Government Polytechnic Kullu at Seobagh Distt Kullu H.P. 175138					
Department of Automobile Engineering					
Lesson Plan w.e.f 04-08-2025 to 26-11-2025					
Name of Subject:-		Elements of Design & Mechanics of Vehicle	Session:-	Aug-Nov 2025	
Name of Teacher:-		Rishav	Semester:-	5th Semeser	
Designation:-		Lecturer (Automobile Engg.)	Scheme:-	N-2022	
Sr No	**Month**	**Week**	**Contents**		**Remarks**
1	August	Week 2	Unit–I: Introduction: Design considerations, design procedure, Basic requirements		
		Week 3	classifications of design and principles of good economic design. Standardization,		
		Week 4	Interchangeability of Automobile parts with reference to ISspecifications, Limits, fits and tolerances		
		Week 5	Unit-II: Design of keys, couplings and Engine Parts: Concept of Sunk Keys, Rectangular Keys, Square, Parallel,Crosshead, Woodruff Key Design of rectangular key, Coupling: Flange coupling, Muff coupling, Clamp coupling,		
2	September	Week 1	Engine Parts: Cylinder liner and cylinder head, Piston, Connecting Rod		
		Week 2	**Class Test I**		
		Week 3	Clutch- Single Plate and Multi plate Clutch, Brakes- Internal Expanding shoe brake		
		Week 4	Unit-III Simple Mechanism: Definition of link, kinematic pair, kinematic chain, Mechanism, inversions and machines,		
		Week 5	Simple examples of mechanism with: Lower pairs, Four bar chain, Slider crank chain,		
3	October	Week 1	Unit-IV: Motion and Turning Moment: Displacement, velocity and acceleration of piston Angular velocity and angular acceleration of connecting rod,		
		Week 2	Calculations of piston effort and crank effort at different angles, Fly wheel: types,		
		Week 3	**Class Test II**		
		Week 4	weight and moment of inertia, Fluctuation of energy for fly wheel,		
		Week 5	Turning moment diagrams with reference to internal combustion engines.		
4	November	Week 1	Unit-V: Power Transmission: Flat belt, V-belt and chain drives		
		Week 2	**House Test**		
		Week 3	Ratio of tension of two sides of the belt with and without centrifugal tension,		
		Week 4	Horse power transmitted and condition for maximum horse power transmitted		
		Week 5	Velocity ratios transmitted by Belts, Simple, compound and Epicyclic gear box.		

Signature of Teacher
(Er. Rishav)

Signature of H.O.D
(Er Vivek Singh)

Government Polytechnic Kullu at Seobagh Distt Kullu H.P. 175138

Department of Automobile Engineering

Lesson Plan w.e.f 04-08-2025 to 26-11-2025

Name of Subject:-	**Auto Electrical & Electronic Equipment**	Session:-	**Aug-Nov 2025**
Name of Teacher:-	**Er. Vivek Singh**	Semester:-	**5th Semester**
Designation:-	**HOD (Automobile Engg.)**	Scheme:-	**N-2022**

Sr No	Month	Week	Contents	Remarks
1	August	Week 2	Unit-I: Introduction & Batteries: Various Electrical components/systems in Automobile. Their functions and demands, earths return system,	
		Week 3	types of earthing, 6V, 12V & 24V system. Lead Acid Batteries: Construction, working, elements,	
		Week 4	types, materials used, electrolyte and its strength, effect of added plate area and temperature,	
		Week 5	rating, capacity, efficiency, temperature characteristics, terminal voltages,charging and discharging, Battery Testing: Electrolyte testing by hydrometer, voltage test, high discharge and cadmium test (voltage)	
2	September	Week 1	Battery Charging: Constant potential and constant current, initial charging, normal charging, trickle charging, intermittent charging,	
		Week 2	**Class Test I**	
		Week 3	boost charging, Battery Defects: Sulphation, plates decay, working, erosion, cracking, sedimentation, separator defects, short circuits, overcharging.	
		Week 4	Unit-II: Charging System & Starting system: Circuits, function and various components of alternator, types, construction,	
		Week 5	working, advantages and disadvantages of alternators, drives, cut out relay.	
3	October	Week 1	Starting System: Function of various components, torque terms, principle and constructional details of starter motor, switches, types	
		Week 2	starter to engine drive and their types, Starter alternators. Unit-III: Ignition System : Constructional details of coil, distributor, condenser, meaning of cam angle,	
		Week 3	**Class Test II**	
		Week 4	ignition timing, ignition advancing mechanisms, centrifugal and vacuum type, transistorized ignition system, construction and working details of magneto ignition system.	
		Week 5	Spark Plugs: Constructional details of spark plugs, classification as per reach, heat range, diameter, a	
4	November	Week 1	and effect of leaded fuels, care and maintenance ofspark plug. Unit- IV: Lighting System: Various lighting circuits, head lamp, type and constructional details,	
		Week 2	**House Test**	
		Week 3	sealed beam, double filaments, fog light, side light, brake light, instrument light, indicator lights, reversing light.	
		Week 4	Wiring: HT and LT, their specifications, cable colour codes, wiring Harness,	
		Week 5	Wiring diagrams of cars and two wheeler, Fuses, faults and rectification.	

