NAME OF FACULTY: SHIV KUMAR

DISCIPLINE: MECHANICAL ENGINEERING

SEMESTER: VI

SUBJECT: AUTOMOBILE ENGINEERING

LESSON PLAN DURATION: 15 WEEKS

WORK LOAD (LECTURE/PRACTICAL) PER WEEK: (3 lectures /2 Practical's)

WEEK	THEORY		PRACTICALS
	LECTURE NO.	TOPIC	TOPIC
1st	1	**UNIT-1. Introduction** 1.1 Automobile and its development.	1. Fault and their remedies in (i) Battery Ignition system (ii) magnetic Ignition system.
	2	1.2 Various types of automobiles manufactured in India.	
	3	1.3 Layout of chassis.	
2nd	4	**UNIT-2. Power System** 2.1 Fuel systems for petrol and diesel engines	2. Demonstration of (i) Head Light Model (ii) Wiper and Indicators.
	5	Multi point fuel injection (MPFI), common rail direct injection (CRDI).	
	6	Fuel injectors and nozzles.	
3rd	7	2.2 Comparison of MPFI with carburetor system.	3 Demonstration of (i) AC Pump (ii) SU Pump (iii) Master Cylinders.
	8	2.3 Concept of double overhead cam, single overhead cam.	
	9	Twin cam 16 valve technology in 4 cylinder engine.	
4th	10	**SESSIONAL TEST -I**	4 Demonstration of (i) rear axle (ii) differential (Iii) Steering system.
	11	**UNIT-3. Transmission System** 3.1 Clutch - Function, Constructional details of single plate clutch.	
	12	Constructional details of multi plate friction clutches.	
5th	13	Centrifugal and semi centrifugal clutch, Hydraulic clutch.	5 Fault finding practices on an automobile - four wheelers (petrol/ diesel vehicles).
	14	3.2 Gear Box - Function, Concept of sliding mesh, constant mesh, and synchromesh gear box.	
	15	Torque converter and overdrive, 3.3 Types of drives – Front wheel, Rear wheel, Four Wheel.	
6th	16	3.4 Function of Propeller shaft, Universal joint, Differential and Different types of Rear axles and Front Axles.	6 Tuning of an automobile engine.
	17	3.5 Wheels and Tyres - Types of wheels, Types and specifications of tyres used in Indian vehicles, Wheel balancing.	
	18	**UNIT-4. Steering System** Function and principle of Ackerman steering mechanism.	
7th	19	Function and principle of Davis steering mechanism.	7 Driving practice on

	20	Types of steering gear boxes – Worm and nut, worm and wheel cont.	a 4-wheeler.
	21	Worm and roller, rack and opinion.	
8th	**22**	Power steering system.	8 Charging of an automobile battery and measuring cell voltage and specific gravity of Electrolyte.
	23	Alignment of wheels – Toe in, toe out, camber, caster, kingpin inclination.	
	24	**SESSIONAL TEST -II**	
9th	**25**	**UNIT-5. Braking system** Constructional details and working of mechanical brake. cont.	9 Changing of wheels and inflation of tyres, balancing of wheels.
	26	Constructional details and working of hydraulic brake. cont.	
	27	Concept of air and vacuum brake.	
10th	**28**	Brake adjustment.	10 Checking spark gap and valve clearance.
	29	Introduction to Anti lock brake system and its working.	
	30	**UNIT-6. Suspension System** Function, Types of coil spring. cont.	
11th	**31**	Working of coil spring.	11 Cleaning and adjusting a carburetor.
	32	Function, Types of leaf spring cont.	
	33	Working of leaf spring.	
12th	**34**	Concept of Air suspension	Copy Checking / revision
	35	Shock absorber.	
	36	**UNIT-7. Auto Electrical System** Constructional details of lead acid cell battery.	
13th	**37**	Maintenance of batteries.	Viva- voice
	38	Checking of batteries for voltage and specific gravity.	
	39	Magneto and Battery coil ignition system.	
14th	**40**	Concept of Dynamo.	Viva- voice
	41	Alternator - Construction and working.	
	42	Charging of battery by Alternator and Regulator.	
15th	**43**	**SESSIONAL TEST -III**	

