



# SEMBODAI RUKMANI VARATHARAJAN ENGINEERING COLLEGE

SEMBODAI - 614809  
DEPARTMENT OF CIVIL ENGINEERING

## SYLLABUS

Sub.Code: CE6405

Sub.Name: SOIL MECHANICS

Staff Name: Mr. M. ANBARASAN, B.E.,

Year / Sem: II / IV

Batch: 2014-2018

Academic Year : 2015-16 (Even)

### OBJECTIVES:

The student should be made to:

- Behavior and the performance of saturated soil.

#### UNIT-I: SOIL CLASSIFICATION AND COMPACTION 9

Nature of soil – phase relationships – Soil description and classification for engineering purposes, their significance – Index properties of soils - BIS Classification system – Soil compaction – Theory, comparison of laboratory and field compaction methods – Factors influencing compaction behaviour of soils.

#### UNIT-II: SOIL WATER AND WATER FLOW 9

Soil water – static pressure in water - Effective stress concepts in soils – capillary stress – Permeability measurement in the laboratory and field pumping in pumping out tests – factors influencing permeability of soils – Seepage – introduction to flow nets – Simple problems. (sheet pile and weir).

#### UNIT-III: STRESS DISTRIBUTION AND SETTLEMENT 9

Stress distribution - soil media – Boussinesq theory - Use of Newmarks influence chart – Components of settlement – immediate and consolidation settlement – Terzaghi's one-dimensional consolidation theory – computation of rate of settlement. -  $\sqrt{t}$  and  $\log t$  methods –  $e$ - $\log p$  relationship - Factors influencing compression behaviour of soils.

#### UNIT-IV: SHEAR STRENGTH 9

Shear strength of cohesive and cohesionless soils – Mohr – Coulomb failure theory – Measurement of shear strength, direct shear – Triaxial compression, UCC and Vane shear tests – Pore pressure parameters – cyclic mobility – Liquefaction.

#### UNIT-V: SLOPE STABILITY 9

Slope failure mechanisms – Types - infinite slopes – finite slopes – Total stress analysis for saturated clay – Fellenius method - Friction circle method – Use of stability number - slope protection measures.

**Total: 45**

**TEXT BOOKS:**

1. Murthy, V.N.S., “Soil Mechanics and Foundation Engineering”, CBS Publishers Distribution Ltd., New Delhi. 2007
2. Gopal Ranjan and Rao A.S.R. “Basic and Applied soil mechanics”, Wiley Eastern Ltd, New Delhi (India), 2000.
3. Arora K.R. “Soil Mechanics and Foundation Engineering”, Standard Publishers and Distributors, New Delhi, 2002.

**REFERENCES:**

1. McCarthy D.F. “Essentials of Soil Mechanics and Foundations”. Prentice-Hall, 2002.
2. Coduto, D.P. "Geotechnical Engineering – Principles and Practices", Prentice Hall of India Pvt.Ltd, New Delhi, 2002.
3. Das, B.M. "Principles of Geotechnical Engineering". Thompson Brooks / Coles Learning Singapore, 5th Edition, 2002.
4. Punmia, B.C. "Soil Mechanics and Foundations", Laxmi Publications Pvt. Ltd., New Delhi, 2005.
5. Palanikumar. M, “Soil Mechanics”, Prentice Hall of India Pvt. Ltd, Leaning Private Limited, Delhi, 2013.
6. Craig. R.F., "Soil Mechanics". E & FN Spon, London and New York, 2007
7. Purushothama Raj. P., “Soil Mechanics and Foundation Engineering”, 2nd Edition, Pearson Education, 2013

**OUTCOMES: At the end of the course, the student should be able to:**

- Both physical and engineering behaviour of soils
- Mechanism of stress transfer in two-phase systems
- Stability analysis of slopes.

**STAFF INCHARGE****CLASS IN CHARGE****HOD****CE6405 SOIL MECHANICS****SRVEC**