AT6602 AUTOMOTIVE CHASSIS COMPONENTS DESIGN

DETAILED SYLLABUS

UNIT I VEHICLE FRAME AND SUSPENSION

Study of loads-moments and stresses on frame members. Design of frame for passenger and commercial vehicle - Design of leaf Springs-Coil springs and torsion bar springs.

UNIT II FRONT AXLE AND STEERING SYSTEMS

Analysis of loads-moments and stresses at different sections of front axle. Determination of bearing loads at Kingpin bearings. Wheel spindle bearings. Choice of Bearings. Determination of optimum dimensions and proportions for steering linkages, ensuring minimum error in steering. Design of front axle beam.

UNIT III CLUTCH

Design of single plate clutch, multiplate clutch and cone clutch. Torque capacity of clutch. Design of clutch components, Design details of roller and sprag type of clutches.

UNIT IV GEAR BOX

Gear train calculations, layout of gearboxes. Calculation of bearing loads and selection of bearings. Design of three speed and four speed gearboxes.

UNIT V DRIVE LINE AND REAR AXLE

Design of propeller shaft. Design details of final drive gearing. Design details of full floating, semifloating and three quarter floating rear shafts and rear axle housings and design aspects of final drive.

TEXT BOOKS

1. Giri, N.K., "Automobile Mechanics", Khanna publishers, New Delhi, 2007.

2. Khurmi. R.S. & Gupta. J.K., "A textbook of Machine Design", Eurasia Publishing House (Pvt) Ltd, 2001.

REFERENCES

1. Heldt, P.M., "Automotive Chassis", Chilton Book Co., 1992.

2. Dean Averns, "Automobile Chassis Design", Illife Book Co., 2001.

OBJECTIVES

The student will be able to understand the fundamental principles involved in design of components of automotive chassis, the complete design exercise and arrive at important dimensions of chassis components.