

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

1.	Title of the Course	Water Resources Engineering
2.	Course Number	CE3103
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	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 course introduces students to the various processes that govern the distribution and circulation of water resources in natural and man-made systems, such as precipitation, evaporation, streamflow, runoff, infiltration and groundwater flow. Upon completion of this course, students will be able to quantify the different components of hydrologic systems and supply engineering solutions for the management and distribution of water.	
12.	Course Content: Introduction: hydrologic cycle; Precipitation: forms, classification, variability, measurement, data analysis; Evapotranspiration: Penman-Monteith method, irrigation water requirement; Infiltration processes and its estimation; Runoff: drainage basin characteristics, hydrograph, concepts, assumptions, and limitations of unit hydrographs, flow duration curves, rainfall-runoff modelling; Groundwater: occurrence, well hydraulics, yield, artificial recharge; Hydrologic analysis: design flood estimation, frequency analysis, flood routing, storm drainage network design; Dams: types, forces, failure types and causes; Reservoirs: safe yield, capacity design, reliability, design of overflow spillway, flood mitigation and management; Irrigation: diversion and regulation structures, field irrigation methods.	
13.	Text book(s): 1. Chow V T, Maidment D R and Mays L W, <i>Applied Hydrology</i> , McGraw Hill (2016). 2. Subramanya K, <i>Engineering Hydrology</i> , McGraw Hill (2017).	
14.	Reference(s): 1. Wurbs R A and James W P, <i>Water Resources Engineering</i> , Pearson (2015).	