9. RESOURCE REQUIREMENTS

9.1 Physical Resources

9.1.1 Total Space Requirements

The total space for lecture room, tutorial rooms and drawing halls may be worked out as per AICTE norms.

9.1.2 EQUIPMENT REQUIREMENTS

Sr. No	Title and Specification	Qty	Rate in (Rs)
Laboratory : Auto Servicing Lab			
1.	Air compressor 2 stage, twin cylinder, air cooled - Reciprocating type - oil splash lubricating – Driven by 5 HP -3 phase motor starter - with a working pressure gauge, Automatic pressure switch - safety valve, non-return valve	1	20,000
2.	Garage Lift (hoist) 4 Ton capacity single post with a stroke of 1500 mm	1	21,500
3.	Grease High pressure pump with a working ratio of 50:1 built in Air Regulator mounted on a 50 Kg drum with grease hose and trigger operated control valve	1	5,000
4.	Car washing machine with 3 HP motor	1	13,000
5.	Tyre inflator with twin hose assembly and small hose assembly	1	2,500
6.	Spark plug cleaning machine	1	5,000
7.	Tyre inflator assembly (portable)	1	6,000
8.	Pneumatic tyre changer for all vehicles - wheel disks upto 17" suitable for all cars (small cars and LCV)		8,000
9.	Condemned petrol engine of light petrol vehicle such as Maruti, Ambassador/Contessa, Premier Padmini with all fittings like manifolds, components of fuel system, cooling system, lubrication system, pistons, connecting rods, crankshaft assembly etc	4 each	15,000
10.	Condemned Diesel engine of medium and heavy vehicles such as Tata, Ashoka Leyland, Matador, Mahindra Nissan with all fittings like manifolds, components of fuel system, cooling system, lubrication system, pistons, connecting rods, crank shaft, assembly etc.	4	25,000
11.	Model of motor car engine	1	10,000
12.	Model of diesel engine	1	10,000
13.	Educational car model with cut out sections	1	20,000
14.	Cut out model of a fuel system of a multi cylinder petrol engine	1	5,000

Sr. No	Title and Specification	Qty	Rate in (Rs)
15.	Cut out model of a multi cylinder diesel engine fuel system	1	5,000
16.	A.C. Mechanical fuel pump units	2 each	500
17.	S.U. Electrical fuel pump units	2 each	500
18.	Solex carburettor	2 each	600
19.	Maruti Carburettor	2 each	600
20.	Distributor type fuel pump	2 each	600
21.	Motor and scooter carburettor	2 each	600
22.	Condemned fuel injection pumps as a 6 cylinder engine with all fittings	2	2,500
23.	Condemned chassis frame of any light motor vehicle (Ambassador car/Maruti/Premier Padmini)	1	5,000
24.	Condemned chassis frame of heavy motor vehicle (Tata/ Ashoka Leyland)	1	10,000
25.	Condemned Tractor with engine, clutch, gear box and other standard mountings	1	10,000
26.	Sectioned models of a) Different types of pistons mounted in a board b) Different type of piston rings mounted on a board c) Different types of piston pins mounted on a board d) Different types of connecting rods mounted on a board e) Different types of oil pumps mounted on a board f) Water pump mounted on a board g) Different types of carburettors mounted on a board	 1 1 1 1 1 1 1	 2,000 500 1,000 2,000 2,000 500 2,000
27.	Sectioned working model of a single cylinder two stroke petrol engine	1	1,000
28.	Sectioned working model of single cylinder two stroke diesel engine	1	1,000
29.	Sectioned working model of a single cylinder four stroke diesel engine	1	1,000
30.	Sectioned working model of a single cylinder four stroke petrol engine fitted with ignition system Hand Operated Motor Operated	 1 1	 4,000 6,000
31.	Sectioned model of a shock absorber mounted on a board	1	500
32.	Sectioned model of a Radiator	1	500
33.	Sectioned model of a Wankel engine (working)	1	1,000
34.	Sectioned models of a. Self starter b. Dynamo c. Alternator	1 each	50,000

