PAU6I102 VEHICLE DESIGN (3-0-1)

Module I (12 hours)

Introduction of Auto System Design: Aspects of Auto Design, Design Procedure, Principle of Design, Classification of design, Basic requirements of design, Quality of Design Engineer. Automotive chassis and chassis frame: general considerations related to chassis layout, Power plant location, weight distribution, stability, types of frame, materials, calculation of stresses on sections construction details, loading points, testing of frames in bending and torsion.

Module II (12 hours)

Design of IC Engine Parts: General considerations of Engine Design, Principle of Similitude, and Design of Engine Components like: Piston, Cylinder, Connecting rod, Crank shaft, Valves.

Design of Clutch: Types of friction clutches, requirements of clutches, general design consideration, design the equation for power transmitted through single plate and multi plate clutch for Uniform wear and uniform pressure, design for dimensions of clutch, equation for centrifugal clutch.

Module III (12hours)

Design of Brake: General design considerations, braking efficiency, braking torque on the shoe, effect of expanding mechanism of shoes on braking torque, braking of vehicle for two wheel drive and four wheel drive, braking of vehicle for curved path calculation of mean lining pressure and heat generation during brake operation. Design of Suspension System: Function suspension system in automobile, design of helical coil spring, leaf spring, materials for spring, standard sizes of automobile suspension spring. Propeller Shaft: Design of Propeller shaft, Design of universal Joint.

Text Books:

Automotive Mechanics:- Dr N.K.Giri, Khanna Publishers, 2007

Reference Book:

1.A Text Book of Machine Design, R.S.Khurmi and J.K.Gupta, S.Chand Publication
2. Design of Machine Elements, V.B. Bhandari, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2nd Edition 2007.
3. Machine Design, P.C.Sharma and D.K.Agrawal, S.K.Kataria & Sons

VEHICLE DESIGN LABORATORY

1. 1.Design of coneecting rod.
2. 2.Design crank shaft.
3. Design of clutch.
4. Design of leaf spring.
5. Design of brake.
6. 6.Design of Propeller shaft.