ENGR 1307: Plane Surveying, Section 010 MW (VIN 162) 11:00 am – 11:50 pm; Section 01Z T (HSL) 8:00 am – 10:50 am; Section 02Z T (HSL) 12:00 pm – 2:50 pm

1: Instructors:
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- Office hours: check Dr. Apronti’s profile page

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- Phone: 325-942-2483
- Office: VIN 266
- Office hours: check Dr. Kitch’s profile page

2: Required materials
- Access Card for Elementary Surveying: An Introduction to Geomatics Mastering Engineering is required to access homework assignments for this class. You can purchase the access card together with the textbook or as a standalone access card.
- Additional materials include surveyor’s field notebook, a calculator meeting NCEES rules, a pencil, a ruler, an engineering pad for in-class exercises and homework. Visit Other Course Info on the right pane of the course page for more information on these additional materials.

3: Prerequisites
- MATH 1314 – College Algebra or equivalent academic preparation

4: Course Description
In this course, you will learn to recognize and solve problems in surveying as they apply to engineering projects. You will be introduced to modern surveying equipment such as levels and total stations and learn to use these instruments to perform surveys and layout typical engineering projects. You will also be introduced to surveying using Global Navigation Satellite Systems.

5: Student Learning Outcomes
When you complete this class, you should be able to:
1. Determine errors in measurements and the accuracy of a set of measurements by propagating the errors through computations
2. Use tapes, levels, and total stations to perform field measurements of elevation and location in the context of engineering projects and document measurements in accurate field notes
3. Use plane survey measurements to create maps, contours, site plans and other engineering descriptions of a given site

4. Use plane surveying methods to layout engineering constructions such as buildings, roads, horizontal and vertical curves

5. Solve common civil engineering survey problems related to leveling, traversing, earthworks, and highway curves

6. Describe the components in Global Navigation Satellite Systems and how they are used in surveying

7. Use Civil3D and Geographic Information System software as engineering tools to solve civil engineering problems and to visually communicate problem solutions

6: Course outcome mapping

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

Table 1: Course Outcome Mapping

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</table>

7: Course structure and communication

This course will use a combination of online materials, in-class activities, lectures, and labs to allow you to achieve the course learning outcomes. You are expected to complete all pre-class assignments before class and come to class prepared to apply this material. We will be using both Blackboard and Piazza to communicate during this course. Lesson materials will be delivered via Blackboard. Piazza will be used for announcements and discussion of course materials. Please do not email your instructor with questions about class—instead post your questions on Piazza.

8: Professionalism

Professional engineering standards apply in this class. You are expected to demonstrate a behavior consistent with the conduct of an individual practicing in the engineering profession. You are expected to: (1) come prepared for class; (2) respect faculty and peers; (3) demonstrate responsibility and accountability for your own actions; (4) demonstrate 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: In-class Exercises

You are expected to meet every class meeting on time and prepared. In-class activities shall be part of most classes and scores for the in-class activities will count toward your final grades. Should you find it necessary to miss a class for any reason, you are expected to notify your instructor by email as early as the absence is known—preferably before the absence. Piazza will be the main forum for communicating with your instructor and fellow students. One purpose of the discussions is to inform your instructor about any open questions from the reading or other material. It’s important that you provide feedback to your instructor.

Nearly all worthwhile accomplishments from raising a family to launching the space shuttle are the work of teams. Civil engineering is no exception. All significant civil engineering projects are completed by teams. You will be periodically assigned to a team to complete submittals and in class activities. You will also be assigned to a team or teams for this class. The purpose of the teams is to give you practice working together and to provide a support group for you within the class. Outside of class, please collaborate and work with anyone you wish. Your participation in your assigned teams will be evaluated anonymously by your peers.

9.2: Homework

Homework assignments will be due at the times specified on Blackboard or in the homework as the due date. Any assignments submitted in hard copy are due at the beginning of class on the due date. Your instructor may assess penalties for late work.

Late submissions: Submissions before the due date and time can earn the total score for the assignment. Late submissions will be penalized. Late submissions will attract a penalty of 10 percent on the first day after the submission deadline and 20 percent for each additional day beyond the first day. Late submissions will not be accepted on the fifth day after the due date.

9.3: Field Notes & Lab Submittals

Engineers have both an ethical and professional responsibility to take accurate, understandable field notes. Field notes form the basis of both engineering and legal decision making. Your field notebooks will be evaluated for accuracy, completeness and professionalism. All your lab work will be completed in teams. Five of the labs will be evaluated based on post-lab submittals (pacing, taping, levelling, traversing, topo mapping, and introduction to GIS). The remaining labs will be evaluated on your in-field performance and participation.

9.4: Exams

Fifty-minute Exams - There will be two in-class 50-minute exams that are tentatively scheduled for Monday, October 8 and Wednesday, November 11 during normal class times. Exam 1 and Exam 2 are worth 10% and 15% of your final grades, respectively. Exams will consist of short answer quizzes, essay and calculation-based problems.

Final Exam – The final will be comprehensive and will be held on Wednesday, December 12 from 10:30 am – 12:30 pm. Although the exam will be comprehensive, it will emphasize the material not covered by the previous exams.

