LESSON PLAN

Name of Teacher :- Gaurav Puwari **Subject:** Elements of strength of Materials **Class:** 4th Semester Automobile Engg.

S. No.	Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
1	JANUARY	5th Week	27,28,29	Stresses and strains	Introduction to stress and strain, tensile and compressive stress. Shear stress and strain	
2	FEBRUARY	1st Week	2,3,4,5		Hook's law and Young's Modulus of elasticity, Modulus of Rigidity, Poisson's ratio	
3		2nd Week	9,10,11,12		Bulk Modulus, Deformation and stress in uniform bar.Deformation and stress in non-uniform bar, Longitudinal and hoop stress in thin cylinders.	
4		3rd Week	16,17,18,19	Beam and Bending	Concept of Beam and their types (simply supported, overhanging, cantilever), Different types of supports	
5		4th Week	23,24,25,26		Concept of bending moments and shear force. B.M and S.F. diagram for Beams	
6	MARCH	1st Week	2,3,5		for uniformly distributed and concentrated loads. Determination of position of maximum B.M and S.F. in beam. Point of contra flexure.	
7		2nd Week	9,10,11,12	Bending and Shear Stresses	Concept of simple bending, assumptions made in it and derivation of bending equation	
8		3rd Week	16,17,18,19		Concept of Second Moment of Area and Section Modulus for simple sections: Rectangle cross section	
9		4th Week	23,24,25,		Circular cross section, Triangular cross section. Hollow circular cross section	
10		5th Week	30,31		Calculation of bending stresses for the above section with given loading and span	
11	APRIL	1st Week	1,2	Springs	Leaf Springs, Maximum deflection in leaf springs, Maximum stress in leaf springs	
13		2nd Week	6,7,8,9		close coiled and open coiled springs subjected to axial load and axial twist,	
14		3rd Week	13,16		Stiffness of a spring, Strain energy and proof resistance	
15		4th Week	20,21,22,23	Shaft Design & Columns	Columns: Long and short columns, Buckling of columns, Euler Formula.	
16		5th Week	27,28,29,30		concept of torque and angle of twist,Derivation of Torsion equation.	
17	MAY	2nd Week	4,5,6,7		**HOUSE TEST**	
18		3rd Week	11,12,13,14		Calculation of Torque transmitted by hollow and solid shafts of round sections Stresses in shaft	
19		4th Week	18,19,20,21	Shaft Design & Columns	Shaft coupling and various types (concept only)	
20		5th Week	25,26		Design of shafts (Solid and hollow) Shaft under torsion.	

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LESSON PLAN

Name of Teacher :- Jitender Kumar **Subject: ACBT-II** **Class:** 4th Semester Automobile Engg.

S. No.	Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
1	**JANUARY**	5th Week	29,30,31	**Suspension System**	Function type - independent, rigid axle. Springs, functions,, sprung and un-sprung weight, Characteristics of springs	
2	**FEBRUARY**	1st Week	2,5,6,7		material, spring eye, bushes, variable rate spring, helper leafs, leaf sections. Camber grading and nippling spring seats and types (coil, leaf and torsion bar)	
3		2nd Week	9,12,13		rubber pads, pressure blocks, spring covers; inter leaf inserters, pneumatic suspension system.	
4		3rd Week	16,19,20,21		Function and construction of hydraulic dampers (shock absorbers), active suspension system and diagnosis of common faults	
5		4th Week	23,26,27,28	**Braking System**	Purpose of brakes, lay out of braking system, components, Types of brakes- mechanical, hydraulic, power. Principle of hydraulic brakes, braking action, master cylinder, wheel cylinder, leading and trailing shoes, self-adjusting brakes	
6	**MARCH**	1st Week	2,5,6,7		Drum brakes - construction and working details. Disc brakes - constructional and working details. Power Brakes: Air, air hydraulic, hydraulic vacuum their construction and working details.	
7		2nd Week	9,12,13,		Brake fluid and characteristics, brake liner, hand brake, engine exhaust brake system and its importance, brake tests, antilock braking system with electronic brake distribution, common faults and their rectification.	
8		3rd Week	16,19,20,	**Wheel and Tyres**	Wheels, types, hub attachment, wheel specification, tyres classification and purpose, types and construction of pneumatic tyre, causes of excessive tyre wear	
9		4th Week	23,27,28		effects of different condition of vehicles stability. Care and maintenance of tyres, tubes, retreading of tyres	
10		5th Week	30		tubeless tyres, Run flat tyres, concept of green tyres wheel.	
11	**APRIL**	1st Week	2,4	**Automotive Safety Systems**	Preventive design, designing for minimum injury in accident, seat belts	
13		2nd Week	6,9,10,		seat belt pre-tensioner with load limiter, airbags, electronic vehicle stability	
14		3rd Week	13,16,17,18		(traction control system, Hill Hold) and occupants protection system, pedestrian protection	
15		4th Week	20,23,24,25		isocar seat fix, child-lock	
16		5th Week	27,30	**Miscellaneous**	SHVS system	
17	**MAY**	1st Week	2,		lane departure warning, 360º degree camera	
18		2nd Week			**HOUSE TEST**	
19		3rd Week	11,14,15,16	**Miscellaneous**	adaptive cruise control,automatic emergency braking system	
20		4th Week	18,21,22,23		REVISION	
21		5th Week	25		REVISION	