	d. Spark plug e. Ignition coil f. Speedometer g. Distributor h. Complete coil ignition system of a 4 cylinder engine fitted to a board i. Magneto ignition system of a single cylinder engine fitted to a board j. Horn circuit fitted to a board k. Complete electrical system with ignition, starter, lighting system mounted on a board l. Transmission with a Torque converter with Automatic Transmission		
35.	Sectioned model of a scooter engine (any one type)	1	8,000
36.	Sectioned model of a motor cycle engine (any one type)	1	10,000
37.	Open end spanner 3 mm to 32 mm (set of 12 pcs)	4 sets	400
38.	Double ended spanner 3 mm to 32 mm (one set of 12 pcs)	4 sets	500
39.	Ring spanner, off set, 3 mm to 32 mm (complete set)	4 sets	500
40.	Socket set with reversible ratchet (complete set)	2 sets	2,000
41.	Adjustable spanner 250 mm long	2	200
42.	Torque wrench (dia type)	2	400
43.	Pipe wrench 300 mm size	2	200
44.	Screw driver, plastic handle 100 mm long	4	25
45.	Screw driver, Plastic handle 150 mm long	2	30
46.	Screw driver, plastic handle 200 mm long	2	40
47.	Screw driver, Phillip type plastic handle 3mm lip, 100 mm long	2	30
48.	Screw driver, Phillip type plastic handle 6 mm lip, 150 mm long	2	45
49.	Insulated electrician screw driver 150 mm long	1	40
50.	Combination (engineers') plier insulated 150 mm long	2	50
51.	Long - nose plier insulated, 150 mm long	2	80
52.	Self-grip, flat nose plier	1	100
53.	Allen key set, 1.5 mm to 12.4 mm sizes	2	200
54.	Round file, fine, double cut 150 mm long	2	75
55.	Steel rule 300 mm long	4	150
56.	Wire brush	4	50
57.	Scraper, flat blade, 150 mm long	4	100
58.	Scraper, angular blade, removable type 60 mm	2	100
59.	Twist drills set(3 mm to 15 mm)	2	500
60.	Steel measuring tape, 2 metres graduated in mm	2	100
61.	Tap set, 3 mm to 16 mm with drill set to match tap sizes	2	500
62.	Work bench	2	2,500
63.	Bench vice, 120 mm Jaw	2	1,500
64.	Digital tachometer to read up to 10,000 rpm	1	1,000
65.	Bearing puller	2	500

Sr. No.	Title and Specification	Qty	Rate in (Rs)
66.	Feeler gauge, 0.05 mm to 1.5 mm	1	75
67.	Ball pein hammer (wooden handle) about 0.5 kg weight	2	30
68.	Ball pein hammer (wooden handle) about 250 gm weight	2	30
69.	Plastic hammer about 300 gms weight	2	45
70.	Wooden hammer (Mallet)	2	30
71.	Rubber hammer about 500 kg weight	2	40
72.	Plug spanner	4	30
73.	Hacksaw, metal frame, adjustable type upto 300 mm	2	74
74.	Flat file, double cut rough, 200 mm long	2	75
75.	Flat file, smooth, double cut, 150 mm long	2	75
76.	Half round file, medium, double cut, 150 mm long	2	75
77.	Square file, smooth, double cut, 150 mm long	2	75
78.	Garage tool kit containing a. Piston ring compressor, 60 mm to 125 mm double bend b. Piston ring expander, 50 mm to 125 mm c. Piston groove cleaner with cutter d. Piston ring file e. Valve lifter (c-type) f. Valve lifter (screw type) g. Brake shoe spring plier	1 set	10,000
79.	Complete tool kit for car and scooter	1 set	5,000
80.	Automobile body repair tool kit	1 set	5,000
81.	Audio visual equipment 1. Overhead projector with film slide adjustment with roll film 2. Video Cassette Player(VCP) 3. Colour TV (if not available in the college)	 1 1 1	 10,000 20,000 20,000
82.	Fuel injectors of different types (single hole, multi hole, pintax, pintle type) each type minimum one No	4	500
83.	Working sectioned model of a single plate clutch	1	1,000
84.	Working sectioned model of a multiplate clutch	2	1,500
85.	Condemned multiple clutch unit with all parts	2	2,000
86.	Sectioned working model of a sliding mesh gear box	1	1,500
87.	Condemned sliding mesh gear box	2	3,000
88.	Sanctioned working model of a constant mesh gear box	1	2,000
89.	Condemned constant mesh gear box	2	2,500
90.	Sectioned working model of synchro-mesh gear box	1	2,500
91.	Condemned synchromesh gear box	2	3,000
92.	Working model of a steering system of an automobile	1	1,000

