LESSON PLAN (AUG-2025 to DEC- 2025)

Name of faculty **Sh. SONU PRAKASH SHARMA**

Discipline **Mechanical Engineering**

Semester **3rd Semester**

Subject **MECHANICAL ENGINEERING DRAWING-II**

Lesson Plan Duration **15 weeks**

Work load per week (in hours) **6 Hrs Practical**

WEEK	PRACTICAL	
	Day Practical	**PracticalTopic**
1	1	**Unit- 1** Limit, fits and tolerance Need of limit, fits and tolerance, Maximum limit of size, minimum limit of size, tolerance, allowance, deviation, upper deviation, lower deviation, fundamental deviation, clearance, maximum clearance, minimum clearance. Fits – clearance fit, interference fit and transition fit
	2	Hole basis system, shaft basis system, tolerance grades, calculating values of clearance, interference, hole tolerance, shaft tolerance with given basic size for common assemblies like H7/g6, H7/m6, H8/p6. Basic terminology and symbols of geometrical dimensioning
2	3	tolerances. **Unit- 2** Drawing of the following with complete dimensions, tolerances, bill of material and surface finish representation.
	4	Universal coupling and Oldham coupling (Assembly)
3	5	Bearings - Bushed Bearing (Assembly Drawing)
	6	Ball Bearing and Roller Bearing (Assembled Drawing) & **Assignment No.-1.**
4	7	Plummer Block (Detail and Assembly Drawing)
	8	Foot step Bearing (Assembled Drawing)
5	9	Pulleys, Function of pulley, Types and materials of Pulley
	10	**1st Class Test**
6	11	Free hand Sketch of Various types of pulleys,Fast and loose pulley (Assembly Drawing)
	12	Pipe Joints, Types of pipe Joints, Symbol and line layout of pipe lines
7	13	Expansion pipe joint (Assembly drawing)
	14	Flanged pipe and right angled bend joint (Assembly Drawing)
8	15	**1st Sessional test**
	16	Lathe Tool Holder (Assembly Drawing), Reading and interpretation of mechanicalcomponents and assembly drawings. & **Assignment No.-2.**
9	17	Sketching practice of bearings and bracket.
	18	**2nd Class Test**
10	19	**Unit- 3** Drilling Jig (Assembly Drawing)
	20	**Unit- 4** Machine vices (Assembly Drawing)
11	21	**Unit- 5** I.C. Engine Parts – Piston, Connecting rod (Assembly Drawing)
	22	Crankshaft and flywheel (Assembly Drawing)
12	23	**2nd Sessional test**
	24	**Unit- 6** Boiler Parts, Steam Stop Valve (Assembly Drawing) & **Assignment No.-3.**
13	25	Blow off cock. (Assembly Drawing)
	26	**3rd Class Test**

14	27	**Unit- 7** Mechanical Screw Jack (Assembled Drawing)
	28	**Unit- 8** Gears, Types of gears, Nomenclature of gears, conventional representation ofgears
15	29	Draw the actual profile of involute teeth of spur gear by different methods. **Assignment No.-4.**
	30	**3rd Sessional test**

LESSON PLAN (SEPTEMBER-2022 to January 2023)