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Government Polytechnic Kullu at Seobagh Distt Kullu H.P. 175138					
Department of Automobile Engineering					
Lesson Plan w.e.f 04-08-2025 to 26-11-2025					
Name of Subject:-			Mechatronics and Microprocessor	Session:-	Aug-Nov 2025
Name of Teacher:-			Pankaj Kumar	Semester:-	5th Semester
Designation:-			Workshop Supdt.	Scheme:-	N-2022
Sr No	**Month**	**Week**	**Contents**		**Remarks**
1	August	Week 2	1.1 Introduction to Mechatronics, 1.2 Mechatronic system ,1.3 Measurement systems ,1.4 Control system-open Loop, Close loop and sequential 1.5 Microprocessor based controllers,1.6 The Mechatronics approach		
		Week 3	"2.1 Sensors and transducers ,2.2 Performance terminology ,2.3 Displacement, position and motion sensors,2.4 Electromechanical sensors and transducers ,		
		Week 4	2.5 Force sensors,2.6 Liquid flow sensors, 2.7 Temperature sensors ,2.8 Light sensors,2.9 Selection of sensors ,2.10 Simple problems		
		Week 5	3.1 Displays ,3.2 Data presentation elements, 3.3 Magnetic recording		
2	September	Week 1	3.4 Data acquisition systems 3.5 Measurement systems 3.6 Testing and calibration 3.7 Simple problems		
		Week 2	**Class Test I**		
		Week 3	4.1 Actuation systems,4.2 Pneumatic and hydraulic systems,4.3 Directional contr		
		Week 4	4.4 Pressure control valves,4.5 Cylinders,4.6 Process control valves ,4.7 Rotary actuators"		
		Week 5	5.1 Mechanical systems5.2 Cams		
3	October	Week 1	5.3 Gear trains5.4 Ratchet and pawl		
		Week 2	5.5 Belt and chain drives		
		Week 3	**Class Test II**		
		Week 4	6.1 Electrical systems 6.2 Mechanical switches 6.3 Solid-state switches		
		Week 5	6.5 D.C. motors		
4	November	Week 1	6.4 Solenoids 6.5 D.C. motors 6.6 A.C. motors 6.7 Stepper motors		
		Week 2	**House Test**		
		Week 3	7.1 Microcomputer structure 7.2 Microcontrollers 7.3 Applications		
		Week 4	7.4 Programmable logic controller – applications 7.5 Basic structure, input/output processing		
		Week 5	Revision		

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Department of Automobile Engineering					
Lesson Plan w.e.f 04-08-2025 to 26-11-2025					
Name of Subject:-		Two And Three Wheelers	Session:-	Aug-Nov 2025	
Name of Teacher:-		Er. Rishav	Semester:-	5th Semester	
Designation:-		Lecturer (Automobile Engg)	Scheme:-	N-2022	
Sr No	**Month**	**Week**	**Contents**		**Remarks**
1	August	Week 2	Unit-I: Power Unit: Two stroke and four stroke SI engine, merits and demerits. Symmetrical and unsymmetrical port timing diagrams		
		Week 3	Types of scavenging process merits and demerits, scavenging efficiency.		
		Week 4	Scavenging pumps. Rotary valve engine. Unit-II: Various System: Fuel system. Lubrication system		
		Week 5	Magneto coil and battery coil spark ignition system. Electronic Ignition system.Starting system. Kick starter system. Unit-III: Chassis and Sub-Systems: Mainframe, its types		
2	September	Week 1	Chassis and shaft drive. Single, multiple plates and centrifugal clutches		
		Week 2	**Class Test I**		
		Week 3	Gear box and gear controls. Front and rear suspension- systems. Shock absorbers		
		Week 4	Panel meters and controls on handle bar.		
		Week 5	Unit-IV: Brake and Wheels: Drum brakes, Disc brakes		
3	October	Week 1	front and rear brake links layouts. Spoked wheel		
		Week 2	Cast wheel. Disc wheel. Disc types. Tyres & tubes.		
		Week 3	**Class Test II**		
		Week 4	Unit-V: Two Wheelers: Case study of Major Indian models of motorcycles		
		Week 5	SCOOTERS AND MOPEDS. Bajaj, Vespa, Lambretta scooters.		
4	November	Week 1	Enfield, TVSSuzuki, Hero-Honda		
		Week 2	**House Test**		
		Week 3	Yamaha RX100, Kawasaki Bajaj Motor cycle. Kinetic Spark, Hero Majestic,		
		Week 4	TVS mopeds. Servicing and maintenance. Three Wheelers: Case study of Indian Models. Front engine and rear engine.		
		Week 5	. Auto rickshaws. Pickup van. Delivery Van and Trailer.		

