

LESSON PLAN

Duration: 16 Weeks (30.07.2026 to 23.11.2026)

Subject: FIT

Discipline: Mechanical Engg.

Semester: 1st

Name of Faculty: Pardeep

Designation: Guest Faculty

Teaching Load: Theory - 2 Lectures / Week, Practical - 2 Turn/Group/Week (2 Periods / Turn)

Week	Lecture No.	THEORY
		TOPIC
1	1	Unit - I Basics Of Computer: Brief history of development of computers, Definition of Computer
	2	Block diagram of a Computer, Hardware and Software
2	3	Bootting: Cold and Hot Bootting, Interaction between the CPU and Memory with Input/Output devices
	4	Function of CPU and major functional parts of CPU
3	5	Memory: Bit, Nibble, Byte, KB, MB, GB, TB, PB
	6	Functions of memory, Use of storage devices in a Computer, List types of memory used in a Computer
4	7	Importance of cache memory, CPU speed and CPU word length
	8	UNIT - II Basic Internet Skills: Understanding browser, Introduction to WWW
5	9	Efficient use of search engines, Awareness about Digital India portals (state and national portals) and college portals
	10	Advantages of Email, Various email service providers
6	11	Creation of email id, sending and receiving emails, Attaching documents with email and drive
	12	Effective use of Gmail, G-Drive,
7	13	Google Calendar, Google Sites, Google Sheets. Online mode of communication using Google Meet & WebEx
	14	Sessional Test - I
8	15	UNIT – III Basic Logic Building: Introduction to Programming, Steps involved in problem solving
	16	Definition of Algorithm, Definition of Flowchart
9	17	Steps involved in algorithm development, Differentiate algorithm and flow chart
	18	Symbols used in flowcharts, Algorithms for simple problems
10	19	Flowcharts for simple problems, Practice logic building using flowchart/algorithms
	20	UNIT - IV Office Tools: Office Tools like LibreOffice/OpenOffice/MSOffice
11	21	OpenOffice Writer – Typesetting Text and Basic Formatting, Inserting Images, Hyperlinks, Bookmarks
	22	Sessional Test - II
12	23	Introducing Libre Office/Open Office Calc, Working with Cells, Sheets, data, tables
	24	Using formulae and functions, using charts and graphics
13	25	Open Office Impress – Creating and Viewing Presentations, Inserting Pictures and Tables
	26	Slide Master and Slide Design, Custom Animation
14	27	UNIT - V Use Of Social Media : Introduction to Digital Marketing,
	28	Why Digital Marketing
15	29	Characteristics of Digital Marketing, Tools for Digital Marketing
	30	Effective use of Social Media like LinkedIn, Google+, Facebook, Twitter,
16	31	Features of Social media, Advantages and Disadvantages of Social Media
	32	Sessional Test - III

PRACTICAL EXERCISES		
WEEK	TURN	EXPERIMENT
1	1	1. Browser features, browsing, using various search engines, writing search queries
	2	1. Browser features, browsing, using various search engines, writing search queries
	3	Browser features, browsing, using various search engines, writing search queries
	4	Browser features, browsing, using various search engines, writing search queries
2	5	2. Visit various e-governance/Digital India portals, understand their features, services offered
	6	Visit various e-governance/Digital India portals, understand their features, services offered
	7	2. Visit various e-governance/Digital India portals, understand their features, services offered
	8	Visit various e-governance/Digital India portals, understand their features, services offered
3	9	3. Read Wikipedia pages on computer hardware components, look at those components in lab,
	10	3. Read Wikipedia pages on computer hardware components, look at those components in lab,
	11	identify them, recognize various ports/interfaces and related cables, etc.
	12	identify them, recognize various ports/interfaces and related cables, etc.
4	13	4. Using Administrative Tools/Control Panel Settings of Operating Systems
	14	4. Using Administrative Tools/Control Panel Settings of Operating Systems
	15	FILE CHECKING
	16	FILE CHECKING
5	17	5. Connect various peripherals (printer, scanner, etc.) to computer,
	18	5. Connect various peripherals (printer, scanner, etc.) to computer,
	19	explore various features of Peripheral and their device driver software
	20	explore various features of Peripheral and their device driver software
6	21	6. Explore features of Open Office tools and MS- Office, create documents, create presentation, create spreadsheet, using these features, do it multiple times
	22	6. Explore features of Open Office tools and MS- Office, create documents, create presentation, create spreadsheet, using these features, do it multiple times
	23	create spreadsheet, using these features, do it multiple times
	24	create spreadsheet, using these features, do it multiple times
7	25	7. Working with Conversion Software like pdf To Word, Word To PPT, etc.
	26	7. Working with Conversion Software like pdf To Word, Word To PPT, etc.
	27	PRACTICAL SESSIONAL / VIVA-VOCE
	28	PRACTICAL SESSIONAL / VIVA-VOCE
8	29	8. Working with Mobile Applications– Searching for Authentic Mobile app, Installation and Settings,
	30	8. Working with Mobile Applications– Searching for Authentic Mobile app, Installation and Settings,
	31	Govt. of India Mobile Applications
	32	Govt. of India Mobile Applications
9	33	9. Creating email id, sending and receiving mails with attachments
	34	9. Creating email id, sending and receiving mails with attachments
	35	FILE CHECKING
	36	FILE CHECKING
10	37	10. Using Google Drive, Google Calendar
	38	10. Using Google Drive, Google Calendar
	39	FILE CHECKING
	40	FILE CHECKING
11	41	11. Create Flow chart and Algorithm for the following
	42	11. Create Flow chart and Algorithm for the following
	43	PRACTICAL SESSIONAL / VIVA-VOCE
	44	PRACTICAL SESSIONAL / VIVA-VOCE
12	45	Addition of numbers and display result
	46	Addition of numbers and display result
	47	To convert temperature from Celsius to Fahrenheit
	48	To convert temperature from Celsius to Fahrenheit
13	49	To find Area and Perimeter of Square
	50	To find Area and Perimeter of Square
	51	Swap Two Numbers
	52	Swap Two Numbers
14	53	Find the smallest of two numbers
	54	Find the smallest of two numbers
	55	FILE CHECKING
	56	FILE CHECKING
15	57	Find whether given number is Even or Odd
	58	Find whether given number is Even or Odd
	59	To print first n even Numbers
	60	To print first n even Numbers
16	61	Find sum of series $1+2+3+ \dots +N$. Print multiplication table of a number. Generate first n Fibonacci terms $0, 1, 1, 2, 3, 5, \dots, n$ ($n > 2$)
	62	Find sum of series $1+2+3+ \dots +N$. Print multiplication table of a number. Generate first n Fibonacci terms $0, 1, 1, 2, 3, 5, \dots, n$ ($n > 2$)
	63	PRACTICAL SESSIONAL / VIVA-VOCE
	64	PRACTICAL SESSIONAL / VIVA-VOCE

