COURSE OBJECTIVE AND OUTCOME

BRANCH	Automobile Engineering		YEAR	2016-17	
SEM	4		SUBJECT CODE	AEC 402	
SUBJECT	Fluid mechanics		TEACHING SCHEME	Theory lect.	4
				Pract/Tut	2

COURSE OBJECTIVE AND SCOPE:-

Tostudy fluid statics and fluid dynamics.

To study application of mass,momentum and energy equation in fluid flow.

To learn various flow measurment techniques.

EXPECTED OUTCOMES:-

Define properties of fluid and classification of fluid.

Evaluate hydrostatic forces on various surfaces.

Apply bernaullis equation to various flow measuring device.

Calculate resustance to flow of incompressible fluids throgh closed conduits .

Formulate and solve equations of control volume.

REFERENCES:(Text Book And reference Book):

fluid mechanics by Yunus A cengel and john M cimbala ,Mc grew hill Education .

Introduction to Fluid mechanics ;Fox and Mc donald.

Fluid Mechanics by victor streeter ,Benjamine wylie and K W Bedford ,Mac Graw Hill education.
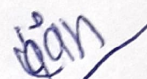
fluid mechanics -K L Kumar.

Fluid mechanics ;B M Massey

TEACHING PLAN

Module No. And Name	Lecture No.	Topics planned	Date Planned	Date Conducted	Reference (T/R book page no.)
Module 1	1	.1Fluid Definition and properties,	01-01-2016	07-01-2016	T2
	2	Newton's law of viscosity concept of continuum,	02-01-2016	08-01-2016	T2
	3	.2Fluid Statics:	08-01-2016	11-01-2016	T1
	4	Definition of body and surface forces,pascal's law.	11-01-2016	12-01-2016	T1
	5	, Forces on surfaces due to hydrostatic pressure, Buoyancy and Archimedes' principle	12-01-2016	13-01-2016	T3
Module 2	6	2 Fluid Kinematics:	13-01-2016	14-01-2016	T3
	7	Eulerian and Lagrangian approach to solutions,	14-01-2016	15-01-2016	T3
	8	Velocity and acceleration in an Eulerian flow field,	15-01-2016	18-01-2016	T2
	9	Definition of streamlines, path lines and streak lines;	18-01-2016	19-01-2016	T1
	10	Definition of steady/unsteady, uniform/non-uniform, o	19-01-2016	20-01-2016	T2
	11	Understanding of differential and integral methods of analysis	21-01-2016	22-01-2016	T3
Module 3	14	3 Fluid Dynamics:	23-01-2016	25-01-2016	T2
	15	3.1 Integral equations for the control volume:	25-01-2016	27-01-2016	T1
	16	Reynold's Transport theorem,	27-01-2016	28-01-2016	T2
	17	equations for conservation of mass, energy and momentum,	28-01-2016	29-01-2016	T3
	18	, Bernoulli's equation and its application in flow measurement, pitot tube, venture.	29-01-2016	02-02-2016	T2
	19	Differential equations for the control volume:	01-02-2016	03-02-2016	T3
	20	Mass conservation in 2 and 3 dimension	02-02-2016	04-02-2016	T5
	21	derivation of Bernoulli's equation; Navier-Stokes equations	03-02-2016	05-02-2016	T5
	22	Exact solutions of Navier-Stokes Equations to viscous laminar flow	05-02-2016	06-02-2016	T5
Module 4	23	4 Real fluid flows:	06-02-2016	09-02-2016	T3
	24	Definition of Reynold's number, Laminar flow through a pipe	09-02-2016	11-02-2016	T2
	25	Eddy viscosity theory and Prandtl mixing length theory,	10-02-2016	12-02-2016	T2
	26	velocity profiles for turbulent flows universal velocity profile.	12-02-2016	15-02-2016	T2
	27	1/7 power law; Velocity profiles for smooth and rough pipes	15-02-2016	16-02-2016	T3
	28	Darcy's equation for head loss in pipe (no derivation).	17-02-2016	18-02-2016	T3
	29	Moody's diagram, pipes in series and parallel.	18-02-2016	22-02-2016	T3

Module 5	30	5 Boundary Layer Flows:	22-02-2016	24-02-2016	T3
	31	Concept of boundary layer and definition of boundary layer thickness.	24-02-2016	25-02-2016	T3
	32	Growth of boundary layer.	25-02-2016	26-02-2016	T4
	33	laminar and turbulent boundary layers, laminar sub-layer,	26-02-2016	29-02-2016	T3
	34	Von karman momentum integral equation for boundary layers ,analysis of laminar and turbulant boundary layer seperation and methods to control it.	01-03-2016	03-03-2016	T4
	35	analysis of laminar and turbulent boundary layers, drag, boundary layer separation	03-03-2016	04-03-2016	T3
	36	streamlined and bluff bodies	04-03-2016	08-03-2016	T3
	37	2Aerofoil theory: Definition of aerofoil, lift and drag,	08-02-2016	09-03-2016	T3
Module 6	38	6 Compressible Fluid flow:	09-02-2016	11-03-2016	T3
	39	propogation of sound waves through compresible fluids ,sonic velocity.	12-02-2016	14-03-2016	T2
	40	Application of continuity , momentum and energy equations	15-02-2016	16-03-2016	T2
	41	steady flow through nozzle, isentropic flow through ducts	16-03-2016	18-03-2016	T2
	42	Effect of varying back pressure on nozzle performance.	18-03-2016	22-03-2016	T2
	43	Critical pressure ratio	22-03-2016	28-03-2016	T2

FACULTY

ACADEMIC COORDINATOR

HOD

COURSE OBJECTIVE AND OUTCOME

BRANCH	Automobile		YEAR		2016-17	
SUBJECT	Strength Of Material		TEACHING SCHEME	Theory lect.	4	
				Pract/Tut	2	
SEM	3		COURSE CODE	AEL 302		

COURSE OBJECTIVE AND SCOPE:-

To familiarise material behaviour under different loading condition.

To acqunt with surface hardness measuring method .

To familiarise with impact test methods for different materials

EXPECTED OUTCOMES.-

Analyse the stress strain behavioure of materials.

Measure ultimate tensile /compressive strength of materials.

Measure torsion strength of material.

Measure the hardness of material.

TEACHING PLAN

Sr. No.	Practical	Topics planned	Date Planned	Date Conducted	References
1	1	Tension test on mild steel bar	07-11-2016	14/7/2016	Lab Manual
2	2	Bending test on UTM	19/7/2016	21/7/2016	Lab Manual
3	3	Torsion test on mild steel bar / cast iron bar	26/7/2016	28/7/2016	Lab Manual
4	4	Impact test on metal specimen (Izod tes)	08-01-2016	08-03-2016	Lab Manual
5	5	Impact test on metal specimen (Charpy test)	08-05-2016	08-08-2016	Lab Manual
6	6	Hardness test on metals - Brinell Hardness Numbe	19/8/2016	22/8/2016	Lab Manual
7	7	Hardness test on metals - Rockwell Hardness Numbe	26 8 2016	29 8 2016	Lab Manual
8	8	Flexural test on beam(central loading)	09-06-2016	09-07-2016	Lab Manual
9	9	Flexural test on beam (three point loading)	09-12-2016	14 9 2016	Lab Manual

FACULTY

ACADEMIC COORDINATOR

HOD