LESSON PLAN

NAME OF FACULTY: SH. PRADEEP KUMAR

DISCIPLINE: MECHANICAL ENGINEERING

SEMESTER:6TH

SUBJECT: AUTOMOBILE ENGG.

LESSON PLAN AND DURATION: 15 WEEKS

WORK LOAD (LECTURE/PRACTICAL) PER WEEK: 3L/2P

WEEK	THEORY		PRACTICALS
	LECTURE NO.	TOPIC	TOPIC
1st	1	**UNIT-I Introduction** Automobile and its development Various types of automobiles manufactured, their manufacturer and location of their manufacturing unit.	1. Fault and their remedies in Battery Ignition system.
	2	Classification of automobiles Layout of chassis Types of drives-front wheel, rear wheel, four wheels.	
	3	**Electric and Other Modern Vehicles**: Introduction; History of Hybrid and Electric Vehicles; Social and Environmental importance of Hybrid and Electric Vehicles;	
2nd	4	Components, Vehicle mechanics: Roadway fundamentals, Vehicle kinetics, Dynamics of vehicle motion; Propulsion System Design,	2. Adjustment of Head Light Beam (ii) Wiper and Indicators.
	5	Motor sizing, Introduction of CNG/PNG in Automobiles, Introduction to self-driven cars.	
	6	**UNIT-II :Transmission System** Clutch - Functions, Constructional details of single plate and multi plate friction clutches, Cone clutch, Hydraulic clutch	
3rd	7	Gear Box - Functions, Working of sliding mesh, constant mesh and synchromesh gear box, Torque converter and overdrive,	3. Dismantling and inspection of (i) AC Pump (ii) SU Pump
	8	Introduction to Automated Manual Transmission, Automatic transmission and Continuously Variable Transmission (CVT).	
	9	Propeller shaft and rear axle - Functions, Universal joint, Differential, Different types of rear axles and rear axle drives.	
4th	10	Wheels and Tyres-Types of wheels, Types and specifications of tyres used in Indian vehicles, Toe in, Toe out, camber, caster, kingpin inclination,	REVISION OF 1ST PRACTICAL
	11	Wheel balancing and alignment, Factors affecting tyre life.	
	12	**UNIT III: Steering System** Function and principle of steering system, steering geometry,	
	13	Types of steering mechanism-Ackerman and Davis Steering Mechanism. Types of steering gears - worm and wheel, rack and pinion,.	REVISION OF 2ND

5th	14	Power steering-Hydraulic and Electrical. Braking System Function of braking system,	PRACTICAL
	15	**SESSIONAL TEST-1**	REVISION OF 3RD PRACTICAL
6th	16	Constructional details and working of mechanical, hydraulic, air and vacuum brake,	4. Dismantle (i) rear axle (ii) differential and find out the gear ratio of crown wheel & driven sun gear and planet pinion.
	17	Power brake. Relative merits and demerits. Details of master cylinder, wheel cylinder,	
	18	Concept of brake drum, brake lining/pad and Brake adjustment,	
7th	19	Introduction to Anti-lock Brake System (ABS)	5. Fault finding practices on an automobile - four wheelers (petrol/ diesel vehicles).
	20	Electronic Brake-force Distribution (EBD) and its working, Regenerative braking	
	21	**UNIT IV: Suspension System** Function of suspension system and types of Coil spring,	
8th	22	leaf spring, Air suspension, Shock Absorber (Telescopic type) –Function, construction and working.	6.Servicing/Tuning of a 2 wheeler/4 wheeler.
	23	**Battery**: Functions and types,	
	24	Constructional details of Lithium ion batteries, Specification of battery-capacity, rating , number of plates,	
9th	25	selection of battery for particular use, Battery charging,	7. Servicing of hydraulic brakes : a) adjustment of brakes b) bleeding of brakes c) fitting of leather pads
	26	chemical reactions during charge and discharge, Maintenance of batteries,	8. Learning Driving Practice
	27	Checking of batteries for voltage and specific gravity.	Learning Driving Practice
10th	28	Batteries for electric and hybrid vehicles. Battery pack Design, Properties of Batteries	Learning Driving Practice
	29	**UNIT V Dynamo and Alternator**: Dynamo- Function and details,	
	30	Regulators - voltage current and compensated type,	
	31	Cutout- construction, working and their adjustment,	
11th	32	**SESSIONAL TEST-2**	Testing and

