

## LESSON PLAN

**Name of the Faculty :** B.S Kadam

**Discipline** Mechanical engineering

**Semester** 4th

**Subject** hhm

**Lesson Plan duration :** 15 weeks (from January , 2018 to April , 2018)

Work load (Lecture/ Practical) per week (in hours) : Lecture -03 practical-02

WEEK	THEORY		PRACTICAL	
	Lecture day	Topic (including assignment and test)	Practical Day	Topic
1	1	<b>Introduction---</b> Fluid, types of fluid; properties of fluid viz mass density,	1	Measurement of pressure head by employing.
	2	weight density (specific		i) Piezometer tube
	3	weight), specific volume, capillarity, specific gravity, viscosity, compressibility,		ii) Single and double column manometer
2	4	surface tension, kinematic viscosity and dynamic viscosity and their units	2	To find out the value of coefficient of discharge for a venturimeter
	5	<b>Pressure and its Measurement---</b> Concept of pressure (Atmospheric Pressure, gauge pressure, absolute		Measurement of flow by using venturimeter
	6	pressure), Pascal's Law, Static Pressure		Verification of Bernoulli's theorem.
3	7	Pressure measuring devices: peizometer tube manometers - simple U-tube,	3	To find coefficient of friction for a pipe (Darcy's friction).
	8	differential single column, inverted U-tube, micromanometer including		To study hydraulic circuit of an automobile brake and hydraulic ram
	9	simple problems		Study the working of a Pelton wheel and Francis turbine
4	10	Bourdon pressure gauge, Diaphragm pressure gauge, dead weight pressure	4	To study a single stage centrifugal pump for constructional details and its operation to find out its normal head and discharge.
	11	gauge		
	12	<b>Flow of Fluids---</b> Types of fluid flow – steady and unsteady, uniform and non-uniform, laminar and		
5	13	turbulent		
	14	; rate of flow and their units; continuity equation of flow; potential energy		
	15	of a flowing fluid; total head; Bernoulli's theorem (statement and proof) and its		
6	16	applications		
	17	Discharge measurement with the help of venturi-meter, orifice meter,		
	18	pitot-tube, limitations of Bernoulli's theorem simple problems.		
7	19	<b>Flow through Pipes---</b> Definition of pipe flow, wetted perimeter, hydraulic mean depth, hydraulic		
	20	gradient;		
	21	loss of head due to friction; Chezy's equation and Darcy's		
	22	equation of head loss (without proof), Reynold's number and its effect on		
	23	pipe friction		

8	24	siphon, Nozzle - definition, velocity of liquid flowing through		
9	25	the nozzle, power developed. Water hammer, anchor block, syphon, surge		
	26	tank (concept only).		
	27	Loss of head in pipes due to sudden enlargement, sudden contraction,		
10	28	obstruction on flow path, change of direction and pipe fittings (without proof)		
	29	<b>Flow through Orifices</b> -- $C_c$ , $C_v$ , $C_d$ , flow through drowned		
	30	partially drowned orifices, time for emptying a		
11	31	tank through a circular orifice		
	32	. Simple problems		
	33	<b>Hydraulic Machines</b> ---Description, operation and application of hydraulic systems – hydraulic ram		
12	34	hydraulic jack, hydraulic brake, hydraulic accumulator, hydraulic door closer		
	35	hydraulic press, selection of specification of above systems for different		
	36	applications		
13	37	<b>Water Turbines and Pumps</b> -- Concept of a turbine, types of turbines –		
	38	impulse and reaction type (concept		
	39	Revision		
14	40	Revision		
	41	Revision		
	42	Revision		
15	43	Revision		
	44	Revision		
	45	Revision		