

GOVERNMENT POLYTECHNIC TALWAR Department of Automotive Engineering | 3rd Semester Lesson Plans

Subject: BTHP (Basics of Thermodynamics & Hydraulics)

Subject: Basics of Thermodynamics Hydraulics and Pneumatics
GOVERNMENT POLYTECHNIC TALWAR
 Department of Automotive Engineering | Lesson Plans (Labs/Workshop)
 Teacher: Ravi Sankhyan | Class: 3rd sem/Automobile Engg. (Group 1)

Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
August		11,18	Job 1	To find flash point and fire point of given fuel.	
		25	Job 2	To find viscosity of given fuel.	
		1,8	Job 3	To study air compressor.	
		15,22	Job 4	To analyse exhaust gases by exhaust gas analyzer	
		29	Job 5	To conduct morse test of multicylinder petrol engines.	
September					
October		6,13	Job 6	To prepare heat balance sheet of an IC engine	
		27	Job 7	Identification of components in air conditioning system	
		10	Job 8	To develop hydraulic circuit using different components.	
November		17	Job 9	To analyze exhaust gas for diesel engine through smoke meter.	
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Signature of Lab department					

GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | 3rd Semester Lesson Plans

Subject: BTHP (Basics of Thermodynamics & Hydraulics)

Subject: Basics of Thermodynamics Hydraulics and Pneumatics

GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | Lesson Plans (Labs/Workshop)

Teacher: Ravi Sankhyan | Class: 3rd sem/Automobile Engg. (Group 2)

Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
August		5,12	Job 1	To find flash point and fire point of given fuel.	
		19,26	Job 2	To find viscosity of given fuel.	
		2,9	Job 3	To study air compressor.	
September		16,23	Job 4	To analyse exhaust gases by exhaust gas analyzer	
		30	Job 5	To conduct morse test of multicylinder petrol engines.	
		7,14	Job 6	To prepare heat balance sheet of an IC engine	
October		21,28	Job 7	Identification of components in air conditioning system	
		11,18	Job 8	To develop hydraulic circuit using different components.	
		25	Job 9	To analyze exhaust gas for diesel engine through smoke meter.	
November					
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GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | 3rd Semester Lesson Plans

Subject: BTHP (Basics of Thermodynamics & Hydraulics)

Subject: Mechanical Workshop Practice

GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | Lesson Plans (Labs/Workshop)

Teacher: Rakesh Kumar | Class: 3rd sem/Automobile Engg. (Group 1)

Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
August	1	5, 12	Job 1	One exercise on lap and butt joint each with arc welding	
		19, 26	Job 2	One exercise of vertical and overhead arc welding	
September	2	2	Job 3	One exercise of welding and cutting	
		9	Job 4	One exercise of spot welding	
		16	Job 5	One exercise of TIG welding	
		23, 30	Job 6	One utility article	
October		7, 14	Job 7	Shaping machine: simple exercise of shaping machine.	
		21, 28	Job 8	Milling machine: simple exercise as gear cutting and rack cutting.	
November		11	Job 9	Drilling: Simple exercise of drilling machine.	
		18	Job 10	Grinding: Face grinding and surface grinding.	
		25	Job 11	One utility job in each machine and develop a part programming in	

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GOVERNMENT POLYTECHNIC TALWAR
Department of Automotive Engineering | 3rd Semester Lesson Plans
Subject: BTHP (Basics of Thermodynamics & Hydraulics)

Subject: Mechanical Workshop Practice

GOVERNMENT POLYTECHNIC TALWAR
Department of Automotive Engineering | Lesson Plans (Labs/Workshop)

Teacher: Rakesh Kumar | Class: 3rd sem/Automobile Engg. (Group 2)

Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
September	11	11	Job 1	One exercise on lap and butt joint each with arc welding	
	18	18	Job 2	One exercise of vertical and overhead arc welding	
	25	25	Job 3	One exercise of welding and cutting	
	1,8	1,8	Job 4	One exercise of spot welding	
	15,22	15,22	Job 5	One exercise of TTG welding	
October	29	29	Job 6	One utility article	
	6	6	Job 7	Shaping machine: simple exercise of shaping machine.	
	13	13	Job 8	Milling machine: simple exercise as gear cutting and rack cutting.	
	27	27	Job 9	Drilling: Simple exercise of drilling machine.	
November	10	10	Job 10	Grinding: Face grinding and surface grinding.	
	17	17	Job 11	One utility job in each machine and develop a part programming in	

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Subject: Autoshop Workshop Practice I

III GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | Lesson Plans (Labs/Workshop)

Teacher: Rishu Dhiman | Class: 3rd sem/Automobile Engg. (Group 1)

Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
AUGUST		7	Job 1	Identification and sketching of special tools and gauges such as cylinder dial gauge, inside & outside micrometer, telescopic gauge, compression gauge, Vernier caliper, height gauge of automobile workshop and practice to use them.	
		14,21	Job 2	Identify and servicing of the components of single plate clutch and Multiplate clutch, removal of worn out parts, adjustment of clutch pedal free play and release lever adjustment	
		22,28	Job 3	Servicing and overhauling of gear boxes: sliding mesh, constant mesh and synchromesh gear box.	
		29	Job 4	Servicing and overhauling of rear axle, differential units and adjustment of backlash.	
SEPTEMBER		5,11	Job 5	Servicing and Replacement of brakes - mechanical, hydraulic brakes and power brakes adjustments - bleeding of brakes.	
		18	Job 6	Servicing and Replacement of brakes - mechanical, hydraulic brakes and power brakes adjustments - bleeding of brakes.	
		19	Job 7	Overhauling of wheels, tyres and suspension system of car/jeep.	
		25	Job 8	Identification of various denting and painting tools	
OCTOBER		26	Job 9	Cleaning, greasing, checking as per maintenance schedule, washing, wiping and polishing of jeep/car and two wheeler.	
		3,9	Job 10	Removing dents on body and minor body repairs - body trimming and painting. Dismantling and assembly of water pump	
		16,17	Job 11	Servicing of Lubrication system: Flushing, crank case cleaning and replacing oil, filter element	
		23,24	Job 12	Servicing of fuel system: petrol feed system, cleaning and flushing fuel tank.	
NOVEMBER		30,31	Job 13	Removal and fitting of wheels and tyres of a two wheelers and repairing of punctures and rotation of tyres pressure, use of gauges.	
		13	Job 14	Job on bodypaneling using spot welding/riveting.	
		20	Job 15	Inside and outside inspection/checking of vehicle, checking of engine oil, horn, starter, cooling water before starting of engine.	
		21	Job 16	Identification dismantling and assembling of AC fuel pump	
		27	Job 17	Soldering of defective radiator and brazing of a fuel tank	
		28	Job 18	Flushing out water jackets, cleaning of radiator and refitting in vehicle, adjustment of fan belt tension by self-adjusting and automatic adjusting.	

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Subject: Autoshop Workshop Practice I

III GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | Lesson Plans (Labs/Workshop)

Teacher: Rishu Dhlman | Class: 3rd sem/Automobile Engg. (Group 2)

Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
AUGUST		10,17	Job 1	Identification and sketching of special tools and gauges such as cylinder dial gauge, inside & outside micrometer, telescopic gauge, compression gauge, Vernier caliper, height gauge of automobile workshop and practice to use them.	
		22	Job 2	Identify and servicing of the components of single plate clutch and Multiple plate clutch, removal of worn out parts, adjustment of clutch pedal free play and release lever adjustment	
		24	Job 3	Servicing and overhauling of gear boxes: sliding mesh, constant mesh and synchromesh gear box.	
		29,31	Job 4	Servicing and overhauling of rear axle, differential units and adjustment of backlash.	
SEPTEMBER		5,7	Job 5	Servicing and Replacement of brakes - mechanical, hydraulic brakes and power brakes adjustments - bleeding of brakes.	
		14	Job 6	Servicing and Replacement of brakes - mechanical, hydraulic brakes and power brakes adjustments - bleeding of brakes.	
		19	Job 7	Overhauling of wheels, tyres and suspension system of car/jeep.	
		21,26	Job 8	Identification of various denting and painting tools	
OCTOBER		28	Job 9	Cleaning, greasing, checking as per maintenance schedule, washing, wiping and polishing of jeep/car and two wheeler.	
		3,5	Job 10	Removing dents on body and minor body repairs - body trimming and painting. Dismantling and assembly of water pump	
		12,17	Job 11	Servicing of Lubrication system: Flushing, crank case cleaning and replacing oil, filter element	
		19,24	Job 12	Servicing of fuel system: petrol feed system, cleaning and flushing fuel tank.	
NOVEMBER		31	Job 13	Removal and fitting of wheels and tyres of a two wheelers and repairing of punctures and rotation of tyres pressure, use of gauges.	
		9	Job 14	Job on bodypanelling using spot welding/riveting.	
		16	Job 15	Inside and outside inspection/checking of vehicle, checking of engine oil, horn, starter, cooling water before starting of engine.	
		21	Job 16	Identification dismantling and assembling of AC fuel pump	
		23	Job 17	Soldering of defective radiator and brazing of a fuel tank	
		28	Job 18	Flushing out water jackets, cleaning of radiator and refitting in vehicle, adjustment of fan belt tension by self-adjusting and automatic adjusting.	

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Subject: Computer Aided Drawing

III GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | Lesson Plans (Labs/Workshop)

Teacher: Gaurav Puwarl | Class: 3rd sem/Automobile Engg. (Group 1)

Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
AUGUST		10,17	Job 1	Advantages and applications, setting the drawing environment: Limits, Grid, Snap, Axis, Units, Ortho, Coordinates ON, OFF Units and Color, 2D Drawing entities - Point, Line, Arc, Circle, Ellipse, Polygon, and Trace. Object Selection using Object Snap (OSNAP).	
		22	Job 2	Editing commands: Selection of entities by different methods copy, Move, Scale, Rotate, Fillet, Chamfer, Mirror, Array, Polar, Rectangular, Measure, Divide, and Erase.	
		24	Job 3	Drawing Display Methods: Zoom, Pan, and View.	
		29,31	Job 4	Adding Texts and Dimensions: Text, Dimension-linear, continued, angular Pedit commands. Working on multiple layers Layer concepts in CAD - Various options with layer command - Hatch command - Creating line types library and user made library. Preparing the schematic drawing of a workshop building in one layer, the blocks of machines in another Layer and Electrical connection on another layer.	
SEPTEMBER		5,7	Job 5	Drawing 2D figure of complex shape	
		14	Job 6	Extruding it into a 3D drawing Understanding 3D Co-ordinate values, Creating and viewing a drawing in 3D, Rotating the drawings- Meshing 3D drawing.	
		19	Job 7	Turning 3D into 2D Ortho Graphic projection.	
		21,26	Job 8	Understanding model space and paper space.	
OCTOBER		28	Job 9	Drawing and working in UCS	
		3,5	Job 10	UCS Icon, 3D editing-Union, Subtraction, 3D Orbit.	
		12,17	Job 11	Basic 3D entities command, Box, Cylinder, Cone, Chamfer, Revolve.	
		19,24	Job 12	Four Stroke Petrol Engine Piston	
NOVEMBER		31	Job 13	Diesel Engine Piston	
		9	Job 14	Connecting rod	
		16	Job 15	Fuel Injector	
		21	Job 16	Crank shaft -4 Cylinder Engine	
		23	Job 17	Connecting rod	
		28	Job 18	Revision and Practice Session	

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Subject: Computer Aided Drawing

III GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | Lesson Plans (Labs/Workshop)

Teacher: Gaurav Puwari | Class: 3rd sem/Automobile Engg. (Group 2)

