Name of Faculty : AMIT RANA

Discipline : MECHANICAL ENGINEERING

Semester : 4th

Subject : STRENGTH OF MATERIAL-I

Lesson Plan duration : 29 January 2018 to 30 April 2018

Week	Theory		Practical	
	Day	Topic (including assignment/ test)	Practical Day	Experiment
1	1	Concept & types of Stresses and strains	1	To study the Brinell hardness testing machine & perform the Brinell hardness test.
	2	Poisson's ratio, stresses and strain in simple and compound bars under axial loading		
	3	Stress strain diagrams		
	4	Numerical Problems		
2	5	Hooke's law, elastic constants & their relationships	2	To study the Rockwell hardness testing machine & perform the Rockwell hardness test
	6	Temperature stress		
	7	Strain in simple & compound bars under axial loading		
	8	Numerical Problems		
3	9	Compound Stresses & Strains	3	To study the Vickers hardness testing machine & perform the Vickers hardness test.
	10	Concept of surface and volumetric strains		
	11	Two dimensional stress system		
	12	Numerical Problems		
4	13	Conjugate shear stress at a point on a plane	4	To study the Erichsen sheet metal testing machine & perform the Erichsen sheet metal test
	14	Principle stresses & strains and principal planes		
	15	Mohr's circle of stresses		
	16	Numerical Problems		
5	17	SF & BM diagrams for cantilevers	5	To study the Impact testing machine and perform the Impact tests (Izod & Charpy).
	18	Simply supported beams with or without over-hang		
	19	Calculation of maximum BM & SF and the point of contra-flexure under concentrated loads, uniformly distributed loads over a hole span or a part of it		
	20	Combination of concentrated loads and uniformly distributed loads, uniformly varying loads		
		Sessional Exams		
7	21	Application of moments, relation between the rate of loading, the shear force and the bending moments	6	To study the Universal testing machine and perform the tensile test
	22	Torsion of thin circular tube, Solid and hollow circular shafts		
	23	Tapered shaft, stepped shaft & composite circular shafts		
	24	Combined bending and torsion, equivalent torque		
8	25	Numerical Problems	7	To perform compression, bending and shear test on UTM.
	26	Bending stresses in beams with derivation & application to beams of circular, rectangular, I,T and channel sections		
	27	Composite beams, shear stresses in beams with combined bending, torsion		
	28	Axial Bending of beams		

29	Numerical Problems		
30	Column under axial load, concept of instability and buckling, slenderness ratio	8	To study the torsion testing machine and perform the torsion test.
31	Derivation of Euler's formulae for the elastic buckling load. Eulers, Rankine		
32	Gordon's formulae Johnson's empirical formula for axial loading columns and their applications		
33	Eccentric compression of a short strut of rectangular & circular sections		
34	Relationship between bending moment, slope & deflection. Mohr's theorem	9	To draw shear Force, Bending Moment Diagrams for a simply Supported Beam under Point and Distributed Loads.
35	Numerical Problems		
36	Moment area method, method of integration, Macaulay's method		
37	Calculations for slope and deflection of (i) cantilevers and (ii) simply supported beams with or without overhang under concentrated load, Uniformly Distributed loads or combination of concentrated and uniformly distributed loads	10	To find Moment of Inertia of a Fly Wheel.
38	Numerical Problems		
39	Fixed Beams: Deflections, reactions and fixing moments with SF & BM		
40	Numerical Problems		
41	SF & BM calculations & diagrams for fixed beams under (i) concentrated loads		
42	Uniformly distributed load and (iii) a combination of concentrated loads & uniformly distributed load		
43	Numerical Problems		
44	Numerical Problems		
	Pre University Exams		

15/12/2017

15/12/2017

Name of Faculty:- PARDEEP KUMAR

Discipline:- MECHANICAL ENGINEERING

Semester:- 4TH

Subject:- FLUID MECHANICS

Lesson Plan duration:- 29 January 2018 to 30 April 2018

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test	Practical Day	Experiment
1	1	Fluid Properties and Fluid Statics: Concept of fluid and flow, ideal and real fluids	1	To determine the coefficient of impact for vanes.
	2	continuum concept and properties of fluids, Newtonian and non-Newtonian fluids.		
	3	Pascal's law, hydrostatic equation, hydrostatic forces on plane and curved surfaces		
	4	stability of floating and submerged bodies, relative equilibrium.		
2	5	Problems.	2	To determine coefficient of discharge of an orifice meter.
	6	Fluid Kinematics: Eulerian and Lagrangian description of fluid flow ; stream, streak		
	7	path lines; types of flows, flow rate and continuity equation, differential equation of		
	8	continuity in cylindrical and polar coordinates, rotation, vortexis		
3	9	and circulation, stream potential functions, flow net.	3	To determine the coefficient of discharge of Notch (V and Rectangular types).
	10	Problems.		
	11	Fluid Dynamics: Concept of system and control volume, Euler's equation, Bernoulli's equation,		
	12	venturimeter, orifices, orifice meter, mouthpieces, kinetic and momentum		
4	13	correction factors, impulse momentum relationship and its applications, .	4	To determine the friction factor for the pipes.
	14	Problems		
	15	Compressible Fluid Flow: Introduction, continuity momentum and energy equation, sonic		
	16	velocity, propagation of elastic waves due to compression of fluid propagation of elastic		
5	17	waves due to disturbance in fluid, stagnation properties, isentropic flow, effect of area	5	To determine the coefficient of discharge of venturimeter.
	18	variation on flow properties, isentropic flow through nozzles, diffusers, injectors		
	19	Problems		
	20	Problems		
6		Sessional Exams		

