INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
PROFORMA FOR NEW COURSE

1.	Title of the Course	Fluid Mechanics and Hydraulic Machines
2.	Course Number	ME2202
3.	Status of the Course	Core
4.	Structure of Credits	2-1-2-4
5.	Offered To	UG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Mechanical Engineering
8.	To take effect from	July 2018
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	**Course Objective:** To understand the importance of flow phenomena and the relationship between mathematics, physics, and modelling of fluid flow; to develop a professional approach in the application of fluid mechanics concepts to engineering analyses	
12.	**Course Content:** Theory: Fluid continuum, properties of fluids, classification of flows, rheological classification; Pressure and fluid statics, pressure measurement devices, buoyancy and stability; Fluid kinematics, Lagrangian and Eulerian description, vorticity and rotationality; Reynolds transport theorem, Bernoulli equation, conservation of mass, continuity equation, stream function, potential function, conservation of momentum; Dimensional analysis; Internal flow, laminar and turbulent flow in pipes, Moody's chart; External flow, lift and drag, flow over flat plates, cylinders and spheres; Hydraulic machines: pumps and turbines. Laboratory: Fluid property measurement, stability of floating bodies, Bernoulli's principle, impact of jet on surfaces, flow measurement methods, Pelton wheel, centrifugal pump	
13.	Text book(s): 1. White F M, *Fluid Mechanics,* 8th Edition, McGraw-Hill, Inc. (2017).	
14.	Reference(s): 1. Fox R W, Philip J P and McDonald A T, *Introduction to Fluid Mechanics,* 9th Edition, Wiley (2015). 2. Munson B R, Young D F, Okiishi T H and Huebsch W W, *Fundamentals of Fluid Mechanics,* 8th Edition, Wiley (2016).	