

Name of Faculty:-

AMIT RANA

Discipline:-

MECHANICAL ENGINEERING

Semester:-

5TH

Subject:

MT-II(ME-309-F)

Lesson Plan duration

30 JULY 2018 TO 30 NOVEMBER 2018

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/ test)	Practical Day	Experiment
1	1	Deformation of metal during machining	1	Study and Practice of Orthogonal & Oblique Cutting on a Lathe
	2	nomenclature of lathe		
	3	milling tools		
	4	mechanics of chip formation, built-up edges		
2	5	mechanics of orthogonal and oblique cutting	2	FILE CHECKING& REVISION
	6	Merchant cutting force circle		
	7	shear angle relationship in orthogonal cutting		
	8	factors affecting tool forces. Cutting speed		
3	9	feed and depth of cut, surface finish.	3	Machining time calculation and comparison with actual machining time while cylindrical turning on a Lathe and finding out cutting efficiency
	10	Temperature distribution at tool chip interface.		
	11	NUMERICALS		
	12	NUMERICALS		
4	13	NUMERICALS	4	FILE CHECKING& REVISION
	14	PROBLEMS		
	15	PROBLEMS		
	16	CLASS TEST		
5	17	Cutting Tool Materials & Cutting Fluids: Characteristics	5	Study of Tool Life while Milling a component on the Milling Machine
	18	various types of cutting tool materials, coated tools		
	19	cutting tool selection, Types of tool wear, tool life		
	20	factors governing tool life, Purpose and types of cutting		
6	21	basic actions of cutting fluids, effect of cutting fluid on tool life, selection of cutting fluid.	6	FILE CHECKING& REVISION
	22	REVISION		
	23	PROBLEMS		
	24	PROBLEMS		
7	25	Abrasive jet machining: Principles, applications, process parameters.	7	Study of Tool Wear of a cutting tool while Drilling on a Drilling Machine
	26	Ultrasonic machining: Principles, applications, analysis of process parameters.		
	27	Electro-chemical machining and grinding: Principles, classifications, choice of electrolytes, applications.		
	28	Electric discharge machining: Principles, selection of tools materials and dielectric fluid.		
8		Sessional exam	8	
9	29	Electron beam machining: Generation of electron beam, relative merits and demerits.	9	FILE CHECKING& REVISION
	30	Laser beam machining: Principles and applications		
	31	Jigs & Fixtures: Introduction		
	32	location and location devices		
10	33	clamping and clamping devices	10	Study of Speed, Feed, Tool, Preparatory (Geometric) and Miscellaneous functions for N. C part programming
	34	Drill Jigs, Milling Fixtures		
	35	REVISION		
	36	REVISION		
11	37	Numerical Control of Machine Tools; Introduction	11	FILE CHECKING& REVISION
	38	Numerical Control & its growth, NC Machines tools		
	39	Axes of NC Machines, Classification of NC System		
	40	CNC, DNC and Machining Centre.		

12	41	Machine Control unit, NC tools & Tool changer	12	Part Programming and proving on a NC lathe for:- a. Outside Turning b. Facing and Step Turning c. Taper Turning d. Drilling e. Outside Threading
	42	Manual Part Programming; coordinate		
	43	Feed, Speed & Tool, Preparation &		
	44	Examples of two axes part programming for Turning and Milling Operations		
13		Sessional exam	13	
14	45	Group Technology; Definition and concept	14	FILE CHECKING& REVISION
	46	Group and Family, working of group technology		
	47	Stages for Adopting Group Technology		
	48	Advantages of Group Technology		
15	49	Component Classification and Coding	15	Part Programming and Proving on a NC Milling Machine:- a. Point to Point Programming b. Absolute Programming c. Incremental Programming
	50	Personnel and Group Technology		
	51	Planning the introduction of Group Technology		
	52	Group Technology layout		
16	53	REVISION	16	FILE CHECKING& REVISION
	54	REVISION		
	55	REVISION		
	56	REVISION		
17	57	REVISION	17	Part Programming and Proving for Milling a Rectangular Slot
	58	REVISION		
	59	REVISION		
	60	REVISION		
18		Pre university exams	18	

Name of Faculty:-

AMIT RANA

Discipline:-

MECHANICAL ENGINEERING

Semester:-

7TH

Subject:

OR(ME-405-F)

Lesson Plan duration:-

30 JULY 2018 TO 30 NOVEMBER 2018

Week	Theory	
	Lecture Day	Topic (including assignment/ test)
1	1	Introduction: Definition, role of operations research in decision-making
	2	applications in industry. Concept on O.R. model building –Types & methods
	3	Linear Programming (LP): Programming definition
	4	formulation, solution- graphical
2	5	simplex Gauss-Jordan reduction process in simplex methods
	6	BIG-M methods computational
	7	NUMERICALS
	8	NUMERICALS
3	9	NUMERICALS
	10	NUMERICALS
	11	REVISION
	12	REVISION
4	13	PROBLEMS
	14	PROBLEMS
	15	PROBLEMS
	16	CLASS TEST
5	17	Deterministic Model: Transportation model-balanced & unbalanced
	18	north west rule, Vogel's Method
	19	least cost or matrix minimal, Stepperg stone method
	20	MODI methods, degeneracy
6	21	assignment, traveling salesman
	22	NUMERICALS
	23	NUMERICALS
	24	NUMERICALS
7	25	Advanced Topic Of LP: Duality, PRIMAL-DUAL relations-its solution,
	26	shadow price, economic interpretation
	27	dual-simplex, post-optimality & sensitivity analysis
	28	NUMERICALS
8		Sessional exam
9	29	Waiting Line Models: Introduction
	30	queue parameters, M/M/1 queue
	31	performance of queuing systems, applications in industries
	32	NUMERICALS
10	33	NUMERICALS
	34	NUMERICALS
	35	Project Line Models: Network diagram
	36	event, activity, defects in network

11	37	PERT & CPM
	38	float in network, variance and probability of completion time
	39	project cost- direct, indirect, total
	40	optimal project cost by crashing of network, resources leveling in project
12	41	NUMERICALS
	42	NUMERICALS
	43	NUMERICALS
	44	REVISION
13		Sessional exam
14	45	Simulation: Introduction
	46	design of simulation, models & experiments
	47	model validation, process generation
	48	time flow mechanism
15	49	Monte Carlo methods- its applications in industries
	50	NUMERICALS
	51	NUMERICALS
	52	NUMERICALS
16	53	Decision Theory: Decision process
	54	SIMON model types of decision making environment- certainty, risk
	55	uncertainty, decision making with utilities
	56	NUMERICALS
17	57	NUMERICALS
	58	NUMERICALS
	59	REVISION
	60	REVISION
18		Pre university exams