7	21	Viscous Flow: Flow regimes and Reynolds's number, Relationship between shear stress	6	To determine the coefficient of discharge contraction & velocity of an orifice.
	22	pressure gradient, uni-directional flow between stationary and moving parallel plates.		
	23	movement of piston in a dashpot, power absorbed in bearings.		
	24	Problems		
8	25	Flow Through Pipes: Major and minor losses in pipes , Hagen-Poiseuille law, hydraulic gradient	6	To verify the Bernoullis Theorem.
	26	total energy lines, series and parallel connection of pipes, branched pipes;		
	27	Equivalent pipe, power transmission through pipes		
	28	Problems		
9	29	CLASS TEST-I	8	To find critical Reynolds number for a pipe flow.
	30	Boundary Layer Flow: Boundary layer concept, displacement, momentum and energy		
	31	thickness, von-karman momentum integral equation, laminar and turbulent boundary layer flows		
	32	CLASS TEST-II		
10	33	drag on a flat plate, boundary layer separation and control. Streamlined and bluff	9	To determine the meta-centric height of a floating body.
	34	bodies lift and drag on a cylinder and an airfoil.		
	35	Problems		
	36	Turbulent Flow: Shear stress in turbulent flow , Prandtl mixing length hypothesis.		
11	37	hydraulically smooth and rough pipes	10	To determine the minor losses due to sudden enlargement, sudden contraction and bends.
	38	friction coefficient for smooth and rough pipes.		
	39	velocity distribution in pipes		
	40	Problems		
12	41	Problems		
	42	REVISION		
	43	REVISION		
	44	REVISION		
13		Pre University Exams		

	*Name of Faculty: Mr. Sandeep Deswal			
	Discipline:	Mechanical Engineering		
	Semester:	4th		
	Subject:	Steam & Power Generation		

Lesson Plan duration: 29 January 2018 to 30 April 2018

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1	1	Introduction: Components of Steam Power System, Carnot Cycle	1	To study low pressure boilers and their accessories and mountings.
	2	Rankine Cycle, Modified Rankine Cycle		
	3	P-V, H-S and T-S diagram for Rankine and Modified Rankine Cycle		
	4	Mollier's diagram, use of steam table		
	5	Steam Generators: Purpose, Classification of boilers	2	To study high pressure boilers and their accessories and mountings.
	6	Fire tube and water tube boilers		
	7	Mountings and accessories		
	8	Description of Lancashire boiler , Locomotive boiler		
3	9	Babcock Wilcox boilers, draught	3	To prepare heat balance sheet for given boiler.
	10	Design of natural draught chimney, artificial draught		
	11	Mechanical draught, efficiency of boiler and heat balance		
	12	Steam Nozzles: Function of steam nozzles		
4	13	Shape of nozzles for subsonic and supersonic flow of steam	4	To study the working of impulse and reaction steam turbines.
	14	Steady state energy equation, continuity equation		
	15	Nozzle efficiency, critical pressure ratio for max. Discharge, Design of steam nozzle		
	16	Class Test		
5	17	Steam Engine: Working of steam engine	5	To find dryness fraction of steam by separating and throttling calorimeter.
	18	Single acting and double acting steam engine		
	19	Compounding of steam engine, ideal and actual indicator diagram		
	20	Mean effective pressure, diagram factor		
6		Sessional Exams		

7	21	Revision	6	To find calorific value of a sample of fuel using Bomb calorimeter.
	22	Mechanical efficiency, thermal efficiency of steam engine		
	23	Steam Turbine: Classification of steam turbine, Impulse turbine, working principle		
	24	Compounding of impulse turbine, velocity diagram		
8	25	Power output and efficiency of a single stage impulse turbine		Viva Voce
	26	Reaction turbine, working principle		
	27	Degree of reaction, velocity diagram		
	28	Power output, efficiency, condition for max. Efficiency		
9	29	Governing of steam turbines	7	To find the condenser efficiencies
	30	Improved Turbines: Back pressure and pass out turbines		
	31	Class Test		
	32	Regenerative feed heating cycle		
10	33	Binary vapour cycle	8	To study and find volumetric efficiency of a reciprocating air compressor.
	34	Steam Condensers: Classification of condensers		
	35	Sources of air leakage in condensers		
	36	Effect of air leakage in condenser, vacuum efficiency		
11	37	Condenser efficiency, air pumps	9	Calibration of Thermometers and pressure gauges.
	38	Cooling water calculations		
4	39	Fuel and Combustion: Classification of fuels – solid, liquid and gaseous fuels		
	40	Calorific values of fuels		
12	41	Stochiometric air fuel ratio	10	To study cooling tower and find its efficiency.
	42	Excess air requirement		
	43	Analysis of exhaust gases		
	44	Revision		
13		Pre University Exams		

15/12/17

11/12/17 (H.O.D, M.E)

Name of Faculty:- VINAY MALIK

Discipline:- MECHANICAL

Semester:- 4TH

Subject:- MT-I (ME-202-F)

