

Government Polytechnic for Women, Faridabad

Lesson Plan

Name of Faculty : VF-II(Theory / Practical)

Discipline : Mechanical Engineering

Semester : 4th

Subject : Materials and Metallurgy

Lesson Plan Duration : 15 weeks (from January 2020 to April 2020)

Work Load (Lectures / Practical) per week (in hours): Lectures-03, Practicals-02

WEEK	THEORY		PRACTICAL	
	Lecture Day	Topic (Including Assignment / Test)	Practical Day	Topic
1 st	1 st	1.Introduction • Material • History of material origin	1 st	1.Classification of about 25 specimens of materials/machine parts into • Metals and non metals • Metals and alloys • Ferrous and non ferrous metals • Ferrous and non ferrous alloys
	2 nd	• Scope of material science •		
	3 rd	• Overview of different engineering materials and applications •		
2 nd	4 th	• Classification of material • Present and future needs of materials	2 nd	Do
			3 rd	Do
	5 th	• Thermal • Chemical • Electrical • Mechanical Properties of Various material	4 th	Do

	6 th	Overview of biomaterials and semiconducting materials		
3 rd	7 th	Various issues of material usage Economical, Environment and social	5 th	2. Given a set of specimen of metals and alloys (copper, brass, aluminum, cast iron, HSS, gun metal); identify and indicate the various properties possessed by them
	8 th	2. Crystallography Fundamentals: Crystal, unit cell, space lattice		
	9 th	Arrangement of atoms in - Simple cubic crystals, - BCC crystals		
4 th	10 th	- FCC crystals - HCP crystals	6 th	Do
	11 th	Number of atoms per unit cell Atomic packing factor	7 th	Do
	12 th	Deformation - Overview of behavior - Mechanisms	8 th	Do
5 th	13 th	Behavior of material under load and stress	9 th	3. Study of heat treatment furnace.
	14 th	Failure mechanism: failure modes, fracture, fatigue and creep	10 th	Do
	15 th	3. Metals and Alloys Introduction: History and development of iron and steel		
6 th	16 th	Different iron ores	11 th	Do
	17 th	Raw material in production of iron and steel	12 th	do
	18 th	Basic process of making - Iron - Steel		
7 th	19 th	Classification of iron and steel	13 th	4. Study of a metallurgical microscope and a specimen polishing machine.
	20 th	Cast iron Different types of cast iron		
	21 st	Manufacturing and their Usage	14 th	Do
8 th	22 nd	Steels : steels and alloy steel	15 th	do
	23 rd	Classification of plain carbon steel Availability	16 th	do

		• Properties • Usage		
	24 th	Effects of various alloys on properties of steel		
9 th	25 th	Uses of alloys steels • High speed steel • Stainless steel • Spring steel • Silicon steel	17 th	5. To prepare specimens of following materials for microscopic examination and to examine the microstructure of the following materials: i) Brass ii) Cu iii) Grey iv) Malleable v) LCS vi) HCS vii) HSS
	26 th	Non ferrous materials		
	27 th	Properties and uses • Light metals and their alloys	18 th	do
10 th	28 th	White metals and their alloys	19 th	do
	29 th	4.Theory of heat treatment Purpose of heat treatment,		
	30 th	Solid solutions and its types	20 th	do
11 th	31 st	Iron carbon diagram: formation and decomposition of austenite,	21 st	6. To anneal a given specimen and find out difference in hardness as a result of annealing
	32 nd	Martensitic Transformation • Cooling curves		
	33 rd	Various heat treatment process • Hardening	22 nd	do
12 th	34 th	• Tempering Annealing Normalizing	23 rd	do
	35 th	Case hardening and surface hardening •		

			24 th	7. To normalize a given specimen and to find out the difference in hardness as a result of normalizing
	36 th	Types of heat treatment furnaces required for above operations •		
13 th	37 th	5 Engineering Plastics Importance and sources of plastics •	25 th	do
	38 th	Classification and uses of plastics • Thermoplastic •	26 th	do
	39 th	Thermosetting Various trades of engineering • Plastics Plastic coating		
14 th	40 th	6. Advanced Materials Composites Classification, properties and application •	27 th	8. To harden and temper a specimen and to find out the difference in hardness due to tempering
	41 st	Ceramics • Classification, properties and application Overview of tool and die materials	28 th	
	42 nd	Heat insulating materials Materials for bearing metals		
15 th	43 rd	7. Miscellaneous Materials Properties and uses of • Asbestos and glass wool Thermocole, cork and mica Spring materials	29 th	do
	44 th	Materials for nuclear energy	30 th	do
	45 th	Refractory materials		

Government Polytechnic for Women, Faridabad

Lesson Plan

Name of Faculty : Mr. Sandeep Kumar(Theory / Practical)
Discipline : Mechanical Engineering
Semester : 4th
Subject : Hydraulics and Pneumatics
Lesson Plan Duration : 15 weeks (from January 2020 to April 2020)

