Government Polytechnic Kullu at Seobagh Distt Kullu H.P. 175138					
Department of Automobile Engineering					
Lesson Plan w.e.f 27-01-2026 to 27-05-2026					
Name of Subject:-		Elements of Strength of Material		Session:-	Jan-May 2026
Name of Teacher:-		Er Maneet Guleria		Semester:-	4th Semester
Designation:-		Workshop Supdt. (Automobile Engg)		Scheme:-	N-2022
Sr No	**Month**	**Week**	**Contents**		**Remarks**
1	January	Week 5	**Unit I: Stresses and strains:** Introduction to stress and strain,tensile and compressive stress.		
2	February	Week 1	Shear stress and strain. Hook's law and Young's Modulus of elasticity, Modulus of Rigidity, Poisson's ratio, Bulk Modulus,		
		Week 2	Deformation and stress in uniform bar. Deformation and stress in non-uniform bar, Longitudinal and hoop stress in thin cylinders.		
		Week 3	**Unit II: Beam and Bending**: Concept of Beam and their types (simply supported,overhanging, cantilever),		
		Week 4	Different types of supports,		
3	March	Week 1	Concept of bending moments and shear force. B.M and S.F. diagram for Beams; for uniformly distributed and concentrated loads.		
		Week 2	**Class Test -I**		
		Week 3	Determination of position of maximum B.M and S.F. in beam. Point of contra flexure.		
		Week 4	**Unit III: Bending and Shear Stresses:** Concept of simple bending, assumptions made in it and derivation of bending equation,		
		Week 5	Concept of Second Moment of Area		
4	April	Week 1	Section Modulus for simple sections: Rectangle cross section, Circular cross section, Triangular cross section. Hollow circular cross section.		
		Week 2	**Class Test -II**		
		Week 3	Calculation of bending stresses for the above section with given loading and span.		
		Week 4	**Unit IV: Springs:** Leaf Springs, Maximum deflection in leaf springs, Maximum stress in leaf springs, close coiled and open coiled springs subjected to axial load and axial twist		
		Week 5	Stiffness of a spring, Strain energy and proof resistance.**Unit V: Shaft Design & Columns:** Concept of torque and angle of twist,		
5	May	Week 1	Derivation of Torsion equation. Calculation of Torque transmitted by hollow and solid shafts of round sections Stresses in shaft, Shaft coupling and various types (concept only)		
		Week 2	**House Test**		
		Week 3	Design of shafts (Solid and hollow) Shaft under torsion,		
		Week 4	**Columns:** Long and short columns, Buckling of columns, Euler Formula.		
		Week 5	**Revision**		

Teacher's references. Mechanics of Materials by Barry J. Goodno/James M. Gere ; Cengage Learning India Pvt. Ltd

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Government Polytechnic Kullu at Seobagh Distt Kullu H.P. 175138					
Department of Automobile Engineering					
Lesson Plan w.e.f 27-01-2026 to 27-05-2026					
Name of Subject:-		Elements of Strength of Material Lab		Session:-	Jan-May 2026
Name of Teacher:-		Er Maneet Guleria		Semester:-	4th Semester
Designation:-		Workshop Supdt. (Automobile Engg)		Scheme:-	N-2022

Sr No	Month	Week	Contents	Remarks
1	January	Week 5	To study tensile behavior of three different metals.	
2	February	Week 1	To study tensile behavior of three different metals.	
		Week 2	To study tensile behavior of three different metals.	
		Week 3	To calculate shear strength of two different metal under single and double shear.	
		Week 4	To calculate shear strength of two different metal under single and double shear.	
3	March	Week 1	Test on a spring to find out spring constant of the spring.	
		Week 2	Calculation of impact strength of metals by, 1.Charpy test 2. Izod test	
		Week 3	To calculate bending strength by performing bending	
		Week 4	To calculate torsion strength of 3 different metals by torsion test.	
		Week 5	To calculate torsion strength of 3 different metals by torsion test.	
4	April	Week 1	To calculate torsion strength of 3 different metals by torsion test.	
		Week 2	To calculate hardness of metals by Rockwell hardness test.	
		Week 3	Study of a reciprocating pump.	
		Week 4	Study of a centrifugal pump.	
		Week 5	Verification of Bernoulli's theorem.	
5	May	Week 1	Measurement of flow with Venturi meter & Orifice meter	
		Week 2	**House Test**	
		Week 3	**Revision**	
		Week 4	**Revision**	
		Week 5	**Revision**	