Lesson Plan duration:- 29 January 2018 to 30 April 2018

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test	Practical Day	Experiment
1	1	Metal Cutting & Tool Life: Introduction, basic tool geometry	1	NOT IN SYLLABUS
	2	single point tool nomenclature, chips types and their characteristics,		
	3	mechanics of chips formation, theoretical and experimental determination of shear angle		
	4	orthogonal and oblique metal cutting, metal cutting theories,		
2	5	relationship of velocity, forces, and power consumption, cutting speed, feed and depth of cut	2	
	6	coolant, temperature profile in cutting, tool life relationship, tailor equation of tool life, tool material and mechanism		
	7	Economics of Metal Machining: Introduction, elements of machining cost		
	8	tooling economics, machining		
3	9	economics and optimization	3	
	10	geometry of twist, drills and power calculation in drills		
	11	Numerical Problems		
	12	Numerical Problems		
4	13	Metal forming: Jigs and Fixtures: Introduction, Metal blow condition, theories of plasticity	4	
	14	conditions of plane strains, friction, conditions in metal working, wire drawing, theory of forging		
	15	rolling theory, no slip angle, and forward slip		
	16	types of tools, principles of locations, locating and clamping devices, jigs bushes, drilling jigs, milling fixtures		
5	17	turning fixtures, boring and broaching fixtures, welding fixtures, different materials for jigs and fixtures, economics of jigs and fixtures.	5	
	18	Metrology: Measurement, linear and angular simple measuring instruments		
	19	vernier, clampers, screw gauge, sine bar, auto-collimator		
	20	comparator: mechanical, electrical, optical		
6		Sessional Exams		

	21	surface finish and its measurements, micro and macro deviation factors influencing surface finish and evaluation of surface finish	6	
	22	Machine tools: Introduction, constructional features, specification, operations and devices of basic machine tools Lathe		
	23	Shaper, planner, drilling machining, and milling machine, indexing in milling operation		
	24	working principles of capstan and turret lathes		
8	25	Basic Steps in Casting Processes, Pattern: Types of Pattern and Allowances	7	
	26	Preparation. Mould & Core making with assembly and its Types		
	27	Gating System, Melting of Metal		
	28	Furnaces and Cupola, Metal Pouring, Fettling, Casting Treatment		
9	29	Inspection and Quality Control, Sand Casting Defects & Remedies	8	
	30	Welding: Introduction to Welding, Classification of Welding Processes		
	31	Gas Welding: Oxy-Acetylene Welding,		
	32	Resistance Welding: Spot and Seam Welding		
10	33	Metal Arc, TIG & MIG Welding, Submerged arc welding (SAW).	9	
	34	resistance welding principles, electrode types and selection		
	35	thermit welding, electro slag welding,		
	36	electron beam welding, laser beam welding, forge welding		
	37	friction welding, Welding defects and remedies, brazing & soldering	10	
	38	Forming Processes: Basic Principle of Hot & Cold Working,		
	39	Hot & Cold Working Processes, Rolling, Extrution, Forging, Drawing, Wire Drawing and Spinning		
	40	Sheet Metal Operations: Measuring, Layout marking, Shearing		
12	41	Punching, Blanking, Piercing, forming, Bending and Joining		
	42	Revision		
	43	Revision		
	44	Revision		
13		Pre University Exams		

Name of Faculty :- PARDEEP KUMAR KHOKHAR
Discipline:- MECHANICAL
Semester:- 4TH
Subject :- KOM (ME-204-F)
Lesson Plan duration :- 29 January 2018 to 30 April 2018

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/ test	Practical Day	Experiment
	1	Introduction of KOM	1	To study various types of Kinematic links, pairs, chains and Mechanisms
	2	mechanism and machines, kinematics links, kinematics pair, kinematics chain		
	3	degree of freedom, Grubler's rule, kinematics inversion, equivalent linkages		
	4	four link planar mechanisms, straight line mechanisms		
	5	steering mechanisms, pantograph	2	To study inversions of 4 Bar Mechanisms, Single and double slider crank mechanisms
	6	problems		
	7	Cams: Classification of cams and followers		
	8	disc cam nomenclature, construction of displacement of follower motion		
	9	velocity and acceleration diagrams for different types of follower motions	3	To plot slider displacement, velocity and acceleration against crank rotation for single slider crank mechanism
	10	analysis of follower motions, determination of basic dimension		
	11	synthesis of cam profile by graphical methods, cams with specified contours		
	12	problems		
	13	introduction of gear train	4	To study various type of cam and follower arrangements
	14	synthesis of simple, compound and reverted gear trains		
	15	analysis of epicyclic gear trains		
	16	problems		
	17	Types of friction, laws of friction, motion along inclined plane	5	To study various types of gears – Helical, cross helical worm, bevel gear.
	18	screw threads, efficiency on inclined plane,		
	19	friction in journal bearing, friction circle and friction axis, pivots and collar friction, uniform pressure and uniform wear		
	20	problems		
		Sessional Exams		
	21	displacement analysis and velocity diagram instantaneous center of velocity		To find co-efficient of friction between belt and pulley
	22	velocity determination and relative velocity method		
	23	kennedy's theorem		
	24	graphical and analytical methods of velocity and acceleration analysis		

