

INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
PROFORMA FOR NEW COURSE

1.	Title of the Course	Hydraulics and Environmental Engineering Laboratory
2.	Course Number	CE3191
3.	Status of the Course	Core
4.	Structure of Credits	0-0-3-2
5.	Offered To	UG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Civil Engineering
8.	To take effect from	July 2018
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	Course Objective: This laboratory introduces under-graduate students to application of principles of fluid mechanics, hydraulics and environmental engineering in practical scenarios.	
12.	Course Content: Hydrostatic pressure on surfaces; Impact of jets on objects; Bernoulli's principle; Flow measurement devices; Friction losses in pipe flows; Flow through weirs and notches; Analysis of water quality: Determination of pH, turbidity, conductivity, hardness, alkalinity, chlorides, sulphates, fluoride, optimum coagulation dose, heavy metals, residual chlorine and available chlorine in bleaching powder; Analysis of wastewater characteristics: Determination of suspended, settleable, volatile and fixed solids in a wastewater sample; Dissolved Oxygen, Biochemical Oxygen Demand, Chemical Oxygen Demand, and Total Organic Carbon; Determination of Sludge Volume Index (SVI) of biological sludge and microscopic examination; Determination of Most Probable Number (MPN) index.	
13.	Text book(s): 1. Federation W E and American Public Health Association, <i>Standard Method for the Examination of Water and Wastewater</i> , American Public Health Association (APHA): Washington, DC, USA. (2005). 2. White F M, <i>Fluid Mechanics</i> , McGraw Hill (2017).	
14.	Reference(s): 1. Munson B R, Okiishi T H, Huebsch W W and Rothmayer A P, <i>Fluid Mechanics</i> , Wiley (2013).	