

1.	Title of the course	Applied Hydraulic Engineering
2.	Course number	CE518L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To CE5106/8
6.	To be offered by	Department of Civil and Environmental Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	Course Objective(s): This course describes and analyses the hydraulics of various open channel flows and their properties. This course also develops the theoretical and applied basis for the use of pumps and pipe networks in the distribution of water. Upon completion of this course, students will be able to design channel sections and hydraulic jumps, pumps and water distribution networks for practical engineering applications.	
10.	Course Content: Introduction: types of open channel flows and their properties; Uniform flow: Manning's and Chezy's formula, determination of normal depth, most economical cross-sections; Gradually Varied Flow (GVF): assumptions, classification and computation, numerical integration; Rapidly Varied Flow (RVF): types and characteristics, hydraulic Jumps and their properties; Flow through non-prismatic channel sections: transitions, flow through culverts, bridge piers, obstructions; Pumps: types, characteristics and operation; Pipe networks: analysis and design.	
11.	Textbook(s): 1. Chow V T, <i>Open-channel Hydraulics</i> , McGraw Hill (1973). 2. Som S K, Biswas G and Chakraborty S, <i>Introduction to Fluid Mechanics and Fluid Machines</i> , McGraw Hill (2017).	
12.	Reference(s): 1. Subramanya K, <i>Flow in open channels</i> , McGraw Hill (2009). 2. White F M, <i>Fluid Mechanics</i> , McGraw Hill (2017).	