8	25	problems	6	To study the working of Screw Jack and determine its efficiency.
	26	fundamental law of gearing, involute spur gears		
	27	characteristics of involute and cycloidal action, interference and undercutting		
	28	[illegible]		
9	29	non-standard gear teeth, helical, spiral bevel and worm gears	7	To plot follower displacement vs cam rotation for various Cam Follower systems
	30	problems		
	31	introduction of Kinematics synthesis of Mechanisms		
	32	function generation, path generation, Freudenstein's equation		
10	33	two and three position synthesis of four bar and slider crank mechanisms by graphical and analytical methods	8	To Create various types of linkage mechanism in CAD and simulate for motion outputs and study the relevant effects
	34	precision positions, structural error; Chebyshev spacing, transmission angle		
	35	problems		
	36			
11	37	Open and cross belt drive, velocity ratio, slip, material for belts	9	To Creation of various joints like revolute, planes, spherical, cam follower and study the degree of freedom and motion patterns available
	38	crowning of pulleys, law of belting, types of pulleys, length of belts, ratio of tension		
	39	centrifugal tension, power transmitted by belts and ropes, initial tension and creep		
	40	chain drives, chain length, classification of chains		
12	41	problems	10	To study various types of gear trains – simple, compound, reverted, epicyclic and differential
	42	Revision		
	43	Revision		
	44	class test		
13		Pre University Exams		

Name of Faculty: PARDEEP KUMAR KHOKHAR

Designation: MECHANICAL

Semester: 6TH

Subject: MEASUREMENTS AND INSTRUMENTATION (ME-310-F)

Lesson Plan duration:- 29 January 2018 to 30 April 2018

Week	Theory		Practical	
	Lecture No.			
1	1	Introduction of measurements and instrumentation	1	To Study various Temperature Measuring Instruments and to Estimate their Response times. (a) Mercury – in glass thermometer (b) Thermocouple (c) Electrical resistance thermometer (d) Bio-metallic strip
	2	Various types of Instruments and Their Representation		
	3	Typical Applications of Instrument Systems. Functional Elements of a Measurement System.		
	4	Standards and Calibration		
2	5	Various Static characteristics of Instruments	2	To study the working of Bourdon Pressure Gauge and to check the calibration of the gauge in a dead-weight pressure gauge calibration set up.
	6	Various Dynamic characteristics of Instruments		
	7	Formulation of Differential Equations for dynamic Performance: Zero Order, First Order and Second order		
	8	Response of First and Second Order Systems to Step, Ramp, Impulse and Harmonic Functions		
3	9	problems	3	To study a Linear Variable Differential Transformer (LVDT) and use it in a simple experimental set up to measure a small displacement.
	10	Introduction of Transducer Elements		
	11	classification of Transducer		
	12	Analog and Digital Transducers, Electromechanical: Potentiometric, Inductive Self Generating and Non-Self Generating Types transducer		
4	13	Electromagnetic, Electrodynamic, Eddy Current, Magnetostrictive, Variable Inductance transducer	4	To study the characteristics of a pneumatic displacement gauge.
	14	Linearly Variable Differential Transformer		
	15	Variable Capacitance, Piezo-Electric Transducer and Associated Circuits		
	16	Unbonded and Bonded Resistance Strain Gages		
5	17	Mechanic Electronic Transducers	5	To measure load (tensile/compressive) using load cell on a rotor.
	18	Opto-Electrical Transducers and Photo Conductive Transducers		
	19	Photo Voltaic Transducers, Digital Transducers, Frequency Domain Transducer		
	20	Vibrating String Transducer, Binary codes, Digital Encoders and problems		
6		Sessional Exams		
7	21	Introduction of Motion, Force and Torque Measurement	6	To measure the speed of a motor shaft with the help of non-contact type pick-ups (magnetic or photoelectric).
	22	Relative motion Measuring Devices		
	23	Electromechanical, Optical, Photo Electric, Moire-Fringe, Pneumatic displacement measurement		
	24	Absolute Motion Devices, Seismic Devices, Spring Mass & Force Balance Type Calibration.		

9	25	Load cell and their types Hydraulic Load Cell, Pneumatic Load Cell	7	To measure the stress & strain using strain gauges mounted on simply supported beam/cantilever beam.
	26	Elastic Force Devices, Separation of Force Components, Electro Mechanical Methods, Torque Meter.		
	27	Amplifiers and their classification		
	28	Introduction of Pressure and Flow Measurement		
10	29	Moderate Pressure Measurement, Manometers	8	To measure static/dynamic pressure of fluid in pipe/tube using pressure transducer/pressure cel
	30	Elastic Transducer, Dynamic Effects of Connecting Tubing and High Pressure Transducer.		
	31	Flow Rate Meters, Variable Head Meters, Variable Area Meters		
	32	Rotameters, Pitot-Static Tube Meter, Drag Force Flow Meter		
11	33	Electro Magnetic Flow meter	9	To measure torque of a rotating shaft using torsion meter/strain gauge torque transducer.
	34	Hot-Wire Anemometer		
	35	Turbine Flow Meter and Electronic Flow Meter		
	36	Introduction of Temperature Measurement		
12	37	classification of Temperature Measurement		
	38	Non Electrical Methods – Solid Rod Thermometer, Bimetallic Thermometer, Liquid-in-Glass thermometer		
	39	Class Test		
	40	Thermo-Electric Sensors		
13	41	Thermocouple Materials		
	42	Radiation Methods (Pyrometry), Total Radiation Pyrometer		
	43	Selective Radiation Pyrometer.		
	44	problems		
14		Pre University Exams		

