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

EGCE 214-02 ENGINEERING SURVEYING
SCH 19519
Spring Semester 2010

Instructor: Binod Tiwari, Ph.D.
Office: E-419
Phone: (657) 278-3968
Fax: (657) 278-3916
Email: btiwari@fullerton.edu

Class Meeting: TR 11:00 – 11:50
Class Room: MH-412
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
Monday 11:00 – 13:00  Tuesday 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 (Take Home) (February 23, 2010): 25%
- Midterm Exam II (March 25, 2010): 25%
- Final Exam (May 19, 2010; 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 2010 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</th>
<th>Textbook</th>
<th>Due Homework*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>January 26</td>
<td>Introduction, Surveying basics</td>
<td></td>
<td>Handout, 1</td>
<td></td>
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<tr>
<td></td>
<td>28</td>
<td>Distance Measurement I</td>
<td>3</td>
<td></td>
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<tr>
<td>2</td>
<td>February 2</td>
<td>Distance Measurement II</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>4</td>
<td>Distance Measurement III</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>Leveling I</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Leveling II</td>
<td>2</td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td><strong>February 16</strong></td>
<td><strong>Faculty Furlough Day</strong></td>
<td></td>
<td>No Class</td>
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<tr>
<td></td>
<td>18</td>
<td>Review for Mid-term Exam 1</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>23</td>
<td>Mid-term Exam 1</td>
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<tr>
<td></td>
<td>25</td>
<td>Angles and Directions I</td>
<td>4</td>
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<tr>
<td>6</td>
<td><strong>March 2</strong></td>
<td><strong>Faculty Furlough Day</strong></td>
<td></td>
<td>No Class</td>
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<tr>
<td></td>
<td>4</td>
<td>Angles and Directions II</td>
<td>4</td>
<td></td>
<td>Home Work # 3</td>
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<td></td>
<td>9</td>
<td>Angles and Directions III</td>
<td>4</td>
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<td></td>
<td>11</td>
<td>Traverse Surveying I</td>
<td>7</td>
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<td>Home Work # 4</td>
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<td>16</td>
<td>Traverse Surveying II</td>
<td>7</td>
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<td></td>
<td>18</td>
<td>GPS I</td>
<td>8</td>
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<td>Home Work # 5</td>
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<td>23</td>
<td>Review for Mid-term Exam 2</td>
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<td>25</td>
<td>Mid-term Exam 2</td>
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<td>10</td>
<td><strong>March 29 – April 4</strong></td>
<td><strong>Fall Recess</strong></td>
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<td>No Class</td>
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<td>April 6</td>
<td>GPS II</td>
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<td>Home Work # 6</td>
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<td>8</td>
<td>Faculty Furlough Day</td>
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<td>No Class</td>
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<td>12</td>
<td>13</td>
<td>Control Surveying</td>
<td>11</td>
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<td>15</td>
<td>Topographic Survey I</td>
<td>9</td>
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<td>Home Work # 7</td>
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<td>13</td>
<td>20</td>
<td>Topographic Survey II</td>
<td>9</td>
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<td>22</td>
<td>GIS</td>
<td>10</td>
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<td>Home Work # 8</td>
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<td>14</td>
<td>27</td>
<td>Area and Volume Calculation</td>
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<td>Handout</td>
<td>Home Work # 9</td>
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<td>29</td>
<td>Area and Volume Calculation</td>
<td></td>
<td>Handout</td>
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<tr>
<td>15</td>
<td>May 4</td>
<td>Highway Curve I</td>
<td>14</td>
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<tr>
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<td>6</td>
<td>Highway Curve II</td>
<td></td>
<td></td>
<td>Home Work # 10</td>
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<tr>
<td>16</td>
<td>11</td>
<td>Construction Surveying I</td>
<td>15</td>
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<tr>
<td>13</td>
<td>May 19</td>
<td>(12:00 – 13:50)</td>
<td></td>
<td>Final Exam</td>
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</tbody>
</table>

* Date on the same row is the homework due date. For example Homework # 1 is due on February 4.
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, 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