Programme: B. Sc. Degree Class: B.Sc.	Year: III	Semester: VI
Subject: Mathematics		
Course Code:	**Paper: Fluid Dynamics**	

Course Outcome	**CO1:I**ntroducing the concepts of fluid motions. **CO2:** Finding equation of continuity and equation of motion of fluid flow. **CO3:**Provide foundation for higher courses like civil engineering, mechanical engineering etc.

Units	Paper Contents	Hours
I	**Characteristics of Fluids:** Pressure, Density, Specific weight, Specific volume, Thermal conductivity of fluids, Specific heats (C_p and C_v), Incompressible andcompressible fluids, Compressibility, Viscous (Real) and non-viscous (inviscid or perfect) fluids, Viscosity, Newton's law of viscosity, Some important flows and their definition: Laminar (streamline) and turbulent flows, Steady and unsteady flows, Rotational and irrotational flows, Uniform and non-uniform flows.	12
II	**Fluid motion:**Eulerian and Lagrangian description of fluid motion and examples, Velocity of a fluid particle, Material, Local and convective derivative, Acceleration of a fluid particle (vector form and in Cartesian coordinate), Examples, Conservation of mass, Equation of conservation of mass (equation of continuity), Vector form, Cartesian coordinate, Cylindrical coordinate.	12
III	**Kinematical and Physical Properties:**Boundary conditions(Kinematical and Physical), Conditions at a boundary surface, examples, Streamlines, Path line, Streak lines, Difference between path lines and stream lines, Stream tube and stream filament, Examples, The velocity potential, The vorticity vector, Vortex lines and their equations, Vortex tube and vortex filament, Rotational and irrotational motion, Examples.	12
IV	**Equation of Motion:**Equation of Motion of perfect fluid: Euler's equation of motion (cartesian coordinate), Lamb's hydrodynamical equation, Examples.	12
V	**Bernoulli's equation and theorem:**Bernoulli's equation (Pressure Equation), Bernoulli's theorem, Applications of Bernoulli's equation and Bernoulli's theorem (Torrieclli's theorem, Pitot Tube).	12

Suggested Books

1. F. Charlton,A Text Book of Fluid Dynamics, CBC.

2. M.D.Raisinghania,Fluid Dynamics, S.Chand and Company.

3. B. R. Munson, D. F Young, T. H. Okiish, Fundamentals of Fluid Mechanics, John Wiley & Sons.

Mapping of course outcomes with program outcomes & program specific outcomes

CO's No.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	3	2	3	3	3	2	2	1	2
CO2	3	3	3	3	3	3	2	3	3
CO3	3	3	3	3	3	3	3	2	3