

Course Name: Foundation Design
Course Code: CE 421
Session: Fall 2016

COURSE AIM

The aim of this course is to give knowledge and understanding of mainly shallow foundation design. This course includes several topics e.g., bearing capacity theories, design of shallow foundations; earth pressure theories, design of retaining wall and earth retaining structures; pile foundations, piles and piles group subjected to vertical load only.

INSTRUCTOR : Prabir K. Kolay, Ph.D., P.E., M. ASCE
Associate Professor

CLASS TIME : Tuesday 8:00 am – 9:15 am
Thursday 8:00 am – 9:15 am

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OFFICE HOURS : Monday 10:00 -11:00 am
: Wednesday 10:00 -11:00 am
: Friday 10:00 – 11:00 am
Any other time please e-mail me or just walk in

TEXT BOOK

Course material has been developed from several textbooks, and research papers will be provided before lecture. References given under bibliography will be used.

BIBLIOGRAPHY

- Das, B. M. (2014). Principles of Foundation Engineering. 8th Edition, Cengage Learning Publishing Company.
- Bowles, J. E. (1988). Foundation Analysis and Design. McGraw Hill Inc.
- Coduto, D. P. (2001). Foundation Design: Principles and Practices. Prentice Hall. Pearson Education International.

CE 421 – FOUNDATION DESIGN
TENTATIVE COURSE OUTLINE

Week	Month/Day	Date	Topics
1	Aug /Tuesday Thursday	8-23-2016 8-25-2016	Introduction to Foundation Design Theories of Bearing capacity
2	Sept /Tuesday Thursday	8-30-2016 9-01-2016	Bearing capacity factors General Bearing capacity equations
3	Sept/Tuesday Thursday	9-06-2016 9-08-2016	Design of Shallow Foundations Effect of water table;
4	Sept/Tuesday Thursday	9-13-2016 9-15-2016	Eccentrically loaded foundation Bearing capacity of layered stratum Test I
5	Sept/Tuesday Thursday	9-20-2016 9-22-2016	Stress increase in soil mass due to new load Settlement of shallow foundation
6	Sept/Tuesday Thursday	9-27-2016 9-29-2016	Immediate settlement of shallow foundation Consolidation settlement of shallow foundation
7	Oct /Tuesday Thursday	10-04-2016 10-06-2016	Consolidation settlement of shallow foundation (contd.) Lateral earth pressure (LEP) Lateral earth pressure at rest, active, passive
8	Oct/Tuesday Thursday	10-11-2016 10-13-2016	Fall Break Rankine earth pressure theory Rankine theory to calculate LEP due to surcharge
9	Oct/Tuesday Thursday	10-18-2016 10-20-2016	Effect of wall movement & sloping backfill on LEP Coulomb's theory to calculate LEP Test II
10	Oct/Tuesday Thursday	10-25-2016 10-27-2016	Types of Retaining wall Design of retaining wall; Stability of retaining wall
11	Nov /Tuesday Thursday	11-01-2016 11-03-2016	Mechanically stabilized retaining walls Introduction to deep foundation
12	Nov/Tuesday Thursday	11-08-2016 11-10-2016	Pile foundation and types of piles Compression capacity of single pile in sand
13	Nov/Tuesday Thursday	11-15-2016 11-17-2016	Compression capacity of single pile in clay Settlement of single pile Test III

14	Nov/Tuesday Thursday	11-22-2016 11-24-2016	Settlement of pile group Thanksgiving Break
15	Nov/Dec /Tuesday Thursday	11-29-2016 12-01-2016	Pile load test; Efficiency of pile group
16	Dec/Tuesday Thursday	12-06-2016 12-08-2016	Guest Lecture Revision class

Test IV: Final Exam, date and time to be announced.

ASSESSMENT AND GRADING

Final grade will be based on three tests, quizzes and homework assignments.

Grade Distribution

<u>Assessment</u>	<u>Percentage (%)</u>
Test I	25
Test II	25
Test III	25
Test IV (Optional, comprehensive)	25
Quizzes	05
HW Assignments	20

<u>Final Grade</u>	<u>Final Letter Grade</u>
90 % and above	A
80 % and above	B
70 % and above	C
60 % and above	D
Less than 60%	F