INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
PROFORMA FOR NEW COURSE

1.	Title of the Course	Compressible Flow
2.	Course Number	ME5025
3.	Status of the Course	Elective
4.	Structure of Credits	3-0-0-3
5.	Offered To	PG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Mechanical Engineering
8.	To take effect from	July 2018
9.	Prerequisite	CoT
10.	Whether approved by the Department	Yes
11.	**Course Objective:** To provide clear explanation of the physical phenomena encountered in practical situations in which compressibility effects are important; to understand the basic thermodynamic and conservation principles used in modelling compressible flow; to learn analytical tools to be used for compressible flows and apply them in practice.	
12.	**Course Content:** Review of fluid flow and thermodynamics; Density change; Differences between compressible and incompressible flow; Ideal gas; Basic conservation equations and examples of their use; Wave propagation, speed of sound, Mach number; One-dimensional flow equations, normal shocks, one-dimensional duct flow with heat transfer; One-dimensional duct flow with friction; Oblique shock waves; Prandtl-Meyer expansion waves; Isentropic flow of a calorically perfect gas through ducts of variable area; Diffusers.	
13.	Text book(s): 1. Anderson J D, *Modern Compressible Flow with Historical Perspective*, 3rd Edition, McGraw-Hill, Inc., New York (2017).	
14.	Reference(s): 1. Anderson J D, *Fundamentals of Aerodynamics*, 5th Edition, McGraw-Hill Education (2010). 2. Bertin J J and Cummings R M, *Aerodynamics for Engineers*, 6th Edition, Pearson (2013).	