CE/BOS/CE 541/0412

K L UNIVERSITY
GEOTECHNICAL EARTHQUAKE ENGINEERING (11 – CE 541)

SYLLABUS

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Seismology and Earthquakes
Introduction, Seismic Hazards, seismic waves, internal structure of earth, Continental drift and plate tectonics, faults, elastics rebound theory, geometric notations, location of earthquakes, size of earthquakes.

Strong Ground Motion
Strong ground motion measurement, ground motion parameters, estimation of ground motion parameters.
Seismic Hazard Analysis: Identification and Evaluation of Earthquake Sources, deterministic seismic hazard analysis, probabilistic seismic hazard analysis.

Wave propagation
Waves in unbounded media, waves in a semi – infinite body, waves in a layered media, attenuation of stress waves.
Dynamic soil properties: Measurement of dynamic soil properties using field and laboratory tests (overview), stress strain behavior of cyclically loaded soils, strength of cyclically loaded soils.

Ground Response Analysis
One – Dimensional Ground response Analysis – Linear and Non-Linear Approaches.
Local Site Effects: Effect of local site conditions on ground motion, design parameters, development of design parameters.

Liquefaction
Flow liquefaction, cyclic mobility, evaluation of liquefaction hazards, liquefaction susceptibility, initiation of liquefaction, effects of liquefaction.
Soil Improvement for Remediation of Seismic Hazards: Densification techniques, Reinforcement Techniques, Grouting and Mixing techniques, Drainage techniques.

TEXT BOOK:
1. Geotechnical Earthquake Engineering by Steven L. Kramer, prentice Hall, 1st edition, 1996.

REFERENCE BOOK:
1. Geotechnical Earthquake Engineering Handbook by Robert W. Day, McGraw-Hill.2nd edition, 2010.