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LESSON PLAN

Name of Teacher :- Rishu Dhiman **Subject:** Auto Engine **Class:** 4th Semester Automobile Engg.

S. No.	Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
1	JANUARY	5th Week	27,30,31	Introduction	Engines, internal and external combustion Engines, Engine terminology including Bore, Stroke, dead centres, Compression Ratio, Swept volume,clearance volume, compression ratio	
2	FEBRUARY	1st Week	2,3,6,7		Engine capacity, Engine torque, Indicated power, Brake power, Friction power, Classification of engines as per stroke, cycle, fuel, ignition, cooling, speed, number and arrangement of cylinders	
3		2nd Week	9,10,13		governing, reciprocating and rotary, Concept of 2-stroke and 4- stroke engines and their comparison	
4		3rd Week	16,17,20,21	Engine Components	Construction details, specification, function and working of components, cylinder block, head, cylinder liner, piston, piston rings, wrist pin, connecting rod	
5		4th Week	23,24,27,28		crankshaft bearing, camshaft, valves and valves mechanisms. Fly wheel and dampers.	
6	MARCH	1st Week	2,3,6,7	IC Engine Testing	Testing of I.C. engine and determination of Indicated Power and Brake Power. Mechanical Efficiency, Volumetric efficiency	
7		2nd Week	9,10,13		Thermal Efficiency, Relative Efficiency, Mean Effective Pressure and Specific fuel consumption. Heat balance sheet, Morse Test	
8		3rd Week	16,17,20		Simple numerical problems	
9		4th Week	23,24,27,28	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, carburetion, working of simple carburetor and its limitation.	
10		5th Week	30,31		Petrol Injection: Introduction, Comparison with Carburetor method	
11	APRIL	1st Week	4		Description and working of multipoint fuel injection (M.P.F.I.), Advantages and disadvantages of M.P.F.I.	
13		2nd Week	6,7,10		Ignition system: Concept of ignition system, types of ignition systems, Battery/coil and magneto ignition system, Function and working of ignition coil, distributors,condenser, advance mechanisms	
14		3rd Week	13,17,18		C.B. Point and gap, spark plugs and gaps pertaining to Indian vehicles	
15		4th Week	20,21,24,25		Distributor less Ignition System, transistorized ignition system,Sensors and construction of ECU.	
16		5th Week	27,28	Cooling System and lubrication System	Cooling system: necessity, types (air, water), pump circulation cooling., Advantages & Disadvantages of Air cooling &water cooling, Components of Water cooling system- Radiators, thermostat, water pump, Fan, Pressure cap, Water jackets, anti-freeze solution, trouble shooting and remedies.	
17	MAY	1st Week	2,		Lubrication System: Necessity and types of Lubrication system (Splash System, Pressure system)	
18		2nd Week			**HOUSE TEST**	
19		3rd Week	11,12,15,16	Cooling System and lubrication System	Wet and dry sump, Components used, oil pump, oiliness, oil filters,oil coolers, crankcase ventilationcharacteristics, classification and service ratings of lubricating oil, additives for Lubricants.	
20		4th Week	18,19,22,23		**REVISION**	
21		5th Week	25,26		**REVISION**	

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LESSON PLAN

Name of Teacher :- Sh. Ravi Sankhyan **Subject:** Tractor & Farm Equipment. **Class:** 4th Semester Automobile Engg.