Month	Week	Date	Name of Chapter	Contents to be taught
AUGUST	7	7	Job 1	Advantages and applications, setting the drawing environment: Limits, Grid, Snap, Axis, Units, Ortho, Coordinates ON, OFF Units and Color. 2D Drawing entities - Point - Line - Arc - circle, Ellipse, Polygon, and Trace. Object Editing commands: Selection of entities by different methods - copy, Move, Scale, Rotate, Fillet, Chamfer, Mirror, Array-Polar, Rectangular, Measure, Divide, and Erase. Pedit commands: Working on multiple layers Layer concepts in CAD - Various options with layer command - Hatch command - Creating line types library and user made library. Preparing the schematic drawing of a workshop building in one layer, the blocks of machines in another Layer and Electrical connection on another layer.
		14,21	Job 2	
		22,28	Job 3	
SEPTEMBER	29	29	Job 4	Drawing 2D figure of complex shape Extruding it into a 3D drawing Understanding 3D Co-ordinate values, Creating and viewing a drawing in 3D. Rotating the drawings - Meshing 3D drawing. Turning 3D into 2D Ortho Graphic projection. Understanding model space and paper space.
		5,11	Job 5	
		18	Job 6	
OCTOBER	19	19	Job 7	Drawing and working in UCS UCS icon, 3D editing-Union, Subtraction, 3D Orbit. Basic 3D entities command, Box, Cylinder, Cone, Chamfer, Revolve.
		25	Job 8	
		26	Job 9	
NOVEMBER	3,9	3,9	Job 10	Four Stroke Petrol Engine Piston Diesel Engine Piston Connecting rod Fuel injector
		16,17	Job 11	
		23,24	Job 12	
NOVEMBER	30,31	30,31	Job 13	Crank shaft - 4 cylinder Engine Connecting rod Revision and Practice Session
		13	Job 14	
		20	Job 15	
NOVEMBER	21	21	Job 16	
		27	Job 17	
		28	Job 18	

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GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | 3rd Semester Lesson Plans

A: BTHP (Basics of Thermodynamics & Hydraulics)

Arinder Kumar | Class: 3rd Semester Automobile Engg

Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
August	1st & 2nd wk	3,4,5,6,7	Unit I: Principles of Thermal Engineering	Introduction, Thermodynamics properties intensive and extensive Property, path, process, system, surroundings, Heat and work, Enthalpy and internal energy, Gas Laws: Boyle's law, Charles law, Joule's law, Characteristic gas equation, gas constant, universal gas constant, Simple numerical problems, Modes of heat transfer, conduction, convection, radiation, Fourier's Law	
	3rd wk	10,11,12,13,14			
	4th wk	17,18,19,20,21			
	5th wk	24,25,26,27,28			
September	1st week	1,2,3	Unit II: Law of Thermodynamics and Air Cycles	Zeroth law of thermodynamics Irreversible process, First law of thermodynamics (concept only) Second law of thermodynamics (concept only), Thermal efficiency and heat pump heat engine and heat sink Concept of entropy, Constant volume constant pressure, isothermal, adiabatic, polytropic throttling and free expansion processes (concept only)	Class Test 1 (Week 2)
	2nd week	7,8,9,10,11			
	3rd week	14,15,16,17,18			
Sep/Oct	4th week	21,22,23,24,25	Unit III: Air Compressors	Reciprocating air compressor, Centrifugal compressor working of single stage double stage compressor and applications, Rotary air compressor and supercharger.	
	5th week	28,29,30			
	1st week	1,5,6,7,8,9			
October	2nd Week	12,13,14,15,16	Unit IV: Hydraulics	Types of fluid, Properties of fluid, Pascal Law, Components of hydraulic systems, Function of each component in hydraulic circuit Oil reservoir, filters, Hydraulic Jack, Hydraulic Press.	Class Test 2 (Week 2)
	3rd week	19,21,22,25			
	4th week	27,28,29,30			
	1st week	9,10,11,12,13			
November	2nd Week	16,17,18,19,20	Unit V: Pneumatics	House Test (Week 1) function, air cylinders-function, single acting double acting, air filter, regulator different types of control valves, concept of automation.	PT Meeting (Week 2)
	3rd week	23,25,26,27			
	4th week				

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GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | 3rd Semester Lesson Plans

