

DEPARTMENT OF AUTOMOBILE MAINTENANCE

Semester wise Course outcomes

B.Sc MAJOR

Semester I		
Sr. No.	Name of the Course	Outcomes
1	C1T: Principles of Automobiles C1P: Principles of Automobiles	<ul style="list-style-type: none">▪ S.I. and C.I Engines, 2 Stroke, 4-Stroke engines, MEP, I.H.P, B.H.P, S.F.C, mechanical and thermal efficiencies, Otto, Diesel, Dual cycles, Thermodynamic Cycle: Carnot, Valve timing diagram, Properties of Fuel of Petrol and Diesel, Combustion Process, ignition and chemical reaction, Stress, strain▪ Engine component, thermostat valve, water pump service, viscous fan, Electrical safety precaution, Electrical measuring instrument practice, joint practice,
2.	C2T: Constructional details and working of I.C engines C2P: Constructional details and working of I.C engines	<ul style="list-style-type: none">▪ functions of 2& 4 wheelers, engine component, fuel feed system, M.P.F.I system, air cleaners, carburetor, CRDI system, fuel injection, lubricants and their properties, lubrications in other parts of an automobiles▪ Fuel pump, carburetor, fuel fitter and air cleaner, tune up in a vehicle, Oil pump, oil filter, oil galleries, F.I.P pump single & multi cylinder, injector, Fuel bleeding, cleaning the injector. fitting shop, Measuring instruments, Gauge Measurement, Cutting tool's Operation, Heat Treatment, Drill and Grinding Machine, Job training or garage practice

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Semester II		
Sr. No.	Name of the Course	Outcomes
1	C3T: Theory of Machine C3P: Practical	<ul style="list-style-type: none">▪ Friction, Belt, Rope and Chain Drive, Gear, Gear Trains, laws of gearing, epicyclic gear, Cam, Flywheels, Governors, Torsion and tensional, Shear force, bending moment,▪ C.I. & S.I. valve timing, Firing order set, tappet timing, gear timing, chain timing, ignition timing, tappet timing, Electronics components checking, D.C Generator, Starter motor, Wiper Motor, Alternator, Transformer,
2.	C4T: Suspension system, Steering system, Ignition system and Auto Air conditioning C4P: Practical	<ul style="list-style-type: none">▪ Suspension system, rigid axle suspension, shock absorber, Steering geometry, steering angle, steering mechanism, steering linkages, power steering , trouble shooting. Ignition System, Battery, magneto and electronic ignition systems, Auto Air conditioning,▪ Replacing shock absorber, shackle, leaf spring, coil spring, front suspension system, Spark plug cleaning, spark plug testing, Limit, Fit and Tolerance, Transmission of power, Vice, Screw driver, Spanner, Pliers, Bolts, Nuts, Washers, Keys, pins, Bearing, Pulley , Gear. lathe machine, Welding(Arc), sheet metal work and Forging.

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Semester III		
Sr. No.	Name of the Course	Outcomes
	C5T: Transmission system Part -I C5P: Lab	<ul style="list-style-type: none"> ▪ Manual, Semi-automatic, Automatic, Hydraulic transmission, Gear boxes, acceleration and hill climbing, synchromesh gear box, free wheel drive, gear lubrication, transmission troubles, ▪ sliding mesh, constant mesh and synchromesh gear box , epyclic gear box, Mould materials, sand, Sand molding, Pit molding, machine molding , Melting practice. Cupola furnace, Electric arc furnace. Special casting, die casting, centrifugal casting, investment casting, Shell molding , Green sand mould making , Patterns , Patterns allowances, Cores, Core allowances. Core Prints.
	C6T: Transmission System Part –II C6P: Practical	<ul style="list-style-type: none"> ▪ Clutch, clutch linkage, clutch facing & friction material, Propeller Shaft, fluid drives, Hotchkiss drive, universal & slip joint, Torque convertors, Final drive, differential gears, Front Axle, swivelling mechanism, ▪ single plate, multi plate, diaphragm clutch, Steering System, power steering , steering linkage, steering gear box, Servicing tyre, tube and tyre puncture
	C7T: Manufacturing process or Production Engineering – 1 C7P: Practical	<ul style="list-style-type: none"> ▪ Mechanical properties, ferrous and non ferrous metals iron and steel Heat treatment of metals, measuring tools, gauges, limit, fit, allowance and clearance, jug stand and fixtures, like rolling, drawing, spinning, firging, casting, welding, brazing, and soldering, Machine shops, Lathe, Shaper, Grinder, Drill & Milling. ▪ Forgeable material, forgeability, forging temperature, Presses and hammers, Drop forging, Upset forging, Die forging or press forging , Hot working & Cold working, Open Die, Closed Die, Closed Die forging, Fullering, Edging, Bending, Blocking, Finishing, rolling mills , 2 Hi, 3 Hi & 4 Hi mills
	SEC1T: Assembling Simple Electronics Circuits	<ul style="list-style-type: none"> ▪ Semiconductor and Diode, Rectifiers, Filters and Power Supply, Transistors, Switching and Optoelectronics Devices, Transistor Biasing, Small Signal Transistor Amplifiers, Oscillator, Op-Amp