Work Load (Lectures / Practical) per week (in hours): Lectures-03, Practicals-02

WEEK	THEORY		PRACTICAL	
	Lecture Day	Topic (Including Assignment/Test)	Practical Day	Topic
1 st	1 st	1.Introduction Fluids: Types and properties: mass density, weight density, specific volume, capillarity	1 st	1.Measurement of pressure head by employing i) Piezometer tube ii) Single and double column manometer.
	2 nd	Specific gravity, viscosity, compressibility	2 nd	do
	3 rd	Surface tension, kinematic viscosity and dynamic viscosity and their units		
2 nd	4 th	Test of chapter-1	3 rd	do
	5 th	2. Pressure and its measurement Concept of pressure (Atm. Pressure, gauge and absolute pressure)	4 th	do
	6 th	Pascal's law and static pressure		
3 rd	7 th	Pressure measuring device Assignment Topic: Piezometer tube manometer, simple U-tube, differential single column, inverted U-tube	5 th	2. To find out the value of coefficient of discharge for a Venturimeter.
	8 th	Micrometer including simple problems	6 th	do

	9 th	Pressure gauge • Bourdon • Diaphragm • Dead weight		
4 th	10 th	Test of chapter-2	7 th	do
	11 th	3. Flow of fluids Types of fluids flow: steady and unsteady	8 th	do
	12 th	• Uniform and non-uniform • Laminar and turbulent flow		
5 th	13 th	Rate of flow and their units Continuity equation of flow	9 th	3. Measurement of flow by using Venturimeter
	14 th	Potential energy of a flowing fluid Total head	10 th	do
	15 th	Bernoulli's theorem (statement and proof) and its applications		
6 th	16 th	Discharge measurement with the help of • Venturimeter • Orifice meter	11 th	do
	17 th	• Pitot-tube Limitations of Bernoulli's theorem simple problems	12 th	do
	18 th	Test of chapter-3		
7 th	19 th	4. Flow through pipes Definition of pipe flow, wetted perimeter, hydraulic mean depth, hydraulic gradient	13 th , 14 th	4. Verification of Bernoulli's theorem.
	20 th	Loss of head due to friction • Chezy's equation • Darcy's equation		
	21 st	Re number and its effect on pipe friction, siphon.		
8 th	22 nd	Nozzle Velocity of liquid flowing through nozzle, power developed	15 th	do
	23 rd	Water hammer, anchor block, siphon and surge tank	16 th	do
	24 th	Assignment Topic: • Loss of head in pipes due to sudden enlargement • Sudden contraction		

9 th	25 th	Obstruction on flow path Change of direction and pipes fittings	17 th	5. To find coefficient of friction for a pipe (Darcy's friction)
	26 th	Test of chapter-4	18 th	do
	27 th	5. Flow through orifices C_c , C_v and C_d flow through drowned or partially drowned orifices		
10 th	28 th	Time for emptying a tank through a circular orifice Simple problems	19 th	do
	29 th	Test of chapter-5	20 th	do
	30 th	6. Hydraulic Machines Description, operation and applications of hydraulic system		
11 th	31 st	Hydraulic ram, jack and brake	21 st , 22 nd	6. To study hydraulic circuit of an automobile brake and hydraulic ram.
	32 nd	Hydraulic accumulator, door closer and press		
	33 rd	Selection of specification of above systems for different applications		
12 th	34 th	Test of chapter-6	23 rd	do
	35 th	7. Water turbines and pumps Concept of turbine Types of turbine Impulse turbine /Reaction turbine Difference between them	24 th	7. Study the working of a Pelton wheel and Francis turbine.
	36 th	Assignment Topic: Construction and working of - Pelton and Francis turbine - Propeller and Kaplan turbine		
13 th	37 th	Unit speed, unit power, unit discharge and specific speed of turbines	25 th	do
	38 th	Selection of turbine based on specific speed	26 th	do
	39 th	Concept of hydraulic pump Single acting reciprocating pump		

14 th	40 th	Vane, screw and gear pumps	27 th	8. To study a single stage centrifugal pump for constructional details and its operation to find out its normal head and discharge.
	41 st	Construction and working of Centrifugal pumps		
	42 nd	• Performance • Efficiencies • Specifications	28 th	do
15 th	43 rd	Trouble shooting and problems in centrifugal pump Remedial measures	29 th	do
	44 th	Pitting Cavitations' priming	30 th	do
	45 th	Test of chapter-7		

Government Polytechnic for Women, Faridabad

Lesson Plan

Name of Faculty : Ms. Deepika (Theory / Practical)

Discipline : Mechanical Engineering

Semester : 4th

Subject : TD-II

Lesson Plan Duration : 15 weeks (from January 2020 to April 2020)

Work Load (Lectures / Practical) per week (in hours): Lectures-03, Practicals-02

WEEK	THEORY		PRACTICAL	
	Lecture Day	Topic (Including Assignment/Test)	Practical Day	Topic
1 st	1 st	1.I.C Engines Introduction Working principle of two stroke and four stroke cycle	1 st	1.Study of a two stroke engine using cut section model, note the function and material of each other
	2 nd	SI Engines and CI Engines	2 nd	do
	3 rd	Otto cycle		
2 nd	4 th	Diesel cycle and dual cycle	3 rd	do
	5 th	Location and functions of various parts of IC engines and materials used for them	4 th	do
	6 th	Concept of IC engines: bore, stroke		
3 rd	7 th	Dead centre and crank throw	5 th	2. Study of a four stroke engine using cut section model. Note the function of each part
	8 th	Compression ratio, piston displacement and piston speed		
	9 th	Test of chapter-1	6 th	
4 th	10 th	2. Fuel supply in petrol engine Concept of carburetion	7 th	do
	11 th	Air fuel ratio	8 th	do
	12 th	Assignment Topic: Simple carburetor and its application		