Lesson Plan

Name of the Faculty : **Er. Harpal Singh**

Discipline : **Computer Engg, Electrical Engg. & Mech. Engg.**

Semester : **6th**

Subject : **ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT**

Subject Code : **120264**

Lesson Plan duration : **15 weeks (from Feb, 2024 to June, 2024)**

Work load per week : **Lecture – 03**

Week	Theory	
	Lecture Day	**Topic (Including assessment/test)**
1st	1st	**UNIT-1** Introduction: Concept /Meaning and need of entrepreneurship
	2nd	Qualities and functions of entrepreneur and barriers in entrepreneurship
	3rd	Sole proprietorship and partnership forms of business organization
2nd	4th	Schemes of assistance by entrepreneurial support agencies at National level organization
	5th	Schemes of assistance by entrepreneurial support agencies at State level organization
	6th	NSIC, NRDC, DC, MSME, SIDBI
3rd	7th	Commercial Banks, SFC's TCO, KVIB, DIC
	8th	Technology Business Incubators (TBI) Science and Technology Entrepreneur Parks
	9th	**UNIT-2** Market Survey and Opportunity Identification: Scanning of the business environment
4th	10th	Salient features of National and State industrial policies and resultant business opportunities
	11th	Supply in potential areas of growth, Types and conduct of market survey & Assessment of demand
		Identifying business opportunity, Considerations in product selection
	12th	Converting an idea into a business opportunity
5th	13th	Test/Assessment
	14th	**UNIT-3** Project report Preparation, Preliminary project report
	15th	Detailed project report including technical, economic, market feasibility
6th	16th	Common errors in project report preparations
	17th	Exercises on preparation of project report, Sample project report

	18th	**UNIT-4** Introduction to Management: Definitions and importance of management, Functions of management
7th	19th	Importance and process of planning, organizing, staffing, directing and controlling, Principles of management (Henri Fayol, F.W. Taylor)
	20th	Concept and structure of an organization & Types of industrial organisations and their advantages
	21st	Line organization, Line and staff organization & Functional Organisation
8th	22nd	Test/Assessment
	23rd	**UNIT-5** Leadership: Definition and Need, Qualities and functions of a leader,
	24th	Manager Vs leader, Types of leadership, Case studies of great leaders
9th	25th	Motivation: Definitions and characteristics, Importance of self motivation, Factors affecting motivation
	26th	Theories of motivation (Maslow, Herzberg, Douglas, McGregor)
	27th	**UNIT-6 (A)** Human Resource Management: Introduction and objective, Introduction to Man power planning, recruitment and selection
10th	28th	Introduction to performance appraisal methods
	29th	**(B)** Material and Store Management: Introduction functions, and objectives of ABC Analysis and EOQ
	30st	**(C)**Marketing and sales : Introduction, importance, and its functions, Physical distribution
11th	31nd	Introduction to promotion mix, Sales promotion
	32rd	**(D)** Financial Management: Introductions, importance and its functions
	33th	Elementary knowledge of income tax, sales tax, excise duty, custom duty and VAT, GST
12th	34th	**UNIT-7** Work Culture:- Introduction and importance of Healthy Work Culture in organization
	35th	Components of Culture, Importance of attitude, values and behaviour
	36th	Behavioural Science – Individual and group behavior, Professional ethics – Concept and need of Professional Ethics and human values
13th	37th	**UNIT-8 (A)** Basic of Accounting and Finance:- Meaning and definition of accounting
	38th	Double entry system of book keeping, Trading account, PLA account and balance sheet of a company
	39th	**(B)** Objectives of Financial Management, Profit Maximization v/s Wealth

		Maximization
14th	40st	**UNIT-9** Total Quality Management (TQM): Statistical process control, Total employees Involvement
	41nd	Just in time (JIT)
	42rd	Intellectual Property Right (IPR): Introductions, definition and its importance, Infringement related to patents, copy right, trade mark
15th	43th	Test
	44th	Assessment
	45th	Revision

