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| 1.  | Title of the course  | Soil Dynamics and Geotechnical Earthquake Engineering |
| 2.  | Course number  | CE507L  |
| 3.  | Structure of credits   | 3-0-0-3   |
| 4.  | Offered to   | PG  |
| 5.  | New course/modification to   | Modification To CE5211/3                              |
| 6.  | To be offered by   | Department of Civil and Environmental Engineering     |
| 7.  | To take effect from  | July 2022   |
| 8.  | Prerequisite   | CoT   |
| 9.  | <b>Course Objective(s):</b> Through this course, a student would be able to: 1.Understand the basic concepts of earthquake engineering and behaviour of soil under dynamic loadings 2.Understand various techniques/methods of measuring/estimation of dynamic properties of soils as well as assessment of liquefaction hazard of a soil deposit 3.Perform seismic response/ground response analysis of level ground subject to earthquake loading from bedrock 4. Design foundations under dynamic loading conditions as per relevant codal provisions.  |   |
| 10. | <b>Course Content:</b> Engineering problems involving soil dynamics – Theory of Vibrations: Single and two-degrees of freedom systems – Vibration absorption and isolation techniques – Wave propagation theories – Measurement of dynamic soil properties – Strong Ground Motion: Measurement, characterization and estimation – Amplification theory and ground response analysis – Liquefaction of soils: evaluation using simple methods and mitigation measures – Machine foundations – Codal provisions – Seismic slope stability analysis – Seismic bearing capacity and earth pressures. |   |
| 11. | <b>Textbook(s):</b><br>1. Kramer S L, <i>Geotechnical Earthquake Engineering</i> , Pearson, England (2007).<br>2. Das B M and Luo Z, <i>Principles of Soil Dynamics</i> , 3rd Edition, Cengage Learning, New York, (2016).   |   |
| 12. | <b>Reference(s):</b><br>1. Richart F E, Hall J R, and Woods R D, <i>Vibrations of Soils and Foundations</i> , Prentice-Hall, New Jersey (1970).  |   |