Course Syllabus (Lecture)
Civ E 218 – Surveying for Civil Engineers
Fall 2013

Instructor: George J. Schuh, PLS (gschuh@mail.sdsu.edu)  
Lecture Time: Fri 3:00
Office: East Commons  
Room: E - 201
Phone: 619-565-9047  
Final: TBD
Office Hours: Fri., 2:00-3:00 PM

Grading:
3 Exams 15% ea.  
Final Exam 20%  
Homework 10%  
Lab* 25%
Basis of grading:
A> = 94%; A-> = 90%
B+ = 87%; B> = 84%; B-> = 80%
C+ = 77%; C> = 74%; C-> = 70%
D+ = 67%; D> = 64%; D-> = 60%

Materials:
- Spiral bound field book
- Combination straight edge/protractor for field sketches
- Engineering paper (green) for homework assignments
- Scientific calculator (w/angle conversion)

Programmable and/or graphing calculators will not be permitted for testing in this class.

Course Description
This is an introductory course in the fundamentals of surveying designed for Civil Engineering students. It includes basic measurement techniques of distance and angles, both horizontal and vertical. Traverse measurements and adjustments are discussed. Instruction includes the analysis of circular and parabolic curves, earthwork, and the use of coordinate geometry. Roadway alignments including plan, profiles, and typical cross-sections are studied. An introduction to Global Positioning Systems is also discussed.

Learning Objectives:
This course is one of many that you will take towards your degree in Civil Engineering. Each of our courses is designed as part of your career development in the civil engineering profession. Program outcomes are intended to provide a broad base of knowledge to develop your career. However, each course in the curriculum emphasizes particular aspects of that overall body of knowledge. Although other outcomes may also be addressed, this course is intended to have a particular emphasis on the following program outcomes:

Outcome 1: Solve problems in mathematics through multi-variate calculus, calculus-based physics, and one additional area of science.
- Prepare and calculate survey data for differential and trigonometric leveling, field traverses and adjustments, and circular and parabolic curves.

Outcome 5: Design a Civil, Construction, or Environmental experiment to meet a need, conduct the experiment, and analyze resulting data.
- Collect field profile measurements and Design the horizontal and vertical alignment and calculate the earthwork volumes to design a simple pipeline.
- Explain how horizontal and vertical alignments combined with typical cross-sections are incorporated into roadway design plans.
Outcome 9: Apply relevant techniques, skills, and modern engineering tools to solve a simple problem.

- Explain how field traverses can produce coordinate points and be combined with elevations to create 3-dimensional points which can be used as the framework for civil designs.
- Explain the laws and rules associated with sub-dividing lands under the United States Public Lands Survey System (USPLSS).
- Describe the techniques used to layout a typical building.
- Navigate the Occupational Safety and Health Administration (OSHA) guidebook and explain the various conditions and situations that can be encountered performing typical survey activities.

Text:

Class Policies
Students are expected to behave in a professional manner. Reading a newspaper, texting, or talking with a neighbor are activities that will not be tolerated in this class. If you do not act as if you are interested and engaged, you may distract students who are interested and engaged. I will ask students to leave if their actions are inconsistent with being engaged with the class lecture. Repeated requests will lead to more significant consequences up to and including involuntary drop.

All homework will be due at the beginning of class on the assigned date. Late homework will not be accepted. All homework assignments will be submitted on green engineering paper folded long ways with your name, due date, and assignment number and section number at the top of the page. Your homework is to represent your individual effort. Collaboration is encouraged, but copied work will receive a grade of zero. Students are expected to understand and be able to explain their own work.

There will be three exams and a final for the lecture portion of this class. Each exam will be one and a half hours in duration. Each exam will cover the topics that were discussed in the class meetings leading to that date.

The final exam will be mandatory and comprehensive. You will be responsible for everything in the reading, lectures, class notes, homework, and handouts.

Note: Blackboard will be used to assign homework, show grades and broadcast emails throughout the semester.

Cell phones must be set on vibrate and in your pocket/purse during class. As a courtesy to your classmates and the instructor, please do not make a habit of coming in late or leaving early.
<table>
<thead>
<tr>
<th>Lect.</th>
<th>Date (Fridays)</th>
<th>Subject</th>
<th>Chapter</th>
<th>Text Reading</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug. 30</td>
<td>Introduction</td>
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<tr>
<td>2</td>
<td>Sept. 6</td>
<td>Units, Leveling: Theory, Methods, Equipment</td>
<td>1-2, 4-5</td>
<td>1.1 – 1.6 &amp; 2.1 – 2.11, 4.1 to 4-3 &amp; 5.1 - 5.6</td>
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<tr>
<td>3</td>
<td>Sept. 13</td>
<td>Trigonometric leveling &amp; Profiling</td>
<td>4,5</td>
<td>4-5.4 &amp; 5.9</td>
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<td>4</td>
<td>Sept. 20</td>
<td>Angles, Bearings, &amp; Azimuths</td>
<td>7</td>
<td>7.1 to 7.9</td>
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<td>5</td>
<td>Sept. 27</td>
<td>Traversing / Traverse Computations</td>
<td>9, 10</td>
<td>9.1 to 9.8 &amp; 10.1 to 10.12</td>
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<td></td>
<td>Oct. 4</td>
<td><strong>EXAM 1</strong></td>
<td>1,2,4,5,7</td>
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<td>6</td>
<td>Oct. 11</td>
<td>Traverse Computations (cont.) / Area</td>
<td>10,12</td>
<td>10.1 to 10.12 &amp; 12.5</td>
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<td>7</td>
<td>Oct. 18</td>
<td>Mapping-Contours</td>
<td>18,22</td>
<td>18.1 – 18.10, 22.1 to 22.12</td>
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<td></td>
<td><strong>U.S. Public Land Survey System</strong></td>
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<td>8</td>
<td>Oct. 25</td>
<td>Horizontal Curves</td>
<td>24</td>
<td>24.1 to 24.8</td>
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<td></td>
<td>Nov. 1</td>
<td><strong>EXAM 2</strong></td>
<td>9,10,12,18,22</td>
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<td>9</td>
<td>Nov. 8</td>
<td>Vertical Curves</td>
<td>25</td>
<td>25.1 to 25.10</td>
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<tr>
<td>10</td>
<td>Nov. 15</td>
<td>Roadway Alignments</td>
<td>24 &amp; 25</td>
<td>24.1 to 24.8 &amp; 25.1 to 25.10</td>
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<tr>
<td>11</td>
<td>Nov. 22</td>
<td>Roadway Alignments #2</td>
<td>24 &amp; 25</td>
<td>24.1 to 24.8 &amp; 25.1 to 25.10</td>
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<td>Nov. 29</td>
<td>Thanksgiving Break</td>
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<td>Dec. 6</td>
<td><strong>EXAM 3</strong></td>
<td>18, 22, 24, 25</td>
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<td>TBD</td>
<td><strong>FINAL EXAM</strong></td>
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<td>Comprehensive</td>
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