

Lesson Plan

Name of the faculty: Sh. Sunil Luthra, Lecturer in Mechanical Engg.(Theory) & (Practical)

Discipline: Mechanical

Semester: 6th Mechanical A & B

Subject: Inspection and Quality Control

Lesson Plan Duration: 14 weeks (From January, 2020 to April, 2020)

***Work Load (Lecture/ Practical) per week (in hours):** Theory-03 & 02

Week	Theory		Practical	
	Lecture day	Topic (including assignment / test)	Practical Day	Topic
1 st	1 st	Introduction units of measurement Standards for measurement and interchangeability	1 st	Use of dial indicator for measuring taper.
	2 nd	International, national and company standard Line and wavelength standards		
	3 rd	When to inspect, Who should inspect, Where to inspect, what to inspect	2 nd	Use of dial indicator for measuring taper.
	4 th	Types of inspection: remedial, preventive and operative inspection Incoming, in process and final inspection		
2 nd	1 st	Study of factors influencing the quality of manufacture	1 st	Use of combination set, bevel protector and sine bar for measuring taper.
	2 nd	Basic principles used in measurement and gauging Mechanical, optical, electrical and electronic		
	3 rd	Study of various measuring instruments like: calipers, micrometers, dial indicators, surface plate.	2 nd	Use of combination set, bevel protector and sine bar for measuring taper.
	4 th	Straight edge, try square, protectors, sine bar, clinometers		
3 rd	1 st	. Comparators mechanical, electrical and pneumatic	1 st	Measurement of thread characteristic using vernier and gauges.
	2 nd	Slip gauges, tool room microscope, profile projector		
	3 rd	Limit gauges: plug, ring, snap, taper, thread, height, depth, form, feeler, wire	2 nd	Measurement of thread characteristic using vernier and gauges.

	4 th			
4 th	1 st		1 st	Use of slip guage in measurement of center distance between two pins.
	2 nd			
	3 rd		2 nd	Use of slip guage in measurement of center distance between two pins.
	4 th			
5 th	1 st		1 st	Use of tool maker's microscope and components
	2 nd			
	3 rd		2 nd	Use of tool maker's microscope and components
	4 th			
6 th	1 st		1 st	Plot frequency distribution for 50 turned components
	2 nd			
	3 rd		2 nd	Plot frequency distribution for 50 turned components
	4 th			
7 th	1 st	Their applications for linear, angular, surface thread and gear measurements, gauge tolerances.	1 st	With the help of given data, plot X, R, P and C charts.
	2 nd	Geometrical parameters and error: errors and their effect on quality, concept of errors		
	3 rd	Measurement of geometrical parameter such as straightness, flatness and parallelism.	2 nd	With the help of given data, plot X, R, P and C charts.
	4 th			
8 th	1 st	Study of procedure for alignment tests on lathes		
	2 nd	Drilling and milling machines		
	3 rd	Testing and maintenance of measuring instruments		
	4 th			
9 th	1 st	Basic statistical concepts.		
	2 nd	Empirical distribution and histograms		
	3 rd	Frequency, mean, mode, standard deviation, normal distribution.		
	4 th			
10 th	1 st	Binomial and Poisson, Simple examples		
	2 nd	Introduction to control charts, namely X, R, P and C charts.		
	3 rd	Their applications		
	4 th			

11 th	1 st	Sampling plans, selection of sample size.		
	2 nd	Method of taking samples, frequency of samples.		
	3 rd	Inspection plan format and test reports		
	4 th			
12 th	1 st	Concept of total quality management(TQM)		
	2 nd	National and international Codes		
	3 rd	ISO- 9000, concept and its evolution.		
	4 th			
13 th	1 st	QC tools		
	2 nd	Introduction to Kaizen, 5S		
	3 rd	Measurement of mechanical quantities such as displacement		
	4 th			
14 th	1 st	Vibration, frequency, pressure temperature by electro mechanical transducers of resistance		
	2 nd	Capacitance type		
	3 rd	Inductance type		
	4 th			
15 th	1 st	Vibration, frequency, pressure temperature by electro mechanical transducers of resistance		
	2 nd	Capacitance type		
	3 rd	Inductance type		
	4 th			

Lesson Plan

Name of the faculty: Sh. Vijay Malik, Lecturer in Mechanical Engg.