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Semester IV		
Sr. No.	Name of the Course	Outcomes
	C8T: Chassis, Frame & Body, Brake & Braking System, Wheel & Tyres. C8P: Practical	<ul style="list-style-type: none"> ▪ Chassis, Frame and Body, Brake and braking, bleeding in hydraulic system, tubeless tyres, Wheels and tyres, radial tyres, ▪ Wheel alignment, wheel balancing, toe-in, toe-out, caster angle, camber angle, king pin, inclination, Brake, master cylinder, wheel cylinder, front and rear brake, air servo unit, unloaded valve, release valve, hand brake, vacuum Zuffer, single brake chamber, Brake bleeding, Relining, brake shoes, servicing air tank, servicing brake valve and disc brake, ABS system,
	C9T: Engine Servicing And Tuning, Garage & Service Station, Electrical System and Motor Vehicles Act. C9P: Practical	<ul style="list-style-type: none"> ▪ Engine servicing and tuning, Garage and service, Servicing of Motor vehicles, ignition system, lubrication, repair accident inspection, Testing of motor vehicles, Laboratory road testing, rules of Motor vehicles Act, pollution control and measure required, ▪ Drilling machine, Pillar drilling machine & Radial drilling machine, drilling, boring, reaming, Counter boring, countersinking, chamfering, Spot facing, Trepanning, Arc Welding, Shielded metal arc welding, TIG /MIG welding, Resistance welding, Spot, welding, Seam welding, Projection welding, Brazing and soldering,
	C10T: Manufacturing Process and Machine Tools-II C10P: Practical	<ul style="list-style-type: none"> ▪ Casting, Permanent mould casting, semi permanent mould casting, die casting, centrifugal casting, investment casting, continuous casting, defect in casting, rivets and screws, Slotting machine, planning machine, boring machine, broaching machine, press machine, Ultrasonic machining (USM), Electro chemical machining (ECM), Electrical discharge machining (EDM), Laser beam machining (LBM) C.N.C Machine, N.C Machine, ▪ universal joint, differential, propeller shaft, slip joint. single point cutting tool, Centre lathe, Capstan & Turret Lathe, CNC Lathe, Centering, facing, Turning, parting off, undercutting, grooving, Knurling, boring, thread cutting
	SEC2T: Electro Magnetism and Digital Electronics	<ul style="list-style-type: none"> ▪ Steady electric current, Magneto statics, Magnetic fields in matter, Electromagnetic induction and Maxwell's Equations, Transients in DC, Alternating current, Digital Electronics

