

Department of Civil Engineering

II B.Tech IISEM,2015-16(B)

LESSON PLAN

HYDRAULICS AND HYDRAULIC MACHINERY

N. LAXMI PRAVALLIKA

period	date	unit	Topic	Teaching methodology	Cumulative periods
5	30.12.15	1	Introduction of the chapter and its importance and applications, Dimensions, Dimensional Homogeneity	CT	1
1,2	31.12.15	1	Methods of dimensional analysis – Rayleigh method, Buckingham π – method	CT	3
5	06.01.16	1	Problems on Rayleigh method	CT	4
1,2	07.01.16	1	Problems on Buckingham π –method	CT	6
7	11.01.16	1	Number of dimensionless groups in a complete set of variables	CT	7
7	18.01.16	1	Number of dimensionless groups in a complete set of variables	CT	8
5	20.01.16	1	Superfluous and omitted variables.	CT	9
1,2	21.01.16	2	Open channel flow, Introduction and applications, Types of flows - Type of channels	CT	11
7	22.01.16		Velocity distribution – Energy and momentum correction factors	CT	12
5	27.01.16	2	Chezy's, Manning's formula	CT	13
1,2	28.01.16		Bazin&Kutteformulae for uniform flow	CT	15
7	29.01.16	2	Most Economical sections, Critical flow: Specific energy	CT	16
5	10.02.16	2	critical depth, computation of critical depth – critical sub-critical and super critical flows	CT	17
1,2	11.02.16	2	Non uniform flow-Dynamic equation for G.V.F., Mild	CT	19
7	12.02.16	2	Critical, Steep, horizontal and adverse slopes, surface profiles-direct step method, Rapidly varied flow	CT	20
7	18.02.16	2	Hydraulic jump, energy dissipation	CT	21
5	20.02.16	2	Problems on critical depth and specific energy	CT	22
1,2	21.02.16	2	Problems on critical depth and specific energy	CT	24
7	25.02.16	3	Basics of turbo machinery, Hydrodynamic force of jets on stationary flat	CT	25
5	27.02.16	3	Inclined and curved vanes, jet striking	CT	26

			centrally and at tip		
1,2	28.02.16	3	Velocity triangles at inlet and outlet, expressions for work done, efficiency	CT	28
7	10.03.16	3	Angular momentum principle,	CT	29
5	11.03.16	3	Problems on velocity triangle	CT	30
1,2	12.03.16	3	Applications to radial flow turbines	CT	32
7	22.03.16	4	Hydraulic Turbine, Layout of a typical Hydropower installation – Heads and efficiencies	CT	33
1,2	23.03.16	4	classification of turbines pelton wheel- Francis turbine	CT	35
5	24.03.16	4	Kaplan turbine-working, working proportions	CT	36
7	29.03.16	4	velocity diagram, work done and efficiency, hydraulic design	CT	37
5	04.04.16	4	Draft tube – theory and function efficiency	CT	38
1,2	06.04.16	4	Governing of turbines-surge tanks	CT	40
1,2	07.04.16	4	specific turbines-unit speed-unit quantity-unit power-specific speed	CT	42
7	09.04.16	4	specific turbines-unit speed-unit quantity-unit power-specific speed	CT	43
1,2	11.04.16	4	Geometric similarity, cavitations	CT	45
5	13.04.16	5	Centrifugal pump, Pump installation details-classification	CT	46
7	14.04.16	5	work done, Manometric head-minimum starting speed losses and efficiencies	CT	47
1,2	18.04.16	5	specific speed multistage pumps-pumps in parallel	CT	49
5	20.04.16	5	Characteristic curves	CT	50
7	21.04.16	5	Pumps in parallel, performance of pumps	CT	51
1,2	25.04.16	5	NPSH- Cavitation	CT	53
5	27.04.16	5	Solving problems	CT	54
7	28.04.16	5	Revision	CT	55

NOTE: C.R- Class Room Teaching (Black board, PPT)

N. Praveen
Signature