Foundation Engineering

Course Code	Credit Hours
CE- 405	3-0

Course Description

This course begins with review of soil mechanics and introduction to subsurface exploration. Then it covers bearing capacity of shallow foundation, stress distribution and foundation settlement. This course ends with the design application pile foundation system in geotechnical engineering. It includes computer applications where some of the most convenient software practice on the assignments.

Text Book:

1. Das & Sobhan (2018). Principles of Geotechnical Engineering. 9th .
2. Das & Sivakugan (2018). Principles of foundation engineering. 9th .
3. Foundation Analysis and Design. Joseph E. Bowles, Fifth Edition, McGraw-Hill. Inc., 1997.
4. Geotechnical Engineering Principles and Practices by Donald P. Coduto (1999)

Reference Book:

1. Murthy (2007). Advanced Foundation Engineering
2. Das (2014) Advanced Soil Mechanics. 4th.
3. Coduto (2001) Foundation Design – Principles and Practices.
4. Liu & Evett (2013) Soil and Foundations

Prerequisites :

CE-121 Engineering Geology

ASSESSMENT SYSTEM FOR THEORY

	Without Project (%)	With Project/Complex Engineering Problems (%)
Quizzes	15	10-15
Assignments	10	5-10
Mid Terms	25	25
Project	-	5-10
End Semester Exam	50	45-50

ASSESSMENT SYSTEM FOR LAB

Lab Work/ Psychomotor Assessment/ Lab Reports	70%
Lab Project/ Open Ended Lab Report/ Assignment/ Quiz	10%
Final Assesment/ Viva	20%

Teaching Plan

Week No	Topics/Learning Outcomes
1-2	Introduction to Foundation Engineering. Geotechnical Properties of Soil and their implications on foundation design.
3	Geotechnical Investigation.
4-6	Classification of Foundations. Factors to Consider in Foundation Design. Bearing capacity Theories. Special cases of shallow foundations.
7-8	Foundation Settlement. Effective zone. Different theory of elastic settlement.
9	**Mid Semester Exam**
10-11	Foundation Settlement (continue) Primary settlement. Numerical application of settlement calculation (Settle 3D).
12-13	Shallow foundation. Numerical design of shallow foundation.
14-15	Deep Foundation Types of deep foundation. Single & group piles bearing capacity. Numerical design of deep foundation.
16	Case studies related to Foundation Design
17-18	End Semester Exam

Practical: Nil.