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Government Polytechnic Kullu at Seobagh Distt Kullu H.P. 175138					
Department of Automobile Engineering					
Lesson Plan w.e.f 27-01-2026 to 27-05-2026					
Name of Subject:-			Automobile Chassis, Body And Transmission – II	Session:-	Jan- June 2026
Name of Teacher:-			Er Rishav	Semester:-	4th Semester
Designation:-			Lecturer (Automobile Engg)	Scheme:-	N-2022

Sr No	Month	Week	Contents	Remarks
1	January	Week 5	**Unit I: Suspension System:** Function type - independent, rigid axle. Springs, functions, and types (coil, leaf and torsion bar)	
2	February	Week 1	Sprung and un-sprung weight, Characteristics of springs, material, spring eye, bushes, variable rate spring, helper leafs, leaf sections. Camber grading and nippling spring seats, rubber pads, pressure blocks, spring covers	
		Week 2	Inter leaf inserters, pneumatic suspension system. Function and construction of hydraulic dampers (shock absorbers),	
		Week 3	Active suspension system and diagnosis of common faults and their rectifications.	
		Week 4	**Unit II: Braking System:** Purpose of brakes, lay out of braking system, components, Types of brakes- mechanical, hydraulic, power.	
3	March	Week 1	Principle of hydraulic brakes, braking action, master cylinder, wheel cylinder, leading and trailing shoes, self-adjusting brakes. Drum brakes - construction and working details. Disc brakes - constructional and working details.	
		Week 2	**Class Test-1**	
		Week 3	Power Brakes: Air, air hydraulic, hydraulic vacuum their construction and working details. Brake fluid and characteristics, brake liner, hand brake, engine exhaust brake system and its importance	
		Week 4	Brake tests, antilock braking system with electronic brake distribution, common faults and their rectification.	
		Week 5	**Unit III: Wheel and Tyres:** Wheels, types, hub attachment, wheel specification, tyres classification and purpose, types and construction of pneumatic tyre, causes of excessive tyre wear, effects of different condition of vehicles stability.	
4	April	Week 1	Care and maintenance of tyres, tubes, retreading of tyres, tubeless tyres, Run flat tyres, concept of green tyres, wheel.	
		Week 2	**Class Test-2**	
		Week 3	**Unit IV: Automotive Safety Systems:** Preventive design, designing for minimum injury in accident.	
		Week 4	Seat belts, seat belt pre-tensioner with load limiter,airbags.	
		Week 5	Electronic vehicle stability (traction control system, Hill Hold) and occupants protection system.	
5	May	Week 1	Pedestrian protection, isocar seat fix, child-lock.	
		Week 2	**House Test**	
		Week 3	**Unit V: Miscellaneous:** SHVS system, lane departure warning	
		Week 4	Adaptive cruise control, automatic emergency braking system	
		Week 5	360° degree camera.	

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Department of Automobile Engineering					
Lesson Plan w.e.f 27-01-2026 to 27-05-2026					
Name of Subject:-		Auto Engine	Session:-	Jan-May 2026	
Name of Teacher:-		Er Maneet Guleria	Semester:-	4th Semester	
Designation:-		Workshop Supdt. (Automobile Engg)	Scheme:-	N-2022	