LESSON PLAN

Name of faculty:-Mr. Manish Kumar

Discipline:- Mech. Engg.

Semester:- 3rd

Subject:- SOM

Teaching Load:- 3 Lect./Week Practical:- 1 Turn Group/Week (2 Hrs./Turn)

Lesson Plan duration :- 16 weeks (30-07-2026 To 23-11-2026)

THEORY		
WEEK	LECTURE DAY	Topic
1 st	1	Unit 1 : Stresses and Strains Basics concept of load, stress and strain
	2	Tensile, compressive, shear stresses
	3	Linear, lateral, shear, volumetric strain ,Concept of elasticity, elastic limit,limit of proportionality
2 nd	4	Hook's law, elastic constant, their relation,nominal stress
	5	stress strain curve for ductile and brittle materials
	6	Yield point, plastic stage, ultimate and breaking stress Percentage elongation, proof and working stress
3 rd	7	Factor of safety, poisson's ratio, thermal stress and strain, Introduction to principal stresses
	8	Longitudinal and circumferential stresses,in seamless thin walled cylindrical shells
	9	Unit2: Resilience strain energy, resilience, proof resilience and modulus of resilience
4 th	10	Strain energy due to direct stress and shear stress
	11	Stress due to gradual,sudden and falling load
	12	Unit3: Moment of Inertia Concept of moment of inertia and second moment of area, Radius of gyration
5 th	13	Theorem of perpendicular axis and parallel axis
	14	Second moment of area of rectangle ,triangle, circle and numerical of these
	15	Second moment of area for L,T,I and numerical Section modulus
6 th	16	Numerical problems and revision
	17	Unit4: Bending Moment and Shearing Force Concept to various types of beams and loading
	18	Concept of end supports,hinged and fixed, Concept of bending moment and shear force

7 th	19	B.Mand S.F diagram for cantilever beam
	20	B.M.and S.F diagram for simply supported beam
	21	Sessional Test (Tentative)
8 th	22	B.M and S.F diagram of cantilever and simply supported beams with or without overhang and U.D.L
	23	Unit5: Bending Stresses concepts of bending stresses
	24	Theory of simple bending , Derivation of bending equation
9 th	25	Concept of moment of resistance
	26	Bending stress diagram, section modulus for rectangles
	27	Section modulus for circular and symmetrical I section, Bending stress in beams of rectangular
10 th	28	Bending stress in circular and T section
	29	Numerical and revision
	30	Unit6: Columns Concept of column, modes of failure, Types of columns, modes of failure of column
11 th	31	Buckling load, crushing load, slenderness ratio,Effective length, end restraints
	32	Sessional Test (Tentative)
	33	Factor effecting strength of a column, Strength of column by Euler formula without derivation
12 th	34	Rankine Gourdan formula
	35	Unit7: Torsion concept of torsion, difference between torque and torsion
	36	Derivation of torsion equation, Use of torsion equation for circular shaft (solid and hollow)
13 th	37	Comparison of solid and hollow shaft
	38	Power transmitted by shaft
	39	Concept of mean and maximum torque
14 th	40	Unit8: Springs Closed coil helical springs subjected to axial load
	41	Calculation of stress deformation
	42	Stiffness and angle of twist and strain energy and proof resilience
15 th	43	Numerical problems
	44	Determination of number of plates of laminated springs
	45	Revision Discuss on problems
16 th	46	Numerical problems and revision
	47	Sessional Test (Tentative)
	48	Numerical problems and revision