5 th	13 th	MPFI and common rail system	9 th & 10 th	3. Study of battery ignition system of a multi cylinder petrol engine stressing ignition timings, setting, fixing order and contact breaker, gap adjustment.
	14 th	Supercharging and turbocharger		
	15 th	Test of chapter-2		
6 th	16 th	3. Fuel system of diesel engine Components of fuel system	11 th	do
	17 th	Description and working of fuel feed pump	12 th	do
	18 th	Fuel injection pump		
7 th	19 th	Injectors	13 th , 14 th	4. Study of cooling of IC Engine.
	20 th	Test of chapter-3		
	21 st	4. Ignition system of IC engines Description of battery coil		
8 th	22 nd	Assignment Topic: Magnet ignition system	15 th	do
	23 rd	Electronic ignition system	16 th	do
	24 th	Fault finding in ignition system and remedial action		
9 th	25 th	Test of chapter-4	17 th	5. Study of lubrication system of IC engine.
	26 th	5. Cooling and lubrication Functions of cooling system in IC engine	18 th	do
	27 th	Air and water cooling system		
10 th	28 th	Uses of thermostat, radiator and forced circulation in water cooling	19 th	do
	29 th	Functions of lubrication	20 th	do
	30 th	Types and properties of lubricant		
11 th	31 st	Lubrication system of engine	21 st , 22 nd	6. Determination of BHP by dynamometer.
	32 nd	Cooling and lubrication Fault finding		
	33 rd	Remedial action		
12 th	34 th	Test of chapter-5	23 rd	do
	35 th	6. Testing of IC engines Engine power	24 th	7. Morse test on multi cylinder petrol engine.
	36 th	Indicated and brake power		

13 th	37 th	Efficiency • Mechanical and thermal • Relative and volumetric	25 th , 26 th	do
	38 th	Methods of finding indicated and brake power		
	39 th	• Morse test for petrol engine • Heat balance sheet		
14 th	40 th	Assignment Topic: • Concept of pollutants in SI and CI engines • Pollution control	27 th , 28 th	8. Local visit to roadways or private automobile workshop.
	41 st	Norms for two or four wheelers • BIS-1, II, III and IV		
	42 nd	Methods of reducing pollution in IC engines		
15 th	43 rd	Alternative fuels • CNG	29 th , 30 th	do
	44 th	• LPG		
	45 th	Test of chapter-6		

Government Polytechnic for Women, Faridabad

Lesson Plan

Name of Faculty : Mr. Ramkaran Sharma (Theory)

Discipline : Mechanical Engineering

Semester : 4th

Subject : Workshop Technology-II

Lesson Plan Duration : 15 weeks (from January 2019 to April 2019)

Work Load (Lectures) per week (in hours): Lectures-03

WEEK	THEORY	
	Lecture Day	Topic (Including Assignment / Topic)
1 st	1 st	1.Cutting Tools and Cutting Materials • Various types of single point cutting tools and their uses • Single point cutting tool geometry, tool signature and its effect • Heat produced during cutting and its effect
	2 nd	• Cutting speed, feed, depth of cut and their effect • Cutting tool materials • Properties of cutting tool material
	3 rd	Study of various cutting tool materials • High speed steel • Tungsten carbide • Cobalt steel cemented carbides
2 nd	4 th	• Stellite • Ceramics • Diamonds
	5 th	Test of chapter -1
	6 th	2. Lathe • Principle of turning • Function of various parts of lathe • Classification and specification of various types of lathe

3 rd	7 th	Work holding devices
	8 th	Assignment topic: Lathe tools and operations • Plain and step turning • Facing, parting off and taper turning • Eccentric turning, drilling, reaming and boring • Threading, knurling, form turning and spinning.
	9 th	Cutting parameters • Speed, feed and depth of cut for various materials and for various operations
4 th	10 th	• Machine time Speed ratio • Preferred numbers of speed selection
	11 th	Lathe accessories • Centre, dogs and different types of chucks • Collects, faceplate, angle plate and mandrel
	12 th	• Steady rest, follower rest and taper turning attachment • Tool post grinder and milling attachment
5 th	13 th	Quick change device for tools
	14 th	Introduction to capstan and turret lathe
	15 th	Test of chapter-2
6 th	16 th	3. Drilling • Principle of drilling • Classification of drilling machines and their descriptions
	17 th	Various operation performed on drilling machine • Drilling, spot facing and reaming • Boring and counter boaring
	18 th	• Counter sinking, hole milling and tapping
7 th	19 th	• Speeds and feeds during drilling • Impact of these parameters on drilling and machining time
	20 th	Types of drills and their features, nomenclature of drill
	21 st	Drill holding devices

8 th	22 nd	Test of chapter-3
	23 rd	4. Boring • Principle of boring
	24 th	Assignment Topic: Classification of boring machines and brief description • Boring tools • Boaring bars • Boaring heads
9 th	25 th	Test of chapter-4
	26 th	5. Shaping, Planning and Slotting Working principle of • Shaper • planer • slotter
	27 th	Types of • Shapers • Planers
10 th	28 th	Types of tools used and their geometry
	29 th	Speed and feeds in above process
	30 th	Test of chapter-5
11 th	31 st	6. Broaching • Introduction Types of broaching machine • Single ram • Duplex ram horizontal
	32 nd	• Vertical pull up • Pull down • Push down
	33 rd	• Elements of broach tool, • Broach tooth details –nomenclature, Types and material of tools
12 th	34 th	Test of chapter-6
	35 th	7. Jigs and fixtures • Importance and use of jigs and fixtures • Principle of location
	36 th	• Locating devices

