

B.E Semester: VII
Automobile Engineering
Subject Name: Vehicle maintenance (AE704)

Course Objective:

- To present a problem oriented in depth knowledge of Vehicle maintenance.
- To address the underlying concepts and methods behind Vehicle maintenance.

Teaching / Examination Scheme:

SUBJECT		Teaching Scheme				Total Credit	Evaluation Scheme					Total Marks
CODE	NAME	L	T	P	Total		THEORY		IE	CIA	PR. / VIVA	
		Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	
AE704	Vehicle maintenance	3	0	2	5	4	3	70	30	20	30	150

Detailed Syllabus:

Topic no	Details
1	Vehicular Maintenance Practices: 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	ENGINE MAINTENANCE – REPAIR AND OVERHAULING 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.
3	CHASSIS MAINTENANCE - REPAIR AND OVERHAULING 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.
4	ELECTRICAL AND ELECTRONIC SYSTEM MAINTENANCE – SERVICING AND REPAIRS 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.
5	MAINTENANCE OF FUEL SYSTEM, COOLING SYSTEMS, LUBRICATION SYSTEM AND VEHICLE BODY 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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Lesson Planning:

Sr. No.	Date/Week	Unit No.	% Weightage	Topic No
1	1 st , 2 ^{ed} , 3 ^{ed}	Unit 1	20 % .	1
2	4 th , 5 th , 6 th	Unit 2	20 %	2
3	7 th , 8 th , 9 th	Unit 3	20 %	3
4	10 th , 11 th , 12 th	Unit 4	20 %	4
5	13 th , 14 th , 15 th	Unit 5	20 %	5

Instructional Method & Pedagogy

- At the start of course, the course delivery pattern , prerequisite of the subject will be discussed
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal weightage should be given to all topics while teaching and conduction of all examinations.
- Attendance is compulsory in lectures and laboratory, which may carries five marks in overall evaluation.
- One/Two internal exams may be conducted and total/average/best of the same may be converted to equivalent of 30 marks as a part of internal theory evaluation.
- 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.
- Surprise tests/Quizzes/Seminar/Tutorial may be conducted and having share of five marks in the overall internal evaluation.
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concept being taught in lectures.
- Experiments shall be performed in the laboratory related to course contents.
 - Study and layout of an automobile repair, service and maintenance shop.
 - Study and preparation of different statements/records required for the repair and maintenance works..
 - Cylinder reboring – checking the cylinder bore, Setting the tool and reboring.
 - Valve grinding, valve lapping - Setting the valve angle, grinding and lapping and checking for valve leakage
 - Calibration of fuel injection pump.
 - Minor and major tune up of gasoline and diesel engines.
 - Study and checking of wheel alignment - testing of camber, caster.
 - Testing kingpin inclination, toe-in and toe-out
 - Brake adjustment and Brake bleeding.
 - Simple tinkering, soldering works of body panels, study of door lock and window glass rising mechanisms.
 - Battery testing and maintenance.

Practical / Oral: The candidate shall be examined on the basis of term-work.

Students Learning Outcomes:

- The student can identify different areas of Vehicle maintenance.
- Can find the applications of all the areas in day to day life.

Recommended Study Materials:

Text & Reference Books:

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

