

**B.E Semester: 7 Automobile Engineering**  
**Subject Name: Vehicle Maintenance & Garage Practice (AE702-N)**

**A. Course Objective:**

- To present a problem oriented in depth knowledge of Vehicle Maintenance & Garage Practice.
- To address the underlying concepts and methods behind Vehicle Maintenance & Garage Practice.

**B. Teaching / Examination Scheme:**

Teaching Scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
4	0	2	6	5	3	70	30	20	30	150

**C. Detailed Syllabus:**

Unit No.	Details
1	<b>Vehicular Maintenance Practices</b> Types of maintenance schedules (daily, weekly and monthly) in respect of the Scheduled maintenance chart shown in service book of a vehicle, Break down, Preventive, Predictive maintenance practices, maintaining interior cleaning, maintaining exterior cleaning.
2	<b>Service Station Operations</b> Types of service stations, Workshop layout & its elements, Workshop documents and record, operations and procedures of workshop activities
3	<b>Engine Maintenance – Repair and Overhauling</b> Dismantling of engine components and cleaning, cleaning methods, visual and dimensional inspections, minor and major reconditioning of various components, reconditioning methods, engine assembly, special tools used for maintenance overhauling, engine tune up, including modern engines.
4	<b>Chassis Maintenance-Repair and Overhauling</b> Mechanical and automobile clutch, fluid flywheel, torque converter, automatic transmission and gear box, servicing and maintenance. Maintenance servicing of propeller shaft and differential system. Maintenance servicing of suspension systems. Brake systems, types and servicing techniques. Steering systems, overhauling and maintenance. Wheel alignment, computerized alignment and wheel balancing.
5	<b>Electrical and Electronic System Maintenance-Servicing and Repairs</b> Testing methods for checking electrical and electronic components, checking battery, starter motor, charging systems, DC generator and alternator, ignitions system, lighting systems. Fault diagnosis and maintenance of modern electronic controls, checking and servicing of dash board instruments.

6	<b>Maintenance of Fuel System, Cooling Systems, Lubrication System and Vehicle Body</b> Servicing and maintenance of fuel system of different types of vehicles, calibration and tuning of engine for optimum fuel supply. Cooling systems, water pump, radiator, thermostat, anticorrosion and antifreeze additives. Lubrication maintenance, lubricating oil changing, greasing of parts. Vehicle body maintenance, minor and major repairs. Door locks and window glass actuating system maintenance.
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<b>Total hours (Theory):64</b>
<b>Total hours (Practical):32</b>
<b>Total hours:96</b>

#### D. Lesson Planning:

Sr. No.	Date/Week	Unit	Weight age	Topic No
1	1 <sup>st</sup> ,2 <sup>nd</sup> ,3 <sup>rd</sup>	Unit 1	20%	1,2
2	4 <sup>th</sup> ,5 <sup>th</sup> ,6 <sup>th</sup>	Unit 2	15%	3
3	7 <sup>th</sup> , 8 <sup>th</sup> ,9 <sup>th</sup>	Unit 3	20%	4
4	10 <sup>th</sup> . 11 <sup>th</sup> . 12 <sup>th</sup>	Unit 4	20%	5
5	13 <sup>th</sup> , 14 <sup>th</sup> ,15 <sup>th</sup> ,16 <sup>th</sup>	Unit 5	25%	6

#### E. Instructional Method & Pedagogy

1	At the start of course, the course delivery pattern , prerequisite of the subject will be discussed
2	Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal Weight age should be given to all topics while teaching and conduction of all examinations.
3	Attendance is compulsory in lectures and laboratory, which may carries five marks in overall evaluation.
4	One/Two internal exams may be conducted and total/average/best of the same may be converted toequivalent of 30 marks as a part of internal theory evaluation.
5	Assignment based on course content will be given to the student for each unit/topic and will be evaluated at regular interval. It may carry an importance of ten marks in the overall internal evaluation.
6	Surprise tests/Quizzes/Seminar/Tutorial may be conducted and having share of five marks in the overallinternal evaluation.
7	The course includes a laboratory, where students have an opportunity to build an appreciation for theconcept being taught in lectures. Suggested list of experiment is given below

#### F. List of Practical:

1	Study and layout of an automobile repair, service and maintenance shop.
2	Study and preparation of different statements/records required for the repair and maintenance works.
3	Cylinder reboring – checking the cylinder bore, Setting the tool and reboring.
4	Valve grinding, valve lapping - Setting the valve angle, grinding and lapping and checking for valve leakage.
5	Calibration of fuel injection pump.
6	Minor and major tune up of gasoline and diesel engines.

7	Study and checking of wheel alignment - testing of camber, caster.
8	Testing kingpin inclination, toe-in and toe-out.
9	Brake adjustment and Brake bleeding.
10	Simple tinkering, soldering works of body panels, study of door lock and window glass rising mechanisms.
11	Battery testing and maintenance.

#### G. Students Learning Outcomes:

1	The student can identify different areas of Vehicle Maintenance & Garage Practice .
2	Can find the applications of all the areas in day to day life.

#### H. Text Books & Reference Books:

1	Automotive mechanics by Crouse,TMH
2	Automobile system by Anil Chikara
3	K.K.Ramlingan, Automobile Engineering, SciTech Publication
4	Joseph Heitner, Automechanics, East West Press
5	Pattern and Donald, Automotive Service Basics, Pearson Publications
6	Vehicle Service book
7	Vehicle Workshop Manual
8	Automobile technology by Dr.N.k.giri
9	K.M.Gupta vol-1-Automobile Engineering-umesh publications.