CE 417/617 – Slope Stability and Retaining Walls

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                Lectures: 8:00 am – 8:50 am , Tuesday and Thursday
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                      Follow links to course page

Required Text: **Principles of Foundation Engineering, 4th ed. By Das**
                     Principles of Geotechnical Engineering, 5th ed. By Das

References: **References and links to additional information will be placed on the course web page. Check the web page at least once a week for new information.**

Course Outline:

Date	Day	Topic	Homework Problems
14-Jan-03	Tuesday	Introduction	
16-Jan-03	Thursday	Lateral Earth Pressures (L.E.P)	
21-Jan-03	Tuesday	Lateral Earth Pressures	6.1,6.3,6.4
23-Jan-03	Thursday	Rankine & Coulomb E.P.	6.6,6.8,6.10,6.12,6.17
28-Jan-03	Tuesday	L.E.P due to Surface loads	6.14
30-Jan-03	Thursday	L.E.P. due to Earthquake loads	6.13
4-Feb-03	Tuesday	Retaining Walls	7.1,7.3
6-Feb-03	Thursday	Retaining Walls	7.4,7.6
11-Feb-03	Tuesday	Retaining Walls	7.8,7.9
13-Feb-03	Thursday	Cantilever Sheet Pile walls	8.1,8.7
18-Feb-03	Tuesday	**TEST # 1**	
20-Feb-03	Thursday	Cantilever Sheet Pile walls	8.8
25-Feb-03	Tuesday	Anchored Sheet pile walls	8.10
27-Feb-03	Thursday	Wall Anchors	8.20
4-Mar-03	Tuesday	Wall Anchors	8.22
6-Mar-03	Thursday	Braced Cuts	
11-Mar-03	Tuesday	Braced Cuts	8.23,8.24
13-Mar-03	Thursday	Braced Cuts	
18-Mar-03	Tuesday	**SPRING BREAK**	
20-Mar-03	Thursday	**SPRING BREAK**	
25-Mar-03	Tuesday	Reinforced Earth Walls	7.11,7.12
27-Mar-03	Thursday	Reinforced Earth Walls	7.16
1-Apr-03	Tuesday	Stability of Infinite Slope	**14.1,14.2,14.5**
3-Apr-03	Thursday	Slope stability-Clay	**14.7,14.8**

8-Apr-03	Tuesday	**TEST # 2**	
10-Apr-03	Thursday	Slope stability-Clay	
15-Apr-03	Tuesday	Slope stability-Clay	**14.12,14.13**
17-Apr-03	Thursday	Method of Slices	**14.22**
22-Apr-03	Tuesday	Method of Slices	
24-Apr-03	Thursday	Clay Embankment	**14.23**
29-Apr-03	Tuesday	Computer Analysis	
1-May-03	Thursday	Computer Analysis	
6-May-03	Tuesday	Recap	
8-May-03	Thursday	**Test # 3**	

Bold Homework problem Numbers indicate that the problems are from the geotechnical engineering text book. Remaining problems are from the foundation engineering text book.

** The sections indicated are required reading. Additional material may be covered during the lectures.

Grading:

Criteria	Undergraduate	Graduate
Test 1	25%	25%
Test 2	25%	25%
Test 3	25%	25%
Home work	10%	5%
Projects	15%	10%
Special topics report	0%	10%
Total	100%	100%

Grade Distribution:

89.5 –100	A
79.5 –89.4	B
69.5-79.4	C
59.5-69.4	D
<59.5	F

Course Description: This course covers the fundamental concepts of lateral earth pressures, slope stability and the design of retaining walls and anchors. The course includes evaluation of earth pressures based on Rankine and Coulomb theories, lateral pressures imposed by surface and earthquake loads; slope stability analysis for infinite and finite slopes using wedge method, mass procedure, method of slices and Bishop's method; design of retaining walls, sheet pile walls, support for braced cuts, reinforced earth walls and soil anchors. The course includes two design projects.

Course Objectives: The students will learn to

1.   Find lateral earth pressures and draw lateral earth pressure distribution diagrams (A)
2.   Find lateral earth pressures and draw lateral earth pressure distribution diagrams due to various surface loads and earthquakes (A)
3.   Conduct slope stability analysis for infinite slopes (A)
4.   Conduct slope stability analysis for finite slopes using wedge method, mass procedure, method of slices and Bishop's method. (A)
5.   Conduct slope stability analysis using computer software REAME to simulate various field conditions and impact on slope stability (A)
6.   Design various types of retaining walls (A,C)
7.   Design sheet pile walls with and without anchors (A,C)

8.   Design support components for braced cuts (A,C)
9.   Design reinforced soil walls (A,C)
10.   Develop computer spreadsheets for evaluation and drawing of lateral earth pressure distribution diagrams for different surface loading conditions (A,C,E,K)

   (Alphabets in parentheses refer to CE program outcomes)

Policies and Procedures:

There will be three tests which are open book. Only the text(s) by Das will be allowed during the examination. Makeup exams will be given ONLY in the cases of: 1) a doctor certified medical excuse, or 2) prior instructor approval. Every effort should be made to contact the instructor in the event of medical or personal problems, as soon as possible.

Homework assignments (including projects) must be turned in by NOON on the day they are due. There will be no credit for late assignments. If you are unable to turn in the assignment on the due date for medical reasons, inform the instructor.

Note: Any student with disabilities or other special needs, who needs special accommodations is invited to share these concerns or requests with the course instructor, as soon as possible.

Approved Academic Honesty Statement:

All work in this course must be completed in a manner consistent with NDSU University Senate Policy, Section 335: Code of Academic Responsibility and Conduct.
 (http://www.ndsu.nodak.edu/policy/335.htm)

Graduate Credit:

If you are taking this course as CE617 (for graduate credit), the following additional course requirements apply.

➢ A separate meeting time of approximately 1-hour every week will be setup for graduate students, based on the schedules of the instructor and the graduate students.

➢ Graduate students are expected to complete a special topics report for specific course activities assigned by the instructor.

➢ Graduate students will be assigned additional individual homework assignments and a final group project and report.

➢ At the conclusion of this course, graduate students must submit a brief report describing how the material covered in this course will contribute to 1) the overall graduate experience and 2) their graduate activities.