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Semester V		
Sr. No.	Name of the Course	Outcomes
	C11T: Electrical C11P: Electrical System (Practical)	<ul style="list-style-type: none"> ▪ Generator, Alternator and Batteries, Maintenance, Automobile batteries, battery charging, voltage and current regulator, selfstarter and bendix drive, spark plug, firing order, Lighting System, Speedo meter , Antitheft devices, fuel gauge, oil pressuregauge, Temperature gauge, wind screens, wiper, flashing units, signalling system, ▪ Disassemble the engine component, Battery, battery testing, ignition circuit , lighting circuit, battery charging circuit, dynamo circuit, alternator circuit, Overhauling starter motor, dynamo alternator, Wiper motors, horn, M.P.F.I, ECU, Turbocharger & super charger, Total light circuit, head light, fog light, indicator light, parking light, break light tell light , check ignition
	C12T: Estimating, Costing and Machine Design	<ul style="list-style-type: none"> ▪ Estimating and Costing, Machine Design, Design of simple machine parts, Flange coupling, universal coupling, Gears, Rivets joint, single rivet,
	DSE1T: Alternate Fuels and Energy Systems DSE-1P: Alternate Fuels and Energy Systems (practical)	<ul style="list-style-type: none"> ▪ Introduction to alternate fuels and energy systems, LPG, Hydrogen, Ammonia, CNG, and LNG, alcohols and gasoline blends, Natural Gas, LPG, Hydrogen and Biogas, Electrical and Solar Powered Vehicles, ▪ Solar, Electrical powered vehicle, petroleum and alternate fuel, Visit to industry
	DSE2T: Motor Vehicle Act & Pollution Control DSE2P: Motor Vehicle Act & Pollution Control (Practical)	<ul style="list-style-type: none"> ▪ Motor vehicle act, Penalties and Procedure, Mandatory sings, Accident claims, Accident claims tribunals, Licensing of drivers of motor vehicles, Pollutant Formation in SI Engines, HC and CO formation, NOx formation, NDIR, FID, Chemiluminescent analyzers, Gas Chromatograph, smoke meters, emissionstandards, ECE, FTP Tests.SHED Test ▪ EGR system, Cat Con , PCV System and Fuel vapour Purge Control, Warning and Mandatory Road Signs, various traffic signals,

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Semester VI		
Sr. No.	Name of the Course	Outcomes
	C13T: Automotive Air Conditioning C-13P: Automotive Air Conditioning (practical)	<ul style="list-style-type: none"> ▪ air conditioning, compressor components, condenser and high pressure service, thermostatic expansion valve, controlling evaporator, pressure regulator, temperature regulator. Heating System, automatic temperature control, Refrigerant, diagnostic procedure, Air Conditioning Service ▪ Layout of car AC system Construction and operation of condenser and evaporator. Construction and operation of heating system. Case study of AC system. Controlling system of AC. Servicing of AC system.
	C14T: Vehicle Performance and Testing C-14P: Vehicle Performance and Testing (practical)	<ul style="list-style-type: none"> ▪ parameters, Fuel economy, acceleration, deceleration, grad ability, top speed, handling, comfort, life durability, EGR systems, and Vehicular systems: Suspension steering, Brakes & carriage unit testing, high speed track, pavement track, corrugated track, mud track, steering pad, gradient track, Euro III onwards, accelerated testing, Virtual testing, Evaporative emission testing, Oil consumption Human testing, Dummies, crashworthiness, pole crash testing, rear crash testing, vehicle to vehicle impact, side impact testing, crash test sensors, sensor mounting, crash test data acquisition, Braking distance test ▪ P.V. diagram, mechanical efficiency, volumetric efficiency and losses of fuel economy, EGR and catalytic convertor, Exhaust emission testing, oil consumption testing, seat belt, air bags, GPS, ESP,
	DSE3T: Two and Three Wheelers DSE-3P: Two and Three Wheelers (practical)	<p>Kick starter, electronic ignition system, Magneto coil and battery coil spark ignition, scavenging processes, Symmetrical and unsymmetrical port timing, Chassis and shaft drive, Single, multiple plates and centrifugal clutches, Drum brakes, disc brakes, front and rear brake links, layouts, Spoked wheel, cast wheel, disc Wheel, disc types; Tyres and tubes.</p> <p>4stroke SI engine. 2stroke petrol. lubricating system, Magneto coil and Magneto coil ignition, electronic ignition. clutching system, Transmission Gear box. suspension system, motor cycles and scooter.</p>
	DSE4: Industrial Training	4 weeks industrial training (mandatory)