

### Lesson Plan

**Name of Faculty** : Sh. Abhishek Yadav  
**Dicipline** : Mechanical Engg.  
**Subject** : Automobile Engineering  
**Lesson Plan duration** : 48 Hours  
**Work load (Lecture/Practical) per week (in hours): 3L and 4P**

Week	Theory		Practical
	Lecture day	Topic(Including assignment/test)	Topic
1		<b>UNIT - 01 Introduction</b>	1 Fault and their remedies in Battery Ignition system
	1	Automobile and its development	
	2	Various types of automobiles manufactured in India	
	3	Layout of chassis	
2	4	<b>Assignment-I</b>	2 Adjustment of Head Light Beam (ii) Wiper and Indicators.
		<b>UNIT-02 Power System</b>	
	5	Fuel systems for petrol and diesel engines including multi point fuel injection (MPFI),	
3	6	common rail direct injection (CRDI), Fuel injectors and nozzles.	3 Dismantling and inspection of (i) AC Pump (ii) SU Pump
	7	Comparison of MPFI with carburetor system	
	8	Concept of double overhead cam, single overhead cam	
4	9	Twin cam 16 valve technology in 4 cylinder engine.	4 Dismantle (i) rear axle (ii) differential and find out the gear ratio of crown wheel
	10	Concept of CNC tool holder	
	11	<b>Sessional-I</b>	
5		<b>UNIT-03 Transmission System</b>	5 Fault finding practices on an automobile - four wheelers (petrol/ diesel vehicles).
	12	Clutch - Function, Constructional details of single plate and multiplate, friction clutches	
		Centrifugal and semi centrifugal clutch	
	13	Gear Box - Function, Concept of sliding mesh	
6	14	Gear Box - Function, Concept of sliding mesh	6 Servicing/Tuning of a 2 wheeler/4 wheeler.
	15	Types of drives – Front wheel, Rear wheel, Four Wheel.	
	16	Function of Propeller shaft, Universal joint,	
7	17	types of Rear axles and Front Axles.	7 Servicing of hydraulic brakes : a) adjustment of brakes b) bleeding of brakes c) fitting of leather pads
	18	<b>PTM</b>	
8	19	Wheels and Tyres - Types of wheels, Types and specifications of tyres	8 Tuning of an automobile engine.
		<b>UNIT-04 Steering System</b>	
	20	Function and principle of Ackerman and Davis steering mechanism	
8	21	types of steering gear boxes	
	22	Worm and nut, worm and wheel, worm and roller, rack	
	23	<b>Assignment-II</b>	

	24	Power steering system and alignment of wheels	9 Testing and Charging of an automobile battery and measuring cell voltage and specific gravity of electrolyte.
9	25	Toe in, toe out, camber, caster, kingpin inclination.	
	26	Basic concepts of part programming, NC words	
	27	Revision	
10	28	<b>Sessional-II</b>	
		<b>UNIT-05 Braking system</b>	
	29	Constructional details and working of mechanical	
	30	hydraulic brake. Concept of air and vacuum brake,	10 Changing of wheels and inflation of tyres, balancing of wheels.
11	31	brake adjustment, Introduction to Anti lock brake system and its working.	
	32	<b>PTM</b>	
	33	Revision	
12	34	Revision	11 Measuring spark gap, valve clearance and ring clearance; carrying out cleaning operations for adjustment.
		<b>UNIT 06 Suspension System</b>	
	35	Function, Types, Working of coil spring	
	36	leaf spring. Concept of Air suspension	
13	37	Shock absorber.	
	38	<b>Assignment-III</b>	
	39	Revision	
14	40	Revision	
	41	Revision	
	42	Revision	
15		<b>UNIT-07 Auto Electrical System</b>	
	43	Constructional details of lead acid cell battery.	
	44	Maintenance of batteries	
	45	checking of batteries for voltage and specific gravity	
16	46	Magnato and Battery coil ignition system.	
	47	Concept of Dynamo	
	48	Alternator - Construction and working, Charging of battery by Alternator and Regulator.	