	33	Alternator- Construction and working, charging of battery by alternator.	Charging of an automobile battery and measuring cell voltage and a) Specific gravity of electrolyte
12th	**34**	Introduction to Integrated starter-alternator, wiring Diagram of an Automobile.	10. Rotation of tyres inflation of tyres and balancing of wheels.
	35	**Safety Measures**: Road safety symbols & rules.	
	36	Various safety star rating systems tests of vehicles.	
13th	**37**	Air bags and other safety equipments such as bull guard, cameras, sensors.	**REVISION**
	38	Advance Driver Assistance Systems (ADAS).	
	39	**SESSIONAL TEST-3**	
14th	**40**	**REVISION**	**REVISION**
	41		
	42		
15th	**43**	**REVISION**	**REVISION**
	44		
	45		

LESSON PLAN

NAME OF FACULTY: VISHNU GOYAL

DISCIPLINE: MECHANICAL ENGINEERING

SEMESTER: 6th

SUBJECT: ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

DURATION: 15 weeks

WORK LOAD (Lecture in hours) per week: 03 Lectures

WEEK	THEORY	
	LECTURE	TOPIC
1st	1	**UNIT I: Entrepreneurship:** Concept and definitions, classification and types of entrepreneurs, entrepreneurial competencies,
	2	Traits / Qualities of entrepreneurs, manager v/s entrepreneur, role of Entrepreneur, barriers in entrepreneurship,
	3	Sole proprietorship and partnership forms of business organisations, small business vs startup
2nd	4	critical components for establishing a start-up,
	5	Leadership: Definition and Need, Manager Vs leader, Types of leadership
	6	**UNIT II:** Definition of MSME (micro, small and medium enterprises), significant provisions of MSME Act,
3rd	7	importance of feasibility studies, technical, marketing and finance related problems faced by new enterprises, major labor issues in MSMEs and its related laws,
	8	Obtaining financial assistance through various government schemes like Prime Minister Employment Generation Program (PMEGP) Pradhan Mantri Mudra Yogna (PMMY) ,
	9	Make in India, Start up India, Stand up India , National Urban Livelihood Mission (NULM);

4th	**10**	Schemes of assistance by entrepreneurial support agencies at National, State, District level: NSIC, NRDC,
	11	DC:MSME, SIDBI, NABARD, Commercial Banks, SFC's TCO, KVIB, DIC,
	12	Technology Business Incubator (TBI) and Science and Technology Entrepreneur Parks (STEP).
5th	**13**	**UNIT III: NATURE AND FUNCTIONS OF MANAGEMENT:** Definition,Nature of Management, Management as a Process,
	14	Management as Science and Art, Management Functions, Management and Administration, Managerial Skills,
	15	**ASSIGNMENT - 1**
6th	**16**	**1ST SESSIONAL TEST**
	17	Levels of Management; Leadership.
	18	**PLANNING AND DECISION MAKING:** Planning and Forecasting - Meaning and definition ,Features, Steps in Planning Process,
7th	**19**	Approaches, Principles, Importance, Advantages and Disadvantages of Planning,
	20	Types of Plans, Types of Planning, Management by Objective. Decision Making-Meaning, Characteristics.
	21	**UNIT IV**: **ORGANISING AND ORGANISATION STRUCTURE**: Organising Process - Meaning and Definition, Characteristics Process,
8th	**22**	Need and Importance, Principles, Span of Management,
	23	Organisational Chart - Types, Contents, Uses, Limitations, Factors Affecting Organisational Chart.
	24	**STAFFING:** Meaning, Nature, Importance, Staffing process.
9th	**25**	Manpower Planning, Recruitment, Selection,
	26	Orientation and Placement, Training, Remuneration.
	27	**CONTROLLING AND CO-ORDINATION** Controlling - Meaning, Features, Importance