<b>Name of Faculty:-</b>		<b>ANITA MANDERNA</b>
<b>Discipline:-</b>		<b>MECHANICAL ENGINEERING</b>
<b>Semester:-</b>		<b>5TH</b>
<b>Subject:</b>		<b>MMD-1 (ME-303-F)</b>
<b>Lesson Plan duration:-</b>		<b>30 JULY 2018 TO 30 NOVEMBER 2018</b>
<b>Week</b>		<b>Theory</b>
	<b>Lecture Day</b>	<b>Topic (including assignment/ test)</b>
1	1	Design Philosophy: Problem identification- problem statement
	2	specifications, constraints, Feasibility study-technical feasibility, economic & financial feasibility
	3	societal & environmental feasibility
	4	Generation of solution field (solution variants)
2	5	Brain storming, Preliminary design
	6	Selection of best possible solution, Detailed design,
	7	Selection of Fits and tolerances and analysis of dimensional chains
	8	Selection of Materials: Classification of Engg. Material
3	9	REVISION
	10	REVISION
	11	REVISION
	12	REVISION
4	13	Mechanical properties of the commonly used engg
	14	Materials, hardness, strength parameters with reference to stress-strain diagram Factor of safety
	15	Mechanical Joints: ISO Metric Screw Threads
	16	Bolted joints in tension, Eccentrically loaded bolted joints in shear and under combined stresses,
5	17	Design of power screws,
	18	Design of various types of welding joints under different static load conditions
	19	Riveted Joints, Cotter & Knuckle Joints: Design of various types of riveted joints under different static loading conditions
	20	eccentrically loaded riveted joints, design of cotter and knuckle joints
6	21	PROBLEMS
	22	PROBLEMS
	23	PROBLEMS
	24	PROBLEMS
7	25	Riveted Joints numericals
	26	Riveted Joints numericals
	27	Riveted Joints numericals
	28	Riveted Joints numericals
8		Sessional exam
9	29	Belt rope and chain drives: Design of belt drives
	30	Flat & V-belt drives
	31	Condition for Transmission of max.Power
	32	Selection of belt, design of rope drives
	33	design of chain drives with sprockets

10	34	numericals
	35	numericals
	36	numericals
11	37	PROBLEMS
	38	PROBLEMS
	39	PROBLEMS
	40	PROBLEMS
12	41	Keys, Couplings & Flywheel: Design of Keys – Flat, Kennedy Keys,
	42	Splines, Couplings design – Rigid & Flexible coupling
	43	turning Moment diagram, coefficient of fluctuation of energy and speed,
	44	design of flywheel – solid disk & rimmed flywheels
13		Sessional exam
14	45	Keys, Couplings & Flywheel: Design of Keys – Flat, Kennedy Keys
	46	Splines, Couplings design – Rigid & Flexible coupling
	47	turning Moment diagram, coefficient of fluctuation of energy and speed,
	48	design of flywheel – solid disk & rimmed flywheels
15	49	Clutches: Various types of clutches in use
	50	Design of friction clutches – Disc. Multidisc
	51	Cone & Centrifugal, Torque transmitting capacity
	52	numericals
16	53	Brakes: Various types of Brakes, Self energizing condition of brakes
	54	Design of shoe brakes – Internal & external expanding
	55	band brakes, Thermal Considerations in brake designing.
	56	numericals
17	57	numericals
	58	numericals
	59	numericals
	60	REVISION
18		Pre university exams

Name of Faculty:-

ANITA MANDERNA

Discipline:-

MECHANICAL ENGINEERING

Semester:-

7TH

Subject:

PPE(ME-407-F)

Lesson Plan duration:-		30 JULY 2018 TO 30 NOVEMBER 2018
Week	Theory	
	Lecture Day	Topic (including assignment/ test)
1	1	Energy resources and their availability
	2	types of power plants, selection of the plants
	3	review of basic thermodynamic cycles used in power plants.
	4	Rainfall and run-off measurements
2	5	plotting of various curves for estimating stream flow and size of reservoir
	6	power plants design, construction and operation of different components of hydro-electric power plants,
	7	site selection, comparison with other types of power plants
	8	Steam Power Plants: Flow sheet and working of modern-thermal power plants
3	9	REVISION
	10	REVISION
	11	REVISION
	12	REVISION
4	13	super critical pressure steam stations, site selection, coal storage,
	14	preparation, coal handling systems, feeding and burning of pulverized fuel,
	15	ash handling systems, dust collection-mechanical dust collector and electrostatic precipitator
	16	Combined Cycles: Constant pressure gas turbine power plants
5	17	Arrangements of combined plants ( steam & gas turbine power plants )
	18	re-powering systems with gas production from coal
	19	using PFBC systems, with organic fluids
	20	parameters affecting thermodynamic efficiency of combined cycles.
6	21	PROBLEMS
	22	PROBLEMS
	23	PROBLEMS
	24	CLASS TEST
7	25	NUMERICAL COMBINED CYCLES
	26	NUMERICAL COMBINED CYCLES
	27	Nuclear Power Plants: Principles of nuclear energy
	28	basic nuclear reactions, nuclear reactors-PWR, BWR
8		Sessional exam
9	29	CANDU, Sodium graphite, fast breeder, homogeneous; gas cooled.
	30	Advantages and limitations, nuclear power station, waste disposal

	31	Power Plant Economics: load curve, different terms and definitions
	32	cost of electrical energy, tariffs methods of electrical energy
10	33	performance & operating characteristics of power plants- incremental rate theory
	34	input-output curves, efficiency, heat rate, economic load sharing
	35	NUMERICALS
	36	NUMERICALS
11	37	PROBLEMS
	38	PROBLEMS
	39	PROBLEMS
	40	CLASS TEST
12	41	Non-Conventional Power Generation: Solar radiation estimation
	42	solar energy collectors, low, medium & high temperature power plants,
	43	OTEC, wind power plants
	44	tidal power plants, geothermal power plants.
13		Sessional exam
14	45	Direct Energy Conversion Systems: Fuel cell
	46	MHD power generation-principle
	47	open & closed cycles systems
	48	thermoelectric power generation
15	49	PROBLEMS
	50	PROBLEMS
	51	PROBLEMS
	52	CLASS TEST
16	53	thermionic power generation
	54	REVISION
	55	REVISION
	56	REVISION
17	57	REVISION
	58	REVISION
	59	REVISION
	60	REVISION
18		Pre university exams