Discipline: Mechanical

Semester: 6th Mechanical A & B

Subject: Automobile Engineering

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

***Work Load (Lecture/ Practical) per week (in hours):** Theory-03 & 02

Week	Theory		Practical	
	Lecture day	Topic (including assignment / test)	Practical Day	Topic
1 st	1 st	Automobile and its development	1 st	Fault and their remedies in (i) Battery Ignition System (ii) Magnetic Ignition System.
	2 nd	Various types of automobiles manufactured in India		
	3 rd	Layout of chassis	2 nd	Fault and their remedies in (i) Battery Ignition System (ii) Magnetic Ignition System.
2 nd	1 st	Fuel systems for petrol and diesel engines including multi point fuel injection (MPFI)	1 st	Demonstration of (i) Head Light Model (ii) Wiper and Indicators
	2 nd	Common rail direct injection (CRD)		
	3 rd	Fuel injectors and nozzles	2 nd	Demonstration of (i) Head Light Model (ii) Wiper and Indicators
3 rd	1 st	Comparison of MPFI with carburetor system	1 st	Demonstration of (i) AC Pump (ii) SU Pump (iii) Master Cylinders.
	2 nd	Concept of double overhead cam		
	3 rd	Single overhead cam	2 nd	Demonstration of (i) AC Pump (ii) SU Pump (iii) Master Cylinders.
4 th	1 st	Twin cam 16 valve technology in 4 cylinder engine	1 st	Demonstration of (i) rear Axle (ii) Differential (iii) Steering System
	2 nd	Clutch- Function, Constructional details of single plate		
	3 rd	Multiplate friction clutches, Centrifugal	2 nd	Demonstration of (i) rear Axle (ii) Differential (iii) Steering System
5 th	1 st	Semi centrifugal clutch, hydraulic clutch	1 st	Fault finding practices on an automobile- four wheelers (petrol/ diesel vehicles)
	2 nd	Gear box- function, concept of sliding mesh		
	3 rd	Constant mesh and synchromesh gear box, Torque converter and overdrive.	2 nd	Fault finding practices on an automobile- four wheelers (petrol/ diesel vehicles)
6 th	1 st	Types of drives- front wheel, rear wheel, four Wheel.	1 st	Tuning of an automobile engine
	2 nd	Function of propeller shaft, universal joint		

	3 rd	Differential and different types of rear axles and front axles	2 nd	Tuning of an automobile engine
7 th	1 st	Wheels and tyres- types of wheels	1 st	Driving practice on a 4-wheeler
	2 nd	Types and specifications of tyres used in Indian vehicles		
	3 rd	Wheel balancing	2 nd	Driving practice on a 4-wheeler
8 th	1 st	Function and principle of Ackerman.	1 st	Charging of an automobile battery and measuring cell voltage and specific gravity of electrolyte
	2 nd	Davis steering mechanism		
	3 rd	Types of steering gear boxes- Worm and nut	2 nd	Charging of an automobile battery and measuring cell voltage and specific gravity of electrolyte
9 th	1 st	Worm and wheel, worm and roller	1 st	Changing of wheels and inflation of tyres, balancing of wheels
	2 nd	Rack and opinion, power steering system		
	3 rd	Alignment of Wheels- Toe in, toe out, camber, caster, kingpin inclination	2 nd	Changing of wheels and inflation of tyres, balancing of wheels
10 th	1 st	Constructional details and working of mechanical	1 st	Checking spark gap and valve clearance.
	2 nd	Hydraulic brake		
	3 rd	Concept of air and vacuum brake	2 nd	Checking spark gap and valve clearance.
11 th	1 st	Brake adjustment	1 st	Cleaning and adjusting a carburetor.
	2 nd	Introduction to Anti lock brake system and its working		
	3 rd	Function, types, working of coil spring	2 nd	Cleaning and adjusting a carburetor.
12 th	1 st	Leaf spring		
	2 nd	Concept of Air suspension		
	3 rd	Shock absorber		
13 th	1 st	Constructional details of lead acid cell battery		
	2 nd	Maintenance of batteries		
	3 rd	Checking of batteries for voltage		
14 th	1 st	Specific gravity		
	2 nd	Magneto and battery coil ignition system.		
	3 rd	Concept of Dynamo		
15 th	1 st	Alternator- construction and working		
	2 nd	Charging of battery by alternator		
	3 rd	Regulator.		

Lesson Plan

Name of the faculty: Sh. Niraj Singh Lecturer in Mechanical Engg.