10th	**28**	Control Process, Characteristics of an effective control system,
	29	**ASSIGNMENT- 2**
	30	**2ND SESSIONAL TEST**
11th	**31**	Types of Control. Co-ordination - characteristics, essentials.
	32	**UNIT V :** Market Survey and Opportunity Identification,
	33	Scanning of business environment, Assessment of demand and supply in potential areas of growth,
12th	**34**	Project report Preparation,
	35	Detailed project report including technical, economic and market feasibility,
	36	Common errors in project report preparations,
13th	**37**	Exercises on preparation of project report
	38	**ASSIGNMENT - 3**
	39	Revision of 1st unit
14th	**40**	Revision of 2nd unit
	41	Revision of 3rd unit
	42	**3RD SESSIONAL TEST**
15th	**43**	Revision
	44	Revision
	45	Revision

LESSON PLAN

Name of faculty: **MR. JITENDER**

Discipline: **Mechanical Engineering**
Semester: **6th Semester**
Subject: **Estimating & Costing**

Lesson Plan Duration: **15 weeks**

Workload (Lecture/Practical) per week (in hours): **3 Lecture**

Week	Theory	
	Day Lecture	Topic (Including Assignment/Test)
1	1	**Introduction:** Cost estimation-definition, Importance accounting
	2	Purpose , elements for estimation utility item, cost
	3	Cost estimation procedure. Case study of any
2	4	purposes of cost accounting, Comparison of estimating and costing
	5	**Fundamentals of Estimating**: Organization of estimating department
	6	cost estimator- his essential qualifications, types of estimates
3	7	constituents of job estimates, cost of production, selling price
	8	Capital investment, rate of return (ROR) on investment
	9	Principal factors in estimating, miscellaneous allowances.
4	10	**Elements of Costing**: Definitions, objectives, elements of costs
	11	components of costs, ladder of cost, overhead expenses:
	12	factory expenses, depreciation cost-causes
5	13	methods of calculation of depreciation, obsolescence, interest on capital, idleness costs
	14	Assignment
	15	**Sessional Test-1**
6	16	repairs and maintenance cost, selling and distribution overheads
	17	methods of allocation of overhead charges
	18	procedure for costing Methods of costing with example; unit costing

7	19	batch costing, departmental costing, process costing, multiple and composite costing
	20	**Estimation of Material Cost**: Estimation of volumes, weights and cost of material for items like pulley
	21	spindle, lathe centre, fly wheel, crank shaft and similar items
8	22	Simple numerical on the above, Provision of budgets based on estimates
	23	Assignment
	24	**Sessional Test-2**
9	25	**Estimation of Machine Shop**: Set-up time, operation time, handling time, machining time, tear down time, allowances; personal, fatigue
	26	tool checking/sharpening/changing, unit operation time, cycle time and total time,
	27	full depth of cut, cutting speeds for various operations for different tool materials and product materials
10	28	Estimation of time for various machining operations - turning, drilling
	29	Boring, tapping, shaping, planning, milling and grinding.
	30	**Estimation of Welding and Plastic Moulding:** Estimation of cost of different products produced in welding- gas and electric welding,
11	31	Estimating in injection and plastic moulding
	32	**Estimation of Forging and Foundry Shops**: Estimating in forging and foundry shops, various losses.
	33	Die Cost Estimation: Basic approach to cost estimation – pricing history, work intensity history,
12	34	Additional costs, machinability of materials, cost of materials, evaluation. Die building estimates.
	35	**Process and Job Costing**: Characteristics -Principles -Procedure for Process costing,
	36	Accounting terminology like -book valueNet Present Value-Work in progress- Gross
13	37	Domestic Product (GDP)-balance sheet, Introduction to tendering process.
	38	Assignment
	39	**Sessional Test-3**
14	40	Revision Unit-1
	41	Revision Unit-2
	42	Revision Unit-3
15	43	Revision Unit-4
	44	Revision Unit-5
	45	Full syllabus class test