A: Production Process-I

Dr. Praveen Choudhary 3rd Semester Automobile Engg

Month	Week	Date	Name of Chapter	Contents to be taught	Class Test
August	1st & 2nd wk 3rd wk 4th wk 5th wk	3,4,5,6 10,11,12,13 17,18,19,20 24,25,26,27,31	Unit I: Cutting Fluids & Lubricant	Introduction: Types of cutting fluids. Fluids and coolants required in turning, drilling, reaming, sawing & broaching. Selection of cutting fluids. Methods of application of cutting fluid. Classification of lubricants: solid, liquid, gaseous. Properties and applications of lubricants. Lathe Operations: Cutting parameters, tool signature. Types of lathe: light duty, Medium duty and heavy duty geared lathe. CNC lathe: Specifications, Basic parts and their functions. Operations and tools: Turning, Knurling, facing, Boring, drilling, reaming, step turning, taper turning.	Week 21
September	1st week 2nd week 3rd week 4th week 5th week 1st week	1,2,3 7,8,9,10 14,15,16 21,22,23,24 28,29,30 1,5,6,7,8	Unit II: Foundry Practice Unit III: Modern Machining Processes	Pattern Making: Types of Pattern, Pattern Materials, Pattern Allowances. Introduction to Core Moulding, Introduction to Moulding, Types of Moulding Sand and their properties. Melting and pouring, Defect in castings. Metal forming processes: Die casting, Metal Drawing, Spinning, Rolling, Extruding, Forging and Tube Drawing, Processes, Procedures, Advantages, Limitations and Applications of Electro discharge machining. Electro chemical Machining, USM, AJM and LBM.	Class Test 1 Week 21
October	2nd Week 3rd week 4th week	12,13,14,15 19,21,22 27,28,29	Unit IV: Welding	Classification, Gas welding techniques. Types of welding flames, Arc Welding Principle, Equipment, Applications, Resistance welding - Spot welding, Seam welding, Projection welding. Welding defects: Brazing and soldering: Types, Principles, Applications, Milling: Introduction, Types of milling machines: plan, Universal, vertical; constructional details-specifications. Milling operators: simple, compound and differential indexing. Milling cutters -types; Nomenclature of teeth, Teeth materials; Tool signature of milling cutter; Tool & work holding devices.	Class Test 2 Week 21
November	1st week 2nd Week 3rd week 4th week	9,10,11,12 16,17,18,19 23,25,26	Unit V: Part Programming	House Test (Week 1) NC part programming methods: manual programming - conversational programming - APT programming - Format: sequential and word address formats: sequence number-coordinate system-types of motion control: point-to-point, paraxial and contouring. Datum points: machine zero, work zero, tool zero. NC dimensioning -reference points. Tool material-tool inserts: tool offsets and compensation- NC dimensioning. Preparatory functions and G codes, miscellaneous functions and M codes interpolation: linear interpolation and circular interpolation. CNC program procedure.	PT Meeting (Week 2)

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GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | 3rd Semester Lesson Plans

ct: ACBT-I (Automotive Chassis Body Transmission)

Teacher: Kumar | Class: 3rd Semester Automobile Engg

Month	Week	Date	Name of Chapter
August	1st & 2nd wk 3rd wk 4th wk 5th wk	1,3,4,5,6 10,11,12,13 17,18,19,20,22 24,25,26,27,29,31	Unit I: Chassis and Body Unit II: Clutch
Sep/Oct	1st week 2nd week 3rd week 4th week 5th week 1st week	1,2,3,5 7,8,9,10, 14,15,16,19 21,22,23,24,26 28,29,30, 1,3,5,6,7,8	Unit III: Transmission
October	2nd Week 3rd week	12,13,14,15,17 19,21,22,24	Unit IV: Final Drive
Oct/Nov	4th week 1st week 2nd Week 3rd week 4th week	27,28,29,31 9,10,11,12 16,17,18,19,21 23,25,26,28	Unit V: Front Axle & Steering

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Contents to be taught

Classification of vehicles, types of chassis, layout of conventional type of chassis function and arrangement of major assemblies, Alternating arrangement used such as engine position drive types, their merits and demerits, types of frame and body streamlining cross members, brackets, materials of frame and body upholstery, hydraulic power assisted and wet and dry plate clutch clutch plate and lining material Necessity, function and requirements of clutch, types of clutch single plate clutch, multi plate clutch material Constructional details and working of centrifugal semi centrifugal clutch, diaphragm clutch and fluid coupling.

