

10 ME 421 AUTOMOBILE ENGINEERING
IV B.Tech II Semester
(with effect from the academic year 2013-2014)

Lectures/week: 4 Hrs.
University Exam: 3 Hrs

Credits: 4
Sessional Marks: 40
End Examination Marks: 60

UNIT-I

Components of I.C. Engines: Classification of I.C engines, arrangement of cylinders, valve arrangement of overhead, T-head, L-head, F-head engines, combustion chambers for petrol and diesel engines, Combustion phenomenon in I.C engines.

Liners- dry and Wet type, Piston, Connecting rod, Crank shaft – function and construction details.

UNIT-II

Air Cleaners: Functions and construction details of Air Cleaners, Fuel supply system, Fuel injection systems and Exhaust manifolds

Carburetors: Functions and constructional details of simple, S.U, Solex, Carter and Zenith carburetors.

UNIT-III

Cooling system: Need, thermo siphon and forced systems of water cooling, air cooling.

Lubrication: Methods of engine lubrication, transmission and chassis Lubrication, SAE grading of lubricants and properties of lubricants.

Ignition System: Coil and magneto systems, Storage battery- function and constructional details, rating of batteries, dynamo, cut-out, voltage and current regulator, starter drives- Bendix and over running clutch drive systems.

UNIT-IV

Transmission Systems:

Clutch: Function of clutch, types of clutches - single plate, multiple plate, centrifugal clutches, fluid coupling, torque converter and clutch materials,.

Gear Box: Need, types of gear boxes-sliding type, constant and synchromesh. Automatic transmission.

Propeller shaft: Need and constructional details.

UNIT-V

Front Axle: Independent suspension systems, torsion bar, stub axle and front hub.

Rear axle: Semi, three fourth and full floating systems,

Steering: Steering linkages, Wheel alignment - caster camber, toe-in and toe-out. Power steering.

Brakes: Mechanical, Hydraulic, Vacuum, Air and Pneumatic Systems. Arrangements of brake shoes, vehicle electrical and electronic systems.

TEXT BOOKS:

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|---------------------------------------|---|---------------|
| 1. Automobile Engineering Vol. I & II | : | Kirpal Singh. |
| 2. Automobile Engineering | : | Narang G.B.S. |

REFERENCES:

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|---|---|--------------------------|
| 1. Automotive Mechanics | : | Heitner J. |
| 2. I.C.Engines | : | Mathur M.L. & Singh R.P. |
| 3. Fundamentals of Motor Vehicle Technology | : | Hillier & Pittuck |