PRACTICAL EXERCISES		
Week	TURN	EXPERIMENT
1	1	1.Tensile test of mild steel bar
2	2	Revision of practical 1
3	3	2. Bending tests on a steel bar or a wooden bar
4	4	Revision of practical 2
5	5	VIVA VOCE of EX.1 & 2
6	6	3. Impact test on Metals by IZOD test
7	7	Sessional Test
8	8	3. Impact test on Metals by CHARPY test
9	9	4. Torsion test of solid specimen of circular section of different metals for determining modulus of Rigidity.
10	10	Revision of practical 4 and VIVA VOCE
11	11	Sessional Test
12	12	5.To plot a graph between load and extension and to determine the stiffness of a helical spring
13	13	6.Hardness test on different material
14	14	Revision of practical 6 and VIVA VOCE
15	15	Revision of practical 6 on another metal
16	16	Sessional Test

LESSON PLAN

Duration: 16 Weeks (30.07.2026 to 23.11.2026)

Subject: **Basics of Electrical & Electronics Engg. (BEEE)**

Discipline: **Mechanical Engg.**

Semester: **3rd**

Name of Faculty: **Amit Gupta**

Designation: **HoD (Mechanical)**

Teaching Load: **Theory - 2 Lectures / Week**

Week	Lecture/ Day	Topics
1	1	Unit 1 - Basic Electrical Quantities Definition of voltage, current, power and energy with their units
	2	Name of instruments used for measuring above quantities
2	3	Connection of these instruments in an electric circuit.
	4	Difference between ac and dc. Various applications of electricity.
3	5	Unit 2 - AC Fundamentals Electromagnetic induction-Faraday's Laws, Lenz's Law
	6	Fleming's rules, Principles of a.c. Circuits;
4	7	Alternating emf, Definition of cycle, frequency, amplitude and time period.
	8	Concept of electrical power, Concept of phase and phase difference.
5	9	Sessional Test-I
	10	Concept of resistance, inductance and capacitance in simple a.c. circuit.
6	11	Concept of three phase system; star and delta connections; voltage and current relationship. ASSIGNMENT 1
	12	Unit 3 - Transformer Working principle and construction of single-phase transformer, transformer ratio, emf equation, tapping of transformer
7	13	Power transformer, auto transformer and distribution transformer (brief idea and difference between them)
	14	Cooling of transformer, applications of various types of transformers.
8	15	Unit 4. Distribution System Difference between high and low voltage distribution system, identification of three-phase wires, neutral wire and earth wire in a low voltage distribution system.
	16	Identification of voltages between phases and between one phase and neutral. Difference between three-phase and single-phase supply
9	17	UNIT 5 - Electric Motor Description and applications of single-phase and three-phase motors. Introduction to DC motor and its applications,
	18	Sessional Test-II

10	19	Difference between ac and dc motor, Connection and starting of three-phase induction motors by DO Land star- delta starter.
	20	Changing direction of rotation of a given 3 phase induction motor. Motors used for driving pump, compressor and e vehicles. ASSIGNMENT 2
11		UNIT 6 - Domestic Installation Distinction between light-fan circuit and single-phase power circuit, sub-circuits, various accessories and parts of domestic electrical installation.
	22	Different types of wires and there is specification,
12	23	Identification of wiring systems.Color coding of electrical wires.
	24	UNIT 7 - Electrical Safety Electrical shock and precautions against shock, treatment of electric shock
13	25	Concept of fuses and their classification,concept of earthing and various types of earthing,
	26	Brief description of range of protective devices like MCB, ELCB, and RCB
14	27	UNIT 8 - Basic Electronics Concept of semi-conductor, types-P and N type. Diodes and their applications
	28	Transistor–PNP and NPN.Their characteristics and uses.
15	29	Introduction to integrated circuit (IC) Different types of ICs used in electric drives and their control circuit. ASSIGNMENT 3
	30	Sessional Test-III
16	31	Revision of Syllabus with Old Question Papers
	32	Revision of Syllabus with Old Question Papers

Name of Faculty: Manoj Kumar		
Discipline: Mechanical Engineering		
Semester: 3rd		
Subject: Thermodynamics-I		
Duration: 16 Weeks (30/07/2026-23/11/2026)		
Teaching load(Theory): 3 Lectures/Week		
Week No.	Lecture No.	Topic
1	1	UNIT-I Chapter1:- Fundamental Concepts : Thermodynamic state and system, boundary, surrounding, universe, thermodynamic systems – closed, open, isolated, adiabatic
	2	Homogeneous and heterogeneous, macroscopic and microscopic, properties of system – intensive and extensive
	3	Thermodynamic equilibrium, quasi-static process, reversible and irreversible processes, Zeroth law of thermodynamics
2	4	Definition of properties like pressure, volume, temperature, enthalpy and internal energy
	5	Class test of chapter 1
	6	Chapter2:- Laws of Perfect Gases: Definition of gases
3	7	Explanation of perfect gas laws–Boyle's law, Charles's law, Avogadro's law, Regnault's law
	8	Universal gas constant, Characteristic gas constants and its derivation, Specific heat at constant pressure, specific heat at constant volume of a gas
	9	Derivation of an expression for specific heats with characteristics, simple numerical problems on gas equation
4	10	UNIT-II Chapter3:- Thermodynamic Processes: Types of thermodynamic processes–isochoric, isobaric, isothermal
	11	Adiabatic process, Isentropic process, Polytropic and throttling processes, Equations representing the processes
	12	Derivation of work done, Derivation of change in internal energy, Derivation of change in entropy, Derivation of rate of heat transfer
5	13	Sessional Test 1
	14	UNIT-III Chapter4:- Laws of Thermodynamics: Laws of conservation of energy
	15	First law of thermodynamics (Joule's experiment) and its Limitations
6	16	Steady flow energy equation
	17	Application of steady flow energy equation for turbines, pump, boilers, compressors, nozzles, and evaporators
	18	Heat source and sink, statements of second laws of thermodynamics: Kelvin Planck's statement, Clausius statement

