INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI

PROFORMA FOR NEW COURSE

1.	Title of the Course	Soil Dynamics and Geotechnical Earthquake Engineering
2.	Course Number	CE5211
3.	Status of the Course	Elective
4.	Structure of Credits	3-0-0-3
5.	Offered to	PG
6.	New Course/ Modification to	New Course
7.	To be offered by	Dr. B. Janaki Ramaiah
8.	To take effect from	July 2018
9.	Prerequisite	CoT
10.	Whether approved by the Program	Yes
11.	Course Objective (Max 70 words): 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.	
12.	Course Content (Max 100 words): 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.	
13.	Text Book(s): 1. S.L. Kramer, *Geotechnical Earthquake Engineering*, Pearson, England, 2007. 2. B.M. Das & Z. Luo, *Principles of Soil Dynamics*, 3rd Edition, Cengage Learning, New York, 2016.	
14.	Reference(s): 1. Richart, F.E., Hall, J.R., & Woods, R.D., *Vibrations of Soils and Foundations*, Prentice-Hall, New Jersey, 1970.	