IV B.Tech I Semester

15AME51-AUTOMOBILE ENGINEERING

L	T	P	C
3	1	0	3

Course Objective:

The students acquires sufficient knowledge to classify Engines, Chassis, Fuel Supply Systems, Cooling Methods, Lubrication Methods, Ignition Systems, Generating Systems, Suspension Systems, transmission system, steering mechanism and braking methods. The students get the working knowledge of assembly of various components of layout and of various electrical equipment of an automobile.

UNIT I

Introduction: Components of a Four Wheeler Automobile - Chassis and Body - Power Unit - Power Transmission - Rear Wheel Drive, Front Wheel Drive, Four Wheel Drive - Types of Automobile Engines, Engine Construction, Turbo Charging and Super Charging - Oil Filters, Oil Pumps - Crank Case Ventilation.

Learning outcome & Suggested Student Activities:

Student can understand the function of each and every component of an automobile. Student can understand the use of turbo charging and super charging.

UNIT II

Transmission System: Clutches- Principle- Types: Cone Clutch, Single Plate Clutch, Multi Plate Clutch, Magnetic and Centrifugal Clutches, Fluid Fly Wheel - Gear Box- Types: Sliding Mesh, Constant Mesh, Synchromesh, Epi-Cyclic, Over Drive, Torque Converter.Propeller Shaft - Hotch - Kiss Drive, Torque Tube Drive, Universal Joint, Differential, Rear Axles.

Learning outcome & Suggested Student Activities:

At the end of the unit, student can have broad knowledge on each and every component of transmission system of a automobile.

UNIT III

Steering System: Steering Geometry - Camber, Castor, King Pin Rake, Combined Angle Toe-In, CenterPoint Steering. Types Of Steering Mechanism - Ackerman Steering Mechanism, Davis Steering Mechanism, Steering Gears - Types, Steering Linkages.

Learning outcome & Suggested Student Activities:

After the completion of the chapter, student can able to understand purpose and methods of steering systems and their applications. Students may refer the following website.

UNIT IV

Suspension System: Objects of Suspension Systems - Rigid Axle Suspension System, Torsion Bar, Shock Absorber, Independent Suspension System.

Braking System: Mechanical Brake System, Hydraulic Brake System, Pneumatic and Vacuum Brake Systems.

Learning outcome & Suggested Student Activities:

At the end of the unit. Student can have ample knowledge on suspension system and braking system of an automobile

Head
Mechanical Engineering Department,
JNTUA College of Engineering,
PULIVENDULA - 516 390.

UNIT V

Emissions From Automobiles - Pollution Standards National and International - Pollution Control- Techniques - Multipoint Fuel Injection for SI Engines- Common Rail Diesel Injection, Emissions from Alternative Energy Sources- Hydrogen, Biomass, Alcohols, LPG, CNG - Their Merits And Demerits.

Electrical System: Charging Circuit, Generator, Current - Voltage Regulator - Starting System, BendixDrive, Mechanism of Solenoid Switch, Lighting Systems, Horn, Wiper, Fuel Gauge - Oil Pressure Gauge, Engine Temperature Indicator.

Learning outcome & Suggested Activities:

Student can be able to grasp the knowledge on emission standards, emission control techniques and electrical systems. Student can identify thrust areas for carrying their dissertation in future.

TEXT BOOKS:

1. Automotive Mechanics - Vol. 1 & Vol. 2, Kirpal Singh, Standard Publishers Distributors.
2. Automobile Engineering ,R.K.Rajput,Laxmi Pub, 1st edition, 2013.
3. Automobile Engineering , William Crouse, TMH, 10th edition, 2006.

REFERENCE BOOKS:

1. Automobile Engineering ,K.K.Ramalingam/Scitech Pub, 2nd edition.
2. Automotive engines , Newton, Steeds & Garret.

Head
Mechanical Engineering Department,
JNTUA College of Engineering,
PULIVENDULA - 516 390.