7	19	Equivalency of statements, Perpetual motion Machine of first kind, second kind
	20	Carnot engine, Introduction of third law of thermodynamics
	21	Concept of irreversibility and concept of entropy
8	22	UNIT- IV Chapter 5:- Properties of Steam: Formation of steam and related terms, thermodynamic properties of steam, steam tables,
	23	Sensible heat, latent heat, internal energy of steam
	24	Entropy of water, entropy of steam,
9	25	T-S diagrams, Mollier diagram (H-S Chart)
	26	Sessional Test -II
	27	Expansion of steam, Hyperbolic, reversible adiabatic and Throttling processes, determination of quality of steam (dryness fraction)
10	28	UNIT-V Chapter 6:- Ideal and Real Gases: Uses of steam, classification of boilers, Comparison of fire tube and water tube boilers
	29	Class test of chapter 5
	30	Construction and working of Nestler boiler, Babcock & Wilcox Boiler
11	31	Function of various boiler mounting and accessories
	32	Introduction to modern boilers – Benson boiler.
	33	Concept of ideal gas
12	34	Enthalpy and specific heat capacities of an ideal gas, P-V-T surface of an ideal gas
	35	Triple point, real gases, Vander-Wall's equation
	36	Chapter 7:- Air Compressors Function of air compressor
13	37	Uses of compressed air, Type of air compressors
	38	Representation of processes involved on P-V diagram, Calculation of work done
	39	Class test of chapter 6
14	40	Multistage compressors – advantages over single stage compressors
	41	Use of air cooler, condition of minimum work in two stage compressor (without proof)
	42	Rotary compressors – types, working and construction of centrifugal compressor, axial flow compressor, vane type compressor
15	43	Axial flow compressor, vane type compressor
	44	Third Sessional Test
	45	Revision of old question papers
16	46	Revision of old question papers
	47	Revision of old question papers
	48	Revision of old question papers

Name of Faculty: Manoj Kumar

Discipline: Mechanical Engineering

Semester: 3rd

Subject: Thermodynamics-I

Lesson Plan Duration: 16 Weeks (30/07/2026-23/11/2026)

Teaching load (Practical): 2 Groups/Week (2 Periods/Group)

Week No.	Experiment
1	1. Determination of temperature by 1.1 Thermocouple
2	Determination of temperature by 1.2 Pyrometer
3	Determination of temperature by 1.3 Infrared thermometer
4	Repetition of experiment 1 and Viva Voce
5	2. Study the working of Nestler boiler
6	3. Study of working of high pressure boiler
7	Practical sessional exam-I
8	Repetition of experiment 3 and Viva Voce
9	4. Demonstration of mountings and accessories on a boiler
10	5. Determination of dryness fraction of steam using calorimeter
11	Practical sessional exam-II
12	Repetition of experiments 5 and Viva Voce
13	6. Demonstrate the working of an air compressor
14	7. Industrial visit may be planned to show working of boilers
15	Repetition of experiments 6 and Viva Voce
16	Practical sessional exam-III

Lesson Plan

Name of the Faculty : Shalender Mor/ Manish Kumar

Discipline : Mechanical Engg

Semester : 3rd

Subject : Mechanical Engg. Drawing

Lesson Plan duration : 16 weeks (30-07-2026 To 23-11-2026)

Teaching Load (Practical) : 2 Turn/Week (3 Hrs./Turn)

Week	Practical	
	Practical Lect.	Topic
Week 1	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.
	2	Fits – clearance fit, interference fit and transition fit. Hole basis system, shaft basis system, tolerance grades
Week 2	3	calculating values of clearance, interference, hole tolerance, shaft tolerance with given basic size for common assemblies like H7/g6, H7/m6, H8/p6
	4	Basic terminology and symbols of geometrical dimensioning and tolerances
Week 3	5	Drawing of the following with complete dimensions, tolerances, bill of material and surface finish representation A) Universal coupling (Assembly)
	6	Oldham coupling (Assembly)
Week 4	7	Revision of coupling sheet
	8	Bushed Bearing (Assembly Drawing)
Week 5	9	Ball Bearing and Roller Bearing (Assembled Drawing)
	10	Plummer Block (Detail and Assembly Drawing)
Week 6	11	Foot step Bearing (Assembled Drawing)
	12	Pipe Joints - Types of pipe Joints, Symbol and line layout of pipe lines

