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

Class Meeting: W 19:00 – 21:45
Class Room: CS-207
Units: 3

Prerequisite
EGCE 324, EGCE 418 or equivalent

Students registered for this course should have completed the prerequisite course. During the semester, the department will verify the prerequisite requirements. If any student has completed the prerequisite course at another school, please submit appropriate documents to the department secretary. Otherwise, their name will be deleted from the class list at any time during the semester.

Required textbook


Reference Materials
- Handouts, website URLs, visuals, and other materials will be provided during class or posted on Blackboard.

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
Static and seismic stability analysis of slopes; calculation of earth pressures in retaining structures; design of retaining wall, sheet pile, and braced excavation system for static and seismic loading.

Course Learning Objectives
At the completion of the course students will have gained the following knowledge and skills:

- Methods of slope stability analysis for static and seismic loading conditions.
- Methods of earth pressure calculations in earth and water retaining structures.

Design of retaining structures such as retaining walls, sheet piles, and braced excavation systems for static and seismic loading conditions.
Topics Covered

- Review of Geotechnical Properties of Soil
- Sub-soil Exploration
- Concept of Slope Stability Analysis
- Methods of Slope Stability Analysis
- Slope Stabilization Methods
- Seismic Slope Stability Analysis
- Design of retaining Structures

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.
- An ability to identify, formulate and solve engineering problems.

Homework and Quizzes

There will be several homework assignments during the course of the semester. Those assignments 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. All assignments 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. Assignment submission format and guidelines should be strictly followed.

Class Project

Students will be provided with a compilation of field geotechnical investigation reports and cross-section of a slope to be analyzed. Each student is responsible to conduct slope stability analysis and design the slope according to the prevailing design standard.

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. However, 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 cover the contents covered in the entire class.
Grading Policy

The final letter grade will be computed using the following criteria:

- Homework/Quizzes 10%
- Midterm Exam I (March 23, 2011) 20%
- Midterm Exam II (April 20, 2011) 20%
- Final Exam (May 18, 2011, 19:30 - 21:20) 30%
- Project (May 11, 2011) 20%

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>Chapter in Textbook</th>
<th>Due Date</th>
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<tr>
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<td>January 26</td>
<td>Course Introduction</td>
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<td></td>
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<td>Review of Pre-requisite Materials</td>
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<td>2</td>
<td>February 2</td>
<td>Guest Lecture</td>
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<td>3</td>
<td>9</td>
<td>Examples and Causes of Slope Failures</td>
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<td>Home Work # 1</td>
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<td>Stability Conditions for Analysis</td>
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<td>4</td>
<td>16</td>
<td>Mechanism of Limit Equilibrium Procedures</td>
<td>6</td>
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<td>Examples of Limit Equilibrium Methods</td>
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<tr>
<td>5</td>
<td>23</td>
<td>Methods of Analyzing Slope Stability</td>
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<td>Home Work # 2</td>
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<td>Examples of slope stability analysis</td>
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<td>6</td>
<td>March 2</td>
<td>Reinforced Slopes and Embankments</td>
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<td>Home Work # 3</td>
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<td>Examples of reinforced earth design</td>
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<td>Analysis for Rapid Drawdown</td>
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<td>Examples of Rapid Drawdown Analysis</td>
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<td>8</td>
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<td>Guest Lecture</td>
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<td>Home Work # 5</td>
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<td>Review for Mid-term Exam 1</td>
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<td>9</td>
<td>23</td>
<td>Analysis to Back Calculate Strengths</td>
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<td>10</td>
<td>Mar. 28 - Apr. 3</td>
<td>Spring Recess</td>
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<td>11</td>
<td>April 6</td>
<td>Seismic Slope Stability Analysis</td>
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<td>Home Work # 6</td>
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<td>Examples of Seismic Slope Stability Analysis</td>
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<td>12</td>
<td>13</td>
<td>Slope Stabilization and Repair</td>
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<td>14</td>
<td>27</td>
<td>Review: Earth Pressure Calculation</td>
<td>Handout</td>
<td>Home Work # 8</td>
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<td>Review: Design of Cantilever Retaining Wall</td>
<td>Handout</td>
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<td>May 4</td>
<td>Design of MSE Retaining Wall</td>
<td>Handout</td>
<td>Home Work # 9</td>
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<td>Example of MSE Retaining Wall Design</td>
<td>Handout</td>
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<td>16</td>
<td>11</td>
<td>Design of Retaining Wall for Seismic Loading</td>
<td>Handout</td>
<td>Home Work # 10</td>
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<td>Review for Final Exam</td>
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<td>Final Exam</td>
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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.

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