

INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
PROFORMA FOR NEW COURSE

1.	Title of the Course	Advanced Structural Engineering Laboratory
2.	Course Number	CE5193
3.	Status of the Course	Core
4.	Structure of Credits	0-0-3-2
5.	Offered To	PG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Civil & Environmental Engineering
8.	To take effect from	July 2019
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	Course Objective: This course will impart an understanding of the behaviour of structural members under gravity and dynamic loadings. The objective will achieve through experiments on steel and reinforced concrete (RC) beams and columns under gravity loading as well as dynamic studies on discrete and continuous systems.	
12.	Course Content: Tensile strength of rebars using mechanical and electrical strain gauges; Stress concentration of plate with a hole; Buckling of steel columns with open cross-sections; Testing of RC column under axial compression; Evaluation of elastic modulus of concrete; Flexural tests on RC under-reinforced and over-reinforced beams; Shear test on RC beam; Fracture energy of the beam; Bending test on steel beams; Dynamic studies on discrete and continuous systems.	
13.	Text book(s): 1. Narayanan R and Kalyanaraman V, Santhakumar A R, Seetharaman S, Kumar S, Arul Jayachandran S, Senthil R , <i>Teaching Resource Materials for Structural Steel Design (1, 2 & 3 Volumes)</i> , INSDAG Publications (2005). 2. Pillai S U and Menon D, <i>Reinforced Concrete Design</i> , Tata McGraw-Hill, New Delhi (2016).	
14.	Reference(s): 1. Arya A S and Ajmani J L, <i>Design of Steel Structures</i> , Nem Chand & Bros (2007). 2. Subramaniam N, <i>Design of Steel Structures: Limit State Method</i> , Oxford Higher Education (2008). 3. Timoshenko S and Young D M, <i>Elements of Strength of Materials</i> , Affiliated East-West Press (1968). 4. Varghese P C, <i>Limit State Design of Reinforced Concrete Design</i> , Prentice-Hall, New Delhi (2013).	