S. No.	Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
1	JANUARY	5th Week	27,28	Tractor and Tractor Theory	Classification of tractors, main tractor assemblies, functions on farm tractors, types of engine used, Horse power requirement, human factor in tractor design	
2		1st Week	2,3,4		Prominent Indian makes tractors, specifications, selection, maintenance and operation of tractors.	
3		2nd Week	9,10,11		Tractor Theory: Basics trends in tractor design, forces acting on a tractor on move, parallel pull and rolling resistance,tractor stability and weight distribution.	
4	FEBRUARY	3rd Week	16,17,18	Hydraulic System and Tractor Chassis	Functions of hydraulic system, hydraulic components, and methods of attaching implements classification of hydraulic controls for hitches, integral hitch system, three point hitches, and draft control system.	
5		4th Week	23,24,25		Tractor Chassis: Salient features of engine, clutch, power transmission, final drive, brakes and steeping of Indian tractors.	
6		1st Week	2,3		Supplementary System Power take off shaft, draw bar working, belt pulley, tractor control.	
7		2nd Week	9,10,11	Tractor Wheels and Tyres	Salient features of wheels and tyres, specifications of wheels and tyres	
8	MARCH	3rd Week	16,17,18		dual versus tandom tyres, tread design, effect of tyre inflation.	
9		4th Week	23,24,25	Agricultural Equipment	Types of agriculture equipment, trailer and mounted types	
10		5th Week	30,31,		description and working principles of ploughs, single plough, disc plough, tiller	
11	APRIL	1st Week	1		Interior Fittingcovers/mats, decoration, electrical fittings.	
13		2nd Week	6,7,8		cultivator, reaper, winnowers, binder, thrasher	
14		3rd Week	13		pumps, sprayers and attachments.	
15		4th Week	20,21,22	Repair and Maintenance	Faults and their rectification in tractor and farm equipment.	
16		5th Week	27,28,29		Faults and their rectification in tractor and farm equipment.	
17		2nd Week	4,5,6		**HOUSE TEST**	
18	MAY	3rd Week		Repair and Maintenance	Faults and their rectification in tractor and farm equipment.	
19		4th Week	18,19,20		Faults and their rectification in tractor and farm equipment.	
20		5th Week	25,26		**REVISION**	

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LESSON PLAN

Name of Teacher :- Jitender Kumar **Subject:** Heavy Earth Moving Machinery & Equipment **Class:** 4th Semester Automobile Engg.

S. No.	Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
1	**JANUARY**	5th Week	27,28,29	**Earth Moving Equipment**	Function, classification and constructional features of the following: Excavators, scrappers, rippers, draglines, graders.r.	
2	**FEBRUARY**	1st Week	3,4,5		Function, classification and constructional features of the following: shovels,trailers, and loader.	
3		2nd Week	10,11,12		Dozers: Types, Poclain Difference in each type of engine used, featuresof clutch, power transmission, track chains, sprockets, springs and blades	
4		3rd Week	17,18,19	**Pneumatic & Hoisting Equipment**	Brief introduction and description of hoist winch, part lines, hoisting chains, fork lift truck, cranes	
5		4th Week	24,25,26		Factors affecting selection of hoisting equipment.	
6	**MARCH**	1st Week	3,,5		Function and salient features of pneumatic tools, hammers & chippers. Air operated grease gun and spray gun.	
7		2nd Week	10,11,12	**Rollers**	Types of rollers	
8		3rd Week	17,18,19		type of engines used for rollers.	
9		4th Week	24,25,		Chassis, power transmission	
10		5th Week	31,		steering, braking and other features	
11	**APRIL**	1st Week	1,2	**Military And Combat Vehicles**	Ride and stability characteristics, power take off	
13		2nd Week	7,8,9		special implementations	
14		3rd Week	16		Special features and constructional details of MainBattle tankers.	
15		4th Week	21,22,23		Special features and constructional details of gun carriers, transport vehicles.	
16		5th Week	28,29,30		Special features and constructional details of bridge builders and communication vehicles.	
17	**MAY**	1st Week	5,6,7	**Calculations**	Calculations of hire charges for various types of earth moving equipments.	
18		2nd Week	12,13,14		**HOUSE TEST**	
19		3rd Week	19,20,21	**Calculations**	Calculations of hire charges for various types of earth moving equipments.	
20		4th Week	26,		**REVISION**	

