



Diploma branch in which subject is offered: - Automobile Engineering

Objective: The course is designed to give knowledge of various special purpose vehicles, existing systems and their applications in the present context.

Credits Earned: 4

Course Outcomes:

After learning the course, the students should be able to:

- Identify the types of special purpose vehicle, its components and attachments.
- Demonstrate the working of tractor and its components and attachments.
- Explain the working of different SPV like road roller, dumper, etc.
- Identify the types of crane and explain the difference and working of various cranes.

Pre-requisite of course: Automobile system and transmission

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	Introduction: Classification of Special Purpose Vehicles, wheel type & track type, applications.	4	10
2	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.	8	20
3	Special purpose vehicles: Study of different types of earth moving machinery such as rippers, Scrapers and shovels, Loaders, Excavators,	20	50



	Dumpers, Bulldozers, Fork Lift, JCB and Road rollers, Features of Oil tankers, Articulated vehicles, working features of Ambulance, fire extinguishing vehicle and Tipper-working of Hover craft.		
4	Mobile cranes: Basic characteristics of truck cranes, stability and design features, control systems and safety devices.	8	20

References:

a) List of Books

1. Y. Pokras and M. Tushnyakov, "Construction Equipment Operation & Maintenance", MIR, Moscow.
2. N. Rudenko, "Material Handling Equipment", M.R. Publishers.
3. David A. Day, Neal B. H. Benjamin, "Construction Equipment Guide", Wiley;
4. J.Y Wong - Theory of Ground vehicles - John Wiley and Sons

Suggested Theory distribution:

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

Suggested List of Tutorials/Experiments

1. Study of tipping mechanism of a dumper
2. Study of forklift truck
3. Study of operation of a truck crane
4. Study of technical & operational features of a tractor
5. Study of technical & operational features of a power scraper
6. Study of technical & operational features of a power hoe and shovel
7. Study of an extinguishing vehicle