Sr. No.	Title and Specification	Qty	Rate in (Rs)
93.	Sectioned Model of` a. Steering gear box - Rack and pinion type - Worm and wheel type - Worm and sector type - Cam and lever type - Recirculating ball type	1 each	2,500
94.	Condemned single plate clutch	2	2,000
95.	Sectioned working model of a hydraulic braking system with four wheel cylinder fitted to four brake drums mounted on a tabular frame	1	2,500
96.	Master cylinder assembly	2	1,000
97.	Wheel cylinder with full assembly	2	1,000
98.	Cutout model of differential gear assembly	1	1,500
99.	Rear axles fitted with differential with all the parts assembled	2	5,000
100.	Cutout models of a universal joint	1	500
101.	Propeller shafts with universal joints fitted	2	1,500
102.	Sectioned model of a shock absorber - Hydraulic Telescopic type	1	1,500
103.	Telescopic type hydraulic shock absorbers	2	3,000
104.	Engine Analyzer professional work station with all accessories and built in exhaust gas analyzer 1. Switching 115/230 VAC $\pm$ 10% 2. Overall dimensions 61" Height x 39" width 3. Boom height approximately 80" 4. Boom length approximately 54"	1	8,00,000
105.	Microprocessor wheel balancing machine with all accessories 1. Monophase power supply, 220 Volts, 0.11 KW 2. Balancing accuracy $\pm$ 1 g 3. Rim diameter from 10" to 24" 4. Rim width from 1.5" to 20" 5. Maximum wheel weight 65 kgs.	1	1,00,000
106.	4 wheel alignment system with all accessories Power supply 50/60 Hz, 350 Watt single-phase motor. Dimensions: 78 cm, Depth 74 cm, Weight 231 kgs	1	5-7 lacs
107.	Diesel smoke Tester with all accessories 1. Power requirement 220/240 Volt, AC 50/60 HZ 2. Operating temperature 2 to 55 degree C 3. Warm-up time less than 15 minutes 4. Response time - less than 5 second to sample reporting 5. Accuracy $\pm$ 1%, full scale repeatability + 0.5% 6. Bench Head weight 9.1 kg 7. Effective Cell path length 43 cms 8.	1	70,000

Sr. No.	Title and Specification	Qty	Rate in (Rs)
108.	Roller Brake Tester for cars and Vans upto 3 to 5 tons axle road with all accessories Technical Data 1. Electronic strain gauge measuring system 2. Automatic slip cut-out and automatic re-start 3. Automatic stop after leaving the test stand 4. Drive motors-2 x 3 KW 5. Axle load - 3 to 5 T 6. Maximum track - 2200 mm 7. Minimum track - 780 mm 8. Roller diameter - 202 mm 9. Roller friction - 0.9, value for steel and plastic 10. Roller centre distances 400 mm 11. Chassis dimensions H 240 x W 680 x L 2320 mm 12. Test Speed 4.5 Km/h	1	7,00,000
109.	Suspension Tester (with all accessories) Technical Data 1. System-electric pneumatic 2. Max. shearing force-4000 N 3. Electrical steering-220V- 24 V/3V 4. Max. axle load - 2500 kg 5. Compressed air connections 5-10 bar 6. Ram height - 45 mm 7. Dimensions - 600 mm x 720 mm x 76 mm	1	1,40,000
110.	Compression Tester-Suitable for 4 to 6 cylinder petrol engine with flexible nose adopters	1	1,000
111.	Compression tester for diesel engines with control knob	1	1,500
112.	Engine performance gauge/vacuum gauge with suitable adopters	1	1,500
113.	Portable exhaust gas analyzer (Electronic types)	1	15,000
114.	Portable exhaust gas analyzer	1	10,000
115.	Spring testing instrument for valve springs, clutch springs and other compression springs 100 kg capacity and upto 105 mm length	1	8,000
116.	Spray painting unit with container 0.5 litre capacity single cylinder - air compressor - reservoir - air pressure gauge with 25' air hose	1	20,000
117.	Decarbonizing kit with various sizes and shapes of wire brushes suitable to operate with a hand drilling gun.	1	5,000
118.	Hydraulic mobile crane 2 tons capacity	1	8,000
119.	Chain pulley block, 1 ton	1	15,000
120	Engine prop's for servicing (4' x 7/2' x 3')with swivelling stand and rollers	2	4,000