Necessity, function and types of manual transmission-Sliding, constant mesh and synchromesh Over drive, over running clutch, description and operation of transfer gear box, Common faults and remedies, trans axle construction, Types of automatic transmission and their main Epicyclic gearbox-construction, working and determination of speed ratio Torque converter, Construction, principle of working, Continuously variable transmission, Automated Manual Transmission, hydrostatic transmission systems, direct shift gear box (DSG).

Propeller shaft-function, construction details, Universal joints-functions and types, Types of final drive hotchkiss drive, torque tube drive, Differential principle, functions and working, Rear axles- semi floating, three quarter floating, Fully floating, Common faults and remedies

House Test (Week 1)

Types-Stub double drop, fully dropped, load distribution, effect of braking on axle shape, steering head Elliot and reverse Elliot, steering knuckle, Steering mechanism, function steering axis inclination, toe in and toe out, Cornering force, cornering power and self- righting torque, Over steering and understeering, Traction control system, Power steering- necessity, types, Ackerman's Principle of steering, Working and constructional details of steering gear, steering linkages Front wheel geometry-caster, camber, Construction features and working of hydraulic and electronic power steering systems four wheel steering, adjustable steering -rake and telescopic type, Common steering systems troubles and remedies.

Remarks

Class Test 1
(Week 2)

Class Test 2
(Week 2)

PT Meeting
(Week 2)

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GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | 3rd Semester Lesson Plans

Act: Automotive Material

Act: Sankhyam | Class: 3rd Semester Automotive Engrg

Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
August	1st week 2nd week 3rd week	1,6,7 13,14 20,21,22	Unit I: Properties of Materials:	Classification: Metals and non-metals, Ferrous and non-ferrous metals and their alloys. Properties of metals and alloys. Names of common metals, their alloys and non-metals used in Automobile Industry. Physical properties Appearance, luster, color, density and melting point, Mechanical Properties: Strength, stiffness, elasticity, plasticity, toughness, ductility, malleability, brittleness, hardness, fatigue and creep. Thermal and electrical conductivity and corrosion resistance.	
Aug/Sep	4th week 1st week 2nd week 3rd week	27,28,29 3,5 10,11 17,18,19	Unit II: Ferrous Metals and Alloys:	Effect of alloying elements such as Aluminium, chromium, Nickel, Cobalt, Manganese, Molybdenum, tungsten, Vanadium, Silicon, Sulphur and Phosphorus. Composition, properties, grades and uses of alloy steels such as High speed steel, Stainless steel, Silicon steel, Heat resistant steel, spring steel. Heat Treatment: Iron-carbon diagram, objectives and practical aspects of heat treatment. Description and uses of principal heat treatment processes Annealing, Normalizing, Tempering, Hardening, and Carburising. Nitriding and Cyaniding and applications. Case hardening and surface hardening. Hardenability of steels. Examples in heat treating automobile engineering components.	Class Test 1 (Week 2)
Sep/Oct	4th week 1st week 2nd week 3rd week	24,25,26 1,3 8,9 15,16,17	Unit III: Non-ferrous Metals and Alloys:	Copper: Properties and uses. Composition, properties and uses of copper alloys. Brass: Cartridge brass, Nickel silver, Bronze: Phosphor bronze, Al-bronze, Mn-bronze, and Gunmetal. Properties and uses of Aluminium and their grades Composition, properties and uses of Al-alloys e.g., Duralumin, Yellow metal, Magnesium and Hindalium Properties and uses of alloys of lead, tin and magnesium. Bearing Metal: Requisite qualities. Composition, properties and uses of white metal bearing. Copper based bearing metals. Aluminium based bearing metals. Use of nylon/PTFE for bushes/bearings. bi-metallic and tri-metallic bushes	Class Test 2 (Week 2)
Oct/Nov	4th week 5th week 1st week 2nd week 3rd week 4th week	22,23,24 29,30,31 5,6,7 19,22 26,27,28	Unit IV: Identification of Metals Unit V: Other Important Materials:	Identification tests: Appearance, sound, filing, weight, magnetic, spark, bend and microstructure. Plastics: Definition, classification of plastics, fiberglass, reinforced plastics. Major applications of various plastics with specific mention of their uses and grades. House Test (Week 1) Heat insulating materials: Properties and uses of Asbestos, glass wool, Thermocole, cork, mica. Sound insulating materials: Cork, fiberboards. Fabrication materials: Wood, plywood, Rubber natural and synthetic. Glasses plate glass, toughened glass, safety glass. Electrical insulating materials: properties and uses of china clay, leather Bakelite, ebonite, glass wool. Refractory materials: General characteristics and uses of dolomite, ceramics. Protective coating materials: Auto paints, primers, varnishes, enamels, pull, electroplating materials. Adhesive requirements types and advantages, thread locking special solution, anti-rust solution.	PT Meeting (Week 2) House Test Week - 1