<b>Name of Faculty:-</b>		<b>ANITA MANDERNA</b>			
<b>Discipline:-</b>		<b>MECHANICAL ENGINEERING</b>			
<b>Semester:-</b>		<b>5TH</b>			
<b>Subject:</b>		<b>FM-II (ME-305-F)</b>			
<b>Lesson Plan duration:-</b>		<b>30 JULY 2018 TO 30 NOVEMBER 2018</b>			
Week	Theory		Practical		
	Lecture Day	Topic (including assignment/ test)	Practical Day	Experiment	
1	1	Impact of free jets	1	To study the constructional details of a Pelton turbine and draw its fluid flow circuit	
	2	Impulse – momentum principle			
	3	jet impingement - on a stationary flat plate			
	4	inclined plate and a hinged plate			
2	5	at the center of a stationary vane	2		
	6	on a moving flat plate, inclined plate			
	7	a moving vane and a series of vanes			
	8	Jet striking tangentially at the tip of a stationary vane and moving vane(s), jet propulsion of ships			
3	9	NUMERICALS	3	To study the constructional details of a Francis turbine and draw its fluid flow circuit	
	10	NUMERICALS			
	11	NUMERICALS			
	12	NUMERICALS			
4	13	Impulse Turbines: Classification – impulse and reaction turbines	4		
	14	water wheels, component parts, construction, operation and governing mechanism of a Pelton wheel			
	15	work done, effective head, available head and efficiency of a Pelton wheel			
	16	design aspects, speed ratio, flow ratio, jet ratio, number of jets			
5	17	number of buckets and working proportions, Performance Characteristics, governing of impulse turbines	5	To draw the constant head, constant speed and constant efficiency performance characteristics of Francis turbine	
	18	NUMERICALS			
	19	NUMERICALS			
	20	NUMERICALS			
6	21	Francis Turbines: Component parts, construction and operation of a Francis turbine, governing mechanism	6		
	22	work done by the turbine runner, working proportions and design parameters, slow, medium and fast runners			
	23	degree of reaction, inward/outward flow reaction turbines, Performance Characteristics			
	24	NUMERICALS			
7	25	NUMERICALS	7	To study the construction details of a Kaplan turbine and draw its fluid flow circuit	
	26	NUMERICALS			
	27	Component parts, construction and operation of a Propeller, Kaplan turbine, differences between the Francis and Kaplan turbines,			
	28	draft tube - its function and different forms, Performance Characteristics, Governing of reaction turbine			
8		Sessional exam	8		
9	29	Introduction to new types of turbine, Deriaz ( Diagonal ) , Bulb, Tubular turbines	9	To study the constructional details of a Centrifugal Pump and draw its characteristic curves	
	30	NUMERICALS			
	31	NUMERICALS			
	32	NUMERICALS			

10	33	Dimensional Analysis and Model Similitude: Dimensional homogeneity, Rayleigh's method and Buckingham's $\pi$ -theorem, model studies and similitude, dimensionless numbers and their significance. Unit quantities,	10	
	34	specific speed and model relationships for turbines, scale effect, cavitations – its causes, harmful effects and prevention,		
	35	Thomas cavitation factor, permissible installation height		
	36			
11	37	Centrifugal Pumps: Classification, velocity vector diagrams and work done, manometric efficiency, vane shape, head capacity relationship and pump losses, pressure rise in impeller, minimum starting speed,	11	To study the constructional details of a Reciprocating Pump and draw its characteristics curves.
	38	design considerations, multi-stage pumps. Similarity relations and specific speed, net positive suction head,		
	39	cavitation and maximum suction lift, performance characteristics. Brief introduction to axial flow, mixed flow and submersible pumps		
	40			
12	41	NUMERICALS	12	
	42	NUMERICALS		
	43	NUMERICALS		
	44	REVISION		
13		Sessional exam	13	
14	45	Reciprocating Pumps: Construction and operational details, discharge coefficient, volumetric efficiency and slip	14	To study the construction details of a Gear oil pump and its performance curves
	46	work and power input, effect of acceleration and friction on indicator diagram (pressure – stroke length plot)		
	47	separation, air vessels and their utility, rate of flow into or from the air vessel, maximum speed of the rotating crank		
	48	characteristic curves, centrifugal vs reciprocating pumps, brief introduction to screw, gear, vane and radial piston pumps		
15	49	NUMERICALS	15	To study the constructional details of a Hydraulic Ram and determine its various efficiencies
	50	NUMERICALS		
	51	NUMERICALS		
	52	REVISION		
16	53	Hydraulic systems: Function, construction and operation of Hydraulic accumulator	16	To study the model of Hydro power plant and draw its layout
	54	hydraulic intensifier, hydraulic crane, hydraulic lift		
	55	hydraulic press, Fluid coupling and torque converter, Hydraulic ram		
	56	NUMERICALS		
17	57	NUMERICALS	17	To study the constructional details of a Centrifugal compressor
	58	NUMERICALS		
	59	REVISION		
	60	REVISION		
18		PRE UNIVERSITY EXAMS	18	

Name of Faculty:- PARDEEP KUMAR  
 Discipline:- MECHANICAL  
 Semester:- 7th  
 Subject: Refrigeration and Air Conditioning(ME-403-F)  
 Lesson Plan duration 30 July 2018 to 30 November 2018

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/ test		
1	1	Introduction to RAC	1	To study the vapour compression Refrigeration System and determine its C.O.P. and draw P-H and T-S diagrams.
	2	Method of re Fridgeration		
	3	COP & unit of re Fridgeration		
	4	Fundamentals of Air Conditioning Systems		
2	5	Refrigerants and their Classification and Nomenclature	2	To Study the Mechanical heat pump and find its C.O.P.
	6	Desirable properties of refrigerents		
	7	secondary refrigerants and Introduction to eco-friendly Refrigerants		
	8	Carnot refrigeration cycle.		
3	9	Bell Coleman air refrigeration cycle	3	To study the Air and Water heat pump and find its C.O.P.
	10	Air craft refrigeration systems, Simple cooling and Simple evaporative types		
	11	Boot strap and Boot strap evaporative types		
	12	Regenerative type and Reduced Ambient type system		
4	13	problems	4	To study the cut- sectional models of Reciprocating and Rotary Refrigerant compressor
	14	Simple VC Refrigeration systems		
	15	Analysis of VC cycle		
	16	Limitations of Reversed Carnot cycle with vc		
5	17	problems	5	To study the various controls used in Refrigerating & Air Conditioning systems.
	18	Compound VC cycle and their necessity		
	19	Vapour Absorption Refrigeration Systems		
	20	Electrolux Refrigeration		
6	21	Steam Jet Refrigerating System	6	To study the Ice- plant, its working cycle and determine its C.O.P and capacity.
	22	problems		
	23	problems		
	24	introduction to Psychrometry of Air		
7	25	Properties of moist Air	7	To study the humidification, heating, cooling and dehumidification processes and plot them on Psychrometric charts.
	26	Psychrometric chart		
	27	Psychrometry of air-conditioning processes		
	28	problems		
8		sessional exam		
9	29	Air- Conditioning Load Calculations	8	To determine the By-pass factor of Heating & Cooling coils and plot them on Psychrometric charts on different inlet conditions.
	30	problems		
	31	Air Conditioning Systems with Classifications		
	32	Layout of AC plants		

10	33	summer airconditioning system	9	To determine sensible heat factor of Air on re-circulated air-conditioning set up.
	34	Winter air conditioning systems		
	35	various sensors and coil of ac system		
	36			
11	37	compressors and their types	10	To study the chilling plant and its working cycle.
	38	Types of Condensers and Heat transfer in condensers		
	39	Types of expansion devices		
	40	types of evaporators		
12	41	Cooling and Dehumidifying coils		revision and problems
	42	problems		
	43	problems		
	44	class test		
13		sessional exam		file checking
14	45	revision		revision and problems
	46	revision		
	47	revision		
	48	revision		
15	49	revision		file checking
	50	revision		
	51	problems		
	52	problems		
16	53	problems		revision and problems
	54	problems		
	55	problems		
	56	problems		
17	57			file checking
	58	class test		
	59			
	60	class test		
18		Pre University Exams		