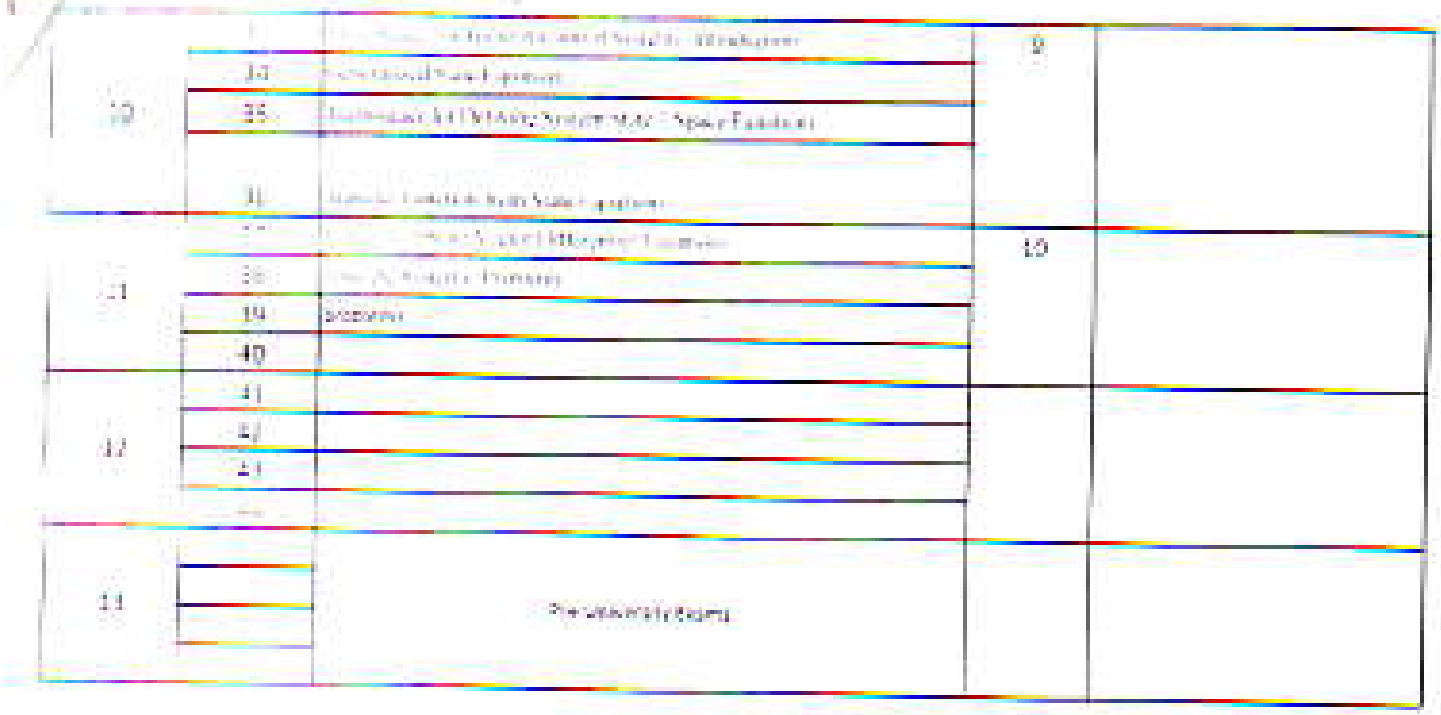
Name of Faculty:-	VINAY MALIK			
Discipline:-	MECHANICAL ENGINEERING			
Semester:-	6th			
Subject:-	MMD-II (ME-304-F)			
Lesson Plan duration:-	29 January 2018 to 30 April 2018			
Week	Theory		Practical	
	Lecture Day	Topic (including assignment/ test	Practical Day	Experiment
1	1	Design for Production : Ergonomic and value engineering considerations in design, Role of processing in design	1	NOT IN SYLLABUS
	2	Design considerations for casting		
	3	Design considerations forforging and machining		
	4	Variable Loading : Different types of fluctuating/ variable stresses		
2	5	Fatigue strength considering stress concentration factor, surface factor, size factor, reliability factor etc.,	2	
	6	Fatigue design for finite and infinite life against combined variable stresses using Goodman and Soderberg's Criterion		
	7	Fatigue design using Miner's equation		
	8	Problems.		
3	9	Problems.	3	
	10	Problems.		
	11	Shafts : Detailed design of shafts for static and dynamic loading.		
	12	Rigidity and deflection consideration.		
4	13	Numerical Problems	4	
	14	Numerical Problems		
	15	Numerical Problems		
	16	Numerical Problems		
5	17	Springs : Types of Springs, Design for helical springs again	5	
	18	compression and fluctuating loads, Design of leaf springs		
	19	Surging phenomenon in springs, Design		
	20	Numerical Problems		
6		Sessional Exams		

7	21	Spring Numerical Problems	6	
	22	Spring Numerical Problems		
	23	Spring Numerical Problems		
	24	Bearings : design of pivot and collar bearing		
8	25	Selection of ball and roller bearing based on static dynamic load carrying capacity using load-life relationship. Selection of Bearings from manufacturer's catalogue	7	
	26			
	27	Types of lubrication – Boundary, mixed and hydrodynamic lubrication, Design of journal bearings using Raimondi and Boyd's Charts.		
	28	Lubricants and their properties. Selection of suitable lubricants		
9	29	Numerical Problems	8	
	30	Numerical Problems		
	31	Numerical Problems		
	32	Numerical Problems		
10	33	Class Test	9	
	34	Gears : Classification, Selection of gears. Terminology of gears.		
	35	Force analysis, Selection of material for gears, Beam & wear strength of gear tooth.		
	36	Form or Lewis factor for gear tooth, Dynamic load on gear tooth -Barth equation		
11	37	Buckingham equation and their comparison, Design of spur, helical	10	
	38	Design of bevel & worm gear including the Consideration for maximum power transmitting capacity, Gear		
	39	Numerical Problems		
	40	Numerical Problems		
12	41	Numerical Problems		
	42	Numerical Problems		
	43	Revision		
	44	Revision		
13		Pre University Exams		

