



Department of Automobile Engineering	LP: AE18703 Rev. No: 00
B.E/B.Tech/M.E/M.Tech : BE- Automobile Engineering Regulation: 2018	Date: 23/07/2021
PG Specialisation : NA	
Sub. Code / Sub. Name : AE18703 VEHICLE MAINTENANCE	
Unit : I	

UNIT I : MAINTENANCE, WORKSHOP PRACTICES, SAFETY AND TOOLS

Maintenance – Need, importance, primary and secondary functions, policies, classification of maintenance work, vehicle insurance, basic problem diagnosis, automotive service procedures, Workshop operations, preparation of workshop forms, vehicle identification number. Safety – personnel, machines and equipment, vehicles, fire safety, first aid. Basic tools, special service tools, measuring instruments, condition checking of seals, gaskets and sealants.

Objective: To understand the importance and service procedure used in an automotive service station.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Maintenance – Need, importance, primary and secondary functions	1, 2	PPT
2	Policies, Classification of maintenance work	1, 2	PPT
3	Vehicle insurance, Basic problem diagnosis	1, 3	PPT
4	Automotive service procedures	2,4	PPT
5	Workshop operations, Preparation of workshop forms	1,4	PPT
6	Vehicle identification number	1,4	PPT
7	Safety – personnel, machines and equipment, vehicles	1,2	PPT
8	Fire safety, First aid	4	PPT
9	Basic tools	4	
10	Special service tools		
11	Measuring instruments		
12	Condition checking of seals, gaskets and sealants		
Content beyond syllabus covered (if any):			

* Session duration: 50 minutes



Sub. Code / Sub. Name: **AE18703 VEHICLE MAINTENANCE**
Unit : **II**

UNIT II ENGINE AND ENGINE SUBSYSTEM MAINTENANCE

General engine service, dismantling of engine components, engine repair, working on the underside, front, top, ancillaries, service of basic engine parts, cooling and lubricating system, fuel system, intake and exhaust system, electrical system, electronic fuel injection and engine management service, fault diagnosis, servicing emission controls.

Objective: To understand the procedure involved in the service and maintenance of automotive engine and sub assemblies.

Session No *	Topics to be covered	Ref	Teaching Aids
13	General engine service	1,4	PPT
14	Dismantling of engine components, engine repair	1,4	PPT
15	Working on the underside, front, top, ancillaries	1,4	PPT
16	Service of basic engine parts	2,3	PPT
17	Service of cooling system	1,4	PPT
18	Service of lubricating system	3,4	PPT
19	Service of Fuel system	3,4	PPT
20	Service of Intake and exhaust system	2,4	PPT
21	Service of Electrical system	2,3	PPT
22	Service of Electronic fuel injection		
23	Engine management service		
24	Fault diagnosis- servicing emission controls		

Content beyond syllabus covered (if any):

* Session duration: 50 minutes



Sub. Code / Sub. Name: **AE18703 VEHICLE MAINTENANCE**
Unit : **III**

UNIT III TRANSMISSION AND DRIVELINE MAINTENANCE

Clutch- general checks, adjustment and service, dismantling, identifying, checking and reassembling transmission, transaxle, road testing, removing and replacing propeller shaft, servicing of cross and yoke joint and constant velocity joints, rear axle service points, removing axle shaft and bearings, servicing differential assemblies, fault diagnosis, maintenance and service of automatic transmission.

Objective: To familiarize the general checks, adjustment and service involved in power transmission system.

Session No *	Topics to be covered	Ref	Teaching Aids
25	Clutch - general checks	2,4	PPT
26	Clutch - adjustment and service	1,4	PPT
27	Dismantling, identifying, checking and reassembling transmission	1,4	PPT
28	Dismantling, identifying, checking and reassembling transaxle	3,4	PPT
29	Road testing	2,4	PPT
30	Removing and replacing propeller shaft	2,4	PPT
31	Servicing of cross and yoke joint	3,4	PPT
32	Servicing of constant velocity joints	3,4	PPT
33	Rear axle service points	3,4	PPT
34	Removing axle shaft and bearings servicing		
35	Servicing differential assemblies, fault diagnosis		
36	Maintenance and service of automatic transmission		