**Lesson Plan**

**Name of the Faculty :** Gagan Kumar

**Discipline** Mechanical engineering

**Semester** 6th

**Subject** MQC

**Lesson Plan duration :** 15 weeks

**Work load (Lecture/ Practical) per week (in hours) :** Lecture -04 practical-02

WEEK	THEORY		PRACTICAL	
	Lecture day	Topic (including assignment and test)	Practical Day	Topic
1	1	Introduction, units of measurement, standards for measurement and interchangeability	1	Use of dial indicator for measuring taper.
	2	International, national and company standard, line and wavelength standards.	2	Use of combination set, bevel protector and sine bar for measuring taper.
	3		3	Measurement of thread characteristic using vernier and gauges.
	4		4	Use of slip gauge in measurement of center distance between two pins
2	5	Planning of inspection: what to inspect? When to inspect?	5	Use of tool maker's microscope and comparator
	6	Who should inspect?	6	Plot frequency distribution for 50 turned components.
	7	Where to inspect?	7	With the help of given data, plot X, R, P and C charts
	8	Types of inspection: remedial, preventive operative inspection, incoming, in-process and final inspection.		
3	9	Study of factors influencing the quality of manufacture.		
	10	Basic principles used in measurement and gauging, mechanical,		
	11	optical,		
4	12	electrical and electronic.		
	13	Study of various measuring instruments like: calipers,		
	14	micrometers,		
5	15	indicators, surface plate		
	16	straight edge, try square, protectors, sine bar,		
	17	clinometer,		
	18	comparators – mechanical, electrical and pneumatic. Slip gauges, tool room microscope, profile projector.		
6	19	Limit gauges: plug, ring, snap, taper, thread, height, depth, form, feeler, wire		
	20	their applications for linear, angular, surface, thread and gear		
	21	measurements, gauge tolerances		
7	22	Geometrical parameters and errors:		
	23	Errors & their effect on quality		
	24	concept of errors, measurement of geometrical parameter such as straightness, flatness and parallelism.		
8	25	Study of procedure for alignment tests on lathes, drilling and milling machines.		
	26	Testing and maintenance of measuring instruments.		
	27	Basic statistical concepts, empirical distribution and histograms, frequency,		
9	28	mean, mode		
	29	standard deviation, normal distribution, binomial and Poisson, Simple- examples.		
	30	Introduction to control charts		
	31	namely X, R, P and C charts and their applications.		
10	32	Sampling plans,		
	33	method of taking samples,		
	34	selection of sample size,		
11	35	frequency of samples		
	36	Inspection plan format and test reports		
	37	Concept of total quality management (TQM)		
	38	National and International Codes.		
12	39	ISO-9000, concept and its evolution		
	40	QC tools		
	41	Introduction to Kaizen,		
12	42	5S		
	43	Measurement of mechanical quantities such as displacement,		
	44	vibration,		

13	49	frequency,		
	50	pressure temperature by electro mechanical		
	51	transducers of		
14	52	resistance,		
	53	capacitance		
	54	inductance type.		
15	55	Revision		
	56	Revision		
	57	Revision		
15	58	Revision		
	59	Revision		
	60	Revision		

## LESSON PLAN

**Name of the Faculty :** Gagan Kumar

**Discipline** Mechanical engineering

**Semester** 6th

**Subject** EDM

**Lesson Plan duration :** 15 weeks

**Work load (Lecture/ Practical) per week (in hours) :** Lecture -03 practical-00

WEEK	THEORY		PRACTICAL	
	Lecture day	Topic (including assignment and test)	Practical Day	Topic
1	1	1. Introduction (14 hrs)		
	2	• Concept /Meaning and its need		
	3	• Qualities and functions of entrepreneur and barriers in entrepreneurship		
2	4	• Sole proprietorship and partnership forms of business organisations		
	5	• Schemes of assistance by entrepreneurial support agencies at National,		
	6	State, District –level, organisation: NSIC, NRDC, DC, MSME, SIDBI,		
3	7	NABARD, Commercial Banks, SFC's TCO, KVIB, DIC, Technology		
	8	Business Incubators (TBI) and Science and Technology Entrepreneur Parks		
	9	2. Market Survey and Opportunity Identification (10 hrs)		
4	10	• Scanning of the business environment		
	11	• Salient features of National and State industrial policies and resultant		
	12	business opportunities		
5	13	• Types and conduct of market survey		
	14	• Assessment of demand and supply in potential		
	15	• Identifying business opportunity		
6	16	• Considerations in product selection		
	17	3. Project report Preparation (8 hrs)		
	18	• Preliminary project report		
7	19	• Detailed project report including technical, economic and market feasibility		
	20	• Common errors in project report preparations		
	21	• Exercises on preparation of project report		
8	22	4. Introduction to Management (04 hrs)		
	23	• Definitions and importance of management		
	24	• Functions of management: Importance and process of planning, organising,		
9	25	• Principles of management (Henri Fayol, F. W. Taylor)		
	26	• Concept and structure of an organisation		
	27	• Types of industrial organisations		
10	28	a) Line organisation		
	29	b) Line and staff organisation		
	30	c) Functional Organisation		
11	31	5. Leadership and Motivation (03 hrs)		
	32	a) Leadership		