Sr No	Month	Week	Contents	Remarks
1	January	Week 5	**Unit I: Introduction:** Engines, Internal and external combustion Engines, Engine terminology including Bore, Stroke, dead centres, Compression Ratio, Swept volume, clearance volume, compression ratio, Engine capacity, Engine torque, Indicated power, Brake power, Friction power	
2	February	Week 1	Classification of engines as per stroke, cycle, fuel, ignition, cooling, speed, number and arrangement of cylinders, governing, reciprocating and rotary,	
		Week 2	Concept of 2-stroke and 4- stroke engines and their comparison. **Unit II: Engine Components:** Construction details, specification, function and working of components, cylinder block, head	
		Week 3	cylinder liner, piston, piston rings, wrist pin, connecting rod, crankshaft bearing, camshaft, valves and valves mechanisms. Fly wheel and dampers.	
		Week 4	**Unit III: IC Engine Testing:** Testing of I.C. engine and determination of Indicated Power and Brake Power. Mechanical Efficiency, Volumetric efficiency, Thermal Efficiency, Relative Efficiency, Mean Effective Pressure and Specific fuel consumption	
3	March	Week 1	Heat balance sheet, Morse Test. Simple numerical problems.	
		Week 2	**Class Test -I**	
		Week 3	**Unit IV: Fuel System in spark Ignition Engine:** Fuel System: types of fuel feed system, gravity and pump feed. Fuel injection system, Fuel tank, fuel lines, fuel filters	
		Week 4	carburetion, working of simple carburetor and its limitation.	
		Week 5	Petrol Injection: Introduction, Comparison with Carburetor method, Description and	
4	April	Week 1	working of multipoint fuel injection (M.P.F.I.), Advantages and disadvantages of M.P.F.I., Sensors and construction of ECU.	
		Week 2	**Class Test -II**	
		Week 3	**Ignition system:** Concept of ignition system, types of ignition systems, Battery/coil and magneto ignition system, Function and working of ignition coil, distributors,	
		Week 4	condenser, advance mechanisms, C.B. Point and gap, spark plugs and gaps pertaining to Indian vehicles, Distributor less Ignition System, transistorized ignition system.	
		Week 5	**Unit V: Cooling System and lubrication System:** Cooling system: necessity, types (air, water), pump circulation cooling., Advantages & Disadvantages of Air cooling &water cooling,	
5	May	Week 1	Components of Water cooling system- Radiators, thermostat, water pump, Fan, Pressure cap, Water jackets, anti-freeze solution, trouble shooting and remedies.	
		Week 2	**House Test**	
		Week 3	**Lubrication System:** Necessity and types of Lubrication system (Splash System, Pressure system), Wet and dry sump, Components used, oil pump, oiliness,	
		Week 4	oil filters, oil coolers, crankcase ventilation, characteristics, classification and service ratings of lubricating oil, additives for Lubricants.	
		Week 5	Revision	

Teacher's references. AutomobileEngineering-Vol.2 by Dr. Kirpal Singh; Standard Publishers Distributors

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Government Polytechnic Kullu at Seobagh Distt Kullu H.P. 175138					
Department of Automobile Engineering					
Lesson Plan w.e.f 27-01-2026 to 27-05-2026					
Name of Subject:-			Tractor & Farm Equipment	Session:-	Jan- June 2026
Name of Teacher:-			Er Rishav	Semester:-	4th Semester
Designation:-			Lecturer (Automobile Engg)	Scheme:-	N-2022

Sr No	Month	Week	Contents	Remarks
1	January	Week 5	**Unit- I: Tractor and Tractor Theory:** Classification of tractors, main tractor assemblies, functions on farm tractors, types of engine used.	
2	February	Week 1	Horse power requirement, human factor in tractor design. Prominent Indian makes tractors, specifications, selection, maintenance and operation of tractors.	
		Week 2	Tractor Theory: Basics trends in tractor design, forces acting on a tractor on move.	
		Week 3	Parallel pull and rolling resistance, tractor stability and weight distribution.	
		Week 4	**Unit- II: Hydraulic System and Tractor Chassis:** Functions of hydraulic system, hydraulic components, and methods of attaching implements.	
3	March	Week 1	Classification of hydraulic controls for hitches, integral hitch system, three point hitches, and draft control system.	
		Week 2	**Class Test-1**	
		Week 3	Tractor Chassis: Salient features of engine, clutch, power transmission, final drive, brakes and steeping of Indian tractors.	
		Week 4	**Supplementary System:** Power take off shaft, draw bar working, belt pulley, tractor control.	
		Week 5	**Unit III: Tractor Wheels and Tyres:** Salient features of wheels and tyres, specifications of wheels and tyres.	
4	April	Week 1	Dual versus tandom tyres, tread design, effect of tyre inflation.	
		Week 2	**Class Test-2**	
		Week 3	**Unit- IV: Agricultural Equipment:** Types of agriculture equipment, trailer and mounted types.	
		Week 4	Description and working principles of ploughs, single plough, disc plough, tiller, cultivator.	
		Week 5	Reaper, winnowers, binder, thrasher.	
5	May	Week 1	Pumps, sprayers and attachments.	
		Week 2	**House Test**	
		Week 3	**Unit- V: Repair and Maintenance:** Faults and their rectification in tractor and farm equipment.	
		Week 4		
		Week 5		