Name of faculty **SH. RAVIKANT SHANDILAY**

Discipline **Mechanical Engineering**

Semester **3rd Semester**

Subject **WORKSHOP TECHNOLOGY-I**

Lesson Plan Duration **15 weeks**

Work load (Lecture/ Practical) per week (in hours) **3 Hours Lecture**

WEEK	THEORY	
	Day Lecture	Topic(Including Assignment/Test)
1	1	1.1 Welding Process -Principle of welding, Classification of welding processes,
	2	Advantages and limitations of welding, Industrial applications of welding,
	3	Welding positions and techniques, symbols. Safety precautions in welding.
2	4	Gas Welding-Principle of operation, Types of gas welding flames and their applications,
	5	Gas welding equipment - Gas welding torch, Oxygen cylinder, acetylene cylinder, cutting torch, Blow pipe, Pressure regulators,
	6	Filler rods and fluxes and personal safety equipment for welding.
3	7	Arc Welding - Principle of operation, Arc welding machines and equipment. A.C. and D.C. arc welding,
	8	Effect of polarity, current regulation and voltage regulation, Electrodes: Classification, B.I.S. specification and selection, Flux for arc welding.
	9	Requirements of pre heating, post heating of electrodes and work piece. Welding defects and their testing methods. & **Assignment No.-1.**
4	10	Other Welding Processes - Resistance welding: Principle, advantages, limitations, working and applications of spot welding, seam welding, projection welding and percussion welding, Atomic hydrogen welding,
	11	Shielded metal arc welding, submerged arc welding, Welding distortion, welding defects, methods of controlling welding defects and inspection of welded joints.
	12	Modern Welding Methods - Methods, Principle of operation, advantages,
5	13	disadvantages and applications of, Tungsten inert gas (TIG) welding, Metal inert gas (MIG) welding, Thermit welding, Electro slag welding,
	14	Electron beam welding, Ultrasonic welding, Laser beam welding, Robotic welding
	15	**1st Class Test**
6	16	Pattern Making - Types of pattern, Pattern material, Pattern allowances, Pattern codes as per B.I.S., Introduction to cores, core boxes.
	17	core materials, Core making procedure, Core prints, positioning of cores.
	18	Moulding Sand -Properties of moulding sand, their impact and control of properties viz. permeability, refractoriness, adhesiveness, cohesiveness,
	19	strength, flow ability,collapsibility, Various types of moulding sand, Testing of

7		moulding sand. Safety precautions in foundry.
	20	Mould Making - Types of moulds, Step involved in making a mould, Molding boxes, hand tools used for mould making, Molding processes:
	21	Bench molding, floor molding, pit molding and machine molding, Molding machines squeeze machine, jolt squeeze machine and sand slinger.
8	22	**1st Sessional Test**
	23	Casting Processes - Charging a furnace, melting and pouring both ferrous and non ferrous metals, cleaning of castings, Principle,
	24	working and applications of Die casting: hot chamber and cold chamber, Centrifugal casting & **Assignment No.-2.**
9	25	Gating and Risering System - Elements of gating system, Pouring basin, sprue, runner, gates,
	26	Types of risers, location of risers, Directional solidification
	27	**2nd Class Test**
10	28	Melting Furnaces - Construction and working of Pit furnace,
	29	Cupola furnace, Crucible furnace – tilting type, Electric furnace
	30	Casting Defects - Different types of casting defects, Testing of defects:
11	31	radiography, magnetic particle inspection and ultrasonic inspection.
	32	3.1 Press Working - Types of presses, type of dies, selection of press die, die material.
	33	Press Operations-Shearing, piercing, trimming, punching, notching, shaving, gearing, embossing, stamping
12	34	3.2 Forging - Open die forging, closed die forging, Press forging, & **Assignment No.-3.**
	35	upset forging, swaging, up setters, roll forging, Cold and hot forging.
	36	**2nd Sessional Test**
13	37	3.3 Rolling - Elementary theory of rolling, Types of rolling mills,
	38	Thread rolling, roll passes, Rolling defects and remedies
	39	**3rd Class Test**
14	40	3.4 Extrusion and Drawing - Type of extrusion- Hot and Cold,
	41	Direct and indirect. Pipe drawing, tube drawing, wire drawing
	42	4.1 Industrial use of plastics, and applications- Advantages and limitations of use of plastics.
15	43	4.2 Injection moulding-principle, working of injection moulding machine.
	44	4.3 Compression moulding-principle, and working of compression moudling machine. & **Assignment No.-4.**
	45	**3rd Sessional Test**

LESSON PLAN (SEPTEMBER-2022 to January 2023)

