

GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Diploma Engineering			Branch	Automobile Engineering				
Semester	IV			Version	1.0.0.0				
Effective from Academic Year		2019-20		Effective for the batch Admitted in		June 2018			
Subject code	1AU2401	Subject Name		VEHICLE BODY ENGINEERING					
Teaching scheme				Examination scheme (Marks)					
(Per week)	Lecture(DT)		Practical(Lab.)		Total	CE	SEE	Total	
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50

Pre-requisites:

Course Learning Outcomes:

The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes:

- Classify vehicle body according to body shape
- Use various hand & power tools require for vehicle body repair & alignment
- Describe repair procedure of vehicle body damages
- Describe various painting and repainting methods
- Identify different paint defects, its causes and corrections

Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hrs	
UNIT – I Development and construction of vehicle body	1a.	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) Driver seat & drivers visibility General information-body repairs Space & safety in vehicle Introduction to chassis, frame and body	1.1a	06	4
	1b.		Differentiate chassis, frame & body		
	1c.				
	1d.				
	1e.		1.2b Describe classification according to body shape (car & bus)		
	1f.				
	1g.				
	1h.		1.3c Explain fundamental body structure		
	1a.				

UNIT – II Body repair tools and shop equipments	2.1 a 2.2 b	Describe various hand & power tools require for vehicle body repair & alignment Explain safety Measures	2.1 a 2.2 b	Describe various hand & power tools require for vehicle body repair & alignment Explain safety Measures	06	4
UNIT – III Minor Body Repairs	3a. 3b. 3c. 3d. 3e.	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	3.1 a 3.2 b	Describe repair procedure of minor vehicle body damages Describe Corrosion protection	12	8
Unit– IV Major Body Repairs	4a. 4b. 4c. 4d. 4e. 4f. 4g. 4h.	Diagnosis of damage Front end Collision Rear end Collision Side swipe collision Roll-over damage Fibre glass repairs & replacement Body aligning. Panel replacement	4.1a 4.2b	Describe repair procedure of major vehicle body damages	14	10
Unit– V Miscellaneous Body services	5a. 5b. 5c. 5d.	Interior trim and upholstery Glass and door service Body insulation and sealing Exterior trim	5.1a 5.2b	Describe glass and door service Describe body insulation and other vehicle body service	8	8
Unit-VI Body Materials	6a. 6b. 6c. 6d. 6e.	Characteristics of Sheet Metal Types of Glass Types of Resins Plastic parts Composite materials GRP (glass reinforced plastic) , FRP (fiber reinforced plastic)	6.1a	Describe various materials used in vehicle body components	6	4

Unit-VII Painting & Refinishing	7a.	Paint types & characteristics	7.1a	Describe various painting	08	7
	7b.	Painting methods & techniques a. Spraying b. Immersion	7.2b	Describe Paints & painting equipment & tools		
	7c.	Painting equipments	7.3c	Describe Repainting process		
	7d.	Painting procedure with surface preparation	7.4d	Describe Paint Defects, causes & corrections		
	7e.	Refinishing facilities				
	7f.	Refinishing equipments and tools				
	7g.	Different types of paint defects occurring during painting & immediately after drying, their causes & remedies				

List of Practical (any seven)		
No.	Unit	Name of Practical
1	I	Observe & prepare report of various bodies repairing work
2	II	Demonstrate use of different tools required for body repairing work
3	II	Demonstrate safety measures in body building shop
4	III	Demonstrate works carried out for minor repairing
5	IV	Observe and record work carries out for major repairing
6	IV	Demonstrate various joining process
7	V	Demonstrate upholstery works
8	VI	Demonstrate glasses and door fitting and repairing process
9	VII	Demonstrate the use of various paints and coating used for vehicles
List of Instruments / Equipment / Trainer Board		
1	Set of hammer, dolly & spoon	
2	Washer welder equipment	
3	Four wheeler for anatomy of various vehicle parts	

List of Text Books			
No	Title of Reference Books	Authors	Publication
1	Automobile Engineering (Vol– IV) Body repair techniques	Anil Chhikara	Satya Prakation, New Delhi
2	Automobile Engineering (Vol– V) Paint Technique	Anil Chhikara	Satya Prakation, New Delhi
List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	Vehicle body engineering Century	Gilcs J Pawlowski	Century Publications ISBN
2	Automotive Refinishing	Harry T. Chudy	Prentice Hall, Inc., London
3	Vehicle body layout and Analysis	John Fanton	Mechanical Engineering Publications (1980) ISBN
4	The Haynes Automotive Body Repair & Painting Manual	Haynes	Delmar Cengage Learning; 1 edition ISBN:- 1850104794
Link of Learning Web Resource			
1	https://www.youtube.com/watch?v=gcKx2ZqhlcU		

2	https://www.youtube.com/watch?v=ORFa_iPtAeY
3	https://www.youtube.com/watch?v=t4TdwcPbEiE
4	https://www.youtube.com/watch?v=u0IjKh-dWE
5	https://www.youtube.com/watch?v=I3OIxtpWX7Y

CO'S AND PO'S MAPPING

PO'S		CO1	CO2	CO3	CO4	CO5
PO1	An ability to apply knowledge of mathematics and engineering science.	SLI	SLI	SLI	SLI	SLI
PO2	An ability to demonstrate, develop and conduct experiments, as well as to analyze and interpret data.	SUB	SLI	SLI	SLI	SLI
PO3	An ability to design a system component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.	MED	MED	SUB	MED	MED
PO4	An ability to perform with multidisciplinary teams.	MED	MED	SUB	MED	MED
PO5	Use of appropriate modern tool and application software that pertain to Automobile engineering technology systems.	NONE	SUB	MED	SUB	SLI
PO6	An ability to identify, formulates, execute and solve engineering problems.	SLI	SUB	MED	MED	MED
PO7	An ability to communicate and present effectively in both verbal and written forms.	SLI	MED	SUB	MED	MED
PO8	The broad education necessary to understand the impact of engineering solutions in global, economic, environmental and societal context.	MED	SUB	SUB	SLI	SLI
PO9	Recognition of need for self-improvement, and an ability to engage in life-long learning.	SLI	NONE	NONE	SLI	SLI
PO10	Ability to aware about the contemporary issues.	SLI	SLI	SLI	MED	MED
PO11	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	MED	MED	MED	MED	MED
PO12	Demonstrate to analyse and apply unconventional processes, automation, robotics Nanotechnology, Computer-Aided-Design & Manufacturing and knowledge in Automobile Engineering, Thermodynamics, Refrigeration & Air Conditioning and Jet Propulsion & Rocket Engineering to analyse and solve complex problems and to work professionally in such systems and plants.	SLI	MED	MED	SLI	MED