1: Course Number and Name
   a. CENG 4380: Engineering Senior Design, Spring 2020
   b. Section 010, F 8:00 – 8:50 am

2: Credits and Contact Hours
   a. Credits: 3
   b. Contact Hours: 1 hours/week (classroom) 3:50’/week (Studio)

3: Instructor Information
   • Azadeh Bolhari, PhD, PE
   • Phone: 325-486-5508, Office: VIN 273.
   • Email: azadeh.bolhari@angelo.edu
   • Office: Vincent 274, Office Hours: see faculty website

4: Prerequisites
   Senior standing within one semester of graduation or departmental permission.

5: 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.

6: Student 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, transportation, environmental and materials design
   4. Develop an appreciation for the role of professional and ethical responsibility in civil engineering
      and management practice

7: Course outcome mapping
   Mapping of the course outcomes to the ABET Criterion 3 student outcomes is shown in Table 1.
   Table 1: Course Outcome Mapping

<table>
<thead>
<tr>
<th>Student Learning Outcome Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABET Criterion 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Solve Problems</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Design</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Communication</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>4. Ethics &amp; Professionalism</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>5. Teamwork</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6. Experimentation</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>7. Acquire New Knowledge</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>
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

8: Course structure and communication

There will be very little lecture during class. Instead of in-class lectures, you will report in-person 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, water resources, and environmental engineering. Your final report consists of a written report which must include the following sections: Appendix, Figures, and Tables sections. Final designs in your report must be printed on plan sheets with title block.

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Deadlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Drive folder</td>
<td>January, 24</td>
</tr>
<tr>
<td>Scope determination</td>
<td>January, 31</td>
</tr>
<tr>
<td>Project timeline</td>
<td>January, 31</td>
</tr>
<tr>
<td>Options analysis</td>
<td>February 14</td>
</tr>
<tr>
<td>Draft report</td>
<td>March, 27</td>
</tr>
<tr>
<td>Final report</td>
<td>April, 17</td>
</tr>
<tr>
<td>Mock presentation</td>
<td>April 24, (8am-10am)</td>
</tr>
<tr>
<td>Final presentation</td>
<td>May, 1 (10am-12pm)</td>
</tr>
</tbody>
</table>

9: 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.

10: Graded Material

10.1: Class Attendance, Participation, Timeliness and Teamwork

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. 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 and schedule an office visit with your instructor to report your weekly progress.

Teamwork: You will be assigned to various teams which include: structural, water/environmental, transportation, Geotech, and construction. The purpose of these teams is to give you practice working in teams and to provide a support group for you within the project. All teams choose a person as the “lead” and all teams together choose a “Project Lead.” Your participation on the team will be assessed by your team members in the end of September, October and November as well as notes taken by your instructor through weekly meetings. Your average teamwork score will be used as a multiplier for your final presentation and report grade.

10.2: Memo email

You are expected to write a memo email after each meeting that you have with your client and the technical personnel (e.g. faculty, industry). Your instructor needs to be CC’d in memo emails.

10.3: 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>Scope determination</td>
<td>10%</td>
</tr>
<tr>
<td>Options analysis</td>
<td>10%</td>
</tr>
<tr>
<td>Final presentation</td>
<td>20%</td>
</tr>
<tr>
<td>Final report</td>
<td>60%</td>
</tr>
</tbody>
</table>

11: Classroom and University Policies and Student Support

11.1: General Policies

All students are required to follow the policies and procedures presented in the Angelo State University Student Handbook\(^1\) and Angelo State University Catalog\(^2\).
11.2: **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. 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

11.3: **Title IX at Angelo State University**

The University prohibits discrimination based on sex, which includes pregnancy, sexual orientation, gender identity, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination including: sexual assault, sex-based discrimination, sexual exploitation, sexual harassment, public indecency, interpersonal violence (domestic violence and/or dating violence), and stalking. As a faculty member, I am a Responsible Employee meaning that I am obligated by law and ASU policy to report any allegations I am notified of to the Office of Title IX Compliance.

Students are encouraged to report any incidents of sexual misconduct directly to ASU’s Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator at:

- Michelle Boone, J.D.
  - Director of Title IX Compliance/Title IX Coordinator
  - Face to face: Mayer Administration Building, Room 210
  - 325-942-2022, michelle.boone@angelo.edu

You may also file a report online 24/7 at www.angelo.edu/incident-form.

If you are wishing to speak to someone about an incident in confidence you may contact the University Health Clinic and Counseling Center at 325-942-2173 or the ASU Crisis Helpline at 325-486-6345.

For more information about Title IX in general you may visit www.angelo.edu/title-ix.

11.4: **Observance of 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. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day for more information.
11.5: Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures for more information.

11.6: Student Conduct Policies

11.7: Academic Integrity

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university’s Statement of Academic Integrity

11.8: Plagiarism

Plagiarism is a serious topic covered in ASU’s Academic Integrity policyvii in the Student Handbook. Plagiarism is the action or practice of taking someone else’s work, idea, etc., and passing it off as one’s own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality via Turnitin. Resources to help you understand this policy better are available at the ASU Writing Centerviii.

11.9: Copyright Policy

Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

End Notes

i http://www.angelo.edu/student-handbook/
ii http://www.angelo.edu/catalogs/
iii http://www.angelo.edu/services/disability-services/
iv http://www.angelo.edu/incident-form
v http://www.angelo.edu/title-ix
vi http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of
vii http://www.angelo.edu/student-handbook/community-policies/academic-integrity.php
viii http://www.angelo.edu/dept/writing_center/academic_honesty.php