California State University, Fullerton  
College of Engineering and Computer Science  
Civil and Environmental Engineering Department

EGCE 214-01 ENGINEERING SURVEYING  
SCH 11422  
Spring Semester 2011

Instructor: Binod Tiwari, Ph.D.  
Office: E-419  
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Fax: (657) 278-3916  
Email: btiwari@fullerton.edu

Class Meeting: MW 11:00 – 11:50  
Class Room: HUM-110  
Units: 2

Co-requisite: EGCE 214 L  
Students registered for this course should register for co-requisite course too. During the semester, the department will verify the co-requisite requirements. If any student has completed the co-requisite course at another school and it is transferable, please submit appropriate documents to the department secretary. Otherwise, their name will be deleted from the class list at any time during the semester.

Text Book  

Reference Materials  
- Handouts, website URLs, visuals, and other materials will be provided during class or posted on Blackboard.
- Surveying with Construction Applications by Barry F. Kavanagh, Pearson (2007)

Office Hours
Tuesday and Wednesday 13:00 – 15:00  
As long as the office door is open, please feel free to walk in and consult. However, phone and email appointments are encouraged.

Course Description  
Basis of plane surveying, Distance measurement using tapes and EDM, Leveling, Measurement of angles and directions, Traverse, Topographic survey and computations, Application in highway curves, Construction surveys and land surveys, Principle of stadia, Global Positioning System (GPS), Geographic Information System (GIS)

Course Learning Objectives  
This course will provide the students with sufficient guidance and resources to learn the fundamentals of surveying and their application in the real world problems. Upon completion of this course, students will be able to:
- Understand the uses and operations of engineering measuring devices such as tapes, EDM, and total station.
- Develop map and layout from measured distance and elevation data.
- Develop knowledge of basic mapping principles including the use of bearings, azimuths, coordinates systems, and topographical maps including curves and layouts of highways and pipelines.

**Topics Covered**

- Basic Information on Surveying
- Distance Measurement with Tapes and EDM
- Leveling Methods and Applications
- Measurement of Angles and Directions
- Theodolite – Principles and Applications
- Measurement and Computations of Traverses
- Total Station – Principle and Applications
- Topographical Surveying and Mapping
- Introduction to Global Positioning System (GPS)
- Methods and Applications of Control Survey
- Introduction to Geographic Information System (GIS)
- Computation and Setting of Highway Curves
- Introduction to Construction Surveys

**Program Educational Objectives**

The educational objectives of the program are as follows:

A) Technical Growth: Graduates will be successful in modern engineering practice, integrate into the local and global work force, and contribute to the economy of California and nation.

**Assessment of Student’s Learning**

The effect of this course on student’s learning ability will be assessed according to the following criteria:

- An ability to apply knowledge of mathematics, science, and engineering.

**Homework and Quizzes**

There will be several homework assignments during the course of the semester. Homework is due at the beginning of the class, on due date. There will be no credit for the late homework submissions, unless accompanied with a university approved excuse. Homework will be posted on the blackboard every week. Students should check the blackboard at least once a day. There will also be a number of quizzes of 5 minutes duration each. These quizzes will be based on the contents covered in the class. Homework should be submitted neatly in a clean paper, one side of which should be left blank. New problem should be started on the fresh page. Homework submission format and guidelines should be strictly followed.

**Scheduled Exams**

There will be two mid-term exams. No make up exams will be conducted. However, if one misses a midterm exam for any university approved reasons, weight of the other midterm exam will be increased. Students should inform the instructor in written well on time to get approval for such reasons. Missing of exams for non-approved reasons counts as zero score. The final exam will be comprehensive and will include the contents covered in the entire class.
Grading Policy
The final letter grade will be computed using the following criteria:

- **Homework/Quizzes** (20%)
- **Midterm Exam I** (March 14, 2010) (25%)
- **Midterm Exam II** (April 20, 2010) (25%)
- **Final Exam** (May 18, 2011; 12:00 - 13:50) (30%)

**Letter Grades**

- A' (> 97%)
- A (93 – 96.9%)
- A' (90 – 92.9 %)
- B' (87 – 89.9%)
- B (83 – 86.9%)
- B' (80 – 82.9 %)
- C' (77 – 79.9%)
- C (73 – 76.9%)
- C' (70 – 72.9 %)
- D' (67 – 69.9%)
- D (63 – 66.9%)
- D' (60 – 62.9%)
- F (< 60%)

**Honor Code**
- “California State University, Fullerton's Honor Code” explained in UPS 300.021 applies to all works performed in this class including homework, quizzes, and examinations. Students should strictly follow those codes.
- This is a professional course. A learning environment will be created in each class for motivated students; therefore professional conduct is expected of all participants. Professional conduct extends to use of cell phones, personal computers, iPods and PDAs during lecture. Students violating such professional conducts are subject to expulsion from the class.

**Drop Policy**
The Spring 2011 Schedule contains the University Regulations and Deadlines for dropping this course. Students should note that the department stamp and/or department chair’s signature is also required in addition to instructor’s signature to drop the course.

