Course Name:
Geotechnical Earthquake Engineering

Course Number:
20440

Credit:
3

Course Content (outline):

1. **Introduction to Geotechnical Earthquake Engineering**
   - 1.1 Introduction
   - 1.2 Background
   - 1.3 Seismic Hazards
   - 1.4 Mitigation of Seismic Hazards
   - 1.5 Significant Historical Earthquakes

2. **Seismology and Earthquakes**
   - 2.1 Introduction
   - 2.2 Internal Structure of the Earth
   - 2.3 Continental Drift and Plate Tectonics
   - 2.4 Faults
   - 2.5 Elastic Rebound Theory
   - 2.6 Other Sources of Seismic Activity
   - 2.7 Geometric Notation
   - 2.8 Location of Earthquakes
   - 2.9 Size of Earthquake

3. **Strong Ground Motion**
   - 3.1 Introduction
   - 3.2 Strong-Motion Measurement
   - 3.3 Ground Motion Parameters
   - 3.4 Estimation of Ground Motion Parameters
   - 3.5 Spatial Variability of Ground Motions

4. **Seismic Hazard Analysis**
   - 4.1 Introduction

12.3 Reinforcement Techniques

12.4 Grouting and Mixing Techniques

12.5 Drainage Techniques

12.6 Verification of Soil Improvement

12.7 Other Considerations

References:

Kramer, S. L. (1996) “Geotechnical Earthquake Engineering” Prentice Hall, New Jerzy, USA

Ishihara, K. (1985) “Stability of Natural Deposits during Earthquakes” Theme Lecture, Proc. 11th ICSMFE, San Francisco, Vol.2, pp.321-376

Ishihara, K. (1993) “Liquefaction and Flow Failure during Earthquakes” The 33th Rankin Lecture, Geotechnique, Vol. 43, No. 3, 351-415

Many other papers are assigned for further readings