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GOVERNMENT POLYTECHNIC TALWAR

Department of Automotive Engineering | 3rd Semester Lesson Plans

act: Garage Equipment

Govt. Santhyan | Class: 3rd Semester Automobile Engg.

Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
August	1st & 2nd wk	3,4,5	Unit I: General Equipment Specifications and applications	Drilling machine (portable) along with set of drills Bench grinder Air compressor and pneumatic gun Hydraulic and electric hists High pressure washing equipment (Car washer, Car vacuums cleaner, Buffing tool) Oil sprayers Grease Guns-manual and bucket type, pneumatic Tyre inflation gauge (Manual and Digital type automatic) Tyre Changer (Manual and Automatic) Creepers Fire extinguisher First aid box.	
	3rd wk	10,11,12			
	4th wk	17,18,19			
	5th wk	24,25,26			
September	1st week	1,2	Unit II: Tuning and Testing Equipment Specifications and applications	Vacuum Gauge, Compression Gauge (Pressure Gauge) Distributor Tester, Cam (dwell) angle tester, r.p.m. tester Battery Tester Spark plug cleaner tester Ignition timing light Fuel injector tester Fuel consumption tester.	Class Test 1 (Week 2)
	2nd week	7,8,9			
	3rd week	14,15,16			
	4th week	21,22,23			
	5th week	28,29,30			
October	1st week	5,6,7	Unit III: Engine Repair Tools/Measuring and Testing	Torque wrench, pneumatic wrench Piston ring compressor Piston ring files, groove cleaner Scrappers Piston ring remover Cylinder Dial gauge Smoke meter Engine Analyser/Scanner Part degreasing tank, Electrical Test Bench Battery Charger Head Lights Beam Aligner Tester (Electronic and Digital type) Growler	Class Test 2 (Week 2)
	2nd Week	12,13,14			
	3rd week	19,21			
	4th week	27,28			
	5th week				
November	1st week	9,10,11	Unit V: Reconditioning/Testing Equipment for Chassis and Body Use	House Test (Week 1) Brake Efficiency Tester (Chassis Dynamometer) or brake testing equipment Chach Fixtures and Brake Line Riveters, pop riveting gun Crane and Chain Pully Block Jacks mechanical, hydraulic, trolley type Paint chamber Paint Spray Gun Paint Drying Equipment Tools for tyres, automatic tyre remover Computerized wheel balancer-static and dynamic Computerized wheel alignment equipment, Valve Relacer, Valve Seal Cutting and Grinding, Radiator Tester, Cylinder head leakage testing fixture Fuel injector tester, Nozzle cleaning equipment	PT Meeting (Week 2)
	2nd Week	16,17,18			
	3rd week	23,25			
	4th week				
	5th week				

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