Sr. No.	Title and Specification	Qty	Rate in (Rs)
121.	Automatic Transmission with feedback sensors		20,000
122.	Pneumatic suspension for Trucks		20,000
123.	Creeper roller – Trolley 7/2'x5/4'x3"	2	1,500
Laboratory : Auto Electrical Lab			
1.	Starter test bench to test starter under light run, partial torque, and lock torque condition	1	30,000
2.	Dynamo/Alternator/Regulator test bench for automobile range	1	30,000
3.	Growler and Armature tester with prode testing attachment	2	4,500
4.	Universal puller for auto electrical purpose	3	6,000
5.	Pole shoe screw driver for a starter and Generator (Automotive Range)	3	6,000
6.	Volt Ohm Tester(0-25V),(0-6 ohms)	2	2,400
7.	Volt-Amp Tester(0-30V)(0.20A)	2	2,000
8.	Alternator Regulator Tester for testing electronic Regulator (Automobile Range)	1	1,200
9.	Head light testing equipment (for testing LMV and HMV)	1	40,000
10.	Battery charger (6-36 Volts, 0 to 10 amp.)	1	6,000
11.	Cell tester 12-0-12 watt type	3	1,500
12.	Hydrometers	2	200
13.	Neon Timing light (ignition timing) Battery 12V, 6V	2	3,000
14.	Cadmium stick tester (Battery tester)	1	3,000
Laboratory : Auto Machine Shop			
1.	Crank shaft Grinder	1	1,50,000
2.	Cylinder Boring machine (Vertical) capacity: 40 x 200 mm Max. Boring depth 610 mm	1	30,000
3.	Honing machine - vertical Beam type	1	10,000
4.	Valve grinding and facing machine	1	35,000
5.	Power operated double column type hydraulic press - 10 ton capacity with motorized pump unit	1	35,000
6.	Lathe machine, centre lathe General type, swing over bed 450 mm, swing in gap 70 mm, admit between centres 555 mm, Power of motor 3 HP, 3 phase, 440 V with accessories	1	1,50,000
7.	Brake drum skimming lathe	1	65,000
8.	Cylinder head surface grinder Table model	1	35,000
9.	Connecting rod aligner to check a maximum bore of Big end 80 mm and Minimum 40 mm with suitable accessories	1	13,000
10.	Fuel pump calibration machine test F.I.P of all type of vehicles, with accessories	1	3,75,000
11.	Injector Tester complete with calibrating gauge 0.400 kg/cm	1	3,000

Sr. No.	Title and Specification	Qty	Rate in (Rs)
12.	Valve seat cutters set	1	1,500
13.	Cylinder Bore gauge - 35-60, 50-150 mm cylinder dia gauge with Recording spindle of different sizes with all standard accessories with dial accuracy of 0.0001 mm, range 100-250 mm	1 Set	30,000
14.	Injector cleaning unit/kit	1	10,000
15.	Drilling machine with suitable drill stand	1	6,500
16.	Cylinder ridge Remover Three Jaw self expanding type with 0.025 mm divisions, sizes 50 mm to 150 mm	1	2,500
17.	Connecting rod alignment setting equipment	1	8,000
18.	Sleeving and Desleeving tool	1	3,000
19.	Nozzle grinding lapping machine	1	35,000
20.	Nipple forming tool and pipe bending tool - Range Pipe dia from 3mm to 20 mm	1	1,500
21.	Brake shoe – rivetting and derivetting machine	1	20,000
22.	Brake doctor	1	25,000
For Driving Practice			
1.	Car Ambassador, Premier/Maruti/Matador Van (One new and one second hand)	1	3,00,000
2.	Two wheeler Moped/Scooter/Motor cycle (One new and one second hand)	1+1	60,000
3.	Four Wheelers - Jeep/Truck Petrol/Diesel (one new and one second hand)	1+1	3,00,000
4.	Tractor Escort/Massey Ferguson with trailer (old)	1	2,00,000
Applied Mechanics Laboratory			
1.	Apparatus for - Verification of law of polygon of forces - Jib Crane - Simply supported Beam for finding reactions - Inclined plane - Screw Jack - Work and Worm wheel - Winch Crab(Single)	1 set	10,000
2.	Various Lamina for determination of CG	1	5,000