LESSON PLAN

NAME OF FACULTY: SHIV KUMAR

DISCIPLINE: MECHANICAL ENGINEERING

SEMESTER: VI

SUBJECT: ESTIMATING AND COSTING

LESSON PLAN DURATION: 15 WEEKS

WORK LOAD (LECTURE/PRACTICAL) PER WEEK: 4 LECTURES

Week	Theory	
	Lecture Day	**Topic (including assignments/test)**
1st	1	Unit-1 Introduction Definition of estimation, Importance, aims and functions of estimating
	2	cost accounting, purposes of cost accounting, ,
	3	Comparison of estimating and costing
	4	estimating procedure
2nd	5	cost estimators and their qualifications
	6	types of estimates, constituents of job estimates
	7	cost of production, selling price, capital investment,
	8	rate of return(ROR) on investment
3rd	9	**Unit-2** Elements of Costing
	10	Definitions, objectives
	11	elements of costs, components of costs
	12	overhead expenses ,factory expenses
4th	13	depreciation-causes
	14	methods of calculation of depreciation, obsolescence
	15	interest on capital, idleness costs
	16	repairs and maintenance cost
5th	17	selling and distribution overheads,
	18	methods of allocation of overhead charges
	19	procedure for costing
	20	Revision Previous topics
6th	21	**1st Sessional Test**
	22	**Unit-3** Cost Accounting
	23	Objectives of cost accounting
	24	difference between financial accounting and cost accounting
7th	25	advantages of cost accounting, methods of costing; unit costing
	26	batch costing, departmental costing,
	27	process costing, multiple and composite costing
	28	Revision Previous Topics
8th	29	**Unit-4** Fundamentals of Estimating

	30	Objectives of cost estimating
	31	functions of cost estimating
	32	organization of estimating department
9th	33	principal factors in estimating, miscellaneous allowances
	34	Estimating procedures, qualities of estimator
	35	Revision Previous topics
	36	**2nd Sessional Test**
10th	37	**Unit-5** Estimation of Material Cost, Estimation of volumes
	38	weights and cost of material for items like pulley, spindle
	39	lathe centre, fly wheel, crank shaft and similar items
	40	Simple numerical on the above,
11th	41	Budgets and types of budgets
	42	**Unit-6** Estimation of Machine Shop, Set up time
	43	operation time, handling time, machining time,
	44	tear down time allowances;
12th	45	personal, fatigue
	46	tool checking/sharpening/changing
	47	unit operation time
	48	cycle time and total time, full depth of cut
13th	49	cutting speeds for various operations for different tool materials and product materials
	50	estimation of time for various machining operations - turning, drilling, boring, tapping
	51	shaping, planning, milling and grinding
	52	**Unit-7** Estimation of Other Shops
14th	53	Estimation of cost of different products produced in welding
	54	gas and electric welding
	55	forging and foundry shops
	56	Revision
15th	57	**3rd Sessional Test**
	58	Revision
	59	Revision
	60	Revision

LESSON PLAN

NAME OF FACULTY: SHIV KUMAR

DISCIPLINE: MECHANICAL ENGINEERING

SEMESTER: VI

SUBJECT: INSPECTION AND QUALITY CONTROL

LESSON PLAN DURATION: 15 WEEKS

WORK LOAD (LECTURE/PRACTICAL) PER WEEK: 3 LECTURES/2 PRACTICALS

Week	Theory		Practicals
	Lectures Day	Topics	Topics
1st	1	**1. Inspection**	1 Use of dial indicator for measuring taper.
	2	Introduction, units of measurement,	
	3	Standards for measurement and Inspection	
2nd	4	interchangeability	2Use of combination set,bevel protector and sine bar for measuring taper
	5	International, national and company standard, inspection	
	6	Line and wavelength standards	
3rd	7	Planning of inspection: what to inspect? When to inspect?	Copy Checking / revision
	8	Who should inspect? Where to inspect?	
	9	Types of inspection: remedial, preventive	
4th	10	Operative inspection, incoming, in-process and final inspection	3 Measurement of thread characteristic using vernier and gauges.
	11	Study of factors influencing the quality of manufacture	
	12	**2. Measurement and Gauging**	
5th	13	Measurement and Gauging: Basic principles used in measurement, Gauging, mechanical, optical, Electrical and electronic	Copy Checking / revision
	14	Study of various measuring instruments like: calipers, micrometers	
	15	Dial indicators, surface plate, Straight edge, try square	
6th	16	Protectors, Sine bar, clinometers	4 Use of slip gauge in measurement of center distance between two pins
	17	Comparators – mechanical, Electrical, Pneumatic.	
	18	Slip gauges	
7th	19	Tool room microscope	Copy Checking / revision
	20	Profile projector, Limit gauges: plug, ring, snap, taper	
	21	Thread, height, depth, form	
8th	22	Feeler, wire and their applications for linear, angular, surface, thread and gear measurements. Gauge tolerances	5 Use of tool maker's microscop and comparator