13 th	37 th	Clamping devices
	38 th	Advantages of jigs and fixtures
	39 th	Test of chapter-7
14 th	40 th	8. Cutting fluids and lubricants Function of cutting fluid
	41 st	Assignment topic: Types of cutting fluids
	42 nd	Different between cutting fluids and lubricants
15 th	43 rd	Selection of cutting fluids for different materials and operations
	44 th	Common methods of lubrication of machine tools
	45 th	Test of chapter-8

Government Polytechnic for Women, Faridabad

Lesson Plan

Name of Faculty : Mr. B.K. Chutani (Theory)

Discipline : Mechanical Engineering

Semester : 6th

Subject : Industrial Engineering

Lesson Plan Duration : 15 weeks (from January 2020 to April 2020)

Work Load (Lectures) per week (in hours): Lectures-04

WEEK	THEORY	
	Lecture Day	Topic (Including Assignment / Test)
1 st	1 st	1.Productivity • Introduction to productivity • Factors affecting productivity
	2 nd	• Measurement of productivity • Causes of low productivity
	3 rd	• Methods to improve productivity
	4 th	Test of chapter-1
2 nd	5 th	2. Work Study • Definition and scope of work study
	6 th	• Interrelation between method study and work measurement
	7 th	• Human aspect of work study
	8 th	• Role of work study in improving productivity Assignment Topic: • Productivity • Work study and its scope • Relation between method study and work measurement

3 rd	9 th	Test of chapter -2
	10 th	3. Method Study Objectives
	11 th	Procedure for method analysis
	12 th	Information collection of method study
4 th	13 th	Recording techniques of method study
	14 th	Test of chapter-3
	15 th	4. Motion Analysis Principle's
	16 th	- Therbligs - SIMO charts
5 th	17 th	Normal work area
	18 th	Design of work places
	19 th	Ergonomics Assignment Topic: - Objective, procedure and techniques of method study - Therbligs - SIMO Chart - Ergonomics
	20 th	Test of chapter-4
6 th	21 st	5. Work Measurement - Objectives - Techniques
	22 nd	Stop watch time study - Principle - Equipment
	23 rd	Procedure
	24 th	System of performance rating
7 th	25 th	Calculation of basic time
	26 th	Various allowances
	27 th	Calculation of standard time
	28 th	Work Sampling

8 th	29 th	Standard data and its usage
	30 th	Test of chapter-5
	31 st	6. Wages and Incentives Schemes - Introduction - Wage payment for direct labour
	32 nd	- Wage payment for indirect labour - Wage payment planes
9 th	33 rd	Wage incentives
	34 th	Various incentive planes
	35 th	- Incentive for direct labour Assignment Topic: - Work measurement techniques - Work sampling - Wage payment for direct and indirect labour - Incentive plans
	36 th	Test of chapter-6
10 th	37 th	7. Production Planning and Control - Introduction - Objectives
	38 th	Functions of P.P.C
	39 th	Advantages of - Production planning - Production control
	40 th	Stages of P.P.C - Planning - Routing
11 th	41 st	- Scheduling - Dispatching and follow up
	42 nd	Routing - Purpose - Route sheets
	43 rd	- Scheduling purpose - Machine loading chart
	44 th	Gantt chart

12 th	45 th	Dispatching • Purpose and procedure Follow up • Purpose and procedure
	46 th	CPM Techniques
	47 th	PERT Techniques
	48 th	• Drawing of simple networks
13 th	49 th	• Critical time calculation
	50 th	• Production control in job order
	51 st	• Types of productions • Difference between controls of production
	52 nd	Test of chapter-7
14 th	53 rd	8. Estimating and Costing • Introduction • Purpose
	54 th	• Functions
	55 th	• Costing concept
	56 th	• Ladder of cost • Elements of cost
15 th	57 th	Difference between estimation and costing

Government Polytechnic for Women, Faridabad

Lesson Plan

Name of Faculty : Deepika (Theory / Practical)

Discipline : Mechanical Engineering

Semester : 6th

Subject : Automobile Engineering

Lesson Plan Duration : 15 weeks (from January 2020 to April 2020)

Work Load (Lectures / Practical) per week (in hours): Lectures-03, Practicals-02

WEEK	THEORY		PRACTICAL	
	Lecture Day	Topic (Including Assignment / Test)	Practical Day	Topic
1 st	1 st	1.Introduction Automobiles and its development	1 st	1.Fault and their remedies in - Battery ignition system - Magnetic ignition system
	2 nd	Various types of automobiles manufactured in India		
	3 rd	Layout of chassis Assignment Topic: Types of automobile and layout of chassis	2 nd	Do
2 nd	4 th	2. Power System Fuel system for petrol and diesel engines including multipoint fuel injection (MPFI)	3 rd	2. Demonstration of - Head light model - Wipers - Indicators
	5 th	- Common rail direct injection (CRDI) - Fuel injectors and nozzles	4 th	do
	6 th	Comparison of MPFI with carburetor system		

