

Foundation Engineering-I

First Semester

Class : Fourth Year

Theoretical: 3 Hours / week

Applicatory: 1 Hour / week

Item	Subject	Hrs.
1	INTRODUCTORY CONCEPTS - Definition - Foundation Classification - General Requirements of Foundations - Foundation Selection	4
2	SITE INVESTIGATIONS - Purpose of Sub-soil Exploration - Planning for Site Investigation - Methods of Soil Exploration - Soil Samples - Causes of Disturbance - Soil Samplers - Number of Borings - Depth of Borings - Field Tests - Soil Exploration Report	4
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3	SOIL BEARING CAPACITY FOR SHALLOW FOUNDATIONS - Bearing Failure Patterns - Terzaghi's Ultimate Bearing Capacity Equation - Factor of Safety - Ground Water Table Effect - Meyerhof's Bearing Capacity Equations - General (Hansen's) Bearing Capacity Equations - Skempton's Method [$\phi = 0$] - Foundations Under Eccentric Loads - Footings on Layered Soils - Footings Adjacent to a Slope - Bearing Capacity From Field Tests - Foundations Subjected to Uplift or Tension Forces	4
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Foundation Engineering-II

Second Semester

Class : Fourth Year

Theoretical: 3 Hours / week

Applicatory: 1 Hour / week

Item	Subject	Hrs.
1	STRUCTURAL DESIGN OF SHALLOW FOUNDATIONS -Spread Footings (Pad and Wall) -Eccentrically Loaded Spread Footings -Rectangular Combined Footings -Trapezoidal Combined Footings -Strap Footings -Raft (Mat) Foundations	2 2 2 2 2 4
2	PILED FOUNDATIONS -Introduction Definition Uses Types Choice Design criteria -Ultimate Static Pile Capacity Ultimate point capacity Skin resistance capacity -Pile Groups Group efficiency Capacity of a pile group Settlement of a pile group Load distribution in a pile group -Negative Skin Friction	4 4 4 2 2 2 2

Item	Subject	Hrs.
3	<p>SHEET-PILE WALLS</p> <ul style="list-style-type: none"> -Review of Lateral Earth Pressure <ul style="list-style-type: none"> Coulomb earth pressure theory Rankine earth pressure theory -Sheet-Pile Walls <ul style="list-style-type: none"> Types of sheet piling Safety factors -Cantilever Sheet piling <ul style="list-style-type: none"> Cantilever sheet piling in granular soil Cantilever sheet piling in cohesive Soils ($\phi = 0$) -Anchored Sheet piling; Free-Earth Support <ul style="list-style-type: none"> Rowe's moment reduction applied to free-earth support method Capacity of deadman Location of deadman -Braced Cuts <ul style="list-style-type: none"> Pressure envelope for braced-cut design Design of various components of a braced cut Bottom heaving of a cut in clay 	<p>2</p> <p>2</p> <p>2</p> <p>4</p> <p>2</p> <p>2</p> <p>2</p>
4	<p>SLOPE STABILITY</p> <ul style="list-style-type: none"> -Types of Slips -Stability Analysis -Total Stress Versus Effective Stress Analyses -Simplified Methods of Stability Analysis <ul style="list-style-type: none"> Infinite slopes Triangular cross-section Cylindrical failure ($\phi = 0$ condition) Cylindrical failure (Taylor's stability charts) -Slices Methods of Stability Analysis <ul style="list-style-type: none"> Fellenius method Simplified Bishop's method 	<p>2</p> <p>2</p> <p>2</p> <p>2</p> <p>2</p>