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Government Polytechnic Kullu at Seobagh Distt Kullu H.P. 175138					
Department of Automobile Engineering					
Lesson Plan w.e.f 27-01-2026 to 27-05-2026					
Name of Subject:-		Driving Practice-I		Session:-	Jan- June 2026
Name of Teacher:-		Sh. Sandeep Thakur		Semester:-	4th Semester
Designation:-		Apprentice Trainee (MMV)		Scheme:-	N-2022
Sr No	**Month**	**Week**	**Contents**		**Remarks**
1	January	Week 5	**1. Know your vehicles-** Different elements and their functions.		
2	February	Week 1	Vehicles controls- Hand controls,		
		Week 2	Foot controls, other controls,		
		Week 3	Major/Minor Controls.		
		Week 4	**2. Pre driving checks-** before sitting on the driver seats, after sitting on the driver's seat.		
3	March	Week 1	**3. Beginning to Drive-** Setting of mirror for blind spot reduction. Road users characteristics, Road sense,Traffic sense, Anticipation, Judgment		
		Week 2	**Class Test I**		
		Week 3	Gear changing (high to low and low to high)		
		Week 4	Holding steering for controlling, Road signs & signals, Road marking		
		Week 5	Traffic Signals (hand signal, traffic signs, Automatic lights).		
4	April	Week 1	Starting the engine, Precautions before moving the vehicles, Precautions after moving the vehicles.		
		Week 2	**Class Test II**		
		Week 3	Positioning on road, Parking, Stopping distance, Following Distance, Passing, Turning, Stopping, Reversing		
		Week 4	Driver's responsibility on road, Driving techniques, Driving practice on driving simulator, driving in abnormal condition namely hilly and night, rain and heavy traffic.		
		Week 5	**4. Driving Practice with vehicle**		
5	May	Week 1	**5. Important Provisions of Motor Vehicles Act, Accidents &Safety:** Learning License, Display of learning sign on the vehicle, Regular Driving license, General Insurance, Vehicle Registration,		
		Week 2	**House Test**		
		Week 3	Pollution test standards/certificates., log book and other documents. Causes of accidents and precaution to avoid accidents.		
		Week 4	**6. Routine Maintenance:** Engine lubrication and cooling system, Battery top up and charge,		
		Week 5	Tyre wear and wear, Washing, cleaning, greasing and polishing etc.		

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Government Polytechnic Kullu at Seobagh Distt Kullu H.P. 175138					
Department of Automobile Engineering					
Lesson Plan w.e.f 27-01-2026 to 27-05-2026					
Name of Subject:-			Minor Project	Session:-	Jan-May 2026
Name of Teacher:-			Er. Maneet Guleria	Semester:-	4th Semester
Designation:-			Workshop Supdt. (Automobile Engg)	Scheme:-	N-2022
Sr No	**Month**	**Week**	**Contents**		**Remarks**
1	January	Week 5			
2	February	Week 1	Identification of a real life problem in thrust areas.		
		Week 2			
		Week 3			
		Week 4	Developing a model for solving the problem.		
3	March	Week 1			
		Week 2	**Class Test -I**		
		Week 3	Finalization of requirements.		
		Week 4			
		Week 5			
4	April	Week 1			
		Week 2	**Class Test -II**		
		Week 3	Proposing different solutions for the problems based on survey.		
		Week 4			
		Week 5			
5	May	Week 1			
		Week 2	**House Test**		
		Week 3	Future trends in providing alternate solutions.		
		Week 4			
		Week 5	Consolidated report preparation of the above.		

Signature of Teacher
Er. Maneet Guleria

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Government Polytechnic Kullu at Seobagh Distt Kullu H.P. 175138					
Department of Automobile Engineering					
Lesson Plan w.e.f 27-01-2026 to 27-05-2026					
Name of Subject:-		Motor Vehicle Act & Transport Management	Session:-	Jan-May 2026	
Name of Teacher:-		Er. Vivek Singh	Semester:-	4th Semester	
Designation:-		Head of Department	Scheme:-	N-2022	

