010 class that meets on Tuesdays from 2pm-3:50pm. After class on Tuesday, I had a question that I wanted to ask about: [select an options below:]
• …our assignment due Tuesday. [Ask Questions]
• … the requirements for [assignment]. [Ask Questions]
• …my grade on the WCES project. [Ask Questions]

[Pick one of the following]
• Would it be possible for me to discuss this matter with on during your office hours on Wednesday, September 14?
• I would like to make an appointment with you to discuss the matter. I am free at these times:
  o Monday, September 12 from 9am to 3pm
  o Tuesday, September 13 from 8am to 12pm

Thank you for your assistance,
Dominic Ram
(CID 8135550)