Name of Faculty:- PARDEEP KUMAR  
 Discipline:- MECHANICAL  
 Semester:- 5th  
 Subject: Dynamics Of Machines ME-301-F  
 Lesson Plan duration:- 30 July 2018 to 30 November 2018

Week	Theory		Practical	
	Lecture Day			
1	1	Introduction of Dynamics of machine	1	To perform experiment on Watt and Porter Governors to prepare performance characteristic Curves, and to find stability & sensitivity
	2	Introduction to static and dynamic force analysis		
	3	Static force analysis of planer mechanisms,		
	4	Dynamic force analysis including inertia and frictional forces of planer mechanisms.		
2	5	Dynamic force analysis including inertia and frictional forces of planer mechanisms.	2	To perform experiment on Proell Governor to prepare performance characteristic curves, and to find stability & sensitivity
	6	Dynamics of Reciprocating Engines		
	7	Bearing loads in a single cylinder engine		
	8	Various engine shaking forces		
3	9	Numericals	3	To perform experiment on Hartnell Governor to prepare performance characteristic Curves, and to find stability & sensitivity
	10	Introduction of Balancing of Rotating Component		
	11	Static balance and dynamic balancing		
	12	Graphical methods of balancing for different plane		
4	13	Analytical methods of balancing for different plane	4	To study gyroscopic effects through models
	14	Balancing of single cylinder engine		
	15	Balancing of multi cylinder		
	16	Inline, radial and V type engine		
5	17	Problems	5	To determine gyroscopic couple on Motorized Gyroscope.
	18	Introduction to Governor		
	19	Types of governors		
	20	characteristics of centrifugal governors		
6	21	Gravity controlled centrifugal governors	6	To perform the experiment for static balancing on static balancing machine
	22	Spring controlled centrifugal governors		
	23	Hunting of centrifugal governors		
	24	Inertia Governor		
7	25	Problems	7	for dynamic balancing on dynamic balancing machine.
	26	Dynamometers and their types		
	27	Prony brake Dynamometer		
	28	Rope brake dynamometer		
8		sessional exam		
9	29	Torsion dynamometer	8	Determine the moment of inertial of connecting rod by compound pendulum method and tri-flair suspension pendulum.
	30	Hydraulic dynamometer		
	31	Belt transmission dynamometer		
	32	Numericals		

10	33	Problems		file checking
	34	Introduction of gyroscope		
	35	Gyroscopic forces and couples		
	36	Gyroscopic stabilization of aroplane		
11	37	Numericals		revision and problems
	38	ship stabilization		
	39	Numericals		
	40	stability of four wheel vehicles moving on curved paths		
12	41	stability of two wheel vehicles moving on curved paths.		file checking
	42	Numericals		
	43	problems		
	44	problems		
13		sessional exam		revision and problems
14	45	Class test		file checking
	46	revision		
	47	revision		
	48	revision		
15	49	revision		revision and problems
	50	revision		
	51	Problems		
	52	problems		
16	53	Problems		file checking
	54	problems		
	55	problems		
	56	problems		
17	57	Class test		revision and problems
	58			
	59	Class test		
	60			
18	69	Pre University Exams		
	70			
	71			
	72			

Name of Faculty:-

PARDEEP KUMAR KHOKHAR

Discipline:-

MECHANICAL

Semester:-

3rd

Subject:

Machine Drawing(ME-209-F)

Lesson Plan duration:-

30 July 2018 to 30 November 2018

Week	Lecture Day	Topic
		(including assignment/ test)
1	1	Introduction of Machine Drawing, classification of drawing, lines, scales, section dimensioning and standard abbreviation
	2	
	3	
	4	
2	5	Limits , fits and Tolerance, Surface finish, Gears and their classification and nomenclature
	6	
	7	
	8	
3	9	Orthographic projections
	10	
	11	
	12	
4	13	Drawing of sectional views of cotter and knuckle joints
	14	
	15	
	16	
5	17	Assembly drawing of Machine vice
	18	
	19	
	20	
6	21	Drawing of sectional views of riveted and welded joints
	22	
	23	
	24	
7	25	Assembly drawing of Lathe Tail stock
	26	
	27	
	28	
8		sessional exam
9	29	Assembly drawing of Pedestal bearing
	30	
	31	
	32	
10	33	Assembly drawing with sectioning of Steam stop valve
	34	
	35	
	36	

11	37	Assembly drawing with sectioning of Stuffing box
	38	
	39	
	40	
12	41	Assembly drawing with sectioning of Drill jigs
	42	
	43	
	44	
13		sessional exam
15	45	Assembly drawing with sectioning of Milling fixture
	46	
	47	
	48	
16	49	Drawing of sectional views of piston and connecting rod
	50	
	51	
	52	
	53	class test
	54	
	55	
	56	
17	57	problems
	58	
	59	
	60	
18		Pre University Exams



Name of Faculty:- PARDEEP KUMAR  
 Discipline:- MECHANICAL  
 Semester:- 3rd  
 Subject: Thermodynamic(ME-201-F)  
 Lesson Plan duration:- 30 July 2018 to 30 November 2018

Week	Theory	
	Lecture Day	Topic (including assignment/ test)
1	1	Basic Concepts: Macroscopic and Microscopic Approaches, Thermodynamic Systems, Surrounding and Boundary,
	2	Thermodynamic Property – Intensive and Extensive, Thermodynamic Equilibrium,
	3	State, Path, Process and Cycle, Quasi-static, Reversible and Irreversible Processes, Working Substance
	4	Concept of Thermodynamic Work and Heat, Equality of Temperature, Zeroth Law of Thermodynamic and its utility
2	5	First Law of Thermodynamics: Energy and its Forms, Energy and 1st law of Thermodynamics, Internal Energy and Enthalpy, PMMFK
	6	Steady flow energy equation, 1 st Law Applied to Non- flow process.
	7	Steady Flow Process and Transient Flow Process, Throttling Process and Free Expansion Process
	8	Problems
3	9	Problems
	10	Problems
	11	Second Law of Thermodynamics: Limitations of First Law, Thermal Reservoir, Heat Source and Heat Sink
	12	Heat Engine, Refrigerator and Heat Pump, Kelvin- Planck and Clausius Statements and their Equivalence,
4	13	PMMSK. Carnot Cycle, Carnot Heat Engine and Carnot Heat Pump, Carnot Theorem and its Corollaries, Thermodynamic Temperature Scale.
	14	Entropy, Clausius Inequality, Principle of Entropy Increase, Temperature Entropy Plot, Entropy Change in Different
	15	Availability and Irreversibility: High and Low Grade Energy, Availability and Unavailable Energy
	16	Loss of Available Energy Due to Heat Transfer Through a Finite Temperature Difference
5	17	Dead state of a system, Availability of a Non-Flow or Closed System
	18	Availability of a Steady Flow System, Helmholtz and Gibb's Functions
	19	Effectiveness and Irreversibility, Second law efficiencies of processes & cycles
	20	Problems
6	21	Problems
	22	Problems
	23	problems
	24	Pure Substance: Pure Substance and its Properties
7	25	Phase and Phase Transformation, Vaporization, Evaporation and Boiling
	26	Saturated and Superheat Steam, Solid – Liquid – Vapour Equilibrium
	27	T-V, P-V and P-T Plots During Steam Formation, Properties of Dry
	28	Wet and Superheated Steam, Property Changes During Steam Processes
8	29	sessional exam
	30	
	31	
	32	
	33	Temperature – Entropy (T-S) and Enthalpy – Entropy (H-S) Diagrams.

