



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
(Autonomous Institution, Affiliated to Anna University, Chennai)
Elayampalayam, Tiruchengode – 637 205



DEPARTMENT OF BIOTECHNOLOGY

Course Code / Name : U15GE305 FLUID MECHANICS & MOMENTUM TRANSFER

Class (Year / Programme / Department / Section): II / B.TECH / BT

UNIT I - FLUID STATICS AND HYDRODYNAMICS				
S.No	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
1.	Fluid Statics and Its Applications	45	BB	T1
2.	Unit systems-conversion of units-Dimensional analysis-Basic concepts	45	BB	R1
3.	Fluid mechanics	45	PPT	T1,R1
4.	Hydrostatic equilibrium	45	BB	T1
5.	Application of fluid statics	45	BB	R1
6.	Manometers	45	PPT	T1,R1
7.	Continuous gravity decanter	45	BB	R1
8.	Centrifugal decanter.	45	PPT	R1
UNIT-II - FLUID PROPERTIES				
S.No	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
9.	Fluid Flow Phenomena Rheological properties of fluids	45	BB	T1,R1
10.	laminar and turbulent flow	45	ppt	R1
11.	boundary layers	45	PPT	R1
12.	Basic equations of flow-continuity equation	45	BB	T1
13.	Laminar flow in pipes	45	PPT	T1,R1
14.	Laminar flow in channels	45	BB	R1

15.	turbulent flow in pipes	45	PPT	T1
16.	turbulent flow in channels	45	BB	T1,R1
17.	Mechanical energy equation-Bernoulli equation	45	PPT	T1
18.	pump work in Bernoulli equation	45	BB	R1

UNIT-III- FLOW PAST IMMERSED BODIES

	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
19.	Flow past immersed bodies	45	PPT	R1
20.	Drag and drag coefficients	45	BB	T1
21.	flow through beds of solids-Ergun's equation	45	BB	T1,R1
22.	Motion of particles through fluids-terminal velocity	45	BB	R1
23.	Stoke's law	45	BB	T1
24.	Newton's law	45	PPT	R1
25.	Newton's law continuation	45	BB	T1,R1
26.	Hindered settling.	45	PPT	T1

UNIT-IV- TRANSPORTATION OF FLUIDS

	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
27.	Transportation of fluids in Pipes, fittings and valves	45	PPT	R1
28.	metering of fluids in Pipes, fittings and valves	45	BB	T1
29.	pumps-power requirement	45	PPT	R1
30.	suction lift and cavitation	45	BB	T1,R1
31.	positive displacement	45	PPT	R1
32.	centrifugal pumps	45	BB	T1
33.	Measurement of flowing fluids-Venturi meter	45	BB	R1

34.	orifice meter	45	BB	T1,R1
35.	rotameter, pitot tube	45	BB	T1
36.	magnetic flow meter	45	PPT	T1,R1
Unit – V- MOMENTUM TRANSFER				
	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
37.	Introduction to momentum transfer	45	BB	T1,R1
38.	Momentum transfer	45	BB	R1
39.	Transport properties momentum transport	45	BB	T1
40.	Transport properties momentum transport	45	PPT	R1
41.	Mechanism of momentum transport	45	BB	T1,R1
42.	Mechanism of momentum transport	45	PPT	T1
43.	One dimensional transport in laminar flow	45	BB	T1,R1
44.	One dimensional transport in laminar flow	45	BB	T1
45.	Revision	45	PPT	T1,R1

TEXT BOOKS:

- 1) McCabe, W.L, Smith, J.C and P. Harriot., Unit Operations of Chemical Engineering, 7th Edn., McGraw Hill, 2005.

REFERENCE:

- 1) Fundamentals of Momentum, Heat and Mass Transfer (5th Ed.) J. Welty, C.E. Wicks, G.L. Rorrer, R.E. Wilson, 2007