

DEPARTMENT OF CIVIL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN

COURSE PLAN			
Course Title	Geotechnical Engineering-I		
Course Code	CEPC 19	No. of Credits	3
Department	CIVIL ENGINEERING	Faculty	Dr. Deendayal
Pre-requisites Course Code	NIL		
Course Coordinator(s) (if, applicable)	NIL		
Other Course Teacher(s)/Tutor(s) E-mail		Telephone No.	
Course Type	Core course <input checked="" type="checkbox"/> Elective course <input type="checkbox"/>		
COURSE OVERVIEW			
<ul style="list-style-type: none"> • To give an overview about Geotechnical Engineering. 			
COURSE OBJECTIVE			
<ul style="list-style-type: none"> • To explain what Geotechnical Engineering is about and how it is important to Civil Engineering • To explain how three phase system is used in soil and how are soil properties estimated using three phase system • To explain role of water in soil behavior and how soil stresses, permeability and quantity of seepage including flow net are estimated • To determine shear parameters and stress changes in soil due to foundation loads • To estimate the magnitude and time-rate of settlement due to consolidation 			
COURSE OUTCOMES (CO)			
Course Outcomes	Aligned Programme Outcomes (PO)		
<ul style="list-style-type: none"> • On completion of the course, the students will be able to: • Carry out soil classification. • Solve three phase system problems. • Solve any practical problems related to soil stresses estimation, permeability and seepage including flow net diagram. • Estimate the stresses under any system of foundation loads. • Solve practical problems related to consolidation settlement and time rate of settlement. 			

COURSE TEACHING AND LEARNING ACTIVITIES

S.No	Week	Topic	Mode of Delivery
1	Week 1	Historic development of soils-origin of soils,soil structure and clay mineralogy	PPT & Black board
2	Week 2	Definitions and properties of soils	PPT & Black board
3	Week 3	Index properties of soils	PPT & Black board
4	Week 4	Classification of soils	PPT & Black board
5	Week 5	Assessment-1	
6	Week 5	Soil water_ capillarity phenomena, concept of effective stress and neutral stresses	PPT & Black board
7	Week 6	permeability	PPT & Black board
8	Week 7	Seepage pressure	PPT & Black board
9	Week 8	Seepage analysis-steady state flow , two dimensional flow , flow net	PPT & Black board
10	Week 9	Vertical stress distribution-boussinseq's and westergaard's theories	PPT & Black board
11	Week 10	Vertical stress distribution – approximate methods	PPT & Black board
12	Week 11	compaction	PPT & Black board
13	Week 12	Assessment -2	
14	Week 13	Shear strength- mohr coulomb failure criteria ,shear strength tests ,drainage conditions	PPT & Black board
15	Week 14	Shear strength- shear properties of cohesionless and cohesive soils ,use of mohr's circle –relation between principal stresses and shear parameters	PPT & Black board
16	Week 15	Compressibility and consolidation- terzaghi's 1-D consolidation theory	PPT & Black board
17	Week 16	Compressibility and consolidation	PPT & Black board
18	Week 17	Final Assessment	

COURSE ASSESSMENT METHODS

S.No	Mode of Assessment	Week	Duration	% Weightage
1	Assessment-I	5 th Week	1 hour	20 marks
2	Assessment-II	12 th Week	1 hour	20 marks
3	Assignments: 2 Nos.	3 rd and 10 th week	1 week time	5+5 marks
4	Final Assessment	17 th / 18 th Week	3 hour	50 marks
5	Total			100 marks

ESSENTIAL READINGS : Textbooks, reference books and journals.

Text Books:

Dr. K.R. Arora

Reference Books:

- Gopal Ranjan and Rao, P. Basic and Applied Soil Mechanics, New Age International Pvt. Limited, New Delhi, 2002.
- Murthy, V.N.S., A text book of Soil Mechanics and Foundation Engineering, UBS Publishers Distributors Ltd.,

New Delhi, 1999

3. Punmia, B.C. Soil Mechanics and Foundation Engineering, Laxmi Publications Pvt. Ltd., New Delhi, 1995.
4. Braja M. Das, Fundamentals of Geotechnical Engineering, Thomson Asia Pvt. Ltd., Singapore, 2005.

COURSE EXIT SURVEY

1. Class committee meetings.
2. Online - Feedback forms submission through MIS.


COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

Minimum 75% attendance is compulsory for attending the final examination.

ADDITIONAL COURSE INFORMATION

The Course Faculty Details: Room No.:101 (Civil- Annex Building)
Timings:10-5 p.m.
Email ID:deendayal@nitt.edu
Telephone No.: 0431-250-3170

FOR SENATE'S CONSIDERATION


Course Faculty Dr. Deendayal


CC-Chairperson

HOD

