Syllabus for Diploma Engineering

Automobile Engineering

Semester – III

Subject Name: Automobile System and Transmission

Subject Code: 09AE0302

Diploma branch in which subject is offered: - Automobile Engineering

Objective: Subject is designed to provide knowledge on the various parts of the automobile systems. This course provides skill to study transmission, suspension and other systems of automobile.

Credits Earned: 4

Course Outcomes:

After learning the course the students should be able to:

- Explain various transmission system of an automobile
- Describe various parts and types of gear box
- Explain working of steering, suspension and other systems of automobile.

Pre-requisite of course: Basics of Mechanical Engineering

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 to Automobile Transmission System** Power transmitted in front wheel drive, rear wheel drive and four wheel drive, Different layout of chassis, Lubrication of chassis, Different types of frame, Frame less chassis	4	9
2	**Clutch** Necessity Types of clutches, Construction and functions of different types of clutches, clutch actuating mechanism, Construction and functions of fluid coupling.	4	11
3	**Gear box** Necessity Types of gearboxes, Construction and functions of Sliding mesh, Constant mesh, Synchromesh, Epicyclical train & automatic transmission, Gear shifting mechanism, Torque	6	14

	converter and overdrive- construction & working.		
4	**Propeller shaft & universal joint** Need of propeller shaft, universal joint and slip joint, Construction & functions of various types of propeller shafts, Construction & functions of various types of universal joints.	5	12
5	**Rear axle assembly** Necessity of final drive, Types of final drive, Construction & functions of final drive, Necessity of differential, Construction & functions of differential, differential locks, Types of axle housing, Function of axle housing and different types of axle mounting.	5	12
6	**Steering mechanism** Necessity of steering geometry, Kingpin inclination, camber, caster, Toe-in Toe-out and other terminology, Types of steering linkages and Types of steering gears, Effect of under steer and over steering, Steering lock and turning circle radius, Power steering systems- hydraulic, electronics controlled electrical.	6	14
7	**Brakes** Necessity & Types of brake, Construction and functions of braking system, Braking Mechanism, Brake setting, Anti lock brake systems- purpose, arrangement and function of different parts.	6	14
8	**Suspension system** Necessity of suspension system, Types of front & rear suspension systems, Types of springs, Construction and functions of various types of suspension system, Necessity of shock absorber, Construction and functions of shock absorber.	6	14

References:

1. Automotive mechanics by W. Crouse, - TMH.
2. Automobile Engineering Vol-I & II Dr. K.M. Gupta
3. Automobile Engineering, Vol-I Dr. Kripal Singh.
4. Automobile engineering GBS Narang.
5. P S Gill, Automobile Engineering Vol-II, S K Kataria & Sons, 2014
6. Judge.A.W., Modern Transmission systems , Chapman and Hall Ltd.

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

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

Suggested List of Experiments:

1. To study about vehicle layouts
2. To study about different types of clutch.
3. To study about the performance of vehicle
4. To study about the different types of gear boxes
5. To study about rear axle, final drive and differential.
6. To study about Automatic Transmission system.
7. To study about different types of tyres and wheels
8. To study of different types of automobile brakes
9. To study of steering systems
10. To study about different types of suspension system

Instructional Method:

a) Use of animations, video or power point presentation.