9	34	Throttling and Measurement of Dryness Fraction of Steam
	35	Ideal and Real Gases: Concept of an Ideal Gas, Basic Gas Laws
	36	Characteristic Gas Equation, Avogadro's law and Universal Gas Constant
10	37	P-V-T surface of an Ideal Gas. Vander Waal's Equation of state
	38	Reduced Co-ordinates, Compressibility factor and law of corresponding states
	39	Mixture of Gases, Mass, Mole and Volume Fraction, Gibson
	40	Dalton's law, Gas Constant and Specific Heats
11	41	Entropy for a mixture of non-reactive gases
	42	Problems
	43	Problems
	44	Problems
12	45	Problems
	46	Problems
	47	problems
	48	class test
13	49	sessional exam
	50	
	51	
	52	
14	53	Thermodynamic Relations: Maxwell Relations
	54	Clapeyron Equation, Relations for changes in Enthalpy and Internal Energy & Entropy
	55	Specific Heat Capacity Relations, Joule Thomson coefficient & inversion curve.
	56	Problems
15	57	Problems
	58	Gas power Cycles: Carnot Cycle, Otto Cycle, Diesel Cycle
	59	Dual Cycle, Stirling Cycle, Ericson cycle .
	60	Brayton cycle
16	61	problems
	62	problems
	63	problems
	64	problems
17	65	class test
	66	
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18	69	Pre University Exams
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Name of Faculty:-		PARDEEP KUMAR SHARMA			
Discipline:-		MECHANICAL			
Semester:-		5th			
Subject:		ICEGT ME-307-F			
Lesson Plan duration:-		30 july 2018 to 30 november 2018			
Week	Theory		Practical		
	Lecture Day				
1	1	Air Standard Cycles: Internal and external combustion engines; classification of I.C. Engines, Cycles of operation	1	To study the constructional details & working principles of two-stroke/ four stroke petrol engine.	
	2	in four stroke and two stroke I.C. Engines, Wankel Engines, Assumptions made in air standard cycle; Otto cycle;			
	3	diesel cycle, dual combustion cycle, comparison of Otto, diesel and dual combustion cycles; sterling and Ericsson			
	4	cycles; air standard efficiency, specific work output, specific weight; work ratio; mean effective pressure;			
2	5	deviation of actual engine cycle from ideal cycle	2	To study the constructional detail & working of two-stroke/ four stroke diesel engine.	
	6	Carburetion, fuel Injection and Ignition systems Mixture requirements for various operating conditions in S.I.			
	7	Engines; elementary carburetor, Requirements of a diesel injection system; types of inject systems; petrol			
	8	injection, Requirements of ignition system; types of ignition systems ignition timing; spark plugs			
3	9	problems	3	Analysis of exhaust gases from single cylinder/multi cylinder diesel/petrol engine by Orsat	
	10	problems			
	11	problems			
	12	problems			
4	13	problems	4	To prepare heat balance sheet on multi-cylinder diesel engine/petrol engine.	
	14	Combustion in I.C. Engines : S.I. engines; Ignition limits; stages of combustion in S.I. Engines; Ignition lag;			
	15	velocity of flame propagation; detonation; effects of engine variables on detonation; theories of detonation; octane			
	16	rating of fuels; pre-ignition; S.I. engine combustion chambers, Stages of combustion in C.I. Engines; delay period			
5	17	variables affecting delay period; knock in C.I. engines, Cetane rating; C.I. engine combustion chambers.	5	To find the indicated horse power (IHP ) on multi-cylinder petrol engine/diesel engine by Morse test	
	18	Lubrication and Cooling Systems: Functions of a lubricating system, Types of lubrication system; mist, wet sump			
	19	dry sump systems; properties of lubricating oil SAE rating of lubricants, engine performance and lubrication,			
	20	Necessity of engine coolingdisadvantages of overcooling cooling systems; air-cooling, water cooling; radiators.			
6	21	Engine Testing and Performance: Performance parameters BHP, IHP, mechanical efficiency, brake mean	6	. To prepare variable speed performance test of a multi-cylinder/single cylinder petrol engine/dieselTo perform the experiment for static balancing on static balancing machine	
	22	effective pressure and indicative mean effective pressure torque, volumetric efficiency; specific fuel consumption			
	23	Engine Testing and Performance: Performance parameters BHP, IHP, mechanical efficiency, brake mean			
	24	effective pressure and indicative mean effective pressure, torque, volumetric efficiency; specific fuel consumption			
7	25	indicated power and friction power, heat lost to coolant and exhaust gases; performance curves.	7	To find fhp of a multi-cylinder diesel engine/petrol engine by William's	
	26	Problems			

7	27	Air pollution from I.C. Engine and Its remedies: Pollutants from S.I. and C.I. Engines, Methods of emission	7	engine/petrol engine by whman s line method & by motoring method.
	28	control; alternative fuels for I.C. Engines; the current scenario on the pollution		
8	29	sessional exam		
	30			
	31			
	32			
9	33	Rotary Compressors: Root and vane blowers; Static and total head values; Centrifugal compressors- Velocity	8	To perform constant speed performance test on a single cylinder/multi-cylinder diesel engine & draw. curves of (i) bhp vs fuel rate, air rate and A/F and (ii) bhp vs mep, mech efficiency & sfc.
	34	diagrams, slip factor, ratio of compression, pressure coefficient, pre-whirl; Axial flow compressor- Degree of reaction		
	35	polytropic efficiency, surging, choking and stalling, performance characteristics,		
	36	Problems		
10	37	Problems		To measure CO & Hydrocarbons in the exhaust of 2- stroke / 4-stroke petrol engine.
	38	Problems		
	39	Problems		
	40	Gas Turbines: Brayton cycle; Components of a gas turbine plant; open and closed types of gas turbine plants;		
11	41	Optimum pressure ratio; Improvements of the basic gas turbine cycle; multi stage compression with inter-cooling;		To find intensity of smoke from a single cylinder / multi-cylinder diesel engine.
	42	multi stage expansion with reheating between stages; exhaust gas heat exchanger, Applications of gas turbines.		
	43	Problems		
	44	Problems		
12	45	Problems		To draw the scavenging characteristic curves of single cylinder petrol engine.file checking
	42	problems		
	43	Class test		
	44	Class test		
13	45	sessional exam		
	46			
	47			
	48			
14	49	assignments on numericals		file checking
	50	assignments on numericals		
	51	discussion on problems		
	52	discussion on problems		
15	53	revision		revision and problems
	54	revision		
	55	Problems		
	56	problems		
16	57	Problems		file checking
	58	problems		
	59	problems		
	60	problems		
17	61	Class test		revision and problems
	62			
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18	69	Pre University Exams		
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	72			

