GUJARAT TECHNOLOGICAL UNIVERSITY

B.E Semester: 4

Automobile Engineering

Subject Name FUNDAMENTALS OF AUTOMOBILE SYSTEMS (Institute Elective-I)

Sr. No.	Course content
1.	Vehicle Classification and Layouts Study various vehicle layouts as front engine & front wheel drive, front engine & rear wheel drive, rear engine & rear wheel drive. Classification based on controls positioning.
2.	Engine Types (based on Fuel used): Gasoline, Diesel, LPG, CNG, Bio-Diesel
3.	Transmission Types • Manual Gear Boxes Sliding mesh, constant mesh, synchromesh, epicyclical gear boxes, gear ratios, • Automatic transmission Torque converter, hydro-static and hydro-dynamic transmission and continuously variable transmission.
4.	Frames & Body Types of Chassis frames & construction of Chassis frame and vehicular Body
5.	Performance of vehicle Vehicle motion, resistances during motion, accelerated and constant velocity motions, tractive force, gradeabilty, power required and engine characteristics, gear ratio requirement.
6.	Clutch Functions and type of clutches, single plate, multiple plates, centrifugal,
7.	Brakes • Service Brakes Function, Internal expanding brakes, shoes and lining material, properties, hydraulic braking system, brake oil, bleeding of brakes, pneumatic braking system and vacuum brakes. • Auxiliary Brakes Exhaust brakes, parking brake.
8.	Drive line and axles Propellers shaft, final drive types, Bevel, hypoid, Drive axles & differential, fully or semi-floating and three quarter floating, dead axle

9.	Wheels and tyres Types of wheel rims, tread patterns of tyre, tubeless tyres, specifications of tyres,
10.	Steering and front axle Steering requirements, steering gears box types, steering system and linkages, steering geometry, wheel alignment, toe-in, toe-out, caster, camber, power steering.
11.	Suspension system Purpose of front and rear suspension, types of suspension system, coil spring, leaf spring, torsion bars, shock absorbers, air suspensions, independent suspension and McPherson strut .

List of Practical:

01.	Vehicle layouts.
02.	Different types of clutch.
03.	To study about the performance of vehicle.
04.	Different types of manual gear boxes.
05.	Rear axle, final drive and differential.
06.	Automatic Transmission system.
07.	Different types of tyres and wheels.
08.	Different types of automobile brakes
09	Steering systems
10	Different types of suspension system

REFERENCE BOOKS:

1. Automotive mechanics by W. Crouse, TMH
2. Automobile Engineering, Vol-I Dr. Kripal singh
3. Motor vehicle by Newton and steed
4. Automobile engineering by GBS Narang
5. Vehicle Technology by Heinz Heizler
6. Automobile system by W. Judge