Content beyond syllabus covered (if any):

* Session duration: 50 minutes



Sub. Code / Sub. Name: **AE18703 VEHICLE MAINTENANCE**
Unit : **IV**

UNIT IV STEERING, BRAKE, SUSPENSION, WHEEL MAINTENANCE

Inspection, maintenance and service of steering linkage, steering column, Rack and pinion steering, Recirculating ball steering service- Worm type steering, power steering system. Drum brake, Disc brake, Parking brake. Bleeding of brakes. Inspection, maintenance and service of Mc person strut, coil spring, leaf spring, shock absorbers. Inspection, maintenance and service of tyres and wheels, Tyre rotation, Tyre wear indicator, Wheel balancing.

Objective: To study the inspection, maintenance and service procedure of automotive chassis systems.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Inspection, maintenance and service of steering linkage, steering column, Rack and pinion steering	3,4	PPT
38	Service of recirculating ball steering and Worm type steering	3,4	PPT
39	Service of power steering system	3,4	PPT
40	Service of drum brake	3,4	PPT
41	Service of disc brake	3,4	PPT
42	Service of parking brake	3,4	PPT
43	Bleeding of brakes	3,4	PPT
44	Inspection, maintenance and service of Mc person strut, coil spring suspension	3,4	PPT
45	Inspection, maintenance and service of leaf spring, shock absorbers	3,4	PPT
46	Inspection, maintenance and service of tyres and wheels		
47	Tyre rotation, Tyre wear indicator		
48	Wheel balancing		

Content beyond syllabus covered (if any):

* Session duration: 50 minutes



Sub. Code / Sub. Name: **AE18703 VEHICLE MAINTENANCE**
Unit : **V**

UNIT V AUTO ELECTRICAL AND AIR CONDITIONING MAINTENANCE

Starting system, charging system and body electrical, fault diagnosis using scan tools, Theory of automotive air-conditioning refrigerants, maintenance of air conditioning parts like compressor, condenser, expansion valve, and evaporator, replacement of hoses, leak detection, AC Charging, fault diagnosis.

Objective: To understand the fault diagnosis in automotive electrical and air conditioning system.

Session No *	Topics to be covered	Ref	Teaching Aids
49	Maintenance of starting system	3,4	PPT
50	Maintenance of the charging system	3,4	PPT
51	Maintenance of vehicle body	3,4	PPT
52	Maintenance of electrical systems	3,4	PPT
53	Fault diagnosis using Scan tools	3,4	PPT
54	Fault diagnosis using Scan tools	3,4	PPT
55	Theory of automotive air-conditioning refrigerants	3,4	PPT
56	Maintenance of air conditioning parts like compressor, condenser	3,4	PPT
57	Maintenance of expansion valve, evaporator	3,4	PPT
58	Replacement of hoses- Leak detection		
59	Maintenance of AC Charging		
60	Fault diagnosis		

Content beyond syllabus covered (if any):

* Session duration: 50 minutes



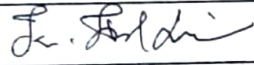


Sub. Code / Sub. Name: AE18703 VEHICLE MAINTENANCE

TEXTBOOKS:

1. Jigar A. Doshi, Dhruv U. Panchal, Jayesh P. Maniar, "Vehicle Maintenance and Garage Practice", Eastern Economy Edition, PHI Learning Private Limited, 2014.
2. William M. Metts, "Vehicle Maintenance Book", Independently Published, 2019.

REFERENCES:

1. Ed May, "Automotive Mechanics - Volume One", Mc Graw Hill Publications, 2003
2. Ed May, "Automotive Mechanics - Volume Two", Mc Graw Hill Publications, 2003.
3. Newton Steeds and Garret, "Motor Vehicle", 13th Edition, Butterworth, London, 2001.
4. Vehicle Service Manuals of Reputed Manufacturers.
5. William H Crouse, Donald L Anglin, "Automotive Mechanics", 10th edition, McGraw Hill Education, 2017.

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Date	23.07.2021	23.07.2021
Remarks *:	Same lesson plan is followed for the academic year 2022-23  25/07/22	
Remarks *:	The Same lesson Plan can be followed for the Academic Year 2023-24  12/07/23	