COURSE MODULES OF THE SUBJECT TAUGHT FOR THE SESSION FEB-JUN 2025-26 (EVEN SEM)

Course Syllabi with CO's

Faculty Name: **PUNEETH K**			Academic Year: 2025-26				
Department: Civil Engineering							
Course Code	Course Title	Core/ Elective	Prerequisite	Contact Hours			Total Hrs/ Sessions
				L	T	P	
BCV402	**Fluid Mechanics & Hydraulics**	Core	**Knowledge of Engineering Mechanics**	**04**	**-**	**-**	**50**
Objectives	1. Understand the fundamentals of properties of fluids, fluid pressure measurement and Hydrostatic law. 2. Learn the principles of Kinematics, Hydrodynamics and its applications. 3. Study the Flow measurements and design of pipes. 4. Understand the design of open channels and energy concepts. 5. Understand the working principles of the hydraulic turbines and pumps.						
Topics Covered as per Syllabus							
MODULE 1: Fluids and their properties – compressibility, surface tension, capillarity, Pascal's law, hydrostatic law, fluid pressure measurement using simple and differential manometers, Total pressure and center of pressure on vertical and inclined plane surfaces. **MODULE 2**: Kinematics- Types of flow, continuity equation in Cartesian coordinates, velocity potential, stream function, flow nets, Dynamics-Euler's equation of motion, Bernoulli's equation, Application Venturimeter, Orifice meter, Pitot tube. **MODULE 3**: Classification of orifice and mouthpiece, hydraulic coefficients, discharge over rectangular, triangular and Cipoletti notch, Flow through pipes- major and minor losses, pipes in series and parallel, equivalent pipe, concept of water hammer and surge tanks. **MODULE 4**: Open channel hydraulics- classification of flow, Most economical channel sections- rectangular, triangular, trapezoidal, circular, Uniform flow, specific energy-rectangular channels, on-uniform flow, hydraulic jump-equation and applications, GVF equation-types. **MODULE 5**: Momentum equation, impact of jet on stationary and moving curved vanes Turbines- types, Pelton wheel-working proportions, velocity triangles Francis turbine- working proportions, velocity triangles Centrifugal pumps-work done, efficiency, multi-stage pumps.							
List of Text Books							
1. P. N. Modi and S. M. Seth-Hydraulics and Fluid Mechanics, including Hydraulic machines, standard Book House, New Delhi 2. K Subramanya- Fluid Mechanics and Hydraulic Machines, Tata McGraw-Hill, New Delhi 3. R.K. Bansal- A text book of Fluid Mechanics and Hydraulic Machines- Laxmi Publications, New Delhi							

List of Reference Books	
1. Victor L. Streeter, Benjamin Wyile E and Keith W. Bedford- Fluid Mechanics, Tata McGraw Hill publishing Co Ltd, New Delhi 2. J. F. Douglas, J. M. Gasoreik, John Warfield, Lynne Jack – Fluid Mechanics, Pearson, Fifth edition. 3. K. Subramanya- Fluid Mechanics and Hydraulic Machines, Problems and Solutions, Tata McGraw Hill, New Delhi 4. S. K SOM and G. Biswas – "Introduction to Fluid Mechanics and Fluid Machines, Tata Mcg raw Hill, New Delhi	
List of URLs, Text Books, Notes, Multimedia Content, etc	
• https://searchworks.stanford.edu/view/10496310 • https://searchworks.stanford.edu/view/13576277 • https://searchworks.stanford.edu/view/11842972	
Course Outcomes	After successful completion of the course, the student should be able to, 1. Explain the fundamental properties of fluids and solve problems on Hydrostatics. 2. Apply Principles of Kinematics and dynamics of fluid flow to solve problems on velocity and pressure. 3. Compute the discharge through pipes, notches and weirs. 4. Design the turbines and open channels of different sections and to estimate the energy loss in hydraulic jump. 5. Able to interpret the experimental results of discharge, efficiency based on the test conducted in the laboratory.
Internal Assessment Marks: 40 (3 Session Tests are conducted during the semester and marks allotted based on average of 2 bestperformances) + 10 Marks Assignment + 20 Lab Marks	

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Subject Code:	**BCV402**	**TITLE: Fluid Mechanics & Hydraulics**							**Faculty Name:**		**PUNEETH K**		
List of Course Outcomes	**Program Outcomes**												
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**Total**
CO-1	2	1	-	-	-	2	1	-	-	-	-	1	7
CO-2	2	1	-	-	-	2	1	-	-	-	-	1	7
CO-3	2	1	-	-	-	2	1	-	-	-	-	1	7
CO-4	2	1	-	-	-	2	1	-	-	-	-	1	7
CO-5	2	1	-	-	-	2	1	-	-	-	-	1	7
Total	10	5				10	5					5	**35**

Note: Level 0: Not Mapped, 1: Low Mapped, 2: Moderately Mapped 3: Highly Mapped

The Correlation of Course Outcomes (CO's) and Program Specific Outcomes (PSO's)

Subject Code:	BCV402	TITLE: Fluid Mechanics & Hydraulics	Faculty Name: PUNEETH K
List of Course Outcomes	Program Specific Outcomes		
	PSO1	PSO2	Total
CO-1	-	1	1
CO-2	-	1	1
CO-3	-	1	1
CO-4	-	1	1
CO-5	-	1	1
Total	-	5	5

Note: Level 0: Not Mapped, 1: Low Mapped, 2: Moderately Mapped 3: Highly Mapped