3 rd	7 th	▪ Concept of double overhead cam and single overhead cam	5 th	3. Demonstration of ▪ AC pump ▪ SU pump ▪ Master cylinders
	8 th	▪ Twin cam 16 valve technology in 4 cylinder engine	6 th	do
	9 th	Test of chapter – 1,2		
4 th	10 th	3.Transmission System ▪ Clutch- Function ▪ Constructional details of single plate and multiplate friction clutches	7 th	do
	11 th	▪ Centrifugal and semi centrifugal clutch ▪ Hydraulic clutch ▪ Gear box- function	8 th	Do
	12 th	▪ Concept of sliding mesh and constant mesh ▪ Synchromesh gear box ▪ Torque converter and overdrive		
5 th	13 th	▪ Types of drives- front wheel, Rear wheel and Four wheel ▪ Function of propeller shaft	9 th	4. Demonstration of ▪ Rear axle ▪ Differential ▪ Steering system
	14 th	▪ Universal joint ▪ Differential ▪ Different types of rear axles and front axles	10 th	Do
	15 th	▪ Wheels and tyres ▪ Types of wheels ▪ Types and specifications of tyres used in Indian vehicles		
6 th	16 th	▪ Wheel balancing Assignment Topic: ▪ MPFI,CRDI, nozzles ▪ Clutch- function ,types ▪ Gear box- types, function ▪ Drives, wheel and tyres- types	11 th	Do

	17 th	Test of chapter-3	12 th	Do
	18 th	4. Steering System Function and principle of Ackerman and Davis steering mechanism		
7 th	19 th	- Types of steering gear boxes-worm and nut - Worm and wheel	13 th	5. Fault finding practices on an automobile- four wheelers (petrol/ diesel vehicles)
	20 th	- Worm and roller - Rack and pinion	14 th	Do
	21 st	Power steering system		
8 th	22 nd	Alignment of wheels - Toe in - Toe out	15 th	6. Tuning of automobile engine
	23 rd	- Camber - Caster	16 th	Do
	24 th	- Kingpin inclination Assignment Topic: - Types of gear boxes - Power steering system		
9 th	25 th	Test of chapter -4	17 th	7. Driving practice on a 4-wheeler
	26 th	5. Braking System Constructional details and working of mechanical and hydraulic brake	18 th	Do
	27 th	Concept of air and vacuum brake		
10 th	28 th	Brake adjustment	19 th	8. Charging of an automobile battery and measuring cell voltage and specific gravity of electrolyte
	29 th	Introduction to antilock brake system		
	30 th	Working of antilock brake system Assignment Topic: - Types of brake - Working of antilock brake system	20 th	Do

11 th	31 st	Test of chapter- 5	21 st	9.Changing of wheels, inflation of tyres and balancing of wheels
	32 nd	6. Suspension System ▪ Function ▪ Types of suspension system		
	33 rd	▪ working of coil spring	22 nd	Do
12 th	34 th	▪ Leaf spring	23 rd	10.Checking spark gap and valve clearance
	35 th	▪ Concept of air suspension	24 th	Do
	36 th	▪ Shock absorber		
13 th	37 th	7. Auto Electrical System ▪ Constructional details of lead acid cell battery	25 th	Do
	38 th	▪ Maintenance of batteries ▪ Checking of batteries for voltage	26 th	Do
	39 th	▪ Checking of batteries for specific gravity ▪ Magneto and battery coil ignition system		
14 th	40 th	Concept of dynamo	27 th	11.Cleaning and adjusting a carburetor
	41 st	Alternator ▪ Construction ▪ Working	28 th	Do
	42 nd	Charging of battery by alternator		
15 th	43 rd	Regulator Assignment Topic: ▪ Leaf spring, shock absorber ▪ Alternator ▪ Dynamo	29 th	Do
	44 th	Test of chapter- 6	30 th	Do
	45 th	Test of chapter- 7		

Government Polytechnic for Women, Faridabad

Lesson Plan

Name of Faculty : VF-II (Theory)

Discipline : Mechanical Engineering

Semester : 6th

Subject : Entrepreneurship Development and Management

Lesson Plan Duration : 15 weeks (from January 2020 to April 2020)

Work Load (Lectures) per week (in hours): Lectures-03

WEEK	THEORY	
	Lecture Day	Topic (Including Assignment / Test)
1 st	1 st	1. Entrepreneurship • Concept / Meaning and its need • Qualities of entrepreneur
	2 nd	• Functions of entrepreneur • Barriers in entrepreneurship
	3 rd	• Sole proprietorship and partnership forms of business organizations • Schemes of assistance by entrepreneurial support agencies at national, state , district level
2 nd	4 th	Organizations • NSIC • NRDC • DC
	5 th	• MSME • SIDBI • NABARD
	6 th	Commercial Banks • SFC's • TCO

