

**CB463 Design & Cons. Of Earth Struct. & Found.**

**COURSE INFORMATION**

Prerequisites	Academic Year & Level		Teaching Methods			Credit Hrs.
	Year	Semester	Lecture	Tutorial	Laborator y	
CB354 CB362	4	8	4	2	0	3

**COURSE AIM**

The course aims at building up the student activities directed for the basic aspects of design, analysis and construction of retaining structures and foundations through using ;communication technologies and skills, engineering technologies, data collection and interpretation, and writing technical reports referring to the relevant literature.

**COURSE WEEKLY CONTENTS**

- 1 Bearing capacity: Bearing failure patterns, Prandtl’s theory for ultimate bearing capacity, bearing capacity theory of Terzaghi, Meyerhof and Hansen, and Effect of water table, bearing capacity based on standard penetration tests.
- 2 Shallow foundations: Types of shallow foundations, application of each type, design requirements, code provisions for allowable stresses and settlements
- 3 Design of isolated footings: Design of isolated footings, safety factors against stability and structural failure, construction considerations
- 4 Combined footings: Design of combined footings, the beam on elastic foundation approach, coefficient of subgrade reaction, computer applications
- 5 Strap footings: Design of footings and strap, safety factors against stability and structural failure
- 6 Mat foundations: Types and usage of mat foundations, classical design approach, the beam on elastic foundation approach, construction considerations
- 7 Retaining walls and structures: Types of retaining walls, usage and limitations of each type, reinforced concrete (RC) cantilever retaining walls, overall and structural stability, construction considerations + Midterm Exam
- 8 Sheet-pile walls: Types of sheet-pile walls, applications, methods of sheet pile design, modes of sheet pile failure, design of anchored sheet-piles
- 9 Sheet-pile walls: Design of cantilever sheet-pile walls
- 10 Sheet-pile walls: Structural details, construction considerations, modes of failures
- 11 Piles: Types and usage of piles, bored and driven piles, timber, RC and steel piles, methods of pile construction
- 12 Single piles: Design of single piles, single pile capacity, settlement of single pile
- 13 Pile groups: Pile group capacity, settlement of pile group, pile group construction
- 14 Pile-load test: Pile load test, objective, procedure, test result interpretation, pile integrity test
- 15 Pile caps: Design and construction of pile caps

STUDENT GRADING & ASSESSMENT

Weeks	Exams	Assign.	Quizzes	Reports	Present.	Lab.	Total
1 to 7	20 Midterm	←	10	MARKS		→	30
To be freely distributed among possible assessments							
8 to 12	←		20	MARKS		→	20
13 to 15	←		10	MARKS		→	10
16 or 17	40 Final						40
Total	Exams	Assign.	Quizzes	Reports	Present.	Lab.	100

REFERENCES

- Textbook** Analysis of Foundation Engineering, Braja M. DAS, Brooks-Cole, 6th Edition, 2007.
- Other** Analysis and Design, BOWLES, J. E., McGraw-Hill, New York, 5th Ed., 1996.