Week 7	13	Expansion pipe joint (Assembly drawing)
	14	Sessional Test (Tentative)
Week 8	15	Flanged pipe and right angled bend joint (Assembly Drawing)
	16	Reading and interpretation of mechanical components and assembly drawings, Sketching practice Wall bracket. (01 sheet)
Week 9	17	Drilling Jig (Assembly Drawing)
	18	Machine vices (Assembly Drawing) (03 sheets)
Week 10	19	Lathe Tool Holder (Assembly Drawing)
	20	Lathe Tail Stock (Assembly Drawing)
Week 11	21	I.C. Engine Parts (03 sheets) Piston
	22	Sessional Test (Tentative)
Week 12	23	Connecting rod (Assembly Drawing)
	24	Revision of Connecting rod
Week 13	25	Crankshaft and flywheel (Assembly Drawing)
	26	Boiler Parts (02 sheets) Steam Stop Valve (Assembly Drawing)
Week 14	27	Blow off cock (Assembly Drawing)
	28	Mechanical Screw Jack (Assembled Drawing) (01 sheet)
Week 15	29	Gears - (2 Sheet) Gear, Types of gears, Nomenclature of gears and conventional representation
	30	Draw the actual profile of involute teeth of spur gear by approximate method.
Week 16	31	Draw the actual profile of involute teeth of spur gear by base circle method.
	32	Sessional Test (Tentative)

LESSON PLAN

Name of Faculty			Hardeep
Discipline			Mechanical Engg.
Subject			Workshop Technology - II
Lesson Plan Duration			16 Weeks (30/07/2026-23/11/2026)
Work load (Lecture) per week (in hours)			3 Hours
Theory			
Week	Lecture Day	Topic	
1	1	Resistance welding: Principle, advantages ,imitations, working and applications of spot welding& seam welding	
	2	Other Welding Processes: Principle, advantages, limitations, working and applications of	
	3	Shielded metal arc welding, submerged arc welding. Welding defects, methods of controlling	
2	4	Welding defects and inspection of welded joint.	
	5	Modern Welding Methods: Methods, Principle of operation, advantages, disadvantages and applications of	
	6	Tungsten inert gas (TIG) welding, Metal inert gas (MIG) welding.	
3	7	Thermit welding, Electro slag welding, Electron beam welding, Ultrasonic welding,	
	8	Laser beam welding, Robotic welding allowances, Pattern codes as per B.I.S.WS	
	9	Introduction to cores, core boxes and core materials,	
4	10	Core making procedure, Core prints, positioning of cores	
	11	Moulding Sand: Properties of moulding sand, their impact and control of properties viz	
	12	Permeability, refractoriness, adhesiveness ,cohesiveness, strength, flowability, collapsibility,	
5	13	Various types of moulding sand, Testing of moulding sand	
	14	Mould Making: Types of moulds, Step involved in making a mould,	
	15	Molding boxes, hand tools used for mould making,	
6	16	Molding processes: Bench molding, floor molding,	
	17	Pit molding and machine molding	
	18	Casting Processes: Charging a furnace,melting and pouring both ferrous and non ferrous metals,	
7	19	1st SESSIONAL TEST	
	20	Cleaning of castings, Principle, working and applications of Die casting: hot chamber and cold chamber, Centrifugal casting	
	21	Gating and Riserig System: Elements of gating system, Pouring basin, sprue, runner, gates,	
8	22	Types of risers, location of risers, Directional solidification.	
	23	Melting Furnaces: Construction and working of Pit furnace, Cupola furnace	
	24	Crucible furnace – tilting type, Electric furnace	
9	25	Casting Defects: Different types of casting defects ,Non destructive testing (NDT) of castings:	
	26	Die penetration test, radiography, magnetic particle inspection and ultrasonic inspection.	
	27	Working principle and construction of shaper, slotter and planer	
10	28	Type of shapers and slotters Type of planers	
	29	Quick return mechanism applied to shaper and planer machine.	
	30	Work holding devices used on shaper and planer Types of tools used and their geometry.	
	31	Specification of shaper and planer. Speeds and feeds in above processes	
11	32	Introduction to broaching Nomenclature of broach tools, types and material	
	33	Types of broaching machines – single ram and duplex, Horizontal type, vertical type ull up, pull down and push down.	
	34	2nd SESSIONAL TEST	
12	35	Milling methods - up milling and down milling Specification	
	36	Working principle of milling machine	
	37	Classification, brief description and applications of milling machines	
13	38	Details of column and knee type milling machine	
	39	Milling machine accessories and attachment – Arbors,adaptors, collets, vices, circular	
	40	Table, indexing head and tail stock, vertical milling attachment, rotary table.	
14	41	Identification of different milling cutters and work mandrels Work holding devices	
	42	Milling operations – face milling, angular milling, form milling,	
	43	Straddle milling and gang milling. Cutting parameters	
15	44	3rd SESSIONAL TEST	
	45	Importance and use of jigs and fixtures, difference between jig and fixture	
16	46	Principal of location Locating and clamping devices	
	47	Types of jigs – drilling jig, template jig and plate jig	
	48	Types of fixtures – Milling and welding fixture	