Name of Faculty : **Sh. Amit Kumar**
Discipline : **Mechanical Engineering**
Semester : **3rd Semester**
Subject : **BEEE**
Lesson Plan Duration: : **15 Weeks**
Work Load (Lecture/Practical) per week(in hours) :3**Hrs. Lecture 2 Practical**

Week	Theory		Practical	
	Lecture Day	Topic(Including Assignement/Test)	Day	Topic
1	1	Difference between ac and dc,		
			1	1. Connection of a three-phase motor and starter with fuses and reversing of direction of rotation (G-I)
	2	various applications of electricity		
	3	advantages of electrical energy over other types of energy	2	Connection of a three-phase motor and starter with fuses and reversing of direction of rotation (G-II)
2	4	Definition of voltage, current, power and energy with their units,		
	5	name of instruments used for measuring above quantities		
	6	connection of these instruments in an electric circuit		
3	7	Revision of Unit I-II	3	2. Connection of a single-phase induction motor with supply and reversing of its direction of rotation (G-I)
	8	Electromagnetic induction-Faraday's Laws, Lenz's Law; Fleming's rules,		
	9	Principles of a.c. Circuits; Alternating emf, Definition of cycle, frequency, amplitude and time period.	4	2. Connection of a single-phase induction motor with supply and reversing of its direction of rotation (G-II)
4	10	Instantaneous, average, r.m.s and maximum value of sinusoidal wave; form factor and Peak Factor.		
	11	Concept of phase and phase difference.	5	3. Troubleshooting in domestic wiring system, including distribution board (G-I)
	12	Concept of resistance, inductance and capacitance in simple a.c. circuit.		
5	13	Power factor and improvement of power factor by use of capacitors.	6	3. Troubleshooting in domestic wiring system, including distribution board (G-II)
	14	Concept of three phase system; star and delta connections; voltage and current relationship (no derivation)		
	15	**1st class test**	7	Connection and reading of an electric energy meter (G-I)
6	16	1st Sessional test		
			8	Connection and reading of an electric energy meter (G-II)
	17	Working principle and construction of single phase transformer,		
	18	transformer ratio, emf equation,		
	19	losses and efficiency, cooling of transformers	9	VIVA - VOCE
	20	isolation transformer, CVT		
7	21	auto transformer (brief idea), applications.		
			10	VIVA - VOCE
	21	Difference between high and low voltage		

		distribution system		
	22	identification of three-phase wires		
8	23	eutral wire and earth wire in a low voltage distribution system	11	Use of ammeter, voltmeter, wattmeter, and multi-meter (G-I)
	24	Identification of voltages between phases and between one phase and neutral		
	25	Difference between three-phase and single-phase supply	12	Use of ammeter, voltmeter, wattmeter, and multi-meter (G-II)
9	26	Revision of Unit - V		
	27	Description and applications of single-phase	13	Measurement of power and power factor in a given single phase ac circuit (G-I)
	28	three-phase motors.		
10	29	Connection and starting of three-phase induction motors by star-delta starter.	14	Measurement of power and power factor in a given single phase ac circuit (G-II)
	30	Changing direction of rotation of a given 3 phase induction motor.		
	31	Motors used for driving pumps, compressors, centrifuge, dyers etc	15	7. Study of different types of fuses, MCBs and ELCBs (G-I)
11	32	Totally enclosed submersible and flame proof motors		
	33	2nd class test	16	7. Study of different types of fuses, MCBs and ELCBs (G-II)
	34	2nd Sessional test		
12	35	Distinction between light-fan circuit and single phase power circuit, sub-circuits	17	8. Study of zener diode as a constant voltage source and to draw its V-I characteristics (G-I)
	36	various accessories and parts of domestic electrical installation.		
	37	. Identification of wiring systems.	18	8. Study of zener diode as a constant voltage source and to draw its V-I characteristics (G-II)
13	38	Common safety measures and earthing		
	39	Electrical shock and precautions against shock, treatment of electric shock,	19	VIVA - VOCE
	40	**concept of fuses and their classification, selection and application**		
	41	concept of earthing and various types of earthing	20	VIVA - VOCE
14	42	applications of MCBs and ELCBs		
	43	Basic idea of semiconductors – P and N type	21	Study of earthing practices (G-I)
	44	diodes, zener diodes and their applications		
15	45	transistor – PNP and NPN	22	Study of earthing practices (G-II)
	46	their characteristics and uses.		
	47	**Characteristics and applications of a thyristor**	23	To draw V-I characteristics of a (i) NPN transistor (ii) thyristor (SCR) (G-I)
16	48	, characteristics and applications of stepper		