3 rd	7 th	• KVIB • DIC
	8 th	• Technology Business Incubators (TBI)
	9 th	Science and technology entrepreneurship parks Assignment Topic: • Entrepreneur, Entrepreneurship • Qualities / Functions • Commercial banks
4 th	10 th	Test of chapter -1
	11 th	2. Market Survey and Opportunity Identification • Scanning of the business environment
	12 th	Silent features of industrial policies • National • State
5 th	13 th	• Resultant business opportunities
	14 th	Types and conduct of market survey
	15 th	Assessment of demand in potential areas of growth
6 th	16 th	Assessment of supply in potential areas of growth
	17 th	Identifying of business opportunity
	18 th	Considerations in product selections Assignment Topic: • National and state industrial policies • Types of market survey • Demand and supply in potential areas of growth
7 th	19 th	Test of chapter-2
	20 th	3. Project Report Preparation • Preliminary project report
	21 st	• Detailed project report
8 th	22 nd	• Technical
	23 rd	• Economic
	24 th	• Market feasibility

9 th	25 th	Common errors in project report preparations
	26 th	Exercises on preparation of project report Assignment Topic: - Preliminary project report - Detailed project report - Common errors
	27 th	Test of chapter- 3
10 th	28 th	4. Management - Definition and importance of management - Functions of management
	29 th	Importance and processes - Planning - Organizing - Staffing
	30 th	- Directing - Controlling
11 th	31 st	- Principles of management (Henri Fayol, F.W Taylor) - Concept and structure of an organization
	32 nd	Types of industrial organizations - Line organization - Line or staff organization - Functional organization
	33 rd	5. Leadership and Motivation Leadership - Definition and need - Qualities and functions of leader
12 th	34 th	- Manager Vs leader - Types of leadership
	35 th	Motivation - Definition and characteristics - Factors effecting motivation
	36 th	Theories of motivation (Maslow, Herzberg, Douglas, McGregor)
13 th	37 th	Test of chapter-4,5
	38 th	6. Management Scope in Different Areas Human Resources Management Introduction and objective

		• Introduction to man power planning, Recruitment and selection • Introduction to performance appraisal methods
	39 th	Material and Store Management • Introduction functions and objectives • ABC analysis and EOQ
14 th	40 th	Marketing and Sales • Introduction, importance and its functions • Physical distribution • Introduction to promotion mix and sales promotion
	41 st	Financial Management • Introduction, importance and its functions Elementary knowledge of • Income tax and sales tax • Excise duty and custom duty • VAT
	42 nd	7. Miscellaneous Topics Customer Relation Management • Definition and need • Types of CRM
15 th	43 rd	Total Quality Management • Statistical process control • Total employees involvement • Just in time (JIT)
	44 th	Intellectual Property Right • Introductions, definition and its importance • Infringement related to patents, copy right and trade mark Assignment Topic: • Principle of management and types of industrial organization Definition of • Leadership and motivation • CRM • TQM • JIT • IPR
	45 th	Test of chapter- 6, 7

	58 th	Overheads • Types • Estimation of material cost • Estimation of cost for machining processes
	59 th	Numerical problems Assignment Topic: • Objectives and functions of P.P.C • Stages of P.P.C • CPM/PERT • Overheads and its types
	60 th	Test of chapter-8

Government Polytechnic for Women, Faridabad

Lesson Plan

Name of Faculty : Mr. Ramkaran Sharma (Theory/Practical)

Discipline : Mechanical Engineering

Semester : 6th

Subject : Inspection and Quality Control

Lesson Plan Duration : 15 weeks (from January 2020 to April 2020)

Work Load (Lectures/Practical) per week (in hours): Lectures-03, Practical-03

WEEK	THEORY		PRACTICAL	
	Lecture Day	Topic (Including Assignment/ Test)	Practical Day	Topic
1 st	1 st	1.Inspection • Introduction • Units of measurement	1 st	1. Use of dial indicator for measuring taper
	2 nd	• Standard for measurement • Interchangeability	2 nd	Do
	3 rd	Standards • International • National • Company • Line and wavelength standards		
	4 th	Planning of inspection • What to inspect? • When to inspect? • Who should inspect? • Where to inspect?		
2 nd	5 th	Types of inspection • Preventive and operative inspection	3 rd	2. Use of combination set, bevel protector and sine bar for measuring taper
	6 th	• Incoming and in-process • Final inspection		
	7 th	Remedial Study of factors influencing the quality manufacture	4 th	Do
	8 th	Test of chapter-1		

3 rd	9 th	2. Measurement and Gauging Principles used in measurement and gauging • Mechanical • Optical • Electrical • Electronic	5 th	Do
	10 th	Study of various measuring instruments • Calipers • Micrometers	6 th	Do
	11 th	• Dial indicators • Surface plate		
	12 th	• Straight edge • Try square		
4 th	13 th	• Protectors • Sine bar • Clinometers	7 th	Do
	14 th	Comparators • Mechanical • Electrical • Pneumatic	8 th	Do
	15 th	Slip gauges		
	16 th	• Tool room microscope • Profile projectors		
5 th	17 th	Limit Gauges • Plug • Ring • Snap	9 th	3.Measurement of thread characteristics using vernier and gauges
	18 th	• Taper • Thread • Height • Depth	10 th	Do
	19 th	• Form • Feeler • Wire		
	20 th	Applications for • Linear • Angular • Surface		

