Course: ***CIV_ENV 352, Foundation Engineering, Winter 2011***

Credits: 1 Unit credit; contact hours: 3 hrs lecture, 1 hr lab per week
Instructor: Raymond Krizek
Text: Principles of Foundation Engineering (Seventh Edition) by Braja M. Das

Description: Application of soil mechanics to analysis and design of foundations and embankments. Settlement of structures, bearing capacities of shallow and deep foundations, earth pressures on retaining structures and slope stability.
Prereq: CIV_ENV 250
Required?: No

Specific Goals for the Course:
Foundation Engineering will focus on design of:

1. Shallow and deep foundations
2. Flexible, rigid and internally stabilized (MSE) retaining structures
3. Methods of ground improvement
4. Considerations of cost and performance will be included (not included this year)

These objectives will be met through the following methods:

5. Self-learning through text book reading and homework problems to be completed before class discussion
6. Discussion of critical aspects in class
7. Completion of additional problems after class discussion
8. Guest specialists to discuss alternatives

Relation of "course specific <u>goals</u>" to programmatic student learning <u>outcome</u> through Course Assessment Table (CAT), which feeds into Program Assessment Table (PAT)

Course Goals	Outcome	Performance Indicator	Assessment	Proposed Action
1 2 3	a	FE-4 FE-14 FE-2	81%* 81% 52%	
1 2	c	ME-12=>FE-5 FE-10	43% => 81% 71%	MTE-12 →FE-5 shows improvement
2	e	MTE-13	10%	More work needed for tributary area
6	g	FE-3	100%	

*passing $\geq 50\%$

Topics Covered:

Date	Topic	Sections	Homework
Jan. 04	Soil Properties	1.1 to 1.12	
Jan. 06	Soil Properties	1.17 to 1.21	1.1 1.9 1.11 1.21
Jan. 11	Soil Exploration	2.1 to 2.19	2.1 2.8 2.9
Jan. 13	Soil Exploration	2.20 to 2.27	2.11 2.15 2.18 2.21
Jan. 18	Shallow Foundations	3.1 to 4.10	3.1 3.5 4.1 4.9
Jan. 20	Stress Distribution	5.1 to 5.8	5.1 5.2 5.3
Jan. 25	Consolidation	5.15 to 5.17; 1.13 to 1.16	1.15 5.5 5.6 5.20
Jan. 27	Settlement	5.9 to 5.14; 5.18 to 5.20	5.10 5.17
Feb. 01	Mat Foundations	6.1 to 6.8	6.1 6.7 6.8 6.9
Feb. 03	TEST	1.1 to 6.8	
Feb. 08	Lateral Earth Pressure	7.1 to 7.14	7.1 7.6 7.13
Feb. 10	Retaining Walls	8.1 to 8.10	8.1
Feb. 15	Reinforced Earth Walls	8.11 to 8.18	8.8 8.10
Feb. 17	Sheet Pile Walls	9.1 to 9.19	9.1
Feb. 22	Braced Cuts	10.1 to 10.8	10.1 10.2
Feb. 24	Pile Foundations	11.1 to 11.24	11.1 11.17 11.23
Mar. 01	Drilled Shafts	12.1 to 12.13	12.1 12.5
Mar. 03	Difficult Soils	13.1 to 13.14	13.3 13.4 13.8
Mar. 08	Ground Modification	14.1 to 14.16	14.1 14.2 14.3 14.4
Mar. 10	Review	1.1 to 14.16	
	FINAL EXAM	1.1 to 14.16	3/18/11 2-4 PM LG76

Grade Distribution:

Test	25%
Final Exam	37.5%
Homework	25%
Participation	12.5%

Contact Information:

Prof. Raymond Krizek
Office: Tech A114
Email: r-krizek@northwestern.edu
Phone: 847-491-4040

Grader: Carlos Vega-Posada
Office: Tech AG50
Email: carlosvega2013@u.northwestern.edu