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(Er . Rishav)

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(Er Vivek Singh)

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Department of Automobile Engineering

Lesson Plan w.e.f 04-08-2025 to 26-11-2025

Name of Subject:-	**Auto Electrical & Electronic Equipment Laborat**	Session:-	**Aug-Nov 2025**
Name of Teacher:-	**Er Maneet Guleria**	Semester:-	**5th Semester**
Designation:-	**Workshop Supdt. (Automobile Engg)**	Scheme:-	**N-2022**

Sr No	Month	Week	Contents	Remark
1	August	Week 2	Testing of Battery with hydrometer and high rate discharge tester, charging of Batteries.	
		Week 3	Testing and measurement of ignition timing and dwell angle with timing light and cam angle tester	
		Week 4	Testing, cleaning and setting of spark plug on spark plug cleaning and testing machine.	
		Week 5	Testing of alternator rotor and stator winding for short circuit, ground and broken circuit using alternator test bench.. Testing and setting of horn and relay.	
2	September	Week 1	Testing and fault tracing of field winding, armature and magnetic switch for short circuit, grounding of a starter using starter test bench.	
		Week 2	**Class Test I**	
		Week 3	Identification of colour codes for continuity test in a wiring harness	
		Week 4	Study and sketching of complete wiring circuit of an Indian vehicle	
		Week 5	Study and sketching of complete wiring circuit of an Indian vehicle	
3	October	Week 1	Fault tracing and diagnosis of electronic ignition system through engine car scanner.	
		Week 2	Fault tracing and diagnosis of electronic ignition system through engine car scanner.	
		Week 3	**Class Test II**	
		Week 4	Study and demonstration of MPFI and CRDI system	
		Week 5	Layout of temperature sensor circuit.	
4	November	Week 1	• Study and layout circuit of D.C. Shunt motor and stepper motor	
		Week 2	**House Test**	
		Week 3	• Study and layout circuit of D.C. Shunt motor and stepper motor	
		Week 4	PLC basic circuits and control.	
		Week 5	PLC basic circuits and control.	

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(Er Vivek Singh

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Department of Automobile Engineering

Lesson Plan w.e.f 04-08-2025 to 26-11-2025

Name of Subject:-	**Automobile Workshop Practice-III**	Session:-	**Aug-Nov 2025**
Name of Teacher:-	**Er Rishav & Sh. Pushpender**	Semester:-	**5th Semester**
Designation:-	**Lecturer (Automobile Engg)**	Scheme:-	**N-2022**

Sr No	Month	Week	Contents	Remark
1	August	Week 2	Electric vehicle & Teardown Shop: ▯ Study of safety equipment's for electrical vehicles	
		Week 3	Study of electric vehicle components (Drive chain, PDU, On board charger, BCM) and fault findings.	
		Week 4	Study of Electric Vehicle battery system, rating and drive train system in Electric Vehicle.	
		Week 5	Job on making the electric vehicle voltage free on two wheeler and electric vehicle. Job on measurement and diagnosis on electric drive motor in electric vehicle on trainer.	
2	September	Week 1	Job on Removal of windows, replacement of window glass, fender and window motor mechanism. • Diagnosis and installation of center locking connected car system and standard accessories	
		Week 2	**Class Test I**	
		Week 3	Job on removal of complete dashboard and installation	
		Week 4	Decarburizing of Engines: removing carbon deposits from engine combustion chamber, piston crown, and valve parts manually and by using engine decarbonizing machine. • Overhauling of Diesel engine.	
		Week 5	• Surfacing of cylinder heads, cylinder blocks and manifolds with cylinder head re-facing machine.	
3	October	Week 1	• Practice in cylinder boring machine, measuring ovality and taperness of cylinder bore, using cylinder dial gauge, inside micrometer, telescopic gauge, and use of direct reading micrometer.	
		Week 2	Practice in honing cylinder blocks, keeping allowance of cylinder clearances.	
		Week 3	**Class Test II**	
		Week 4	Inspection and practice of crankshaft, crankpin, journal grinding, main journal grinding on crankshaft grinding machine.	
		Week 5	Practice of cam shaft journals on line boring machine. • Servicing of valve and valve mechanism, replacement of valves.	
4	November	Week 1	Testing of fuel injector in fuel injection tester.	
		Week 2	**House Test**	
		Week 3	Calibrations of fuel injection pump on fuel calibration machine	
		Week 4	Practice on brake drum lathe, measuring ovality, skimming the brake drum.	
		Week 5	Practice in nozzle grinding and lapping, setting of injection pressure and nature of spray	

