

Course syllabus
Department of Civil Engineering, Indian Institute of Technology Madras

CE2060 - Geotechnical Engineering I

Credit Distribution: C:11 L:3 T:1 P:0 E:1 O:6 TH:0

Course Type: Theory

Description: To introduce the fundamentals of soil mechanics and the importance of engineering geology to civil engineering

Course Content: General geology; Mineralogy; Crystallography; Petrology; Physical geology; Structural geology; Engineering geology; Physico-mechanical properties of rock; Origin and formation of soils; Outline of stratigraphy of India; Water-air void relationship; Soil grain and aggregate properties; Index properties including consistency limits and grain size distribution; Identification and classification of soils; Clay mineralogy; Permeability of soils; Effective stress law; Seepage forces and quick sand phenomenon, seepage through soil including flow net diagrams; Capillarity of soils; Stress distribution in soils; Compaction of soils; Consolidation of soils, consolidation theory, stress history and settlement in soils.

Text Books

- Singh. P. (1995). A Textbook of Engineering and General Geology, S. K. Kataria and Sons, New Delhi.
- Gopal Ranjan and Rao (1991) Basic and Applied Soil Mechanics, Wiley Eastern Limited, New Delhi.

Reference Books

- Bowles, J.E (1984). Physical and Geotechnical Properties of Soils, McGraw-Hill Book Co., New York.
- Cernica, J.N. (1995) Geotechnical Engineering- Soil Mechanics, John Wiley & Sons Inc
- Craig, R.F. (1987) Soil Mechanics, Van Nostrand Reinhold, U.K.
- Johnston, R. B. and DeGraff, J. V. (1988). Principles of Engineering Geology, John Wiley and Sons, New York..

Prerequisite: NIL