		motors		
	49	servo motors in process control	24	. To draw V-I characteristics of a (i) NPN transistor (ii) thyristor (SCR) (G-II)
	50	**3rd class test**		
17	51	3rd seeional test	25	Study of construction and working of a (i) stepper motor and (ii) servo motor (G-I)
			26	Study of construction and working of a (i) stepper motor and (ii) servo motor (G-II)
			27	
			28	
			29	VIVA - VOCE
			30	VIVA - VOCE

LESSON PLAN (SEPTEMBER-2022 to January 2023)

Name of Faculty : **Sh. Ravikant Shandilay**

Discipline : **Mechanical Engineering**

Semester : **3rd Semester**
Subject : **THERMODYNAMICS -I**
Lesson Plan Duration: : **15 Weeks**
Work Load (Lecture/Practical) per week(in hours) : **3Hrs. Lecture & 3 Practical**

Week	Theory		Practical	
	Lecture Day	Topic(Including Assignement/Test)	Practical Day	Topic
1	1	Fundamental Concepts Thermodynamic state and system, boundary, surrounding, universe, thermodynamic systems – closed, open, isolated, adiabatic, homogeneous and heterogeneous, macroscopic and microscopic		Determinationof temperature by thermocouple pyrometer Infrared thermometer
	2	properties of system – intensive and extensive, thermodynamic equilibrium, quasi – static process, reversible and irreversible processes		
	3	Zeroth law of thermodynamics		
2	4	definition of properties like pressure, volume, temperature, enthalpy and internal energy		Practical conduct
	5	Laws of Perfect Gases Definition of gases, explanation of perfect gas laws – Boyle's law, Charle's law, Avagadro's law, Regnault's law		
	6	Universal gas constant, Characteristic gas constants and its derivation.		
3	7	Specific heat at constant pressure, specific heat at constant volume of a gas, derivation of an expression for specific heats with characteristics		Demonstration of mountings and accessories of a boiler.
	8	simple numerical problems on gas equation		
	9	Thermodynamic Processes Types of thermodynamic processes		
4	10	isochoric, isobaric, isothermal		Practical conduct
	11	adiabatic, isentropic, polytropic		
	12	throttling processes, equations representing the processes		
5	13	Derivation of work done, change in internal energy, change in entropy, rate of heat transfer for the above process.		Study the working of Lancashire boiler and Nestler boiler.
	14	1st Class test		
	15	1st sessional test		
6	16	Laws of Thermodynamics Laws of conservation of		Practical conduct

		energy, first law of thermodynamics (Joule's experiment) and its limitations		
	17	Application of first law of thermodynamics to Non-flow systems – Constant volume, Constant pressure, Adiabatic and polytropic processes		
	18	steady flow energy equation, Application of steady flow energy equation for turbines, pump, boilers, compressors, nozzles, and evaporators.		
7	19	Heat source and sink, statements of second laws of thermodynamics: Kelvin Planck's statement, Classius statement, equivalency of statements		Study of working of high pressure boiler
	20	Perpetual motion Machine of first kind, second kind		
	21	Carnot engine,		
8	22	Introduction of third law of thermodynamics		Practical conduct
	23	concept of irreversibility and concept of entropy.		
	24	Concept of ideal gas, enthalpy and specific heat capacities of an ideal gas, P – V – T surface of an ideal gas		
9	25	triple point, real gases, Vander-Wall's equation		Study of boilers (Through industrial visit)
	26	Formation of steam and related terms, thermodynamic properties of steam, steam tables		
	27	sensible heat, latent heat, internal energy of steam, entropy of water, entropy of steam, T- S diagrams, Mollier diagram (H – S Chart)		
10	28	Expansion of steam, Hyperbolic, reversible adiabatic and throttling processes, determination of quality of steam (dryness fraction)		VIVA
	29	2nd class test		
	30	2nd sessional test		
11	31	Uses of steam, classification of boilers, function of various boiler mounting and accessories		Determination of Dryness fraction of steam using calorimeter.
	32	comparison of fire tube and water tube boilers		
	33	Construction and working of Lancashire boiler, Nestler boiler, Babcock & Wilcox Boiler		
12	34	Introduction to modern boilers.		Practical conduct
	35	Meaning of air standard cycle – its use, condition of reversibility of a cycle		
	36	Description of Carnot cycle, Otto cycle		