Name of faculty	**SH. HITESH CHAWLA**			
Discipline	**MECHANICAL ENGINEERING**			
Semester	**6th**			
Subject	**METROLOGY & QUALITY CONTROL**			
Lession plan duration	**15 week**			
Work Load (Lecturer/ Practical) per week (Inhours)	**Lectures-03, Practicals-02**			
Week	**Theory**		**Practical**	
	Lecture day	**Topic**	**Practical day**	**Topic**
1st	1st	**Unit 1- Inspection** Introduction, units of measurement	1st	Use of dial indicator for measuring taper
	2nd	standards for measurement and interchangeability		
	3rd	International, national and company standard		
2nd	4th	line and wavelength	2nd	Use of combination set, bevel protector and sine bar for measuring taper
	5th	Planning of inspection: what to inspect? When to inspect? Who should inspect? Where to inspect?		
	6th	Types of inspection: remedial, preventive and operative inspection		
3rd	7th	incoming, in-process and final inspection	3rd	Revision of Ist experiment
	8th	Study of factors influencing the quality of manufacture		
	9th	**Unit 2 Measurement and Gauging** Basic principles used in measurement and gauging, mechanical, optical, electrical and electronic		
4th	10th	Study of various measuring instruments like: calipers, micrometers	4th	Revision of 2nd experiment
	11th	dial indicators, surface plate		
	12th	straight edge, try square, protectors, sine bar		
5th	13th	clinometer, comparators – mechanical	5th	Measurement of thread characteristic using vernier and gauges
	14th	electrical and pneumatic comparators, Slip gauges		
	15th	**SESSIONAL TEST-1**		
6th	16th	tool room microscope, profile projector	6th	Use of slip

	17th	Limit gauges: plug, ring, snap, taper, thread, height, depth,form, feeler, wire and their applications for linear, angular, surface		gauge in measurement ofcenter distance between two pins
	18th	Measurements, gauge tolerances. Geometrical parameters and errors: Errors & their effect on quality, concept of errors,measurement of geometrical parameter such as straightness, flatness and parallelism.		
7th	19th	Study of procedure for alignment tests on lathes, drilling and milling	7th	Revision of 3rd experiment
	20th	Testing and maintenance of measuring instruments		
	21st	Unit 3 Statistical Quality Control Basic statistical concepts		
8th	22nd	empirical distribution and histograms, frequency, mean	8th	Revision of 4th experiment
	23rd	mode, standard deviation		
	24th	normal distribution, binomial		
9th	25th	Poisson, Simple- examples	9th	Use of tool maker's microscope and comparator
	26th	Introduction to control charts		
	27th	X, R, P and C charts and their applications.		
10th	28th	Sampling plans, selection of sample size	10th	Plot frequency distribution for 50 turned components
	29th	method of taking samples, frequency of samples		
	30th	**SESSIONAL TEST-2**		
11th	31st	Inspection plan format and test reports, Revision of X ,R Charts	11th	Revision of 5th experiment
	32nd	Revision of histograms and frequency mean		
	33rd	Assignment of topic standard deviation, normal distribution and poission ratio.		
12th	34th	**Unit 4 Modern Quality Concepts** Concept of total quality management	12th	Revision of 6th experiment
	35th	National Codes.		
	36th	International Codes.		

13th	37th	ISO-9000, concept and its evolution	13th	With the help of given data, plot X, R, Pand C charts
	38th	QC tools		
	39th	Introduction to Kaizen		
14th	40th	5S	14th	Revision of 7th experiment
	41st	**Unit 5 Instrumentation** Measurement of mechanical quantities such asdisplacement		
	42nd	vibration, frequency		
15th	43rd	pressure temperature by electro mechanical transducers ofresistance	15th	Revision of 3rd and 5th experiment
	44th	capacitance & inductance type		
	45th	**SESSIONAL TEST-3**		