



# GEOTECHNICAL ENGINEERING LABORATORY

## **PROF. J.N. MANDAL**

Department of Civil Engineering  
IIT Bombay

**INTENDED AUDIENCE** : Students from Civil Engineering, Earth Science and Engineering Geology

**PRE-REQUISITES** : Basic Soil Mechanics and Foundation Engineering/ Geotechnical Engineering

**INDUSTRIES APPLICABLE TO** : Larsen & Toubro, Reliance Infrastructure Limited, HCC, TATA Projects, AFCON, RITES Ltd, Gammon India Ltd, Simplex Infrastructure, IVRCL.

## **COURSE OUTLINE :**

This course will show how to conduct the various types of tests used for soil testing. Each experiment of soil testing is presented with brief introduction covering the important details of the experiment, the theory and the purpose for which it is to be performed, followed by the detailed explanation of apparatus required, procedure and specimen calculations. These should enable students to perform the experiment and compute the results of experiments very easily.

## **ABOUT INSTRUCTOR :**

Prof. J.N. Mandal is professor of Civil engineering at Indian Institute of Technology Bombay in Powai, Mumbai, India. The primary area of research interests include geotechnical and geosynthetics engineering, centrifuge, physical and numerical modeling, ground improvement, waste and nano materials, transportation and environmental geotechnics. He founded geosynthetics research and testing laboratory, offered the undergraduate and postgraduate courses on geosynthetics in 1984. Since then the significance growth of world class research and development has focused completely in the fore front of activities in the emerging area of geosynthetics. He is the author/editor of six books and also founded the International Geosynthetics Society chapter for India in 1988. He organized the first Indian Geotextile Conference in 1988 and chairman for International Conference of Geosynthetics and Geoenvironmental Engineering in 2004. He had the privilege of chairing many technical sessions at several national and international conferences in India and abroad. He developed a video film on Geosynthetics Edge in 1986 and focused on turning point program in TV on geosynthetics in 1993. He has previously served as an editorial board/advisory board members of International Journal of Geotextiles and Geomembranes, and International Journal of Construction and Building Materials, respectively and editor of Indian Geotechnical Journal. He was the member of International society of Soil Mechanics and Geotechnical Engineering technical committee TC 9 on Geotextiles and Geosynthetics and International Geosynthetic society Education Committee and Member of the International Scientific Advisory Board (ISAB) of the world city water Forum 2009. Dr. Mandal earned International/national awards for his outstanding contribution on geosynthetics reinforced soil structures. He has supervised many PhD theses and Masters Projects. He has carried out a large number of sponsored and challenging consultancy projects for various industries and agencies. He is also a reviewer for many international/national journals. He has more than 400 research papers to his credit in referred international /national journals/conferences.

## **COURSE PLAN :**

**Week 01** : Soil Processing and Moisture Content Test, Specific Gravity Test, Field Density Test, Grain Size Analysis.

**Week 02** : Grain Size Analysis, Consistency limits, Laboratory Compaction test, Laboratory Permeability test

**Week 03** : Laboratory Permeability test, Shear Strength Test

**Week 04** : Shear Strength Test, Consolidation Test