13	37	Diesel cycle, simple problems on efficiency for different cycles.		Demonstrate the working of air compressor.
	38	Comparison of Otto, Diesel cycles for same compression ratio, same peak pressure developed and same heat input		
	39	Reasons for highest efficiency of Carnot cycle and all other cycles working between same temperature limits		
14	40	Functions of air compressor – uses of compressed air, type of air compressors		Practical conduct
	41	Single stage reciprocating air compressor, its construction and working, representation of processes involved on P – V diagram, calculation of work done		
	42	Multistage compressors – advantages over single stage compressors, use of air cooler, condition of minimum work in two stage compressor (without proof) simple problems Multistage compressors		
15	43	3rd class test		VIVA
	44	Rotary compressors – types, working and construction of centrifugal compressor, axial flow compressor, vane type compressor		
	45	**3rd sessional test**		

LESSON PLAN

Name of faculty: - **Bhupesh Kumar**
Discipline:- **Mechanical Engineering**
Semester:- **3rd**
Subject:- **Strength of Material**

WEEK	LECTURE DAY	THEORY	PRACTICAL
		Topic (Including Assignment/test)	Topic
1st week	1st day	Unit 1: Stresses and Strains Basics concept ofload,stressandstrain	1.Tensile test of mild steel bar
	2nd day	Tensile, compressive, shear stress	
	3rd day	Linear, lateral, shear, volumetric strain Concept of elasticity, elasticlimit, limitof proportionality	
2nd week	1st day	Hooks law, elastic constant, nominal strain	2.Tensile test of aluminum bar
	2nd day	stress strain curve for ductile and brittle material	
	3rd day	Yieldpoint, plasticstage,ultimateand breaking stress Percentage elongation, proof and working stress	
3rd week	1st day	Factorofsafety, poison'sratio, thermal stress and strain, introduction to principal stresses	Revision of practical no 1
	2nd day	Longitudinal and circumferential stresses lnseamlessthin walled cylindricalshells	
	3rd day	Unit2: Resilience strain energy, resilience, proof resilience and modulus of resilience	
4th week	1st day	Strain energy due to direct stress and shear stress	Revision of practical 2
	2nd day	Stress due to gradual,sudden andfalling load	
	3rd day	Unit3: Moment of Inertia conceptof moment of inertia	

5th week	1st day	Theorem of perpendicular and parallel axis	3. Bending tests on a steel bar

	2nd day	Second moment of area of rectangle ,triangle, circleandnumerical of these	
	3rdday	Second moment of area for L,T,I and numerical Section modulus	
6th week	1st day	Numerical problems and revision	4. Bending tests on wooden bar
	2nd day	Unit4: Bending Moment and Shearing Fours Concept of various types of beams and loading	
	3rdday	Concept of end supports,hingedand fixed, Concept of bending moment and shear force	
7th week	1st day	B.M and S.Fdiagram for cantilever beam	5. Impact test on IZOD test
	2nd day	B.M.andS.F diagram for simply supported beam	
	3rdday	B.Mand S.F diagram of cantilever and simply supportedbeams withorwithout overhang and U.D.L	
8th week	1st day	Numerical problems	6. Impact test on CHARPY test
	2nd day	Unit5: Bending Stresses concepts of bending stresses	
	3rdday	Theoryofsimplebending , Derivation of bending equation	
9th week	1st day	Concept of moment of resistance	7. Torsion test of solid specimen of circular section of different metals for determining modulus of rigidity
	2nd day	Bending stress diagram, section modulus *for rectangles*	

