CE/BOS/CE 341/0513

K L UNIVERSITY

GEOTECHNICAL EARTHQUAKE ENGINEERING (11 – CE 341)

Pre – requisite: 11 - ES 201, 11 - CE 204, 11 - CE 206

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SYLLABUS:

Seismology and Earthquakes: 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. **Artificial Ground Motion Generation:** Modification of actual ground motion records, time –domain generation, frequency domain generation. **Dynamic Soil Properties** Representation of stress conditions by Mohr circle, measurement of dynamic soil properties using field and laboratory tests, 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

REFERENCE BOOK:

1. Geotechnical Earthquake Engineering Handbook by Robert W. Day, McGraw-Hill