6 th	21 st	• Thread and gear measurement • Gauge tolerances	11 th	Do
	22 nd	Geometrical Parameters and Errors • Error and their effect on quality		
	23 rd	• Concept of error		
	24 th	Measurement of geometrical parameter • Straightness • Flatness • parallelism	12 th	Do
7 th	25 th	Study of procedure for alignment tests on lathes • Drilling Machine • Milling Machine	13 th	4. Use of slip gauge in measurement of centre distance between two pins.
	26 th	Testing of measuring instruments	14 th	Do
	27 th	Maintenance of measuring instruments Assignment Topic: • Interchangeability • Types of inspection • Limit Gauges • Concept of error		
	28 th	Test of chapter-2		
8 th	29 th	3. Statistical Quality Control • Basic concept • Empirical distribution	15 th	Do
	30 th	• Histogram	16 th	Do
	31 st	• Frequency		
	32 nd	• Mean • Mode		
9 th	33 rd	• Standard deviation	17 th	5. Use of tool maker's microscope and comparator.
	34 th	• Normal distribution		
	35 th	• Binomial		
	36 th	• Poisson	18 th	Do
10 th	37 th	Simple Examples	19 th	Do
	38 th	Introduction to control charts • X chart • R chart		
	39 th	• P chart • C chart	20 th	Do
	40 th	Applications of control charts		

11 th	41 st	Sampling Planes • Selection of sample size • Method of taking samples	21 st	6. Plot frequency distribution for 50 turned components.
	42 nd	• Frequency of samples	22 nd	Do
	43 rd	Inspection plan format and test reports Assignment Topic: • Normal distribution • Standard deviation • Control charts • Sampling plan		
	44 th	Test of chapter-3		
12 th	45 th	4. Modern Quality Concept • Concept of TQM	23 rd	Do
	46 th	• National codes	24 th	Do
	47 th	• International codes		
	48 th	ISO-9000 • Concept • Evolution		
13 th	49 th	QC Tools	25 th	7. With the help of given data plot X, R, P and C charts.
	50 th	Introduction to kaizen		
	51 st	5S		
	52 nd	Test of chapter-4	26 th	Do
14 th	53 rd	5. Instrumentation Measurement of mechanical qualities • Displacement	27 th	Do
	54 th	• Vibration	28 th	Do
	55 th	• Frequency		
	56 th	• Pressure		
15 th	57 th	• Temperature	29 th	Do
	58 th	Electromechanical Transducers and their types • Resistance • Capacitance		
	59 th	• Inductance Assignment Topic: • TQM • ISO-9000 • Kaizen	30 th	Do
	60 th	Test of chapter-5		

Government Polytechnic for Women, Faridabad

Lesson Plan

Name of Faculty : Mr. Sandeep Kumar (Theory)

Discipline : Mechanical Engineering

Semester : 6th

Subject : Estimation & Costing

Lesson Plan Duration : 15 weeks (from January 2020 to April 2020)

Work Load (Lectures) per week (in hours): Lectures-04

WEEK	THEORY	
	Lecture Day	Topic (Including Assignment / Test)
1 st	1 st	1.Introduction • Definition of Estimation,
	2 nd	• selling price, capital investment
	3 rd	• Importance and its aim and function
	4 th	• Cost accounting and its purpose
2 nd	5 th	• Estimating procedure,
	6 th	• cost estimators and their qualifications
	7 th	• Cost of production,
	8 th	• Rate of return (ROR) on investment •
3 rd	9 th	• Comparison of Estimating and Costing
	10 th	Test of chapter-1
	11 th	2. Elements of Costing • Definition and objective,

	12 th	• Elements of Cost and its components,
4 th	13 th	• overhead expenses,
	14 th	• factory expenses
	15 th	• Method of calculation of depreciation
	16 th	• obsolescence, interest on capital, idleness cost
5 th	17 th	• Depreciation Cause
	18 th	Assignment Topic: • Calculation of idleness cost , repairs and maintenance cost, selling and distribution overheads and methods of allocation of overhead charges, procedure for costing
	19 th	3. Cost Accounting • Objectives of cost accounting,
	20 th	• difference between financial accounting and cost accounting,
6 th	21 st	• advantages of cost accounting
	22 nd	• methods of costing
	23 rd	• unit costing
	24 th	• batch costing
7 th	25 th	• departmental costing
	26 th	• process costing
	27 th	• multiple and composite costing
	28 th	• Test of Chapter 3rd
8 th	29 th	• 4. Fundamentals of Estimating • Objectives of cost estimating
	30 th	• functions of cost estimating
	31 st	• organization of estimating department
	32 nd	• principal factors in estimating
9 th	33 rd	• miscellaneous allowances,
	34 th	• estimating procedures
	35 th	• qualities of estimator.
	36 th	• Test of Chapter 4th
10 th	37 th	• 5. Estimation of Material Cost
	38 th	• Estimation of volumes
	39 th	• weights and cost of material for items like pulley
	40 th	• , spindle, lathe centre
11 th	41 st	• fly wheel, crank shaft and similar items
	42 nd	• Simple numericals on the above, budgets and types of budgets.

	43 rd	6. Estimation of Machine Shop
	44 th	• Set up time, • operation time, handling time
12 th	45 th	• machining time, tear down time,
	46 th	• allowances; personal, fatigue,
	47 th	• tool checking/sharpening/changing, unit operation time,
	48 th	• cycle time and total time, full depth of cut,
13 th	49 th	• cutting speeds for various operations for different tool materials and product materials
	50 th	• estimation of time for various machining operations -
	51 st	• turning, drilling, boring, tapping,
	52 nd	• shaping, planning, milling and grinding.
14 th	53 rd	• 7. Estimation of Other Shops
	54 th	• Estimation of cost of different product
	55 th	• Estimation of cost of different products produced in welding
	56 th	• Estimation of cost of different products produced in welding- gas and electric welding
15 th	57 th	• Estimation of cost of different products produced in welding- forging and foundry shops.