Sr No	Month	Week	Contents	Remarks
1	January	Week 5	**Unit-I: Motor Vehicle Act:** Definition and provisions (Salient features of M.V. Act 1988)Requisites and formalities for following: Different forms, application for various Uses ,	
2	February	Week 1	Registration of old and new vehicles, Private and commercial vehicle, Transfer of vehicle: Local and State to State.	
		Week 2	Registration of old and new vehicles, Private and commercial vehicle,	
		Week 3	Transfer of vehicle: Local and State to State.**Unit- II: Inspection, Fitness and Insurance of Vehicle:** Fitness of vehicle, Private and Commercial Different types of permits, Permit consideration for transport andpublic service and tourist permit.	
		Week 4	Insurance: Different types of insurance and policies, Procedure to get Accidental claim and compensation, Surveyor duties, Relations between company and surveyor,	
3	March	Week 1	MACT (Motor accident claims tribunal).**Unit III: Driving and Road Safety:** Driving License,	
		Week 2	**Class Test -I**	
		Week 3	Different types of driving licenses, Procedure to get license, Private, commercial, invalid, international license,	
		Week 4	Principle of Driving, Driving precautions.Driving in abnormal conditions: Like Hilly, night, fog, typhoon, heavy traffic, rainy,	
		Week 5		
4	April	Week 1	Road Safety: Road Signs, Imposition of Penalties for violation, Act and Articles, Duties of Driver, Duties of conductor.	
		Week 2	Class Test -II	
		Week 3	**Unit- IV: Pollution Control:** Different contents of exhaust gas,	
		Week 4	Prescribed standards for vehicles: bharat stage norms, Method of Control of pollution for SI and CI engines	
		Week 5	Fuel efficiency. **Unit- V: Transport Management:** Structure of fleet organization, State transport,	
5	May	Week 1	optimum utilization of fleet, Road worthiness requirement, Maintenance of log book, History sheet,	
		Week 2	House Test	
		Week 3	causes and prevention of: Road Accident Analysis of Accident, Economy of replacement,	
		Week 4	Assessment of used vehicles for sale and purchase, Automotive Associations in India.	
		Week 5	**Revision**	

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

Department of Automobile Engineering

Lesson Plan w.e.f 27-01-2026 to 27-05-2026

Name of Subject:-	**Automobile Workshop Practice-II**	Session:-	**Jan- June 2026**
Name of Teacher:-	**Er Rishav & Sh. Sandeep Thakur**	Semester:-	**4th Semester**
Designation:-	**Lecturer (Automobile Engg)**	Scheme:-	**N-2022**

Sr No	Month	Week	Contents	Remarks
1	January	Week 5	1. Replacement and Servicing of steering system - steering gear boxes correction, adjustment of free play.	
2	February	Week 1	2. Checking and adjustment of camber, caster, toe in and toe out, king pin inclination in steering geometry. 3. Replacement and Servicing of suspension system - leaf springs, independent suspension – coil spring - torsion bar, telescopic shock absorber	
		Week 2	4. Wheel balancing - static and dynamic.	
		Week 3	5. Dismantling and assembly of oil pumps.	
		Week 4	6. Flushing out water jackets, cleaning of radiator and refitting in vehicle, adjustment of fan belt tension by self-adjusting and automatic adjusting.	
3	March	Week 1	7. Painting job on Vehicle Components. 8. Dismantling and assembly of injectors.	
		Week 2	**Class Test I**	
		Week 3	9. Practice in complete servicing of a vehicle i.e. engine oil, Gear oil fuel filter, oil filter replacement, Coolant, Air filter, Cabin AC filter etc. as per maintenance schedule of the vehicle.	
		Week 4	10. Fault tracing of different sensors through engine car scanner. 11. Fault tracing of supplementary restraint system (SRS).	
		Week 5	12. Study of ABS, traction control system model. 13. Programming through teach pendant of Industrial robot.	
4	April	Week 1	14. Setting of engine timing, valve clearance and adjustment of tappet clearance (Engine Tune-up)	
		Week 2	**Class Test II**	
		Week 3	15. Dismantling and assembly of fuel injection pump.	
		Week 4	16. Demonstration of CRDI or MPFI System used in modern vehicle using engine scanner.	
		Week 5	17. Servicing feed pump: mechanical pump, electrical pump and testing.	
5	May	Week 1	18. Trouble shooting of engine : Diagnosing and rectifying to the following troubles - Engine overheating, high oil consumption, engine noises and knocks, high fuel consumption, starter turns the engine on but the engine does not start, engine fires but dies out, engine misfires, lack of power, poor acceleration, engine produces black or white smoke.	
		Week 2	**House Test**	
		Week 3	19. Practice of cylinder ridge removing using ridge cutter and alignment of connecting rod.	
		Week 4	20. Practice of fitting cylinder liner – sleeving and de-sleeving.	
		Week 5	21. Engine testing and finding out fuel consumption, Engine output and efficiency using engine test rig (Petrol/Diesel).	

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(Er Rishav)

Signature of Teacher
(Sh. Sandeep Thakur)

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