11	33	• Definition and Need Qualities and functions of a leader		
12	34	• Manager Vs leader Types of leadership b) Motivation		
	35	• Definitions and characteristics · Factors affecting motivation		
13	36	• Theories of motivation (Maslow, Herzberg, Douglas, McGregor)		
	37	6. Management Scope in Different Areas Human Resource Management		
14	38	• • Introduction and objective · Introduction to Man power planning, recruitment and selection		
	39	• Introduction to performance appraisal methods b) Material and Store Management		
15	40	• Introduction functions, and objectives		
	41	• ABC Analysis and EOQ c) Marketing and sales		
	42	· Introduction, importance, and its functions · Physical distribution		
15	43	• Introduction to promotion mix		
	44	• Sales promotion		
15	45	Revision		

## LESSON PLAN

**NAME OF FACULTY** : ABHISHEK BHARDWAJ  
**DISCIPLINE** : MECHANICAL ENGINEERING - G.P. INDRI  
**SEMESTER** : 6TH  
**SUBJECT** : RENEWABLE SOURCE OF ENERGY  
**LESSON PLAN DURATION** : 12 WEEKS  
**WORK LOAD (LECTURE/PRACTICAL) PER WEEK** : 3 LECTURES

Week	Lecture	Theory
	Day	Topic covered
1st	1	<b>Unit-1.1 Classification of Energy Resources:</b> Conventional Energy Resources, Non-conventional Energy Resources,.
	2	Roles and responsibility of Ministry of New and Renewable Energy Sources
	3	Needs of renewable energy. Targets and Present Status of Renewable Energy Sources in India.
2nd	4	<b>1.2 Solar Energy:</b> Introduction, potential of solar energy in India, Solar Radiation, Principle of conversion of solar radiation into heat
	5	construction and working principle of photo-voltaic cell. Solar cell materials, Difference between solar cell, panel, array, module,
	6	Characteristics, important terms related to solar energy, Efficiency of Solar Cells.
3rd	7	Applications of solar energy like solar PV system (standalone and grid connected), solar water heating system, solar furnaces,
	8	solar cookers, solar lighting, solar water pumping system, solar still. Government schemes and policies.
	9	<b>Unit 2.1 Bio-Energy:</b> Introduction, Biomass energy, Photosynthesis process, Biomass fuels, Biomass energy conversion technologies and applications, Biomass Gasification
4th	10	Types and application of gasifier, Types of biogas plants, Factors affecting biogas generation,
	11	Environmental impacts and benefits, Future role of biomass , Biomass potential and programs in India
	12	<b>2.2 Hydro Energy:</b> Introduction, Capacity and Potential, Hydro Power Plant (mini and micro), Environmental and social impacts.
5th	13	<b>Unit 3.1 Wind Energy:</b> Introduction, Wind energy conversion system
	14	windmills, types of wind mills
	15	selection of site, electricity generation from wind energy,
6th	16	Wind Energy potential and Scenario in India
	17	1 <sup>st</sup> Sessional Test
	18	<b>3.2 Geothermal Energy:</b> Introduction , Geothermal Resource Utilization like hydrothermal

7th	19	Geopressed hot dry rock, magma,
	20	Geothermal based Electric Power Generation, Associated Problems
	21	environmental Effects, prospects of geothermal energy in India.
8th	22	<b>Unit 4.1 Tidal Energy:</b> Introduction, Capacity and Potential, Principle of Tidal Power
	23	Components of Tidal Power Plant, Classification of Tidal Power Plants.
	24	<b>4.2 Ocean Energy:</b> Introduction, Ocean Thermal Energy Conversion (OTEC),
9th	25	Principle of OTEC system, Methods of OTEC power generation, prospects of OTEC in India.
	27	<b>4.3 MHD power generation:</b> Principle of working of Magneto Hydro Dynamic (MHD) Power Generation,
10th	28	2 <sup>nd</sup> Sessional Test
	29	Materials for MHD generators and future prospects, performance and limitations.
	30	<b>Unit- 5.1 Fuel Cells:</b> Fuel cell definition, difference between batteries and fuel cells,
11th	31	Principle of working of fuel cells ,types of fuel cell, power generation by fuel cell ,
	32	conversion efficiency, applications, advantages and disadvantages of fuel cell .
	33	<b>5.2 Energy Storage:</b> Need of energy storage, Different modes of energy storage, Flywheel storage, Superconducting Magnet Energy Storage (SMES) systems,
12th	34	Capacitor, battery, Super capacitor. Comparison and application.
	35	3 <sup>rd</sup> Sessional Test
	36	Revision