Sir (HOD-BME)

Name of Faculty: YOGENDER RATHEE
Discipline:- MECHANICAL
Semester:- 6th sem
Subject: ACS
Lesson Plan duration: 29 January 2018 to 30 April 2018

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/ test)	Practical Day	Experiment
1	1	Section A Introduction And Applications Types of control systems	1	
	2			
	3			
	4			
2	5	Block Diagram Representation, Representation of System in Process Industries, Representation of Feedback Control System	2	
	6	Block Diagram & Transfer Function Representation, Representation of a Physical Control System, Signal Flow Graphs Problems		
	7	Mathematical Modelling of Physical Systems, Types of Control Actions, Terminals Controllers, Electronic Controllers, Pneumatic Controllers, Problems		
	8	numerical problems		
3	9	Section B Transient And Steady State Response Test Signals, Time Domain Representation, Impulse Transform Representation	3	
	10			
	11			
	12	Proportional, Derivative, Integral Control Time Constant		
4	13	problems	4	
	14	Frequency Response Analysis Introduction		
	15	Correlation between Time and Frequency Response, Polar Plots		
	16	Experimental Determination of Transfer Function, Log Plots, Bode Plots, Minimum Phase System		
5	17	Section C: Stability Of Control Systems Introduction	5	
	18	Characteristic Equation, Routh Hurwitz Criterion		
	19	Root Locus Method		
	20	Gain & Phase Margins Problems		
6				
7	21	Nyquist Stability Criterion	6	
	22	Effect of Adding Poles and Zeros to G(s)H(s)		
	23	Nyquist Plots of Minimum Phase Systems and Non-Minimum Phase Systems		
	24	Stability Via Bode Diagrams		
8	25	Section D Digital Control System Introduction	7	
	26	Representation of Sampled Signal		
	27	Sample and Hold Operations		
	28	Z and Inverse Z Transforms, Pulse Transfer Function		
9	29	Block Diagrams, Transient Response	8	
	30	Jury's Stability Criterion		
	31	Root Locus Method		
	32	Numerical Problems		



Name of Faculty: Mr. Sandeep Bansal			
Discipline:	Mechanical Engineering		
Semester:	6th		
Subject:	Industrial Engineering		
Lesson Plan Duration: 15 weeks (from 29January, 2018 to 30April, 2018)			

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1	1	Definition of Industrial Engineering: Objectives, Method study, Principle of motion economy	Not in Syllabus	Not in Syllabus
	2	Techniques of method study - Various charts, THERBLIGS		
	3	Work measurement - various methods, time study PMTS		
	4	determining time, Work sampling		
2	5	Numericals		
	6	Productivity & Workforce Management :Productivity - Definition, Various methods of measurement		
	7	Factors effecting productivity, Strategies for improving productivity		
	8	Various methods of Job evaluation & merit rating		
3	9	Various incentive payment schemes, Behavioural aspects, Financial incentives		
	10	Manufacturing Cost Analysis: Fixed & variable costs, Direct, indirect & overhead costs		
	11	costing, Recovery of overheads,		
	12	Standard costing, Cost control, Cost variance Analysis - Labour, material		
4	13	overhead in volume, rate & efficiency, Break even Analysis		
	14	Marginal costing & contribution		
	15	Numericals		
	16	Class Test		
5	17	Materials Management : Strategic importance of materials in manufacturing industries		
	18	Relevant costs, Inventory control models - Economic order quantity (EOQ)		
	19	Economic batch quantity (EBQ) with & without shortage		
	20	Purchase discounts, Sensitivity analysis, Inventory control systems - P,Q,Ss Systems		
6		Sessional Exams		

Name of Faculty: Mr. Sandeep Beswal			
Discipline:	Mechanical Engineering		
Semester:	6th		
Subject:	Industrial Engineering		

Lesson Plan Duration: 15 weeks (from 29January, 2018 to 30April, 2018)

Week	Theory		Practical	
	Lecture day	Topic (including assignment/test)	Practical Day	Topic
1	1	Definition of Industrial Engineering: Objectives, Method study, Principle of motion economy	Not in Syllabus	Not in Syllabus
	2	Techniques of method study - Various charts, TBERRLIGS		
	3	Work measurement - various methods, time study PMTS		
	4	determining time, Work sampling		
2	5	Numericals		
	6	Productivity & Workforce Management :Productivity - Definition, Various methods of measurement		
	7	Factors effecting productivity, Strategies for improving productivity		
	8	Various methods of Job evaluation & merit rating		
3	9	Various incentive payment schemes, Behavioural aspects, Financial incentives		
	10	Manufacturing Cost Analysis: Fixed & variable costs, Direct, indirect & overhead costs		
	11	costing, Recovery of overheads,		
	12	Standard costing, Cost control, Cost variance Analysis - Labour, material		
4	13	overhead in volume, rate & efficiency, Break even Analysis		
	14	Marginal costing & contribution		
	15	Numericals		
	16	Class Test		
5	17	Materials Management : Strategic importance of materials in manufacturing industries		
	18	Relevant costs, Inventory control models - Economic order quantity (EOQ)		
	19	Economic batch quantity (EBQ) with & without shortage		
	20	Purchase discounts, Sensitivity analysis, Inventory control systems - P,Q,Ss Systems		
6		Sessional Exams		