Name of Faculty:- PARDEEP KUMAR KHOKHAR  
 Discipline:- MECHANICAL  
 Semester:- 3rd  
 Subject: Machine Drawing(ME-209-F)  
 Lesson Plan duration:- 30 July 2018 to 30 November 2018

Week	Lecture Day	Topic (including assignment/ test)
1	1	Introduction of Machine Drawing, classification of drawing, lines, scales, section dimensioning and standard abbreviation
	2	
	3	
	4	
2	5	Limits , fits and Tolerance, Surface finish, Gears and their classification and nomenclature
	6	
	7	
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3	9	Orthographic projections
	10	
	11	
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4	13	Drawing of sectional views of cotter and knuckle joints
	14	
	15	
	16	
5	17	Assembly drawing of Machine vice
	18	
	19	
	20	
6	21	Drawing of sectional views of riveted and weded joints
	22	
	23	
	24	
7	25	Assembly drawing of Lathe Tail stock
	26	
	27	
	28	
8	29	sessional exam
	30	
	31	
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9	33	Assembly drawing of Pedestal bearing
	34	
	35	
	36	
10	37	
	38	

10	39	Assembly drawing with sectioning of Steam stop valve
	40	
11	41	Assembly drawing with sectioning of Stuffing box
	42	
	43	
	44	
12	45	Assembly drawing with sectioning of Drill jigs
	46	
	47	
	48	
13	49	sessional exam
	50	
	51	
	52	
15	53	Assembly drawing with sectioning of Milling fixture
	54	
	55	
	56	
16	57	Drawing of sectional views of piston and connecting rod
	58	
	59	
	60	
	61	class test
	62	
	63	
	64	
17	65	problems
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18	69	Pre University Exams
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	72	

**Name of Faculty:-** SANDEEP DESWAL  
**Discipline:-** MECHANICAL ENGINEERING  
**Semester:-** 3rd  
**Subject:** EM (ME-205-F)

**Lesson Plan duration:-** 30 JULY 2018 TO 30 NOVEMBER 2018

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/ test)	Practical Day	Experiment
1	1	Force system, dimensions and units in mechanics, Laws of mechanics, vector algebra,	1	Verification of reciprocal theorem of deflection using a simply supported beam
	2	addition and subtraction of forces, cross and dot products of vectors, moment of a force about a point and axis, couple		
	3	couple moment, transfer of a force to a parallel position		
	4	resultant of a force system using vector method		
2	5	Problems involving vector application	2	Verification of moment area theorem for slopes and deflections of the beam.
	6	Equilibrium: Static and dynamic equilibrium, static in determinacy,		
	7	general equations of equilibrium, Varignon's theorem, Lami's theorem		
	8	equilibrium of bodies under a force system		
3	9	NUMERICALS	3	FILE CHECKING & REVISION
	10	NUMERICALS		
	11	NUMERICALS		
	12	NUMERICALS		
4	13	PROBLEMS	4	Deflections of a truss-horizontal deflections & vertical deflections of various joints of a pin-jointed truss
	14	PROBLEMS		
	15	PROBLEMS		
	16	CLASS TEST		
5	17	Truss, classification of truss, assumptions in truss analysis	5	Elastic displacements (vertical & horizontal) of curved members
	18	perfect truss, analysis of perfect plane truss using method of joints and method of sections		
	19	NUMERICALS		
	20	NUMERICALS		
6	21	NUMERICALS	6	FILE CHECKING & REVISION
	22	NUMERICALS		
	23	PROBLEMS		
	24	PROBLEMS		
7	25	Centroid, Centre of mass and Centre of gravity, Determination of centroid	7	Experimental and analytical study of 3 hinged arch and influence line for horizontal thrust
	26	centre of gravity by integration method of regular and composite figures and solid objects		
	27	centre of gravity by integration method of regular and composite figures and solid objects		
	28	NUMERICALS		
8		Sessional exam	8	
9	29	Moment of Inertia: Area moment of inertia, mass moment of inertia, parallel axis	9	Experimental and analytical study of behavior of struts with various end conditions
	30	perpendicular axis theorems, radius of gyration		
	31	polar moment of inertia, product of inertia		

	32	principle axis, problem based on composite figures and solid objects		
10	33	Kinematics: Concept of rigid body, velocity and acceleration,	10	To determine elastic properties of a beam
	34	relative velocity, translation and rotation of rigid bodies		
	35	equations of motion for translation and rotation		
	36	NUMERICALS		
	37	NUMERICALS		
11	38	NUMERICALS	11	FILE CHECKING & REVISION
	39	NUMERICALS		
	40	NUMERICALS		
	41	PROBLEMS		
12	42	PROBLEMS	12	Experiment on a two-hinged arch for horizontal thrust & influence line for Horizontal thrust
	43	PROBLEMS		
	44	PROBLEMS		
		Sessional exam		
14	45	Particle Dynamics: Energy methods and momentum methods	14	FILE CHECKING & REVISION
	46	Newton's laws, work energy equation for a system of particles		
	47	linear and angular momentum equations, projectile motion		
	48	NUMERICALS		
15	49	NUMERICALS	15	. Experimental and analytical study of a 3 bar pin jointed Truss
	50	NUMERICALS		
	51	PROBLEMS		
	52	PROBLEMS		
16	53	Shear Force and Bending Moment Diagram for statically determinant beams	16	10. Experimental and analytical study of deflections for unsymmetrical bending of a Cantilever beam
	54	Classification of beams, types of loads, shear force		
	55	bending moment calculation their graphical presentation, point of inflection		
	56	NUMERICALS		
17	57	NUMERICALS	17	FILE CHECKING & REVISION
	58	NUMERICALS		
	59	REVISION		
	60	REVISION		
18		PRE UNIVERSITY EXAMS	18	



**Name of Faculty:-** SANDEEP DESWAL  
**Discipline:-** MECHANICAL ENGINEERING  
**Semester:-** 7TH  
**Subject:** QE(ME-417-F)

