Diyala University
Engineering college
Civil Engineering
Department

Froth year		
Foundation engineering		**CE 402**
Theoretical : 3hrs/week	**Discussion : 1 hr./week**	**Practical : -----**
1.	**Introduction:** Foundation Definition, Importance And Purpose.	**2hrs**
2.	**Foundation Classification.** **Foundation Requirements.** Parameters And Factors Used In The Design Of Foundations.	**4hrs**
3.	**Site Investigation:** **Definition, Purpose. Subsurface Exploration Program.** **Soil Boring Methods:(Trial Pit Method, Rotary Drilling, Wash Boring,** **Percussion Drilling, Continuous Flight Auger)**	**4hrs**
4.	**Soil Sampling:** **Disturb Samples And Undisturb Samples Exploration Methods:** **(Split Spoon Method, Shelby Tubes Method, Piston Sampler.** **Degree Of Sample Disturbance.**	**6hrs**
5.	**Field Tests:** **(Field Density Tests, Standard Penetration Test, Vane Shear Test, Permeability** **Test, Plate Loading Test).** **Soil Investigation**	**4hrs**
6.	**Bearing Capacity :** **Footing On C-Ø Soil.** **Derivation Of The Bearing Capacity Equation.** **(Terzaghi's, Meyerhof's, Hansen's, Vesic's Bearing Capacity Equations).** **Footings On Clayey Soil.** **Footing On Sandy Soil.** **Footing On Non Homogeneous And Layered Soil.** **Effect Of Water Table On Bearing Capacity** **Of Soil**	**10hrs**
7.	**Foundation settlement:** **Stresses in soil due to footing pressure** **Immediate settlement calculation(homogeneous and layered soil).** **Immediate settlement for footing with eccentric load.** **Consolidation settlement** **Secondary consolidation settlement**	**10hrs**
8.	**Structural design of footing:** **Design of spread footings:** **Design of combined footings.** **Design of mat footings**	**14hrs**
9.	**Lateral earth pressure and derivations for the active and passive earth pressure** **case (Rankin theory):** **Lateral earth pressure for cohesive soil.** **Lateral earth pressure for cohesion less soil.** **Lateral earth pressure for layered soil.** **Sheet pile design.** **Retaining wall design** **Braced and unbraced excavations (theoretical and graphical methods).**	**8hrs**
10	**Slope stability:** **Ø=0 method.** **Frictional circle method(method of slices).** **Graphical method.**	**8hrs**
11	**Piles in foundation engineering** **Types of piles, purpose.** **The ultimate bearing capacity of single pile:** **Tomlinson method.** **Meyerhof method** **λ method** **design of pile group**	**12hrs**
12	**Computer programs applications on foundation design**	**8hrs**