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Lesson Plan

(Labs/Workshop)

Name of Teacher:- Rishu Dhiman	Designation:-Lecturer	Group:- G 1 & G2		
Name of Lab/Workshop:-Autoshop Practice	Class/Branch:- 4th sem/Automobile Engg.			
Sr. No.	**Description of Practical job**	**Day**	**Month**	**Remarks**
1	• Replacement and Servicing of steering system - steering gear boxes correction, adjustment of free play	30	January	
2	• Checking and adjustment of camber, caster, toe in and toe out, king pin inclination in steering geometry	31		
3	• Replacement and Servicing of suspension system - leaf springs, independent suspension – coil spring - torsion bar, telescopic shock absorber	13,	Febuary	
4	• Wheel balancing - static and dynamic.	20		
5	• Dismantling and assembly of oil pumps.	21		
6	• Flushing out water jackets, cleaning of radiator and refitting in vehicle, adjustment of fan belt tension by self-adjusting and automatic adjusting.	27		
7	• Painting job on Vehicle Components.	28	March	
8	• Dismantling and assembly of injectors.	6		
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.	7,13		
10	• Fault tracing of different sensors through engine car scanner.	20		
11	• Fault tracing of supplementary restraint system (SRS).	27		
12	• Study of ABS, traction control system model.	28		
13	• Programming through teach pendant of Industrial robot.	4	April	
14	• Setting of engine timing, valve clearance and adjustment of tappet clearance (Engine Tune-up)	10		
15	• Dismantling and assembly of fuel injection pump.	17,18		
16	• Demonstration of CRDI or MPFI System used in modern vehicle using engine scanner.	24		
17	• Servicing feed pump: mechanical pump, electrical pump and testing.	25		
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 enginedoes not start, engine fires but dies out, engine misfires, lack of power, poor acceleration, engine produces black or white smoke.	2	May	
19	• Practice of cylinder ridge removing using ridge cutter and alignment of connecting rod.	15,16		
20	• Practice of fitting cylinder liner – sleeving and de-sleeving.	22		
21	• Engine testing and finding out fuel consumption, Engine output and efficiency using engine test rig.	23		

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Govt. Polytechnic Talwar
Distt. Kangra H.P. 176096
Lesson Plan
(Labs/Workshop)

Name of Teacher:-Sh. Gaurav Puwari	Designation:-Lecturer	Group:- G 1
Name of Lab/Workshop:- Elements of Strength of Material & Fluid Laboratory	Class/Branch:- 4th sem/Automobile Engg.	

Sr. No.	Description of Practical job	Day	Month	Remarks
1	• To study tensile behavior of three different metals.	29	January	
2	• To calculate shear strength of two different metal under single and double shear.	5	Febuary	
3	• Test on a spring to find out spring constant of the spring.	12,19		
4	• Calculation of impact strength of metals by Charpy test & Izod test	26		
5	•To calculate bending strength by performing bending	5	March	
6	• To calculate torsion strength of 3 different metals by torsion test.	12		
7	•To calculate hardness of metals by Rockwell hardness test.	19		
8	•Study of a reciprocating pump.	2,9	April	
9	•Study of a centrifugal pump.	16,23		
10	•Verification of Bernoulli's theorem.	30		
11	•Measurement of flow with Venturi meter & Orifice meter	14,21	May	

