COURSE MODULES OF THE SUBJECT TAUGHT FOR THE SESSION FEB- MAY 2024-25(EVENSEM)

Course Syllabus with CO's

Faculty Name**: AKHILA C G**				Academic Year: 2024-25			
Department: Civil Engineering							

Course Code	Course Title	Core/Elective	Prerequisite	Contact Hours			Total Hrs./Sess ions
				L	T	P	
BCV402	**Fluid Mechanics & Hydraulics**	Core	**Knowledge of Engineering Mechanics.**	**04**	**-**	**-**	**40**

Objectives	1. Fundamentals of fluid pressure and Hydrostatic laws 2. Principles of Kinematics, Hydrodynamics and basic design of pipes 3. Flow measurements 4. Design of open channels and energy concepts 5. Working principles of the hydraulic machines

Topics Covered as per Syllabus

MODULE 1: Fluids and their properties, Fluid pressure measurements, Pascal's law, Measurement of pressure using manometer, Total pressure and center of pressure on vertical and inclined plane surfaces

MODULE 2: Kinematics- Types of fluid flow, continuity equation in Cartesian coordinates, flow nets, Dynamics- Euler's equation of motion, Bernoulli's equation, Application-Venturi meter, Orifice meter, Pitot tube

MODULE 3: Classification of orifice and mouth piece, Hydraulic coefficients, Discharge over Rectangular, Triangular and Cipolletti notch, Flow through pipes-Major and minor losses, pipes in series and parallel, concepts of water hammer and surge tanks

MODULE 4: Open Channel Hydraulics- Classification of Flow through channels, most economical channel sections: Rectangular, Triangular, Circular, Uniform flow, Specific energy, non-Uniform flow- Hydraulic jump, GVF equation

MODULE 5: Impact of jet on curved vanes, momentum equation, Impact of jet on stationary and moving curved vanes, Turbines- Pelton wheel and components, Velocity triangle Reaction turbine-Francis turbine, Working proportions, Centrifugal Pumps-Work done and 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 McGrawHill, 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. Understand fundamental properties of fluids and solve problems on Hydrostatics 2. Apply Principles of Mathematics to represent Kinematics and Bernoulli's principles 3. Compute 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.

InternalAssessmentMarks:20(3SessionTestsareconductedduringthesemesterandmarksallottedbasedonaverageof 2bestperformances) + 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:		AKHILA C G	
List of Course Outcomes	**Program Outcomes**												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	Total
CO-1	3	1	-	-	-	2	1	-	-	-	-	1	8
CO-2	3	1	-	-	-	2	1	-	-	-	-	1	8
CO-3	3	1	-	-	-	2	1	-	-	-	-	1	8
CO-4	3	1	-	-	-	2	1	-	-	-	-	1	8
CO-5	3	1	-	-	-	2	1	-	-	-	-	1	8
Total	15	5				10	5					5	**40**

Note: 3=Strong Contribution   2=Average Contribution   1=Weak Contribution   0=No Contribution

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

Subject Code:	BCV402	TITLE: Fluid Mechanics & Hydraulics	Faculty Name: AKHILA C G
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: 3=Strong Contribution   2=Average Contribution   1 =Weak Contribution   0 =No Contribution