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(Sh. Pushpender)

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Department of Automobile Engineering

Lesson Plan w.e.f 04-08-2025 to 26-11-2025

Name of Subject:-	**Automobile Workshop Practice-III**	Session:-	**Aug-Nov 2025**
Name of Teacher:-	**Er Rishav & Sh. Pushpender**	Semester:-	**5th Semester**
Designation:-	**Lecturer (Automobile Engg)**	Scheme:-	**N-2022**

Sr No	Month	Week	Contents	Remark
1	August	Week 2	Electric vehicle & Teardown Shop: Study of safety equipment's for electrical vehicles	
		Week 3	Study of electric vehicle components (Drive chain, PDU, On board charger, BCM) and fault findings.	
		Week 4	Study of Electric Vehicle battery system, rating and drive train system in Electric Vehicle.	
		Week 5	Job on making the electric vehicle voltage free on two wheeler and electric vehicle. Job on measurement and diagnosis on electric drive motor in electric vehicle on trainer.	
2	September	Week 1	Job on Removal of windows, replacement of window glass, fender and window motor mechanism. • Diagnosis and installation of center locking connected car system and standard accessories	
		Week 2	**Class Test I**	
		Week 3	Job on removal of complete dashboard and installation	
		Week 4	Decarburizing of Engines: removing carbon deposits from engine combustion chamber, piston crown, and valve parts manually and by using engine decarbonizing machine. • Overhauling of Diesel engine.	
		Week 5	• Surfacing of cylinder heads, cylinder blocks and manifolds with cylinder head re-facing machine.	
3	October	Week 1	• Practice in cylinder boring machine, measuring ovality and taperness of cylinder bore, using cylinder dial gauge, inside micrometer, telescopic gauge, and use of direct reading micrometer.	
		Week 2	Practice in honing cylinder blocks, keeping allowance of cylinder clearances.	
		Week 3	**Class Test II**	
		Week 4	Inspection and practice of crankshaft, crankpin, journal grinding, main journal grinding on crankshaft grinding machine.	
		Week 5	Practice of cam shaft journals on line boring machine. • Servicing of valve and valve mechanism, replacement of valves.	
4	November	Week 1	Testing of fuel injector in fuel injection tester.	
		Week 2	**House Test**	
		Week 3	Calibrations of fuel injection pump on fuel calibration machine	
		Week 4	Practice on brake drum lathe, measuring ovality, skimming the brake drum.	
		Week 5	Practice in nozzle grinding and lapping, setting of injection pressure and nature of spray	

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(Er Rishav)

Signature of Teacher
(Sh. Pushpender)

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(Er Vivek Singh

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Department of Automobile Engineering

Lesson Plan w.e.f 04-08-2025 to 26-11-2025

Name of Subject:-	**Driving practice -II**	Session:-	**Aug-Nov 2025**
Name of Teacher:-	**Pushpender**	Semester:-	**5th Semester**
Designation:-	**Appprentice (mmv)**	Scheme:-	**N-2022**

Sr No	Month	Week	Contents	Remarks
1	August	Week 2	Driving Techniques	
		Week 3	Revision	
		Week 4	Maneuver in: Passing, Merging, Diverging, Overtaking, Crossing, Turning, Cornering, Reversing, and Emergency stopping	
		Week 5	Use of bye pass, sub way, over bridge and flyover. Difficult driving- Night driving, Hill driving, driving under special conditions like fog, heavy rain and snow etc	
2	September	Week 1	Difficult driving- Night driving, Hill driving, driving under special conditions like fog, heavy rain and snow etc	
		Week 2	**Class Test I**	
		Week 3	Driving on highways: lane selection & lane discipline	
		Week 4	Public relations and dealing with police	
		Week 5	Public relations and dealing with police	
3	October	Week 1	Fire Hazards	
		Week 2	First Aid	
		Week 3	**Class Test II**	
		Week 4	Vehicle Repair & Maintenance: Break down recovery	
		Week 5	Recovery from police: accident cases	
4	November	Week 1	Record keeping	
		Week 2	House Test	
		Week 3	Accounting	
		Week 4	Practice on road up to 60 K.M. during the semester for each student.	
		Week 5	Practice on road up to 60 K.M. during the semester for each student.	

Signature of Teacher
(Pushpeder)

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(Er Vivek Singh)