Government Polytechnic for Women, Faridabad

Lesson Plan

Name of Faculty : VF-II (Theory)

Discipline : Mechanical Engineering

Semester : 6th

Subject : Plant Maintenance & Material Handling

Lesson Plan Duration : 15 weeks (from January 2020 to April 2020)

Work Load (Lectures) per week (in hours): Lectures-04

WEEK	THEORY	
	Lecture Day	Topic (Including Assignment / Test)
1 st	1 st	1.Introduction Necessity and advantages of testing
	2 nd	repair and maintenance,
	3 rd	common instruments required for testing,
	4 th	significance of B-T curve in life span of machine tool,
2 nd	5 th	Acceptance test for machine tools,
	6 th	Economic aspects,
	7 th	, manpower planning and materials management
	8 th	Fits and tolerances –
3 rd	9 th	common fits and tolerances used for various machine parts
	10 th	Test of chapter-1
	11 th	2. Plant Layout, Erection and Commissioning of Machines (Installation)
	12 th	Location, layout of machines in Plant Layout
4 th	13 th	Principles of Plant layout, types of plant layout
	14 th	positioning of machines, grouping of machines.
	15 th	Foundation – types of foundation,
	16 th	various considerations for machine foundations, foundation plan,

5 th	17 th	types of foundation bolts
	18 th	Assignment Topic: erection and leveling, grouting Vibration, damping, vibration isolation – methods of isolation, anti vibration mounts.
	19 th	3. Testing of Machines
	20 th	Testing equipment – dial gauge, mandrel
6 th	21 st	- spirit level, straight edge, auto collimator
	22 nd	- Recalibration of measuring instruments like vernier calliper
	23 rd	Testing methods – geometrical/alignment test
	24 th	performance test,
7 th	25 th	testing under load,
	26 th	- run test, vibrations, noise
	27 th	Test of Chapter 3rd
	28 th	
8 th	29 th	4. Maintenance Definition, advantages, limitations, functions and types of maintenance organisation
	30 th	Types of maintenance viz. emergency, preventive, breakdown/corrective, predictive
	31 st	Introduction to computerized maintenance record like facility register, maintenance request
	32 nd	- ISO standards for maintenance documentation - Introduction to machine history card – purpose and advantages
9 th	33 rd	Preparation of scheduled yearly plan for preventive maintenance, difference of work content of servicing, repairs and overhauling.
	34 th	MTBF and MTTR. Maintainability
	35 th	Spare parts- Need of frequently needed spare parts inventory, Make provision of spares for parts not available in market
	36 th	Test of Chapter 4th
10 th	37 th	5. Repairing Common parts which are prone to failure, reasons of failure

	38 th	Repair schedule Parts that commonly need repair such as belts
	39 th	Repair schedule Parts that commonly need repair, nuts
	40 th	Repair schedule Parts that commonly need repair couplings,
11 th	41 st	bolts repairing the engines, compressors and boilers.
	42 nd	Test of Chapter 5th
	43 rd	6. Lubrication Systems
	44 th	Lubrication methods and periodical lubrication chart for various machines (daily, weekly, monthly)
12 th	45 th	Handling and storage of lubricants
	46 th	Lubricants conditioning and disposal
	47 th	- Lubricant and their grades needed for specific components such as gears, bearings, and chains
	48 th	Lubricant and their grades needed for specific components such as gears,
13 th	49 th	Purpose and procedure of changing oil periodically (like gear box oil)
	50 th	Test of Chapter 5th
	51 st	7. Material Handling Systems
	52 nd	Basic principles of material handling
14 th	53 rd	Basic types of material handling equipments and its characteristic,
	54 th	Uses and limitations, forklift trucks
	55 th	Selection of material handling equipment, Unit load:
	56 th	pallet sizing and loading. Conveyor models, AGV Systems,
15 th	57 th	Automated Storage & Retrieval System (ASRS), Carousels,

Government Polytechnic for Women, Faridabad

Lesson Plan

Name of Faculty : Mr. B.K Chutani (Practical)

Discipline : Mechanical Engineering

Semester : 5th

Subject : Employability Skills-II

Lesson Plan Duration : 15 weeks (from January 2020 to Dec 2020)

Work Load (Practical) per week (in hours): Practical- 02

WEEK	PRACTICAL	
	Practical Day	Topic
1 st	1 st	Oral Practice 1.Mock interview
	2 nd	
2 nd	3 rd	
	4 th	
3 rd	5 th	
	6 th	
4 th	7 th	2.Preparing for meeting
	8 th	
5 th	9 th	
	10 th	
6 th	11 th	3.Group discussion
	12 th	
7 th	13 th	
	14 th	
8 th	15 th	
	16 th	
9 th	17 th	4.Seminar presentation
	18 th	
10 th	19 th	
	20 th	
11 th	21 st	
	22 nd	
12 th	23 rd	5.Making a presentation

	24 th	• Elements of good presentation
13 th	25 th	• Structure and tools of presentation
	26 th	
14 th	27 th	• Paper reading
	28 th	
15 th	29 th	• Power point presentation
	30 th	