Discipline: Mechanical

Semester: 6th Mechanical A & B

Subject: EDM

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

****Work Load (Lecture/ Practical) per week (in hours):** Theory-03 & 03

Week	Theory		Practical	
	Lecture day	Topic (including assignment / test)	Practical Day	Topic
1 st	1 st	Concept/Meaning and its need.		
	2 nd	Qualities and functions of entrepreneur and barriers in entrepreneurship.		
	3 rd	Sole proprietorship and partnership forms of business organizations.		
2 nd	1 st	Schemes of assistance by entrepreneurial support agencies at National, State District level: NSIC, NRDC.		
	2 nd	DC: MSME, SIDBI, NABARD, And Commercial Banks.		
	3 rd	SFC's TCO, KVIB, DIC, Technology Business Incubator.		
3 rd	1 st	Science and Technology Entrepreneur Parks (STEP).		
	2 nd	Scanning of business environment. Salient features of National and State industrial policies and resultant business opportunities.		
	3 rd	Types and conduct of market survey.		
4 th	1 st	Assessment of demand and supply in potential areas of growth.		
	2 nd	Identifying business opportunity.		
	3 rd	Considerations in product selection.		
5 th	1 st	Preliminary project report.		
	2 nd	Preliminary project report.		
	3 rd	Detailed project report including technical		
6 th	1 st	Economic and market feasibility.		
	2 nd	Common errors in project report preparations.		
	3 rd	Exercises on preparation of project report.		
7 th	1 st	Definitions and importance of management. Functions of management: Importance and process of planning, organizing, staffing, directing and controlling.		
	2 nd	Principles of management (Henri Fayal, F.W. Taylor), Concepts and structure of an organization.		
	3 rd	Types of industrial organizations: Line organization, Line and staff organization, Functional Organization.		

8 th	1 st	Leadership, Definition and Need.		
	2 nd	Qualities and Functions of a leader.		
	3 rd	Manage Vs leader, Types of leadership.		
9 th	1 st	Motivation: Definitions and characteristics.		
	2 nd	Factors affecting motivation.		
	3 rd	Theories of motivation(Maslow, Herzberg, McGregor)		
10 th	1 st	Human Resources Management. Introduction and objective.		
	2 nd	Introduction to Man power planning, recruitment and selection.		
	3 rd	Introduction to performance appraisal methods.		
11 th	1 st	Materials and Store Management: Introduction functions and objectives.		
	2 nd	ABC analysis and EOQ.		
	3 rd	Marketing and sales: Introduction, importance and its functions		
12 th	1 st	Physical distribution.		
	2 nd	Introduction to promotion mix.		
	3 rd	Sales promotion		
13 th	1 st	Financial Management: Introduction, importance and its functions.		
	2 nd	Elementary knowledge of income tax, sales tax, excise duty, custom duty and VAT.		
	3 rd	Miscellaneous Topics; Customer Relation Management, Definition and need.		
14 th	1 st	Types of CRM		
	2 nd	Total Quality Management: Statistical process control		
	3 rd	Total employees Involvement.		
15 th	1 st	Just in time(JIT)		
	2 nd	Intellectual Property Right (IPR)		
	3 rd	Introductions, definition and its importance. Infringement related to patents, copy right trade mark.		

Lesson Plan

Name of the faculty: Sh. Sandeep Dhandi Lecturer in Mechanical Engg.

Discipline: Mechanical

Semester: 6th Mechanical A & B

Subject : Industrial Engineering

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

****Work Load (Lecture/ Practical) per week (in hours):** Theory-03

Week	Theory		Practical	
	Lecture day	Topic (including assignment / test)	Practical Day	Topic
1 st	1 st	Introduction to productivity, factors affecting productivity, practical measurement of productivity		
	2 nd	Difference between production and productivity, causes of low productivity and methods to improve productivity		
	3 rd	Contribution of standardization in improving productivity.		
2 nd	1 st	Definition and scope of work study;		
	2 nd	factors for selection of work study job,		
	3 rd	uses and limitations of work study		
3 rd	1 st	Inter-relation between method study and work measurement		
	2 nd	Human aspects of work study		
	3 rd	Role of work study in improving productivity.		
4 th	1 st	Definition and Objective for Method study analysis		
	2 nd	procedure for Method study analysis		
	3 rd	Information collection and recording techniques through various diagrams.		
5 th	1 st	Principles of Motion analysis		
	2 nd	Therbligs and SIMO charts		
	3 rd	Normal work area (Principle of motion		

		economy)		
6 th	1 st	design and arrangement of work place.		
	2 nd	Ergonomics		
	3 rd	design of tools and equipments		
7 th	1 st	Objectives; work measurement techniques		
	2 nd	stop watch time study		
	3 rd	principle of work measurement		
8 th	1 st	equipment used and procedure		
	2 nd	systems of performance rating		
	3 rd	elements of time		
9 th	1 st	calculation of basic times		
	2 nd	various allowances		
	3 rd	guide for rest allowance in Indian conditions		
10 th	1 st	calculation of standard time		
	2 nd	work sampling		
	3 rd	standard data and its usage		
11 th	1 st	Introduction to wages		
	2 nd	Wage payment for direct and indirect labour		
	3 rd	wage payment plans and incentives		
12 th	1 st	various incentive plans, incentives for indirect labour.		
	2 nd	Production and its types- job order, batch type and continuous type of productions		
	3 rd	Objectives and components (functions) of P.P.C		
13 th	1 st	Advantages of production planning and Production Control		
	2 nd	stages of P.P.C, process planning		
	3 rd	routing, scheduling, dispatching and follow up, routing purpose, route sheets, scheduling		
14 th	1 st	purpose, machine loading chart, dispatching – purpose, and procedure, follow up – purpose and procedure		
	2 nd	Structure and function of Production, Planning Department, Gantt chart. CPM/PERT technique, drawing of simple networks		

