

**INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI**  
**PROFORMA FOR NEW COURSE**

1.	Title of the Course	Engineering Mechanics
2.	Course Number	ES2101
3.	Status of the Course	Core
4.	Structure of Credits	3-1-0-4
5.	Offered To	UG
6.	New Course/Modification to	New
7.	To be Offered by	Engineering Faculty
8.	To take effect from	July 2018
9.	Prerequisite	
10.	Whether approved by the Department	Yes
11.	<b>Course Objective:</b> Static and dynamical mechanical systems are the heart of all engineering systems. The objective of this course is to understand the equations governing these static and dynamical systems ranging from bridges, load bearing members of roofs to fasteners and bolts. This course will touch upon the theoretical tools available to analyze these systems, and developing proficiency in applying these principles to formulate and solve dynamics problems.	
12.	<b>Course Content:</b> Equilibrium of rigid bodies, free body diagram, Equilibrium of continuous system. Energy conservation in rigid bodies –potential energy and elastic energy. Virtual work in multibody assemblies. Lumped mass models in Dynamics –Particle motion in cylindrical coordinates, engineering applications of central force motion. Kinetics of rigid bodies -translation and rotation motion of a rigid body, relative motion with translating and rotating axes and Coriolis acceleration. Kinematics of rigid bodies -3- D properties of sections, angular momentum of rigid bodies and energy relations for rigid bodies.	
13.	Text book(s): 1. Beer F.P, Johnston E.R, <i>Vector Mechanics for Engineers - Volume I - Statics, Volume II - Dynamics</i> , McGraw Hill, New York, (2016). 2. Merlam J.L , Kraige L.G, <i>Engineering Mechanics, Volume I - statics, Volume II- dynamics</i> , John Wiley & Sons, New York, (2012).	
14.	Reference(s): 1. Shames L. H, <i>Engineering Mechanics</i> , Prentice Hall, New Delhi, (2005).	