Sr.No	Title and Specification	Qty	Rate in (Rs)
Basic Mechanical Engineering Laboratory			
1.	Microprocessor based Universal Testing Machine	1	4,00,000
2.	Torsion Testing Machine (fully computerized)	1	2,00,000
3.	Impact Testing Machine (Izod and Charpy)	1	50,000
4.	Hardness Testing Machine (Brinell and Rockwell)	1	30,000
5.	Strain Gauges and Measuring Bridges	5	5,000
6.	Spring Testing Machine	1	40,000
7.	Deflection Meters	1	5,000
8.	Extension Meters	2	5,000
Thermal Engineering Laboratory			
1.	Thermocouple – Different combination Wires	1 each	5,000
2.	Set up for finding flash point and fire point	1	5,000
3.	Set up for finding viscosity	1	5,000
4.	Pyrometer	1	5,000
5.	Electronic gas analyzer	1	50,000
6.	Diesel engine with test set up 3, 5 and 10 KW	1	1,00,000
7.	Petrol engine Test ring consisting of a multi cylinder or standard petrol(new) engine with clutch arrangement	1	70,000
8.	Models for boiler	2	20,000
9.	Air Conditioner	1	30,000
10.	Petrol Engine 2 stoke	1	20,000
11.	Air Compressor test rig	1	20,000
CARPENTRY SHOP			
1	Work benches fitted with carpenter vices	5	20,000
2.	Circular saw grinder	1	6,000
3.	Wood cutting band saw-vertical	1	10,000
4.	Bench grinder	1	5,000
5.	Drilling machine	1	8,000
6.	Wood turning lathe	1	40,000
7.	Wood Planner	1	20,000
8.	Tool accessories measuring and marking Instruments	25	25,000
9.	Band saw blade brazing unit	1	10,000
FITTING SHOP			
1.	Work benches with vices (4 vices on each bench)	5	20,000

Sr. No.	Description	Qty	Total Price (Rs)
2.	Marking tables with scribers	4	24,000
3.	Surface plates	5	20,000
4.	Bench grinders	1	6,000
5.	Drilling machine	2	12,000
6.	Power Hacksaw	1	20,000
7.	Sheet Bending Machine	1	40,000
8.	Tool kits – taps, dies, drills	25	25,000
9.	Tool kits – chiesels, hammers, files, hacksaw	25	25,000
10.	Accessories like calipers, V blocks, height, gauges steel rules and scribers	25	25,000
SMITHY SHOP			
1.	Blacksmithy forge (with open hearths, accessories to match the forge)	20	30,000
2.	Wrought iron anvils	20	20,000
3.	Swage blocks	4	8,000
4.	Blower with accessories, motor switch etc	1	6,000
5.	Work benches with vices	2	6,000
6.	Power hammer	1	10,000
7.	Tools and accessories – hammers, swages, tongs, pokers, pullers etc	20	10,000
WELDING SHOP			
1.	Electrical welding transformer set with accessories	2	20,000
2.	Gas Cutting Unit	1	3,000
3.	Work benches with vices	3	5,000
4.	Welding generator set	1	10,000
5.	Oxy acetylene welding set with accessories	1	7,000
6.	Acetylene generating set	1	6,000
7.	Electric welder tool kit	10	10,000
8.	Projection welding machine	1	15,000
9.	Brazing equipment with accessories	1	10,000
10.	Soldering irons	3	1,000
11.	Pedestal grinder	1	10,000
12.	Metal spraying gun	1	10,000
13.	Spot welder	1	25,000
14.	TIG welding set	1	1,00,000
15.	MIG welding set	1	1,00,000
16.	Seam Welding Machine	1	70,000
17	Welding Partition Screen	5	2,500