	21	Quality Management: Definition of quality, Various approaches, Concept of quality assurance systems
	22	Costs of quality, Statistical quality Control (SQC), Variables & Attributes, X, R, P & C - charts, Acceptance sampling
	23	OC - curves, Concept of AOQL, Sampling plan - Single, Double & sequential
	24	Introduction to TQM & ISO - 9000
8	25	Production Planning & Control (PPC) : Introduction to Forecasting - Simple & Weighted moving average methods
	26	Objectives & variables of PPC, Aggregate planning - Basic Concept, its relations with other decision areas
	27	Class Test
	28	Decision options - Basic & mixed strategies, Master production schedule (MPS),
9	29	Scheduling Operations: Various methods for line & intermittent production systems, Gantt chart, Sequencing - Johnson algorithm
	30	n- Jobs-3 machines, 2 Jobs n-machines
	31	n-Jobs m-machines Various
	32	means of measuring effectiveness of PPC, Introduction to JIT, Numericals
10	33	Management Information Systems (MIS) : What is MIS ? Importance of MIS
	34	Organizational & information system structure, Role of MIS in decision making
	35	Data flow diagram, Introduction to systems analysis & design
	36	Organizing information systems
11	37	Product Design and Development: Various Approaches, Product life cycle
	38	Role 3S's – Standardization
	39	Simplification, Specialization, Introduction to value engineering and analysis
	40	Role of Ergonomics in Product Design
12	41	Revision
	42	Revision
	43	Revision
	44	Class Test
13		Pre University Exams

Name of Faculty:- AMIT RANA
Discipline:- MECHANICAL ENGINEERING
Semester:- 6th
Subject:- AUTOMOBILE ENGINEERING & AUTOMOBILE ENGINEERING LAB
Lesson Plan duration:- 29 January 2018 to 30 April 2018

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/ test)	Practical Day	Experiment
1	1	Classification, Components, Requirements of Automobile Body, Vehicle Frame, Separate Body & Frame	1	To study and prepare report on the constructional details, working principles and operation of the following Automotive Engine Systems & Sub Systems. (a) Multicylinder : Diesel and Petrol Engines. (b) Engine cooling & lubricating Systems. (c) Engine starting Systems. (d) Contact Point & Electronic Ignition Systems
	2	Unitized Body, Car Body Styles, Bus Body & Commercial Vehicle Body Types		
	3	Front Engine Rear Drive & Front Engine Front Drive Vehicles, Four Wheel Drive Vehicles		
	4	Safety features of Automobile		
2	5	Forces acting on automobiles	2	To study and prepare report on the constructional details, working principles and operation of the following Fuels supply systems: (a) Carburetors (b) Diesel Fuel Injection Systems (c) Gasoline Fuel Injection Systems.
	6	Requirement of Clutches, Principle of Friction Clutch – Wet Type & Dry Types		
	7	Cone Clutch, Single Plate Clutch, Diaphragm Spring Clutch		
	8	Multi plate Clutch, Centrifugal Clutches, Electromagnetic Clutch		
3	9	One Way Clutch, Clutch Linkages	3	To study and prepare report on the constructional details, working principles and operation of the following Automotive Clutches. (a) Coil Spring Clutch (b) Diaphragm – Spring Clutch. (c) Double Disk Clutch.
	10	Requirements of transmission system, General Arrangement of Power Transmission system		
	11	Different types of Gear Boxes: Sliding Mesh, Constant Mesh, Synchro-mesh Gear Boxes		
	12	Epicyclic Gear Box, Epicyclic Unit		
4	13	Overdrive and Principle of Overdrive, Advantage of Overdrive	4	To study and prepare report on the constructional details, working principles and operation of the following Automotive Transmission systems. (a) Synchromesh – Four speed Range. (b) Transaxle with Dual Speed Range. (c) Four Wheel Drive and Transfer Case. (d) Steering Column and Floor – Shift levers.
	14	Transaxle, Transfer cases		
	15	Drive Lines, Universal Joint, Differential and Drive Axles		
	16	Effect of driving thrust and torque reactions		
5	17	Hotchkiss Drive, Torque Tube Drive and radius Rods	5	To study and prepare report on the constructional details, working principles and operation of the following Automotive Drive Lines & Differentials. (a) Rear Wheel Drive Line. (b) Front Wheel Drive Line. (c) Differentials, Drive Axles and Four Wheel Drive Line.
	18	Propeller Shaft, Universal Joints, Slip Joint, Constant Velocity Universal Joints		
	19	Front Wheel Drive, Principle, Function, Construction & Operation of Differential		
	20	Rear Axle Types, Dead weight on Rear Axle		
6		Sessional Exams		
7	21	Full Floating, Three quarter Floating and Semi Floating Rear Axles	6	To study and prepare report on the constructional details, working principles and operation of the following Automotive Suspension Systems. (a) Front Suspension System. (b) Rear Suspension System.
	22	Need of Suspension System, Types of Suspension		
	23	Inclined reflecting, side rambert, Suspension Spring, Constructional details and Characteristics of leaf springs.		
	24	Suspension Springs		