		and critical time calculation.		
	3 rd	Production Control in job order, batch type and continuous type of productions. Difference between these controls.		
15 th	1 st	Different Layout and structures of stores, Inventory control		
	2 nd	calculation of EOQ,		
	3 rd	Bin cards and various forms required in stores for documentation. Purchase procedures		

Lesson Plan

Name of the faculty: Sh. Amit Kumar Vats, Lecturer in Mechanical Engg.

Discipline: Mechanical

Semester: 6th Mechanical A & B

Subject : PLANT MAINTENANCE AND MATERIAL HANDLING

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

****Work Load (Lecture/ Practical) per week (in hours):** Theory-03

Week	Theory		Practical	
	Lecture day	Topic (including assignment / test)	Practical Day	Topic
1 st	1 st	Necessity and advantages of testing, repair and maintenance, common instruments required for testing		
	2 nd	significance of B-T curve in life span of machine tool, Acceptance test for machine tools		
	3 rd	Revision		
	4 th	Revision		
2 nd	1 st	Economic aspects, manpower planning and materials management		
	2 nd	Fits and tolerances – common fits and tolerances used for various machine parts		
	3 rd	Revision		
	4 th	Revision		
3 rd	1 st	Location, layout of machines in Plant Layout, Principles of Plant layout		
	2 nd	types of plant layout and positioning of machines, grouping of machines.		
	3 rd	Foundation – types of foundation, various considerations for machine foundations, foundation plan, types of foundation bolts		
	4 th	erection and leveling, grouting Vibration, damping,		

		vibration isolation – methods of isolation, anti vibration mounts		
4 th	1 st	Testing equipment – dial gauge, mandrel, spirit level, straight edge, auto collimator Recalibration of measuring instruments like vernier calliper		
	2 nd	Testing methods – geometrical/alignment test, performance test, testing under load, run test, vibrations, noise		
	3 rd	Revision		
	4 th	Revision		
5 th	1 st	Definition, advantages, limitations, functions and types of maintenance organisation. Types of maintenance viz. emergency, preventive, breakdown/corrective, predictive		
	2 nd	Introduction to computerized maintenance record like facility register, maintenance request		
	3 rd	ISO standards for maintenance documentation Introduction to machine history card – purpose and advantages		
		Revision		
6 th	1 st	Preparation of scheduled yearly plan for preventive maintenance, difference of work content of servicing, repairs and overhauling. MTBF and MTTR. Maintainability		
	2 nd	Spare parts- Need of frequently needed spare parts inventory, Make provision of spares for parts not available in market		
	3 rd	Common parts which are prone to failure, reasons of failure		
	4 th	Revision		
7 th	1 st	Repair schedule Parts that commonly need repair such as belts		
	2 nd	couplings, nuts, and		

		bolts repairing the engines, compressors and boilers.		
	3 rd	Revision		
	4 th	Revision		
8 th	1 st	Revision		
	2 nd	Revision		
	3 rd	Revision		
	4 th	Revision		
9 th	1 st	Revision		
	2 nd	Revision		
	3 rd	Lubrication methods and periodical lubrication chart for various machines (daily, weekly, monthly)		
	4 th	Handling and storage of lubricants Lubricants conditioning and disposal		
10 th	1 st	Lubricant and their grades needed for specific components such as gears, bearings, and chains		
	2 nd	Purpose and procedure of changing oil periodically (like gear box oil)		
	3 rd	Revision		
	4 th	Revision		
11 th	1 st	Revision		
	2 nd	Revision		
	3 rd	Basic principles of material handling, Basic types of material handling equipments and its characteristic		
	4 th	Revision		
12 th	1 st	Uses and limitations, forklift trucks		
	2 nd	Selection of material handling equipment		
	3 rd	Unit load: pallet sizing and loading		
	4 th	Conveyor models, AGV Systems		
13 th	1 st	Automated Storage & Retrieval System (ASRS)		
	2 nd	Carousels,		
	3 rd	Revision		
	4 th	Revision		
14 th	1 st	Revision		
	2 nd	Revision		

	3 rd	Revision		
	4 th	Revision		
15 th	1 st	Revision		
	2 nd	Revision		
	3 rd	Revision		
	4 th	Revision		