

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme		Bachelor of Technology				Branch/Spec.		Automobile Engineering	
Semester		VII				Version		1.0.0.0	
Effective from Academic Year			2020-21			Effective for the batch Admitted in			July 2017
Subject code		2AE703		Subject Name		Special Purpose Vehicle			
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	0	0	3	Theory	40	60	100
Hours	3	0	0	0	3	Practical	0	0	0
Pre-requisites:									
Automobile Systems									
Objectives of the Course:									
To introduce the concept and principle of operation of special vehicles such as:									
<ol style="list-style-type: none"> 1. Bulldozers, Ditchers and Bucket excavators 2. Farm equipments and military vehicles. 3. To have a better understanding of the application of the special types of vehicles in the excavation of earth. 									
Theory syllabus									
Unit	Content								Hrs.
1	Introduction: Classification of Special Purpose Vehicles, wheel type & track type, applications.								4
2	Principles and design considerations Study of working principles and design considerations of different systems involved such as power system, transmission, final drive, lubrication, electrical, braking, steering, pneumatic & hydraulic control circuits.								9
3	Constructional working features and instrumentation Study of different types of earth moving machinery such as rippers, Scrapers and shovels, Loaders, Excavators, Dumpers, Bulldozers, Fork Lift, JCB and Road rollers.								10
4	Tractors Classification of tractors-lay out of wheeled tractor- power transmission system- steering system - accessories of wheeled tractors- hydraulic control system- power take off unit.								6
5	Mobile Cranes Basic characteristics of truck cranes, stability and design features, control systems and safety devices.								6
6	Special purpose vehicles: Features of Oil tankers- Articulated vehicles, working -features of Ambulance, fire extinguishing vehicle and Tipper-working of Hover craft.								6
7	Ergonomic applications Human factors in special purpose vehicle design with reference to comfort, convenience and safety, effects of noise, vibration and thermal stresses on human performance. Economics of special purpose vehicle utilization.								4
Practical content									
None									
Text Books									
1	Y. Pokras and M. Tushnyakov, "Construction Equipment Operation & Maintenance", MIR, Moscow.								
2	A. Astskhov, "Truck Cranes", MIR, Moscow.								
Reference Books									
1	Hand book of Earth Moving Machinery - Central Water & Power Commission (Govt. of India)								
2	N. Rudenko, "Material Handling Equipment", M.R. Publishers.								

3	E.G. Poninson, "Motor Graders", MIR, Moscow.
ICT/ MOOCs references	
1	NIL
Course Outcomes:	
After completion of this course, student will be able to	
<ol style="list-style-type: none">1. Understand Special type of vehicles based on the need and purpose.2. Describe the working principles of special purpose vehicles3. Understand design considerations and features of special purpose vehicles.	