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Govt. Polytechnic Talwar
Distt. Kangra H.P. 176096
Lesson Plan
(Labs/Workshop)

Name of Teacher:-Sh. Gaurav Puwari	Designation:-Lecturer			
Name of Lab/Workshop:- Elements of Strength of Material & Fluid Laboratory	Class/Branch:- 4th sem/Automobile Engg.	Group:- G 2		
Sr. No.	**Description of Practical job**	**Day**	**Month**	**Remarks**
1	• To study tensile behavior of three different metals.	30	**January**	
2	• To calculate shear strength of two different metal under single and double shear.	6	**Febuary**	
3	• Test on a spring to find out spring constant of the spring.	13,20		
4	• Calculation of impact strength of metals by Charpy test & Izod test	27		
5	•To calculate bending strength by performing bending	6	**March**	
6	• To calculate torsion strength of 3 different metals by torsion test.	13		
7	•To calculate hardness of metals by Rockwell hardness test.	20		
8	•Study of a reciprocating pump.	27,10	**April**	
9	•Study of a centrifugal pump.	17		
10	•Verification of Bernoulli's theorem.	24		
11	•Measurement of flow with Venturi meter & Orifice meter	15,22	**May**	

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Govt. Polytechnic Talwar
Distt. Kangra H.P. 176096
Lesson Plan
(Labs/Workshop)

Name of Teacher:- Sh. Jitender	**Designation:-Lecturer**	
Name of Lab/Workshop:- Driving Practice	**Class/Branch:- 4th sem/Automobile Engg.**	**Group:- G 1**

Sr. No.	Description of Practical job	Day	Month	Remarks
1	• Know your vehicles- Different elements and their functions.	30,31	January	
2	• Vehicles controls- Hand controls, Foot controls, other controls, Major/MinorControls.	6,7,13	Febuary	
3	• Pre driving checks- before sitting on the driver seats, after sitting on thedriver's seat.	20,21		
4	• Beginning to Drive • Setting of mirror, Road sense, Traffic sense, Anticipation, Judgment	27,28		
5	• Gear changing, Holding steering for controlling, Road signs &signals,Road marking	6,7	March	
6	• Traffic Signals, Starting the engine, Precautions before moving the vehicles, Precautions after moving the vehicles	13,20		
7	• Positioning on road, Parking, Stopping distance, Following Distance,Passing	27,28		
8	• Turning, Stopping, Reversing, Driver's responsibility on road, Driving techniques	4,10,17	April	
9	• Driving Practice with vehicle • Driving practice on driving simulator	18,24		
10	• Important Provisions of Motor Vehicles Act, Accidents &Safety:	25		
11	• Routine Maintenance	2,15,16,22,23	May	

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Govt. Polytechnic Talwar
Distt. Kangra H.P. 176096
Lesson Plan
(Labs/Workshop)

Name of Teacher:- Sh. Jitender	Designation:-Lecturer	Group:- G 2
Name of Lab/Workshop:- Driving Practice	Class/Branch:- 4th sem/Automobile Engg.	

Sr. No.	Description of Practical job	Day	Month	Remarks
1	• Know your vehicles- Different elements and their functions.	29,31	January	
2	• Vehicles controls- Hand controls, Foot controls, other controls, Major/MinorControls.	5,7,12	Febuary	
3	• Pre driving checks- before sitting on the driver seats, after sitting on thedriver's seat.	19,21		
4	• Beginning to Drive • Setting of mirror, Road sense, Traffic sense, Anticipation, Judgment	26,28		
5	• Gear changing, Holding steering for controlling, Road signs &signals,Road marking	5,7	March	
6	• Traffic Signals, Starting the engine, Precautions before moving the vehicles, Precautions after moving the vehicles	12,19		
7	• Positioning on road, Parking, Stopping distance, Following Distance,Passing	28		
8	• Turning, Stopping, Reversing, Driver's responsibility on road, Driving techniques	2,4,9	April	
9	• Driving Practice with vehicle • Driving practice on driving simulator	16,18,23		
10	• Important Provisions of Motor Vehicles Act, Accidents &Safety:	25,30		
11	• Routine Maintenance	2,14,16,21,23	May	

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