

AT8006 OFF ROAD VEHICLES

DETAILED SYLLABUS

OBJECTIVE:

- At the end of the course, the students will be able to understand the various Off-road vehicle and their systems and features

UNIT I CLASSIFICATION AND REQUIREMENTS OF OFF-ROAD VEHICLES

Construction layout, capacity and applications of off-road vehicle - prime mover, chassis and transmission, Multi-axle vehicles.

UNIT II EARTH MOVING CONSTRUCTIONAL MACHINES

dumpers - safety features, safe warning system for dumper, Design aspects on dumper body, Articulated Dumpers, loaders - single bucket, Multi bucket and rotary types - bulldozers, kinematics for loader and bulldozers with operational linkages, excavators, backhoe loaders, scrapers, motor graders, power shawl, bush cutters, Bush cutters, stumpers, rippers.

UNIT III INDUSTRIAL APPLICATIONS

Constructional and working details of Jib crane, concrete ready mixers, compactors - vibratory compactors, forklift, utility vehicles, man - lift, scissors, lift trucks, material handlers, power generators.

UNIT IV FARM EQUIPMENTS, MILITARY AND COMBAT VEHICLES

Tractors, classification - working attachments, power take off, special implements, paddy harvester, sugarcane harvester, feller bunchers, special features and constructional details of military tankers, AVLB gun carriers and transport vehicles.

UNIT V VEHICLE SYSTEMS, FEATURES

Brake system and actuation – OCDB and dry disc caliper brakes. Body hoist and bucket operational hydraulics. Hydro-pneumatic suspension cylinders. Power steering system. Articulated steering assembly - power and capacity of earth moving machines.

TEXT BOOKS:

1. Abrosimov. K. Bran berg. A and Katayer. K., "Road making machinery", MIR Publishers, Moscow, 1971.
2. Nakra C.P., "Farm machines and equipments" Dhanparai Publishing company Pvt. Ltd.
3. Robert L Peurifoy, "Construction, planning, equipment and methods" Tata McGraw Hill Publishing company Ltd.
4. SAE Handbook Vol. III., Society of Automotive Engineers, 1997
5. Wong. J. T., "Theory of Ground Vehicles", John Wiley & Sons, New York, 1987.

REFERENCES:

1. Bart H Vanderveen, "Tanks and Transport Vehicles", Frederic Warne and Co Ltd., London.
- 1a. S. Ageikin, "Off the Road Wheeled and Combined Traction Devices: Theory and Calculation", Ashgate Publishing Co. Ltd. 1988.
2. Schulz Erich. J, "Diesel equipment I & II", McGraw Hill company, London, 1982.
3. Satyanarayana. B., "Construction planning and equipment", standard publishers and distributors, New Delhi, 1985.