	25	Constructional details and characteristics of leaf springs.	To study and prepare report on the constructional details, working principles and operation of the following Automotive Steering Systems. (a) Manual Steering Systems, e.g. Pitman –arm steering, Rack & Pinion steering. (b) Power steering Systems, e.g. Rack and Pinion Power Steering System. (c) Steering Wheels and Columns e.g. Tilt &
3	26	Steering System : Front Wheel geometry	
	27	Wheel alignment viz. Caster, Camber, King pin Inclination, Toe in, Toe out	
	28	Conditions for true rolling motion of Wheels during steering	
	29	Different types of Steering Gear Boxes	To study and prepare report on the constructional details, working principles and operation of the following Automotive Tyres & wheels. (a) Various Types of Bias & Radial Tyres. (b) Various Types of wheels.
	30	Steering linkages and layout	
	31	Power steering – Rack & Pinion Power Steering Gear	
	32	Understeer steering	
	33	Classification of Brakes	To study and prepare report on the constructional details, working principles and operation of the Automotive Brake systems. (a) Hydraulic & Pneumatic Brake systems. (b) Drum Brake System. (c) Disc Brake System. (d) Antilock Brake System. (e) System Parking & Other Brakes.
	34	Principle and constructional details of Drum Brakes, Disc Brakes	
	35	Brake actuating system	
	36	Mechanical Brakes, Pneumatic Brakes, Hydraulic Brakes, Power Assisted Brakes & Power Assisted Brakes	
11	38	Tyres, Wheels, Types of Tyre & their constructional details	To study and prepare report on the constructional details, working principles and operation of Automotive Emission / Pollution control systems.
	39	Wheel Balancing, Tyre Rotation, Types of Tyre wear & their causes	
	40	Sources of Atmospheric Pollution from the automobile	
	41	Typical Gas Combustion, PCV Systems, Evaporative Emission control Systems	
12	42	Air Injection System and Catalytic Converters	
	43	Purpose construction & operation of lead acid Battery, Capacity Rating & Maintenance of Batteries	
	44	Purpose and Operation of Charging Systems, Purpose and operation of the Starting System, Vehicle Lighting System	
13		Pre University Exams	

15/12/2017

Verified
15/12/17
(H.O.D, M.E.)

Name of Faculty:	PARDEEP KUMAR			
Discipline:	MECHANICAL ENGINEERING			
Semester:	6th			
Subject:	HEAT TRANSFER			
Lesson Plan duration:- 29 January 2018 to 30 April 2018				
Week	Theory		Practical	
	Lecture Day	Topic (including assignment/ test	Practical day	Experiment
1	1	introduction to heat thansfer,difference between heat transfer and thermodynamic	1	To determine the thermal conductivity of a metallic rod.
	2	Modes of heat transfer		
	3	combined heat transfer system		
	4	steady state conduction in 1-D		
2	5	heat conduction through plain wall and composite wall	2	To determine the thermal conductivity of an insulating power.
	6	numericals on plane wall and composite wall		
	7	heat conduction through hollow cylinder and composite cylinder		
	8	numericals on hollow cylinder and composite cylinder		
3	9	heat conduction through hollow sphere and composite sphere	3	To determine the thermal conductivity of a solid by the guarded hot plate method.
	10	numericals on hollow sphere and composite sphere		
	11	Numerical assignment-I		
	12	thermal resistance of hollow sphere, plan wall and hollow cylinder		
4	13	heat transfer through cartesian coordinate,cylindrical and spherical coordinate	4	To find the effectiveness of a pin fin in a rectangular duct natural convective condition and plot temperature distribution along its length.
	14	heat conduction in 1-D with heat generation		
	15	heat Transfer in extended surfaces (fins)		
	16	fin effectiveness and efficiency		
5	17	Numericals on FINS	5	To find the effectiveness of a pin fin in a rectangular duct under forced convective and plot temperature distribution along its length.
	18	Heat transfer by convection		
	19	forced convection , hydrodynamic boundary layer momentum and energy equation		
	20	free convection from vertical plate and horizontal surface		
6		Sessional Exams		
	21	Numerical problem on convection	6	To determine the surface heat transfer coefficient for a heated vertical tube under natural convection and plot the variation of local heat transfer coefficient along the length of the tube. Also compare the results with those of the correlation.
	22	Thermal radation ,kirchman law, Black body radations		
	23	Shape factor and their relationship		
	24	Heat exchange between non black bodies		

8	25	Radiation shield	7	To verify the Stefen-Baltzmann constant for thermal radiation.
	26	Numerical problem on Radiation		
	27	Numerical assignment-II		
	28	Transient heat conduction		
9	29	Transient heat conduction in plane walls	8	To measure the emmisivity of the gray body (plate) at different temperature and plot the variation of emmisivity with surface temperature.
	30	Transient heat conduction in hollow cylinder		
	31	Transient heat conduction in Sphere		
	32	Chart solution and relaxation method		
10	33	Numerical problem transient system	9	To determine average heat transfer coefficient for a externally heated horizontal pipe under forced convection & plot Reynolds and Nusselt numbers along the length of pipe. Also compare the results with those of the correlations.
	34	Numerical assignment-III		
	35	Heat exchangers		
	36	Analysis on heat exchanger		
11	37	counter flow heat exchanger	10	To find overall heat transfer coefficient and effectiveness of a heat exchange under parallel and counter flow conditions. Also plot the temperature distribution in both the cases along the length of heat of heat exchanger.
	38	parallel flow heat exchanger		
	39	Heat exchanger effectiveness		
	40	Numerical problem		
12	41	Boiling curve		
	42	Dropwise condensation		
	43	Nucleate Boiling		
	44	Numerical problem		
13		Pre University Exams		