**Lesson Plan duration:-** 30 JULY 2018 TO 30 NOVEMBER 2018

Week	Theory	
	Lecture Day	Topic (including assignment/ test)
1	1	Basic Concept Quality Costs: Fitness for Use, Quality Characteristics
	2	Parameters of Fitness for use, Definition of quality and its meaning and importance in industry
	3	Control and Quality control, Quality Tasks, Quality functions
	4	The system Concept, Quality systems, quality assurance and ISO 9000 quality system standards,
2	5	Quality costs concept, Quality cost categories
	6	Examples of Quality cost studies, Securing the Cost figures
	7	Pareto Analysis, Cost reduction Programs and economics of quality.
	8	PROBLEMS
3	9	PROBLEMS
	10	PROBLEMS
	11	REVISION
	12	REVISION
4	13	REVISION
	14	REVISION
	15	REVISION
	16	CLASS TEST
5	17	Control charts: Statistical Tools in Quality control, The concept of variation, Tabular Summarization of Data
	18	Frequency distribution, Graphical Summarization of Data: The Histogram, Quantitative methods of summarizing data: Numerical Indices
	19	Probability distributions : General, The normal Probability distribution, The normal curve and Histogram Analysis
	20	The causes of variation, statistical aspect of control charting, concept of rational sub-grouping
6	21	detecting patterns on the control charts, for variables and attributes: X and R, X and S, p, np, c and u charts
	22	specification and tolerances, natural tolerance limits,
	23	specification limits, process capability ratio analysis and narrow limit gauging
	24	PROBLEMS
7	25	PROBLEMS
	26	PROBLEMS
	27	REVISION
	28	CLASS TEST
8		Sessional exam
	29	Basic statistical concepts: Descriptions of Binomial

9	30	Poisson and Normal distribution with practical examples basics of sampling distribution.
	31	Acceptance Sampling: Principle of acceptance sampling, Acceptance sampling by attributes:
	32	single multiple and sequential sampling plans, lot quality protection and average outgoing quality protection,
10	33	Acceptance sampling by variables sampling plans of process parameters
	34	PROBLEMS
	35	PROBLEMS
	36	PROBLEMS
11	37	REVISION
	38	REVISION
	39	REVISION
	40	REVISION
12	41	CLASS TEST
	42	Total quality Management: Basic concepts of TQM
	43	historical review, leadership, concepts, role of senior management, quality statements
	44	
13		Sessional exam
14	45	plans for process parameters, Modern Quality Management Techniques
	46	TQM tools: Benchmarking, QFD
	47	Taguchi quality loss function TPM, FMEA.
	48	Lean Manufacturing continuous improvement techniques
15	49	JIT systems, pareto diagrams, cause and effect diagrams
	50	scatter diagram, run charts
	51	affinity diagrams, inter-relationship diagram
	52	process decision program charts
16	53	PROBLEMS
	54	PROBLEMS
	55	PROBLEMS
	56	PROBLEMS
17	57	REVISION
	58	REVISION
	59	REVISION
	60	REVISION
18		PRE UNIVERSITY EXAMS

**Name of Faculty:-** SANDEEP DESWAL  
**Discipline:-** MECHANICAL ENGINEERING  
**Semester:-** 7TH  
**Subject:** SOM(ME-401-F)

**Lesson Plan duration:** 30 JULY 2018 TO 30 NOVEMBER 2018

Week	Theory	
	Lecture Day	Topic (including assignment/ test)
1	1	Strain Energy & Impact Loading: Definitions, expressions for strain energy stored in a body when load is applied (i) gradually
	2	(ii) suddenly and (iii) with impact
	3	strain energy of beams in bending, beam deflections
	4	strain energy of shafts in twisting
2	5	energy methods in determining spring deflection
	6	Castigliano's & Maxwell's theorems
	7	NUMERICALS
	8	NUMERICALS
3	9	NUMERICALS
	10	NUMERICALS
	11	Theories of Elastic Failure: Various theories of elastic failures with derivations
	12	graphical representations, applications to problems of 2- dimensional stress system with (i) Combined direct loading and bending,
4	13	(ii) combined torsional and direct loading
	14	PROBLEMS
	15	PROBLEMS
	16	PROBLEMS
5	17	NUMERICALS
	18	NUMERICALS
	19	NUMERICALS
	20	NUMERICALS
6	21	Unsymmetrical Bending: Properties of beam cross section, product of inertia
	22	ellipse of inertia, slope of the neutral axis
	23	stresses & deflections, shear center and the flexural axis
	24	NUMERICALS
7	25	NUMERICALS
	26	NUMERICALS
	27	REVISION
	28	REVISION
8		Sessional exam

9	29	Thin Walled Vessels : Hoop & Longitudinal stresses & strains in cylindrical & spherical vessels
	30	their derivations under internal pressure, wire wound cylinders
	31	NUMERICALS
	32	NUMERICALS
10	33	NUMERICALS
	34	NUMERICALS
	35	PROBLEMS
	36	PROBLEMS
11	37	REVISION
	38	REVISION
	39	REVISION
	40	CLASS TEST
12	41	Thick Cylinders & Spheres : Derivation of Lamé's equations, radial & hoop stresses
	42	strains in thick, and compound cylinders
	43	spherical shells subjected to internal fluid pressure only
	44	wire wound cylinders, hub shrunk on solid shaft
13		Sessional exam
14	45	NUMERICALS THICK CYLINDERS
	46	Rotating Rims & Discs: Stresses in uniform rotating rings & discs
	47	rotating discs of uniform strength, stresses in ( D ) rotating rims, neglecting the effect of spokes,
	48	(ii) rotating cylinders, hollow cylinders & solids cylinders
15	49	NUMERICALS
	50	NUMERICALS
	51	NUMERICALS
	52	NUMERICALS
16	53	Bending of Curved Bars : Stresses in bars of initial large radius of curvature
	54	bars of initial small radius of curvature, stresses in crane hooks
	55	rings of circular & trapezoidal sections, deflection of curved bars & rings
	56	deflection of rings by Castigliano's theorem stresses in simple chain link
17	57	deflection of simple chain links
	58	<b>Springs: Stresses in open coiled helical spring subjected to axial loads</b>
	59	and twisting couples, leaf springs, flat spiral springs, concentric springs
	60	NUMERICALS
18		PRE UNIVERSITY EXAMS

**Name of Faculty:-** SANDEEP DESWAL  
**Discipline:-** MECHANICAL ENGINEERING  
**Semester:-** 7TH  
**Subject:-** ADV. CAD/CAM LAB(ME-413-F)

**Lesson Plan duration:-** 30 JULY 2018 TO 30 NOVEMBER 2018

Week	Theory	
	Lecture Day	Topic (including assignment/ test)
1	1	Use and learn import/export techniques and customization of software
	2	
	3	
	4	
2	5	CAM Assignments Physical interpretation of machining features and tool geometries
	6	
	7	
	8	
3	9	Construction of simple machine parts and components like Coupling
	10	
	11	
	12	
4	13	CAM Assignments Tool path generation, Part programming
	14	
	15	
	16	
5	17	Construction of simple machine parts and components like , Crankshaft
	18	
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6	21	
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7	25	Construction of simple machine parts and components like Pulley, Piston
	26	
	27	
	28	
8		Sessional exam
9	29	Construction of simple machine parts and components like Connecting rod, nuts, bolts
	30	
	31	
	32	
10	33	. CAM Assignments G & M codes development for machining operations
	34	
	35	

	36	
11	37	Construction of simple machine parts and components gears and helical springs
	38	
	39	
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	41	
12	42	
	43	
	44	
13		Sessional exam
14	45	Assembly drawing Lathe Tail stock
	46	
	47	
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15	49	
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16	53	Assembly drawing Machine vice, Pedestal bearing
	54	
	55	
	56	
17	57	Make the part family/family table of a bolt.
	58	
	59	
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18		PRE UNIVERSITY EXAMS

