Course No.	Course Name	L-T-P - Credits	Year of Introduction
AU206	AUTO TRANSMISSION	3-0-0- 3	2016

Course Objectives

- To impart basic knowledge in automotive transmission.
- To understand the construction and principle of operation of various types of mechanical transmission components, hydrodynamic devices, hydrostatic devices and automatic transmission system
- To design clutch and gearbox.

Syllabus

Problems on performance of automobile -Determination of gear ratios for vehicles. Different types of gearboxes -Fluid coupling-Hydrodynamic Torque converter -Construction and operation of Ford – T-model gearbox, Wilson Gear box and electromagnetic transmission-Need for automatic transmission, Principle of operation -Hydrostatic drive -Electric drive-Comparison of hydrostatic drive with hydrodynamic drive-Ward Leonard Control system

Expected outcome.

After this course, students will be able to explain about the design of clutches and gear boxes, construction of the transmission components, various types of transmission systems

Text Book:

1. 3. Newton and Steeds – "Motor Vehicle"- Illiffee Publisher- 2000.

References:

1. Design Practices, passenger Car Automotive Transmissions- SAE Hand book- 1994.
2. Crouse, W.H., Anglin, D.L., Automotive Transmission and Power Trains construction, McGraw Hill, 1992.
3. Heldt, P.M., Torque converters, Chilton Book Co., 1992.
4. Judge, A.W., Modern Transmission systems, Chapman and Hall Ltd., 1990.
5 Heinz Heisler, Modern Vehicle Technology

Course Plan

Module	Contents	Hours	Sem.ExamMarks
I	Problems on performance of automobile - such as resistance to motion, tractive effort, engine speed, engine power and acceleration. Requirement of transmission system, Different types of clutches, principle, Construction and torque capacity.	6	15%
II	Determination of gear ratios for vehicles. Different types of gearboxes such as Sliding mesh gearbox, Constant mesh gearbox and Synchromesh gearbox, gear shifting mechanisms in each.	7	15%
	FIRST INTERNAL EXAMINATION		
III	Construction and operation of Ford – T-model gearbox, Wilson Gear box and electromagnetic transmission.	6	15%
IV	Fluid coupling - Principle of operation, Constructional details, Torque capacity, Performance characteristics and Reduction of drag torque. Hydrodynamic Torque converter - Principle of operation, Constructional details and Performance characteristics. Multistage torque converters.	7	15%

	Polyphase torque converters. Converter coupling		
SECOND INTERNAL EXAMINATION			
V	Need for automatic transmission, Principle of operation. Hydraulic control system for automatic transmission. Chevrolet "Turboglide" Transmission, Continuously Variable Transmission (CVT) – Types – Operations.	8	20%
VI	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 Janny hydrostatic drive. Electric drive - Principle of operation of Early and Modified Ward Leonard Control system, Advantages & limitations.	8	20%
END SEMESTER EXAM			

Question Paper Pattern

Total marks: 100, Time: 3 hours

The question paper shall consist of three parts

Part A

4 questions uniformly covering modules I and II. Each question carries 10 marks

Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

Part B

4 questions uniformly covering modules III and IV. Each question carries 10 marks

Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

Part C

6 questions uniformly covering modules V and VI. Each question carries 10 marks

Students will have to answer any four questions out of 6 (4X10 marks =40 marks)

Note: In all parts, each question can have a maximum of four sub questions, if needed.