**Students With Special Needs**
Students who need adaptations or accommodations because of a disability (e.g. learning, attention deficit disorder, psychological, physical, etc.), or have emergency medical information to share with the instructor, or need special arrangements in case the building must be evacuated, are requested to make an appointment to discuss their needs with the instructor during the first week of classes.
### Detailed Class Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>Topic/s</th>
<th>Section Textbook</th>
<th>Due Homework*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>January 24</td>
<td>Introduction, Surveying basics</td>
<td>Handout, 1</td>
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<tr>
<td></td>
<td>26</td>
<td>Distance Measurement I</td>
<td>3</td>
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<tr>
<td>2</td>
<td>31</td>
<td>Distance Measurement II</td>
<td>3</td>
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<td></td>
<td>February 2</td>
<td>Exercise Problems</td>
<td>3</td>
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<tr>
<td>3</td>
<td>7</td>
<td>Distance Measurement III</td>
<td>3</td>
<td>Home Work # 1</td>
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<tr>
<td></td>
<td>9</td>
<td>Leveling I</td>
<td>2</td>
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<tr>
<td>4</td>
<td>14</td>
<td>Leveling II</td>
<td>2</td>
<td>Home Work # 2</td>
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<tr>
<td></td>
<td>16</td>
<td>Angles and Directions I</td>
<td>4</td>
<td></td>
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<tr>
<td>5</td>
<td>21</td>
<td>President’s Day No Class</td>
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<td>23</td>
<td>Angles and Directions II</td>
<td>4</td>
<td>Home Work # 3</td>
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<td>28</td>
<td>Angles and Directions III</td>
<td>4</td>
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<td>March 2</td>
<td>Traverse Surveying I</td>
<td>7</td>
<td>Home Work # 4</td>
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<td>7</td>
<td>7</td>
<td>Traverse Surveying II</td>
<td>7</td>
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<td>8</td>
<td>14</td>
<td>Mid-term Exam 1 Review</td>
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<td>16</td>
<td>GPS I</td>
<td>8</td>
<td>Home Work # 5</td>
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<tr>
<td>9</td>
<td>21</td>
<td>GPS II</td>
<td>8</td>
<td>Home Work # 6</td>
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<td>23</td>
<td>Control Surveying</td>
<td>11</td>
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<td>10</td>
<td>Mar. 28 - Apr. 3</td>
<td>Spring Recess</td>
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<td>No Class</td>
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<td>11</td>
<td>April 4</td>
<td>Topographic Survey I</td>
<td>9</td>
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<td>Topographic Survey III</td>
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<td>GIS</td>
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<td>18</td>
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<td>Area and Volume Calculation</td>
<td>Handout</td>
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<td>27</td>
<td>Area and Volume Calculation</td>
<td>Handout</td>
<td>Home Work # 9</td>
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<td>15</td>
<td>May 2</td>
<td>Highway Curve I</td>
<td>14</td>
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<td>4</td>
<td>Highway Curve II</td>
<td>14</td>
<td>Home Work # 10</td>
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<td>16</td>
<td>9</td>
<td>Construction Surveying I</td>
<td>15</td>
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<td></td>
<td>11</td>
<td>Review for Final Exam</td>
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<tr>
<td>May 18</td>
<td>(12:00 – 13:50)</td>
<td>Final Exam</td>
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* Date on the same row is the homework due date. For example Homework # 1 is due on February 7.
Emergency Procedures Notice to Students

The safety of all students attending California State University Fullerton is of paramount importance. During an emergency it is necessary for students to have a basic understanding of their personnel responsibilities and the University’s emergency response procedures. In the event of an emergency please adhere to the following guidelines

**Before an emergency occurs**-

1. Know the safe evacuation routes for your specific building and floor.
2. Know the evacuation assembly areas for your building.

**When an emergency occurs**-

1. Keep calm and do not run or panic. Your best chance of emerging from an emergency is with a clear head.
2. Evacuation is not always the safest course of action. If directed to evacuate, take all of your belongings and proceed safely to the nearest evacuation route.
3. Do not leave the area, remember that faculty and other staff members need to be able to account for your whereabouts.
4. Do not re-enter building until informed it is safe by a building marshal or other campus authority.
5. If directed to evacuate the campus please follow the evacuation routes established by either parking or police officers.

**After an emergency occurs**-

1. If an emergency disrupts normal campus operations or causes the University to close for a prolonged period of time (more than three days), students are expected to complete the course assignments listed on the syllabus as soon as it is reasonably possible to do so.
2. Students can determine the University's operational status by checking the University's web site at [http://www.fullerton.edu](http://www.fullerton.edu), calling the University's hotline number at 657-278-0911, or tuning into area radio and television stations. Students should assume that classes will be held unless they hear or read an official closure announcement.

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**EMERGENCY CALLS**

**DIAL 9-1-1**
All campus phones and cell phones on campus reach the University Police Department

Non-emergency line: (657) 278-2515

24-hour recorded emergency information line:
(657) 278-0911
(657) 278-4444