LESSONPLAN		
Name of Faculty : Manoj Kumar		
Discipline : Mechanical Engg.		
Semester: 5 th		
Subject: Refrigeration and Air Conditioning		
Duration:16Weeks(30/07/2026-23/11/2026)		
Teaching load(Theory):3 Lectures/week		
Theory		
Week No.	Lecture No.	Topic
1	1	UNIT-01 Fundamentals of Refrigeration: Introduction to refrigeration, and air conditioning
		Meaning of refrigerating effect, units of refrigeration
	2	COP, difference between COP & Efficiency
	3	Difference between COP & Efficiency, Methods of refrigeration
2	4	Natural System & Artificial System
	5	UNIT-02 Vapour Compression System: Introduction
	6	Principle of VCRS, function
		Parts and necessity of vapour compression system
3	7	T-SandP-Hcharts
	8	Dry, wet and superheated compression
	9	Effect of subcooling, Super heating
4	10	Actual vapour compression system
	11	Introduction to Air Refrigeration System
	12	Advantages & disadvantages of air refrigeration over vapour compression system
5	13	UNIT-03 Refrigerants: Functions, classification of refrigerants
	14	Properties of R - 717, R – 22
	15	Properties of R-134 (a) and CO ₂
6	16	Properties of ideal refrigerant, selection of refrigerant
	17	Class test on unit 1
	18	Class test on unit 2
7	19	First Sessional Test/Revision of old questions papers
	20	First Sessional Test/Revision of old questions papers
	21	First Sessional Test/Revision of old questions papers

8	22	UNIT-04 Vapour Absorption System: Introduction, Principle and working of simple absorption system
	23	Domestic Electrolux refrigeration systems, Solar power refrigeration system
	24	Advantages and disadvantages of solar power refrigeration system over vapour compression system
9	25	Compressor-Function, Various types of compressors, Condenser- Function
	26	UNIT-05 Refrigeration Equipments: Evaporator-Function, Types of evaporators
	27	Expansion Valve, Function, Various types such as capillary tube
10	28	Thermostatic expansion valve, Low side and high side float valves, application of various expansion valves, Safety Devices-Thermostat, overload protector LP, HP cut out switch
	29	UNIT-06 Psychrometry: Definition, importance, specific humidity, Relative humidity, degree of saturation
	30	DBT, WBT, DPT, sensible heat, Latent heat, Total enthalpy of air
11	31	Second Sessional Test/Revision of old questions papers
	32	Second Sessional Test/Revision of old questions papers
	33	Second Sessional/Revision of old questions papers
12	34	UNIT-07 APPLIED Psychrometry & Heat Load Estimation: Psychrometric chart, various lines, Psychrometric process
	35	Room sensible heat factor, effective room sensible heat factor, grand sensible heat factor
	36	ADP, Room DPT
13	37	Heating & Humidification, Cooling & Dehumidification
	38	Window air-conditioning, Split type air conditioning
	39	Central air-condition, Car air-conditioning
14	40	UNIT-08 Latest development in refrigeration & Air conditioning: Inverter technology, auto-defrosting
	41	Blast cooling, Star rating
	42	Class test on unit 3
15	43	Third Sessional Test/Revision of old questions papers
	44	Third Sessional Test/Revision of old questions papers
	45	Third Sessional Test/Revision of old questions papers
16	46	Third Sessional Test/Revision of old questions papers
	47	Third Sessional Test/Revision of old questions papers
	48	Revision of old questions papers

LESSONPLAN	
Name of Faculty: Manoj Kumar	
Discipline: Mechanical Engg.	
Semester: 5th	
Subject: Refrigeration and Air Conditioning	
Duration: 16 Weeks (30/07/2026-23/11/2026)	
Teachingload(Practical): 2 Periods/Group (2 Groups/week)	
Week No.	Experiment
1	1. Identify various tools of refrigeration kit
2	Repetition of Experiment 1 and Viva voce
3	2. Practice in cutting, bending, flaring, swaging and brazing of tubes
4	3. Study of thermostatic switch, LP/HP cutout overload Protect or filters, strainers and filter driers
5	4. Identify various parts of a refrigerator and window air conditioner
6	Repetition of experiments 2, 3 and VivaVoce
7	Practical sessional exam I
8	5. To find COP of Refrigeration system
9	6. To measure air flow using anemometer
10	Repetition of experiments 5 and VivaVoce
11	Practical sessional exam II
12	7. Charging of a refrigerator / air conditioner
13	8. To detect fault in a refrigerator / air conditioner
14	9. Visit to an ice plant or cold storage plant or central air conditioning plant
15	Practical sessional exam III
16	Repetition of experiments 7, 8 and VivaVoce

LESSON PLAN

Duration: 16 Weeks (30.07.2026 to 23.11.2026)

Subject: CNC

Discipline: Mechanical Engg.