**Name of Faculty:-** VINAY MALIK  
**Discipline:-** MECHANICAL ENGINEERING  
**Semester:-** 3rd  
**Subject:** MATERIAL SCIENCE (ME-207-F)

**Lesson Plan duration** 30 JULY 2018 TO 30 NOVEMBER 2018

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/ test)	Practical Day	Experiment
1	1	Review of crystal structure, space lattice	1	To study crystal structures of a given specimen.
	2	crystal planes and crystal directions		
	3	co-ordination number, number of atoms per unit cell		
	4	atomic packing factor		
2	5	NUMERICALS	2	FILE CHECKING & REVISION
	6	NUMERICALS		
	7	NUMERICALS		
	8	NUMERICALS		
3	9	Crystal imperfections and their classifications	3	To study crystal imperfections in a given specimen
	10	point defects, line defects		
	11	edge & screw dislocations, surface defects		
	12	volume defects & effects of imperfections on metal properties		
4	13	PROBLEMS	4	FILE CHECKING & REVISION
	14	PROBLEMS		
	15	PROBLEMS		
	16	CLASS TEST		
5	17	Introduction to single and multiphase solid solutions	5	To study microstructures of metals/ alloys
	18	types of solid solutions		
	19	importance and objectives of phase diagram, systems		
	20	phase and structural constituents, cooling curves		
6	21	unary & binary phase diagrams, Gibbs's phase rule	6	FILE CHECKING & REVISION
	22	Lever rule, eutectic and eutectoid systems		
	23	peritectic and peritectoid systems		
	24	iron carbon equilibrium diagram and TTT diagram		
7	25	Principles, purpose, classification of heat treatment processes	7	To study heat treatment processes (hardening and tempering) of steel specimen
	26	annealing, normalizing, stress relieving		
	27	hardening, tempering, carburizing, nitriding, cyaniding, flame and induction hardening.		
	28	Allotropic transformation of iron and steel, Properties of austenite, ferrite, pearlite, martensite		
8		Sessional exam	8	
9	29	Elastic and plastic deformation	9	FILE CHECKING & REVISION
	30	mechanism of plastic deformation, twinning		
	31	conventional and true stress strain curves for polycrystalline materials		
	32	yield point phenomena, strain ageing, work hardening		
10	33	Bauschinger effect, season cracking.	10	To study microstructure
	34	Recovery, re-crystallization and grain growth		

10	35	Failure analysis, fracture	10	of heat-treated steel
	36	process of fracture, types of fracture		
11	37	fatigue, characteristics of fatigue	11	To study thermo-setting of plastics
	38	fatigue limit, mechanism of fatigue, factors affecting fatigue.		
	39	PROBLEMS		
	40	PROBLEMS		
12	41	PROBLEMS	12	FILE CHECKING & REVISION
	42	PROBLEMS		
	43	REVISION		
	44	CLASS TEST		
13		Sessional exam	13	
14	45	Definition and concept, creep curve	14	To study the creep behavior of a given specimen
	46	mechanism of creep, impact of time and temperature on creep		
	47	creep fracture, creep testing		
	48	prevention against creep. Corrosion: Mechanism		
15	49	effect of corrosion, prevention of corrosion	15	To study the properties of various types of plastics
	50	Polymers, formation of polymers		
	51	polymer structure and crystallinity		
	52	polymers to plastics types		
16	53	reinforced particles-strengthened and dispersion strengthened composites.	16	To study Bravais lattices with the help of models
	54	Ceramic materials: Types of ceramics		
	55	properties of ceramic, ceramic forming techniques		
	56	mechanical behavior of ceramic		
17	57	REVISION	17	To study crystal structures and crystals imperfections using ball models
	58	REVISION		
	59	REVISION		
	60	REVISION		
18		PRE UNIVERSITY EXAMS	18	



Name of Faculty:-

VINAY MALIK

Discipline:-

MECHANICAL ENGINEERING

Semester:-

7TH

Subject:-

MECHANICAL VIBRATION(ME-409-F)

Lesson Plan duration:-

30 JULY 2018 TO 30 NOVEMBER 2018

Week	Theory	
	Lecture Day	Topic (including assignment/ test)
1	1	Importance of Study of Vibrations, Classifications of Vibrations
	2	Free and Forced, Undamped and Damped, Linear and Non-linear
	3	Deterministic and Random, Harmonic Motion
	4	Vector and Complex Number Representations
2	5	Definitions and Terminology, Periodic Functions
	6	Harmonic Analysis, Fourier Series Expansion
	7	NUMERICALS
	8	NUMERICALS
3	9	NUMERICALS
	10	NUMERICALS
	11	Single Degree of Freedom system, D'Alemberts Principal
	12	Energy Methods, Rayleighs Method
4	13	Application of these Methods, Damped Free Vibrations
	14	Logarithmic Decrement, Under Damping
	15	Critical and Over Damping, Coulomb Damping
	16	NUMERICALS
5	17	NUMERICALS
	18	NUMERICALS
	19	NUMERICALS
	20	REVISION
6	21	PROBLEMS
	22	PROBLEMS
	23	PROBLEMS
	24	CLASS TEST
7	25	Forced Damped Harmonic Vibration of Single Degree of Freedom Systems
	26	Rotating Unbalance, Rotor Unbalance
	27	Critical Speeds and Whirling of Rotating Shafts
	28	Support Motion, Vibration Isolation, Energy Dissipated by Damping
8		Sessional exam
9	29	Equivalent, Viscous Damping
	30	Structural Damping Sharpness of Resonance
	31	Vibration Measuring Instruments
	32	Impulse Excitation, Arbitrary Excitation

10	33	Response to Step Excitations, Base Excitation Solution by Laplace Transforms
	34	Response Spectrum, Runge-Kutta Method
	35	REVISION
	36	REVISION
11	37	Introduction to Multi-Degree of Freedom Systems
	38	Normal Mode Vibrations, Coordinate Coupling
	39	Principal Coordinates, Free Vibrations in Terms of Initial Conditions
	40	Forced Harmonic Vibrations, Vibration Absorber
12	41	Centrifugal Vibration Absorber, Vibration Damper
	42	Multi degrees of Freedom Systems and Numerical Methods Introduction
	43	Influence Coefficients, Stiffness Matrix, Flexibility Matrix
	44	Natural Frequencies and Normal Modes, Orthogonality of Normal Modes
13		Sessional exam
14	45	Dunkerley's Equation
	46	Method of Matrix Iteration
	47	The Holzer Type Problem
	48	Geared and Branched Systems, Beams
15	49	NUMERICALS
	50	NUMERICALS
	51	NUMERICALS
	52	NUMERICALS
16	53	Vibrating String
	54	Longitudinal Vibrations of Rod
	55	Torsional Vibrations of Rod
	56	Lateral Vibrations of Beam
17	57	NUMERICALS
	58	NUMERICALS
	59	REVISION
	60	REVISION
18		PRE UNIVERSITY EXAMS