Course Number and Name

BCE078 - STUCTURES ON EXPANSIVE SOILS

Credits and Contact Hours

3 & 45

Course Coordinator's Name

Dr. R. Venkata Krishnaiah

Text Books and References

TEXT BOOKS:

- John .D.N & Debora .J.M, "Expansive Soils Problems And Practice In Foundation & Pavement Engineering", J. Wiley, 1992.

REFERENCES:

- Satish Grower, The Architecture of India, Buddist, Hindu Period and Islamic Period Vikas Publishing HousPvt Ltd., New Delhi, 1984.
- Chen F.R," Foundation on Expansive Soils", Elseivier ,1973.
- Parcher J.V & Means R.E, Soil Mechanics & Foundation, Columbus, 1968.
- Perkk R.E., Hansen W.E, Thombum T.H, "Foundation Engineering", John Wiley, 1974.
- Kameswarao N.S.V," Dynamic Soil Test & Applications", Wheeler Publishing Co., 2002

Course Description

- To understand the dynamics of earth and to estimate dynamic properties of soils
- To develop the site specific design spectrum for design of sub structure and evaluation of liquefaction potential.
- To design these structures in expansive soil
- To study the effectiveness of some supper structure resting on treated expansive soil
- Factors influencing mechanisms in expansive soils

Prerequisites	Co-requisites
Soil Mechanics	NIL

required, elective, or selected elective (as per Table 5-1)

Course Outcomes (COs)

CO1	To understand the dynamics of earth and to estimate dynamic properties of soils
CO2	To improve the engineering properties and make it suitable for construction
CO3	The engineering properties, problems and solution need to be considered when constructing a foundation on expansive soils.
CO4	To develop the site specific design spectrum for design of sub structure and evaluation of liquefaction potential.
CO5	To study the behaviour of the stabilized soil subjected to cyclic loading

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k
CO1	H	M	L	H	M						

CO2	H	M	H	M	M						
CO3	M	M	L	H	M						
CO4	H	H	M	H	M						
CO5	M	M	M	H	M						

List of Topics Covered

UNIT I GEOTECHNICAL PROBLEM 9

Occurrence and distribution - moisture equilibrium - Soil, structure, environmental interaction-distress symptoms - case histories.

UNIT II EXPANSIVE SOIL PROPERTIES 9

Clay mineralogy - swell potential - field exploration - laboratory tests for identification.

UNIT III SOIL HEAVING 9

Heave Prediction - Method of prediction of heave- Empirical methods - double of dometer tests - soil moisture suction - field observations, shrinkage.

UNIT IV DESIGN OF FOOTING 9

Foundation Design – Design consideration – individual and continuous footings- stiffened mats- underreamed piles- codal provisions.

UNIT V STABILIZATION 9

Stabilization methods