Semester: 5th

Name of Faculty: Pardeep

Designation: Guest Faculty

Teaching Load: Theory - 3 Lectures / Week

Theory		
Week	Lecture No.	Topic
1	1	UNIT - 01 Introduction : Introduction to NC,
	2	Basic Components of NC, Binary coding,
	3	MCU, input devices,
2	4	advantages and disadvantages of NC machines over Conventional machines applications,
	5	CNC & DNC their types, advantages and disadvantages and their applications,
	6	Selection of parts to be machined on CNC machines,
3	7	Problems with conventional NC, Rules for Axis identification
	8	New development in NC, PLC Control and its purpose.
	9	UNIT-02 Part Programming : Introduction to Part programming
4	10	Basic procedure of part programming, NC words, Block,
	11	part programming formats,
	12	simple programming for rational components(point to point, straight line,curved surface
5	13	Tool off sets, cutter radius & wear compensation
	14	Advanced structures : Advantages of using advance structure.
	15	Part programming using canned cycles,
6	16	Subroutine and do loops, mirror image.
	17	UNIT-03 Construction and Tooling : Design features,special mechanical design features, specification
	18	types of slideways, balls, rollers , motor servo/stepper
7	19	Sessional Test - I
	20	Axis drive and lead screw,
	21	Recirculating balls & Nut Assembly
8	22	Swarf removal, safety and guarding devices
	23	Various cutting tools for CNC machine,
	24	Overview of Tool holder, different pallet systems
9	25	Automatic tool changer system tool change cycle management of a tool room.
	26	UNIT-04 System Devices : Control System,
	27	FeedBack control classification (Open Loop and Closed Loop)
10	28	Actuators, Transducers and Sensors,
	29	Characteristics of sensors, Tachometer,
	30	LVDT, Opto-interrupters,
11	31	Potentiometers for linear and angular position, encoder and decoder, Axis drives.
	32	Sessional Test - II
	33	Problems in CNC Machines
12	34	Common problems in CNC machines mechanical, electrical,
	35	pneumatic, electronic and
	36	PC components of NC machines, Diagnosis study of common problems and remedies
13	37	Use of on-line fault finding diagnosis tools in CNC machines.
	38	Methods of using discussion forums, environmental problems.
	39	UNIT-05 Automation System : Automation,
14	40	Stability of production system and automation,
	41	Types, Emerging trends in automation,
	42	automatic assembly, manufacture of printed circuit boards,
15	43	manufacture of Integrated circuits,
	44	Overview of FMS,AVG,ASRS
	45	Group technology, CAD/CAM and CIM.
16	46	Automated Identification system
	47	concept of AI, Robotics, Nomenclature of joints, motions.
	48	Sessional Test - III

LESSON PLAN

Duration: 16 Weeks (30.07.2026 to 23.11.2026)

Subject: Theory of Machine (TOM)

Discipline: Mechanical Engg.

Semester: 5th

Name of Faculty: Deepak Puniya

Designation: Senior Lecturer

Teaching Load: Theory - 2 Lectures / Week, Practical - 1 Turn/Group/Week (2 Periods / Turn)

WEEK	LECT No.	THEORY
		TOPIC
1	1	UNIT-1 SIMPLE MECHANISMS 1.1 Introduction to Machines and Theory of Machines
	2	1.2 Kinematics of Machines: - Definition of Kinematics, Dynamics, Statics, Kinetics, Kinematic link, Kinematic Pair and its types, constrained motion and its types,
2	3	Kinematic chain and its types, Mechanism, inversion, machine and structure.
	4	1.2 Inversions of Kinematic Chain: Inversion of four bar chain, coupled wheels of Locomotive & Pantograph, Inversion of Single Slider Crank chain- Rotary I.C. Engines mechanism, Crank and Slotted lever quick return mechanism.
3	5	Inversion of Double Slider Crank Chain- Scotch Yoke Mechanism & Oldham's coupling.
	6	UNIT-II CAMS & FOLLOWERS 2.1 Definition and function of cam. Different types of cams and followers and their specific applications.
4	7	2.2 Terminology of cam profile. 2.3 Displacement diagram for uniform velocity, S.H.M.
	8	Displacement diagram for S.H.M. and uniform acceleration and deceleration. 2.4 Drawing of profile of radial cam with knife-edge and roller follower with and without offset with reciprocating motion.
5	9	UNIT-III FLYWHEEL 3.1 Flywheel - Concept, function and applications of flywheel.
	10	Types of flywheel: (i) Disc type (ii) Rim type (Specific application of these two).
6	11	3.2 Turning moment diagram for single cylinder 4-Stroke I.C. Engine and Steam Engine (Single Acting & Double Acting).
	12	3.3 Coefficient of fluctuation of energy, Coefficient of fluctuation of speed and its significance. (Numerical).
7	13	Sessional Test-I
	14	GOVERNORS - Concept, function and applications of Governors.

