

ATGE -328 Special Purpose Vehicles

(02 credits – 50 marks)

Course Outcomes:

After completion of the course, students are expected to be able to:

CO1	Describe the combat vehicles
CO2	Describe the working of stratified charged/lean burn engines
CO3	Describe the working of drive line in combat vehicles and earth moving vehicles compared with commercial vehicles
CO4	Describe the construction of farm equipments
CO5	Describe the working of power trains in heavy vehicles and able to analyze the ride characteristics of tractors

Module I: Tractors and Farm Equipments

(05 hours)

Classification and power required - Design consideration - Ride and stability characteristics power plants and transmission - Farm equipments.

Module II: Earth Moving Machines

(07 hours)

Construction and operation aspects of Bull dozers, Scrapers, Dumpers, Loaders, Mobile cranes, Road rollers, Elevators and Elevating graders. Selection criteria of prime movers for dumpers and front end rollers based on vehicle performance characteristics.

Module III: Military and Combat Vehicles

(06 hours)

Special requirements like power, fuel strength and impact resistance tanker, Gun carrier and transport vehicle.

Module IV: Heavy Vehicles & Other Special Vehicles hours)

(06

Power plants - Converter match curves, chassis and transmission (epicyclic). Selection criteria for universal joints. Harbor and Airport Vehicles, Fire Station Vehicles, Jib cranes, Vibratory compactors, Borewell Machines, Concrete mixtures - Constructional Details

Module -V Tutorials, case studies and presentation based on Module I to IV (06 hours)

References:

1. Construction planning, Equipment and Methods - Robert L. Peurifoy, William B. Ledbrtter, Clifford J. Schexnayder - McGrawHill, Fifth Edition.
2. Y. Pokras and M. Tushnyakov, "Construction Equipment Operation & Maintenance", MIR, Moscow.
3. A. Astskhov, "Truck Cranes", MIR, Moscow.
4. E.G. Poninson, "Motor Graders", MIR, Moscow
5. Hand book of Earth Moving Machinery - Central Water & Power Commission (Govt. of India)
6. N. Rudenko, "Material Handling Equipment", M.R. Publishers
7. Sheldon, R.Shacket, "Electric Vehicles", Domus Books, New York
8. David A. Day, Neal B. H. Benjamin, "Construction Equipment Guide", Wiley; 8. C.P. Nakra, "Farm Machines and Equipment", Dhanpat Rai Publications, New Delhi
9. Donnell hunt and L .W.garver - Farm machinery and mechanism - Iowa state university press
10. J.Y Wong - Theory of Ground vehicles - John Wiley and Sons
11. Motor cycle - M. Michael Griffer
12. A. Gurevich and E.Soreking, Tractors Mir Publishers, Moscow, 1967.
13. V. Rodichev & G. Rodicheva, Tractors and automobiles, MIR Publishers, Moscow.