Sr. No.	Description	Qty	Total Price (Rs)
MATERIAL SCIENCE LABORATORY			
1.	Salt bath oil fired furnace	1	30,000
2.	Salt bath electric resistance furnace	1	40,000
3.	Electric furnace muffle type	1	60,000
4.	Forced circulation tempering furnace	1	30,000
5.	Quenching tank	2	5,000
6.	Work benches	2	4,000
7.	Pyrometers	1	1,000
8	Pot for bailing out the salt	1	1,500
9.	Metallurgical microscope	1	35,000
10.	Abrasive cut off machine	1	50,000
ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY			
1.	Wattmeter	5	10,000
2.	Ammeter	5	10,000
3.	Voltmeter	5	7,500
4.	DC shunt motor	1	5,000
5.	Single phase variac	1	2,500
6.	Single phase transformer	1	5,000
7.	Resistive load	1	4,000
8.	Multimeter	1	4,000
9.	CRO	1	15,000
10.	Regulated supply	1	8,000
11.	Signal generator	1	5,000
12.	3-phase inductor motor	1	5,000
13.	3-phase variac	1	8,000
14.	DC shunt generator coupled with motor and starter	1	25,000
15.	Rheostat	2	2,500
16.	Tachometer	1	5,000
MECHANICAL WORKSHOP			
1.	Centre lathes	10	5,00,000
2.	Universal milling machine	1	1,00,000
3.	Vertical milling machine	1	75,000
4.	Shapers	2	1,00,000
5.	Planers	1	60,000
6.	Radial drilling machine	1	25,000
7.	Upright drilling machine	1	20,000
8.	Gear Shaper	1	75,000

Sr. No.	Description	Qty	Total Price (Rs)
9.	Universal cylindrical grinder	1	75,000
10.	Hydraulic surface grinder	1	50,000
11.	Tool and Cutter grinder	1	50,000
COMPUTER LABORATORY			
1.	ANSYS	1	2,00,000
2.	AutoCAD	1	50,000
3.	Computer – Pentium	11	4,00,000
4.	Mechanical Desk Top	1	50,000
5.	IDEAS	1	5,00,000
6.	Digitiser	1	50,000
7.	Plotter	1	75,000
8.	Scanner	1	1,500
9.	Printer (Laser, DMP)	2	50,000

NOTE: 1. In addition to above, laboratories in respect of physics, chemistry, computer centre etc will be required for effective implementation of the course.

2. Provision for overhead projector, TV with VCR facility slide cum strip projector, TV with VCR facility slide cum strip projector, 16 mm film projector, photocopier, PC-XT facilities, duplicating machines, drafting machines etc has also to be made.

9.1.3 Furniture Requirement

Norms and standards laid down by AICTE be followed for working out furniture requirement for this course.

9.2 Human Resources:

Weekly work schedule, annual work schedule, student teacher ratio for various group and class size, staffing pattern, work load norms, qualifications, experience and job description of teaching staff workshop staff and other administrative and supporting staff be worked out as per norms and standards laid down by the AICTE

Following are the qualifications and experience for the teaching faculty and technical staff

Qualifications	Experience
Lecturer Degree in Automobile Engineering or Degree in Mechanical Engineering with Automobile subject or equivalent	Nil
Sr. Lecturer Degree in Automobile Engineering or Degree in Mechanical Engineering with Auto Subject or equivalent	5 years experience in teaching/industry/ research at the level of lecturer or equivalent
Head of Department ME/M. Tech in Automobile Engineering or Mechanical Engineering with Automobile subject or equivalent with first class at Bachelor's level	8 years of experience in teaching/industry/ research at the level of lecturer or equivalent
Workshop Superintendent Degree in Automobile Engineering or Degree in Mechanical Engineering with Automobile Subject Or equivalent	2 years industrial experience
Instructor/Technician Diploma in Automobile Engineering or equivalent	2 years industrial experience/teaching experience
Mechanic ITI Certificate holder in Motor Mechanic	5 years industrial experience

10. RECOMMENDATIONS FOR EFFECTIVE IMPLEMENTATION OF CURRICULUM

The following recommendations are made for effective implementation of this curriculum.

a) While imparting instructions, stress should be laid on the development of practical skills in the students. For this purpose, as far as possible, classes should be conducted in the laboratories itself.

b) Industrial visits should be organized as and when required to clarify the concepts, principles and practices involved. For this purpose, time has already been provided in student centered activities

c) Extension lectures from professionals should be organized to impart instructions in specialized areas

d) There is no need of purchasing very costly equipment. Efforts may be made to establish linkages with local industrial organizations

e) Considerable stress should be laid on repair and maintenance of equipment

f) Teachers should generate competitiveness among the students for the development of professional skills.

g) Teachers should take working drawings from the industries and provide practices in reading these drawings

h) Hobby clubs and other co-curricular activities be promoted to develop creativity in the students

i) Teachers should be sent for training in the new areas incorporated in their curriculum

j) Students should be given well thought out project assignments. This can help students in developing creativity and confidence in them for gainful employment (wage and self)

A **project bank** should be developed by the Automobile Engineering Department in consultation with local industry.