COURSE TITLE : AUTOMOBILE TRANSMISSION
COURSE CODE : 5052
COURSE CATEGORY : A
PERIODS/WEEK : 4
PERIODS/SEMESTER: 60
CREDITS : 4

TIME SCHEDULE

Module	Topic	Periods
1	Clutch	15
2	Gearbox	15
3	Propeller shaft and differential	15
4	Wheels and tyres	15
TOTAL		**60**

GENERAL COURSE OUTCOME

After the completion of the course,

Sl.No.	Sub	Student will be able to
1	1	Understand the various transmission members of the Automobile Vehicle
	2	Understand the principle of operation of clutch
	3	Identify the components in operating mechanism of clutch
2	1	Understand the working and construction of various gear boxes
	2	Identify the components in gear shifting mechanism
	3	Describe the working of variamatic transmission
3	1	State the function of propeller shaft
	2	Describe the working of differential mechanism
	3	Distinguish C V joints and V V joints
4	1	Understand the constructional details of Wheela
	2	State the factors affecting tyre performance
	3	Specify wheel dimensions

SPECIFIC COURSE OUTCOME

MODULE I

1.1.0 Understand the various transmission members of the automotive vehicle

1.1.1 Identify types of transmission
1.1.2 Review the need for transmission
1.1.3 State various components of transmission

1.2.0 Understand the principle of operation of clutch

1.2.1 List the functions of clutch
1.2.2 Explain the principle of operation of clutch

1.3.0 Understand the different types and construction of clutch

1.3.1 Illustrate with the line diagram and explain single plate clutch, multiplate clutch, diaphragm Clutch, semi-centrifugal, centrifugal, electromagnetic.
1.3.2 Explain the working principle of vacuum and hydraulically operated clutch
1.3.3 Describe the working of fluid flywheel
1.3.4 Describe the constructional features of clutch disc, pressure plate and clutch operating mechanisms

MODULE II

2.1.0 Understand working and construction of various types of gear boxes

2.1.1 State the objectives of gear box in transmission system
2.1.2 Explain the working of sliding mesh gearbox, constant mesh gearbox, synchrony mesh Gearbox, Progressive type gearbox

2.2.0 Understand working of automatic transmission

2.2.1 Describe the working of epicyclic gearbox
2.2.2 Describe the principle and working of torque converter and overdrive mechanism
2.2.3 Illustrate with line diagram, the working principle of CVT & ECVT-Automatic Transmission

2.3.0 Understand the power transmission in 2 &3 wheelers

2.3.1 Describe the construction and working of progressive type gearbox.
2.3.2 Describe the working of variomatic transmission in 2 wheelers

MODULE III

3.1.0 Understand the types and working of driveline

3.1.1 List the functions of propeller shaft and universal joints
3.1.2 Explain the working of torque tube drive, Hotchkiss drive
3.1.3 Explain with sketches the types of constant velocity joints and variable velocity joints

3.2.0 Understand the working of differential mechanism

3.2.1 Describe the working of differential mechanism

3.2.2 Distinguish the working of locking differential and limited slip differential

3.3.0 Understand the types of rear axles

3.3.1 Describe the types and methods of construction of rear axles

MODULE IV

4.1.0 Understand types of wheels

4.1.1 Specify wheels like, spoked wheel, disc wheel, alloy cast wheel & composite wheel

4.1.2 Designate a wheel

4.2.0 Understand the constructional details of a tyre and specify the types

4.2.1 Explain constructional details of a tyre and specify the types

4.2.2 Designate a tyre

4.2.3 Identify the tread patterns

4.2.4 Differentiate the merits and demerits of under inflation and over inflation in Tyres

4.2.5 List the factors affecting tyre performance

CONTENT DETAILS

MODULE I

Introduction - Various components required for a good transmission system. Principle of friction clutches. Constructional features and working of-Single plate dry clutch-Diaphragm clutch, Cone clutch-Centrifugal clutch-Semi centrifugal clutch-Vacuum clutch-Hydraulic clutch-Electro magnetic clutch-Over running clutches-Multiplate clutch (dry & wet)-Fluid fly wheel. Clutch disc – constructional details and functions of each part, Pressure plate – constructional details and functions of each part. Clutch operating mechanisms

MODULE II

Introduction – Necessity and functions of a gearbox - constructional features & working of - Sliding mesh gearbox-Constant mesh gearbox-Synchro mesh gearbox- Progressive type gearbox - Epicyclic gearbox- Torque converter -Gear selector and shifting mechanisms, 2 Wheeler transmissions-Gear drive-Chain drive-V matic transmission ,CVT& ECVT-Automatic transmission in cars.

MODULE III

Introduction of Propeller shaft, slip joint and universal joint-Torque tube drive-Hotchkiss drive-Variable velocity joints-Constant velocity joints-Front wheel drive-Differential mechanism-Locking differential - Limited slip differential-Rear Axles-types

MODULE IV

Introduction of wheels & tyres-Wheels – wire – spoked wheel, disc wheel, and alloy cast wheel, composite wheel-Wheel specification-Tyres-Tyre specification-Tyre construction(cross sectional details).Tubeless tyre-Tyre treads patterns-Inflation pressure and its effects (both over & under inflation)-Factors affecting tyre performance

TEXT BOOK

Kripal Singh - Automobile Engineering Vol. I - Standard publishers

REFERENCES

1. P.L. Kohli - Automobile Chassis & Body – Mc Graw-Hill
2. N.R. Khatawate - An Introduction to Automobile Engineering – Vani Educational books
3. Joseph Heitner - Automotive Mechanics – CBS Publications
4. Jack Erjavec- A system approach to Automotive Technology - Cengage learning