	23	Revision Previous Topics	
	24	**SESSIONAL TEST -I**	
9th	25	Geometrical parameters and errors. Errors & their effect on quality, concept of errors	Copy Checking / revision
	26	Measurement of geometrical parameter such as straightness, flatness and parallelism.	
	27	Study of procedure for alignment tests on lathes, drilling and milling machines. Testing and maintenance of measuring instruments	
10th	28	**3. Statistical Quality Control** Statistical Quality Control Basic statistical concepts Empirical distribution and histograms	6 Plot frequency distribuon for 50 Turned componets
	29	Frequency, mean, mode Standard deviation, normal distribution Binomial and Poisson, Simple- examples.	
	30	Introduction to control charts, namely X, R P and C charts and their ap	
11th	31	Sampling plans, selection of sample size. Method of taking samples\	Copy Checking / revision
	32	Frequency of samples. Inspection plan format and test reports	
	33	**SESSIONAL TEST -II**	
12th	34	**4. Modern Quality Concepts:** Modern Quality Concepts Concept of total quality management (TQM)	7 With the help of given data, plot X, R, P and C charts
	35	National and International Codes.	
	36	ISO-9000, concept and its evolution	
13th	37	QC tools	Copy Checking / revision
	38	Introduction to Kaizen, 5S	
	39	**5. Instrumentation:** Measurement of mechanical quantities such as displacement	
14th	40	Vibration, frequency	Viva-voice
	41	Pressure Temperature	
	42	By electro mechanical transducers of resistance, capacitance & inductance type.	
15th	43	Revision	Viva-voice
	44	**SESSIONAL TEST -III**	
	45	Revision	

LESSON PLAN

NAME OF FACULTY: SHIV KUMAR

DISCIPLINE: MECHANICAL ENGINEERING

SEMESTER: VI

SUBJECT: PLANT MAINTENANCE AND MATERIAL HANDLING

LESSON PLAN DURATION: 15 WEEKS

WORK LOAD (LECTURE/PRACTICAL) PER WEEK: 4 LECTURES

Week	Theory	
	Lecture Day	**Topic (including assignments/test)**
1st	1	Unit-1 Introduction Necessity and advantages of testing
	2	repair and maintenance, common instruments required for testing
	3	significance of B-T curve in life span of machine tool
	4	Acceptance test for machine tools, Economic aspects
2nd	5	Fits and tolerances – common fits and tolerances used for various machine parts manpower planning and materials management
	6	**Unit -2** Plant Layout, Erection and Commissioning of Machines (Installation)
	7	Location, layout of machines in Plant Layout
	8	Principles of Plant layout
3rd	9	types of plant layout and positioning of machines, grouping of machines
	10	Foundation – types of foundation,
	11	various considerations for machine foundations
	12	foundation plan, types of foundation bolts
4th	13	erection and leveling grouting
	14	Vibration, damping, vibration isolation
	15	methods of isolation, anti vibration mounts
	16	Revision Previous Topics
5th	17	**1st Sessional Test**
	18	**Unit-3 Testing of Machines,** Testing equipment – dial gauge, mandrel, spirit level,
	19	straight edge, auto collimator
	20	Recalibration of measuring instruments like vernier calliper
6th	21	Testing methods – geometrical/alignment test, performance test
	22	testing under load, run test, vibrations, noise
	23	**Unit-4 Maintenance,** Definition, advantages, limitations
	24	functions and types of maintenance organization
7th	25	Types of maintenance viz. emergency, preventive,
	26	breakdown/corrective, predictive
	27	Introduction to computerized maintenance record like facility register

	28	maintenance request
8th	29	ISO standards for maintenance documentation
	30	Introduction to machine history card – purpose and advantages
	31	Preparation of scheduled yearly plan for preventive maintenance
	32	difference of work content of servicing, repairs and overhauling
9th	33	MTBF and MTTR. Maintainability
	34	Spare parts- Need of frequently needed spare parts inventory
	35	Make provision of spares for parts not available in market
	36	Revision Previous Topics
10th	37	**2nd Sessional Test**
	38	**Unit-5 Repairing**
	39	Common parts which are prone to failure, reasons of failure
	40	Repair schedule Parts that commonly need repair such as belts
11th	41	couplings, nuts, and bolts repairing the engines
	42	compressors and boilers
	43	**Unit-6 Lubrication Systems**
	44	Lubrication methods and periodical lubrication chart for various machines (daily, weekly, monthly
12th	45	Handling and storage of lubricants
	46	Lubricants conditioning and disposal
	47	Lubricant and their grades needed for specific components such as gears, bearings, and chains
	48	Purpose and procedure of changing oil periodically (like gear box oil)
13th	49	**Unit-7 Material Handling Systems**
	50	Basic principles of material handling
	51	Basic types of material handling equipments and its characteristic
	52	Uses and limitations, forklift trucks, Selection of material handling equipment
14th	53	Unit load: pallet sizing and loading
	54	Conveyor models, AGV Systems
	55	Automated Storage & Retrieval System (ASRS)
	56	Carousels,
15th	57	Revision
	58	**3rd Sessional Test**
	59	Revision
	60	Revision