

Course syllabus

Department of Civil Engineering, Indian Institute of Technology Madras

CE3350: Geotechnical Engineering

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

Course Type: Theory

Description: To introduce the basic concept, design principles and design procedures for different geotechnical structures and interpret behaviour under different loading conditions.

Course Content:

1. Analysis of state of stress in soil, failure theory, shear strength of clays and sands. Site investigation and subsoil exploration.
2. Earth pressure theories and retaining walls, stability analysis, sheet piles and its applications, analysis of anchored wall.
3. Bearing capacity of shallow foundations, deep foundations, methods of construction.
4. Stability of slopes, types of failure, methods of analysis.
5. Introduction to soil dynamics.

Text Books: No text books

Reference Books:

- Basic and Applied Soil Mechanics, Ranjan G. and Rao A. S. R., New Age International (P) Ltd., New Delhi, 2000.
- Principles of Geotechnical Engineering, Das B. M., Cengage Learning, New Delhi, 2010.
- Principles of Foundation Engineering, Das B. M., Cengage Learning, New Delhi, 2011.
- An Introduction to Geotechnical Engineering, Holtz R. D., Kovacs W. D. and Sheahan T. C., 2nd ed., Pearson pubs, 2010.
- Soil Mechanics, Craig R. F., Spon Press, London, 2004.
- Geotechnical Engineering Principles and Practices of Soil Mechanics and Foundation Engineering, Murthy V. N. S., Taylor and Francis, London, 2003.
- Geotechnical Engineering Principles and Practices, Coduto D. P., Yeung M. R. and Kitch W. A., Pearson Education Inc., New Jersey, 2011.
- Foundation Analysis and Design, Bowles J. E., McGraw-Hill International, Singapore, 1996.
- All Relevant Indian Standard (IS) codes and related international guidelines.

Prerequisite: NIL