8	15	Comparison between Flywheel and Governor. Terminology used in Governors.
	16	Types of centrifugal Governor: Construction and working of Simple Watt governor
9	17	Construction and working of Porter Governor and Hartnell Governor
	18	UNIT-IV MECHANICAL POWER TRANSMISSION 4.1 Introduction to Mechanical Power, Need of Power Transmission, Methods of Power Transmission.
10	19	4.3 Types and application of belt drives- Open belt drive, Closed or crossed belt drive, Fast and loose pulley, Stepped cone pulley, Jockey pulley drive, Quarter turn belt drive, Compound belt drive.
	20	Length of belt, 4.4 Concept of velocity ratio, slip and creep; crowning of pulleys,
11	21	Sessional Test-II
	22	4.5 Ratio of driving tensions, power transmitted, centrifugal tension, and condition for maximum horse power. (simple numerical)
12	23	4.6 Introduction to Chain Drive, Different types of chains and their applications. Advantages disadvantages of chain drive relative to belt drive.
	24	4.7 Introduction to Gear Drive, Different types of gears and their applications.
13	25	4.8 Gear train, Types and application of different gear trains: Simple, compound, reverted and epicyclic gear trains(simple numerical)
	26	4.9 Relative advantages and disadvantages of Gear drive over other belt drives
14	27	UNIT-V VIBRATIONS & BALANCING 5.1 Concept and terminology used in vibrations, Causes of vibrations in machines; their harmful effects and remedies.Types of vibrations-Free, forced and damped. Damping of vibrations. Resonance.
	28	5.2 Concept of balancing, static and dynamic balancing, Need of balancing of machine parts.
15	29	5.3 Balancing of rotating masses in the same plane and different planes.
	30	Sessional Test-III
16	31	Revision of old question Papers
	32	Revision of old question Papers

		PRACTICAL EXERCISES
WEEK	TURN	EXPERIMENT
1	1	1. To study inversion of Four Bar Mechanism, Single Slider Crank Chain Mechanism and Double Slider Crank Chain Mechanism with the help of working models.
2	2	Repeat of Experiment-1 and Viva voce
3	3	2. To construct radial cam profile for uniform velocity with knife edge and roller follower on drawing sheet.
4	4	3. To construct radial cam profile for SHM with knife edge and roller follower on drawing sheet
5	5	4. To construct radial cam profile for uniform acceleration and retardation with knife edge and roller follower on drawing sheet.
6	6	5. To find the moment of inertia of a flywheel.
7	7	Practical Sessional Exam-I
8	8	Repeat of Experiment-5 and Viva voce
9	9	6. To Study the different types of centrifugal governors & plot graph between R.P.M & Displacement of sleeve.
10	10	Repeat of Experiment-6 and Viva voce
11	11	Practical Sessional Exam-II
12	12	7. To study various types of belts drives and to calculate velocity ratio.
13	13	8. To study different types of gear trains with the help of working models and to calculate Velocity ratio.
14	14	Repeat of Experiment-7&8 and Viva voce
15	15	9. To perform the experiment of Balancing of rotating parts and find the unbalanced couple and forces
16	16	Practical Sessional Exam-III

LESSONPLAN

Name of Faculty: Manoj Kumar

Discipline: Mechanical Engg.

Semester: 5th

Subject: MOOC(Open Elective)(INTERNET OF THINGS)

Duration:16Weeks (30/07/2026-23/11/2026)

Teachingload(Theory):2 Lectures/week

Theory

Week	Lecture No.	Topic
1	1	1. Introduction to Internet of Things(IoT) Understanding IoT fundamentals
	2	IOT Architecture and protocols, Various Platforms for IoT
2	3	Real time Examples of IoT, Overview of IoT components
	4	and IoT Communication Technologies, Challenges in IOT
3	5	2. Arduino Simulation Environment Arduino Uno Architecture
	6	Setup the IDE, Writing Arduino Software
4	7	Arduino Libraries, Basics of Embedded C programming for Arduino
	8	Interfacing LED, Push button and buzzer with Arduino
5	9	Interfacing Arduino with LCD
	10	3. Sensor & Actuators with Arduino Overview of Sensors working
6	11	Analog and Digital Sensors
	12	Class test on Challenges in IOT, Class test on Arduino Libraries
7	13	First Sessional Test/Revision of old questions papers
	14	First Sessional Test/Revision of old questions papers
8	15	Interfacing of Temperature, Humidity, Motion, Light and Gas Sensor with Arduino
	16	Interfacing of Actuators with Arduino
9	17	Interfacing of Relay Switch and Servo Motor with Arduino
	18	1. Basic Networking with ESP8266 Wi-Fi module Web server- introduction, installation, configuration
10	19	Introduction to ESP8266 Wi-Fi Module, Basics of Wireless Networking
	20	Class test on Web server- introduction, installation, configuration
11	21	Second Sessional Test/Revision of old questions papers
	22	Second Sessional Test/Revision of old questions papers
12	23	Various Wi-Fi library, Posting sensor(s) data to web server
	24	2. IoT Protocols • M2M vs. IOT Communication Protocols

13	25	3. Cloud Platforms for IOT Virtualization concepts and Cloud Architecture
	26	Cloud computing, benefits, Cloud services -- SaaS, PaaS, IaaS
14	27	Cloud providers & offerings, Study of IOT Cloud platforms,
	28	Thing Speak API and MQTT, Interfacing ESP8266 with Web services
15	29	Third Sessional Test
	30	Third Sessional Test
16	31	Revision of old questions papers
	32	Revision of old questions papers

