

AE-317: Power units and transmission										
L	T	P	Credit	Area		CWS	PRS	MTE	ETE	PRE
3	0/1	2/0	4	DEC		15/25	25/-	20/25	40/50	-

Objectives: To understand the requirement of Automotive Power Plant. To know the power characteristics of IC engine and other Automotive Power Plants. To analyze the means of power transmission from engine to driving wheels. To know the working of the electrical/hybrid system power transmission

AE-317: Power units and transmission			Contact Hours
Unit-1	Transmission: Introduction, requirements of automobile propulsion and transmission system, Discussion on tractive effort and other performance parameters.		8
Unit-2	Clutch: Need of clutch, types of clutches, construction of clutch systems and clutch plates, operation and torque transmission characteristics. CVT, diaphragm and centrifugal clutch and fluid flywheel.		6
Unit-3	Gear box: Requirements of gearbox, different types of gear boxes viz sliding, constant mesh and Synchromesh, construction details of gear boxes.		6
Unit-4	Hydro-dynamic drive: Fluid coupling, principle and operation torque capacity performance characteristic, torque converter construction, principle of operation, torque capacity, multistage torque converter performance.		8
Unit-5	Automatic transmission: Construction and operating principle, three forward and reverse, four forward and reverse. Over drive unit need and its operation. Hydrostatic drive: construction and operation. Electric drive Ward Leonard control system, construction and operation, advantages and disadvantages.		8
Unit-6	Drive line and Differential: Need and construction of drive line components, universal joints. Need and requirement of differential, principle of operation and construction. Limitations of ordinary differential and concept of limited slip differential.		6
	Total		42

Reference Books:	
1	Crouse W and Anglin D, Automotive Mechanics, Tata McGraw Hill Publication Ltd 10th edition 2004 ISBN Number: 0-7680-0708-9
2	Nakra C P, Basic Automobile, Dhanpat Rai Publication Co. Ltd 7th Edition 2005 ISBN, 978-93-5216-040-2
3	JosepeHeitner Automotive Mechanics – Principle and Practice, East West Press 2nd edition 1999. ISBN:9788176710152 8176710156
4	Motor Vehicle by Newton, Gerreand Steeds, BH publications.ISBN 9780195699630

Course Outcomes

CO1	To understand Transmission and performance parameters
CO2	To understand clutch and its types , construction and characteristics.
CO3	To understand different types of gear boxes and construction details.
CO4	To understand hydro-dynamic drive and its performance.
CO5	To understand Automatic transmission, construction and operation and performance characteristic
CO6	To understand drive line and differential its Need , types and construction

CO-PO/PSOMatrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	0	0	0	0	0	0	2	2	1	1
CO2	3	3	2	3	1	0	0	0	0	0	0	1	2	1	1
CO3	3	3	3	3	1	0	0	0	0	0	0	2	3	3	2
CO4	3	3	3	3	1	0	0	0	0	0	0	1	3	3	2
CO5	2	2	2	2	2	0	0	0	0	0	0	1	2	2	2