Syllabus for Diploma Engineering

Automobile Engineering

Semester – IV

Subject Name: Vehicle Body Engineering

Subject Code: 09AE0404

Diploma branch in which subject is offered:- Automobile Engineering

Objective:

As a supervisor or self employed, the diploma graduate is supposed to fabricate and repair various vehicle bodies. The knowledge and skills of vehicle body technology is required to manage vehicle body fabrication and repair. In the automotive field auto body repair is experiencing a faster growth than any other service area. Collision repair plus the normal up-keep of the automobile body requires increasing numbers of well trained auto body technicians.This course is designed to provide students the required level of knowledge and skills of vehicle body technology.

Credits Earned: 4

Course Outcomes:

After learning the course the students should be able to:

- Classify vehicle body according to body shape
- Use various hand & power tools require for vehicle body repair & alignment
- Describe various painting and repainting methods
- Identify different paint defects, its causes and corrections
- Identify and describe various materials used in construction of vehicle body parts/components
- Describe repair procedure of vehicle body damages
- Describe body insulation and other vehicle body services such as glass and door service etc.

Pre-requisite of course: Elements of Mechanical Engineering

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE	IA	CSE	Viva	Term work	
3	0	2	4	50	30	20	25	25	150

Contents:

Sr.No.	Topics	Teaching hrs.	Weightage
1	**Development and construction of vehicle body** Introduction to chassis, frame and body, Methods of construction, Basic body construction & its classification, Integral body construction, Design feature of integral body-frame (safety body cell & crumple zone), General information-body repairs, Driver seat & drivers visibility, Space & safety in vehicle	3	7
2	**Body repair tools and shop equipments** Basic hand tools, Power tools, Body shop equipments, Frame & underbody repair tools & equipments, Electronic straightening & measurement system, Safety Measures	3	7
3	**Minor Body Repairs** Repair with washer welder, repair with hammer and dolly, panel filling with plastic body and filler-forming with solder, Panel shrinking (drawing operation), Repairing of rusted body panels	8	19
4	**Major Body Repairs** Diagnosis of damage, Front end Collision, Rear end Collision, Side swipe collision, Roll-over damage, Fibre glass repairs & replacement, Body aligning, Panel replacement.	10	24
5	**Miscellaneous Body services** Interior trim and upholstry, Glass and door service, Body insulation and sealing, Exterior trim	8	19
6	**Body Materials** Characteristics of Sheet Metal, Types of Glass, Types of Resins, Plastic parts, Composite materials, GRP (glass reinforced plastic) , FRP (fiber reinforced plastic),	4	10
7	**Painting & Refinishing** Paint types & characteristics, Painting methods &techniques a. Spraying b. Immersion, Painting equipments, Painting procedure with surface preparation, Refinishing facilities, Refinishing equipments and tools, Different types of paint defects occurring during painting & immediately after drying, their causes & remedies	6	14

References:

1. Automobile Engineering body Repair Technique Vol 4 by Anil Chhikaara
2. Automobile Engineering paint Technique Vol 5 by Anil Chhikaara
3. Vehicle body engineering by Gilcs J Pawlowski
4. Harry T. Chudy by Automotive Refinishing
5. Vehicle body layout and analysis by John Fanton
6. The Principles of Auto body repairing and Repainting by Alexander Tait, Andre,G. Deroche., Necholas.N. Hilde brand

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyse	Evaluate	Create
35%	40%	25%	0	0	0

Suggested List of Experiments:

1. Observe & prepare report of various bodies repairing work
2. Demonstrate use of different tools required for body repairing work
3. Demonstrate safety measures in body building shop
4. Demonstrate works carried out for minor repairing
5. Observe and record work carries out for major repairing
6. Demonstrate various joining process
7. Demonstrate upholstery works.
8. Demonstrate glasses and door fitting and repairing process
9. Demonstrate the use of various paints and coating used for vehicles
10. Demonstrate finishing process

Instructional Method:

a) Lecture cum discussion using animation and videos.
b) Visit of authorized workshop for body repairing works.