CVLE 527 Retaining Structures

Course Syllabus – Spring 2015-2016

Curricular Area		Civil Engineering – Structural Sequence
Type of Course		Technical Elective
Catalogue Description		Lateral Earth Pressure: at rest, Rankine's and coulomb's active and passive earth states, Culmann's graphical solution and the Earthquake effect on active and passive states. the different types of Retaining Walls Proportioning the retaining walls and determining the Lateral earth pressure on Retaining walls. Perform the Stability checks: overturning, sliding, bearing capacity, and settlement. Design the Cantilever retaining walls. Provision of joints in retaining wall construction, the drainage of walls from backfill. The different Types of Sheet Piles and the construction methods. Design the Cantilever sheet piles in sandy and clayey soil. Design the Anchored sheet piles: Free Earth Support in sandy and clayey soil as well as Fixed Earth Support in sandy and clayey soil Understand the different types of Anchors: tie back and concrete plates, their Placement and their Ultimate resistance. the types of braced cuts, precise the Lateral earth pressure in sand, soft and hard clay as well as layered soil. Design the struts and whales.
Prerequisites by Courses		CVLE 432 Foundation Engineering
Prerequisites by Topics		Mohr circles. Failure criteria. Shear strength of soil. Slope stability.
Instructors		Eng. Lina Jaber
Office Hours		
Load		3 credits; 2 Lectures/week –75 min per lecture
Textbook		B. M. Das, "*Principles of Foundation Engineering*", CENGAGE Learning. Seventh Edition.
Reference Books		1. J. E. Bowels, *"Foundation Analysis and Design"*, McGraw Hill. Companies, Inc. 6th Ed. 2001. 2. R. W. Day, *"Foundation Engineering Handbook"*, McGraw Hill. Construction-ASCE Press. Ed. 2006.
Topics	**Week [1]**	Week[1-4] **Lateral Earth Pressure:** • at rest • Rankine's and coulomb's active earth state • Rankine's and coulomb's passive earth state • Culmann's graphical solution • Earthquake effect on active and passive states: Mononobe Okabe equations
	Week [2-4]	

	Week [5-6]	week[5-8] **Retaining Wall:** • the different types of Retaining Walls • Proportioning the retaining walls • Determining the Lateral earth pressure on Retaining walls. • Perform the Stability checks: overturning, sliding, bearing capacity, and settlement. • Design the Cantilever retaining walls. • Provision of joints in retaining wall construction, the drainage of walls from backfill.
	Week [7-8]	

	Week [9-12]	Week[9-12]
		Sheet Piles:
		• The different Types of Sheet Piles
		• The construction methods.
		• Design the Cantilever sheet piles in sandy soil
		• Design the Cantilever sheet piles in clayey soil.
		• Design the Anchored sheet piles:
		  - Free Earth Support in sandy and clayey soil
		  - Fixed Earth Support in sandy and clayey soil
		  - the different types of Anchors:
		  tie back and concrete plates: their Placement and their Ultimate resistance..

	Week [13-14]	Week [13-14] **Braced Cuts:** • The types of braced cuts • The Lateral earth pressure in sand, soft and hard clay as well as layered soil. • Design the struts and whales