5th Semester	RAU5C002	Automotive Transmission Systems	L-T-P 3-0-0	3 CREDITS

MODULE – I **(8 HOURS)**

Mechanical drive

Requirements of transmission system. Design aspects - different types of clutch: principle, construction, torque capacity and design aspects, free wheel. Determination of gear ratios for vehicles. Performance characteristics at different speeds. Different types of gear boxes – sliding, constant and synchromesh gearbox. Problems on performance of automobile such as resistance to motion, tractive effort, engine speed, power and acceleration.

MODULE II **(8 HOURS)**

Hydrodynamic drive

Fluid coupling-principle of operation. Constructional details, torque capacity. Performance characteristics, reduction of drag torque. Torque converter: principle of operation, constructional details and performance characteristics. Converter coupling - principle of operation -construction details - torque capacity – characteristic performance.

MODULE III **(8 HOURS)**

Hydrostatic drive

Hydrostatic drive: various types of hydrostatic systems – principles of hydrostatic drive system, advantages and limitations, comparison of hydrostatic drive with hydrodynamic drive, construction and working of typical jenny hydrostatic drive.

MODULE IV **(8 HOURS)**

Electric drive

Electric drive: principle of operation -construction details - torque capacity – characteristic performance. principle of early and modified ward Leonard control system. Advantages & limitations. Performance characteristics.

MODULE V **(8 HOURS)**

Automatic transmission and application

Principle of working of epi-cyclic gear train, need for automatic transmission, four speed longitudinally mounted automatic Transmission-Chevrolet “Turbo-glide” transmission, continuously variable transmission (CVT)–types–operations of a typical CVT, ford-model gear box, Wilson gear box, coal electromagnetic transmission, hydraulic control system for automatic transmission.

Books:

[1] Heldt. P.M., Torque converters, Chilton Book Co., 1992.

[2] Newton and Steeds, Motor Vehicles, Life Publishers, 1985.
[3] Judge A.W., Modern Transmission Systems, Chapman and Hall Ltd., 1990.
[4] SAE Transactions 900550 & 930910.
[5] Hydrostatic Transmissions for Vehicle Applications, IMech. E Conference, 1981-88.
[6] Course. W.H., Anglin., D.L., automotive transmission and power trains construction, McGraw-Hill, 1976.