9.5: Grades: Weighting and Letter Grades

The weighting system shown in Table 2 will be used in determining final grade for the course
Table 2: Grade Weighting

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-class Exercises</td>
<td>15%</td>
</tr>
<tr>
<td>Homework/In-class Problems</td>
<td>20%</td>
</tr>
<tr>
<td>Field Notes/Lab Participation</td>
<td>5%</td>
</tr>
<tr>
<td>Lab submittals</td>
<td>10%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>10%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>15%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The instructor will determine letter grades for the course using his professional judgment, and the following standards as described in the University Catalog:

A = excellent work     B = good work     C = average work     D = poor work     F = failing work

10: Classroom and University Policies and Student Support

10.1: General Policies

All students are required to follow the policies and procedures presented in the Angelo State University Student Handbook and Angelo State University Catalog.

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.

The Office of Student Affairs is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability, and it is the student’s responsibility to initiate such a request by contacting Ms. Dallas Swafford, Director of Student Disability Services, at 325-942-2047 or Dallas.Swafford@angelo.edu, or visit the Student Disabilities Services website.

10.3: Title IX Statement

Angelo State University is committed to the safety and security of all students. If you or someone you know experience sexual harassment, sexual assault, domestic or dating violence, stalking, or discrimination, you may contact ASU’s Title IX Coordinator: Ms. Michelle Boone, Director of Title IX Compliance, at 325-486-6357, or Michelle.Boone@Angelo.Edu.

10.4: 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.

10.5: 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.
10.6: Student Conduct Policies

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 Statement of Academic Integrity in the Student Handbook.

Plagiarism

Plagiarism is a serious topic covered in ASU’s Academic Integrity policy 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 Center.

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.

11: Instructor Prerogative

This class does not operate under democratic principles. Your instructor may change policies, procedures, of this course when he deems it necessary. You will be notified of any such changes.

12: Course Outline

The course outline is presented in Table 3. Detailed reading and homework assignments along with updates to this schedule will be provided via Bb.
<table>
<thead>
<tr>
<th>Lesson</th>
<th>Date</th>
<th>Topic</th>
<th>Lab</th>
<th>Assignments</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>M 08/27</td>
<td>Intro, significant figures, &amp; units</td>
<td>Pacing lab</td>
<td>HW01 Due 08/31 Lab submittal 01</td>
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<tr>
<td>2</td>
<td>W 08/29</td>
<td>theory of errors</td>
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<td>3</td>
<td>M 09/03</td>
<td>Labor Day</td>
<td>No lab</td>
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<td>4</td>
<td>W 09/05</td>
<td>Measuring distance</td>
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<td>HW02 Due 09/14</td>
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<td>5</td>
<td>M 09/10</td>
<td>Electronic distance measurement</td>
<td>Taping</td>
<td>Lab submittal 02</td>
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<td>6</td>
<td>W 09/12</td>
<td>Leveling: theory, methods</td>
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<td>HW03 Due 09/19</td>
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<td>7</td>
<td>M 09/17</td>
<td>Leveling: equipment</td>
<td>Leveling I</td>
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<td>8</td>
<td>W 09/19</td>
<td>Leveling: field procedures</td>
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<tr>
<td>9</td>
<td>M 09/24</td>
<td>Angles, azimuths, bearing</td>
<td>Leveling II</td>
<td>HW04 Due 10/0</td>
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<td>10</td>
<td>W 09/26</td>
<td>Magnetic bearings and declination</td>
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<td>Lab submittal 03</td>
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<td>M 10/01</td>
<td>Angle measuring instruments</td>
<td>Angles</td>
<td>HW05 Due 10/05</td>
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<td>Angle measurement procedures</td>
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<td>13</td>
<td>M 10/08</td>
<td>Exam 1: Chapters 1-7</td>
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<td>14</td>
<td>W 10/10</td>
<td>Introduction to traversing</td>
<td>Closed Traverse I</td>
<td>HW06 Due 10/17</td>
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<td>Traverse computations, part 1</td>
<td>Closed Traverse II</td>
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<td>16</td>
<td>W 10/17</td>
<td>Traverse computations, part 2</td>
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<td>17</td>
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<td>Coordinate geometry, part 1</td>
<td>Traverse Corrections</td>
<td>HW07 Due 11/31 Lab submittal 04</td>
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<td>Coordinate geometry, part 2</td>
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<td>19</td>
<td>M 10/29</td>
<td>Area computations</td>
<td>Topo survey I</td>
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<td>20</td>
<td>M 11/05</td>
<td>Mapping surveying</td>
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<td>21</td>
<td>W 11/07</td>
<td>Mapping</td>
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<td>22</td>
<td>M 11/12</td>
<td>State Plane coordinates</td>
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<td>23</td>
<td>W 11/14</td>
<td>Exam 2: Chapter 9-12 &amp; 17-20</td>
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<td>24</td>
<td>M 11/12</td>
<td>Construction surveying</td>
<td>Route &amp; Hz curve staking</td>
<td>HW09 Due 11/26</td>
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<td>25</td>
<td>W 11/14</td>
<td>Highway route surveying</td>
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<td>26</td>
<td>M 11/19</td>
<td>Horizontal curves</td>
<td>Route &amp; Hz curve staking</td>
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<td>27</td>
<td>W 11/21</td>
<td>Thanksgiving</td>
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<td>28</td>
<td>M 11/26</td>
<td>Earthwork</td>
<td>Intro to GIS I</td>
<td>HW10 Due 12/30</td>
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<td>29</td>
<td>W 11/28</td>
<td>Satellite Navigation Systems</td>
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<td>Lab submittal 06</td>
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<td>M 12/03</td>
<td>GNSS Survey Methods</td>
<td>Intro to GIS II</td>
<td>Lab submittal 07</td>
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<td></td>
<td>W 12/05</td>
<td>Exam Review</td>
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<td>Final Exam on Wednesday, December 12 from 10:30 am – 12:30 pm</td>
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