	3rdday	Section modulus for circular and symmetrical Isection, Bendingstressin beams of rectangular	
10th week	1st day	Bendingstressincircular andT section	Revision of practical 7
	2nd day	Numerical and revision	

	3rdday	**Unit6: Columns** **Concept of column, modes of failure, Types of columns, modes of failure of column**	
11th week	**1st day**	***Buckling load, crushing load, slenderness ratio***	**8.To plot a graph between load and extension and to determine thestiffness of a helical spring**
	2nd day	***Effective length, end restraints***	
	3rdday	**Factor effecting strength of a column, Strength of column by Euler formula without derivation**	
12th week	**1st day**	**Rankin gourdan formula**	**Revision of practical 8**
	2nd day	**Unit7: Torsion** **concept of torsion, difference between torque andtorsion**	
	3rdday	**Derivationof torsion equation, Useof torsion equation for circular shaft (solid and hollow)**	
13th week	**1st day**	**Comparison of solid and hollow shaft**	**9.hardness teston different material**
	2nd day	**Power transmitted by shaft**	
	3rdday	**Conceptofmeanandmaximum torque**	
14th week	**1st day**	**Unit8: Springs** **Closed coil helical springs subjected to *axial load***	**Revision of practical 9**
	2nd day	**Calculation of stress deformation**	
	3rdday	**Stiffness, angle of twist, strainenergy**	
15th week	**1st day**	**Numerical problems**	**Revision ofpractical 9 on another metal**
	2nd day	**Determination of number ofplatesof laminated springs**	
	3rdday	**Revision Discuss on problems**	
16th week	**1st day**	**Numerical problems**	**Viva question**
	2nd day **3rdday**	**Numerical problems**	

		Numerical problems	
17th week	**1st day**	**Revision**	**Viva question**
	2nd day	**Revision**	
	3rd day	**Revision**	

LESSON PLAN (SEPTEMBER-2022 to January 2023)

Name of faculty	**SH. SUKHVIR YADAV & DHARAMPAL**
Discipline	**Mechanical Engineering**
Semester	**3rd Semester**
Subject	**SOFT SKILL-I**
Lesson Plan Duration	**15 weeks**
Work load (Lecture/ Practical) per week (in hours)	**2 Hours Practical**

WEEK	PRACTICAL	
	Day Practical	**Practical Topic**
1	1	Soft Skills - Concept and Importance
	2	Soft Skills - Concept and Importance
2	3	Soft Skills - Concept and Importance
	4	Soft Skills - Concept and Importance
3	5	Communication Skills- Improving verbal communication
	6	Communication Skills- Improving verbal communication
4	7	Communication Skills- Improving verbal communication
	8	Communication Skills- Improving verbal communication
5	9	Report Writing
	10	Report Writing
6	11	Report Writing
	12	Report Writing
7	13	Method to enhance memory and concentration
	14	Method to enhance memory and concentration
8	15	Method to enhance memory and concentration
	16	Method to enhance memory and concentration
9	17	Component of overall personality- Dressing sense/etiquettes/body language etc
	18	Component of overall personality- Dressing sense/etiquettes/body language etc
10	19	Component of overall personality- Dressing sense/etiquettes/body language etc
	20	Component of overall personality- Dressing sense/etiquettes/body language etc
11	21	Sports-Basketball
	22	Sports-Cricket
12	23	NCC Camp
	24	NCC Camp
13	25	Camp – Blood donation
	26	Camp – Blood donation
14	27	Cultural Event
	28	Cultural Event
15	29	Sports-Football
	30	Sports-Table Tennis