

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1

Mechanical Engineering (I.C.Engine & Automobile)

Subject Name Fundamentals of I.C.Engine & Automobile

Sr.No	Course content
1.	Introduction to I.C Engine; Engine types and their operation; classification; Actual cycle; air fuel cycle; combustion charts (Equilibrium); Two stroke engines; four stroke engine; characteristics of engines; air capacity of engine; valve timing diagram; Fundamentals of Automotive Electronics, Microprocessor and micro computer applications in automobiles, Components for engine management system.
2.	Engine Components, Material, construction and design aspects; piston assembly; connecting rod; crankshaft; cylinder head; cylinder block; flywheel, ports; valves; valve actuating mechanism; cams; camshaft drives; vibration damper.
3.	Fuel Supply in SI Engines; Carburetion and mixture requirements; Transfer pump; Carburetors - types, constructional and design aspects; Mixture distribution and inlet manifold; The concept of multipoint fuel injection system, Fuel Supply in CI Engines; Injection system components; Jerk and Distributor pumps; Mechanical and Pneumatic governors; Injectors.
4.	Stratified Charged; Low heat rejection engine; four / three valve engine; OHC engine; MPFI; VVT; cam less engine; New engine technology; Recent developments in I. C. engines.
5.	Automotive electrical system; Basic transmission systems; suspension systems; steering systems; tyre and wheel; handling and maintenance; troubleshooting and repairs.

List of Experiments:

1. Testing of Internal combustion engine according to Indian and International standards.
2. Study and Performance analysis of two stroke Petrol Engine.
3. Study and Performance analysis of four stroke Petrol Engine.
4. Study and Performance analysis of four stroke Diesel Engine.
5. To Study various engine components, material and design aspects.
6. Study of MPFI and CRDI systems
7. Study of ignition , cooling, lubrication systems
8. Study of clutch and Transmission systems
9. Study of automotive brakes , suspension and steering systems
10. Study of Recent developments in the field of I.C. Engine and Automobile.
11. **Group Discussion / Technical Debate on advanced topic.**

Reference Books:

1. Introduction to Internal Combustion Engines”, Richard Stone, McMillan, London
2. Internal Combustion Engines Fundamentals – John B. Heywood, McGraw Hill
3. Vehicle and Engine Technology – Hein Heister
4. I.C. Engine by Maleev V. L., McGraw Hill Book, Co.
5. I. C. Engines – Ferguson
6. I. C. Engines – C. Fayette Taylor & Edward S. Taylor, International text book com
7. I. C. Engine & Air Pollution – E. F. Obert, Harper & Row Publishers, New York
8. Automotive Engines - Herbert E. Ellinger
9. Automobile Electrical & Electronic Equipments - Young, Griffiths - Butterworths, London
10. Fundamentals of Automotive Electronics - V.A.W. Hilliers - Hatchin, London
11. I.C Engine, R.K. Singhal
12. I.C Engine, Mathur and Sharma
13. I.C Engine, Domkundwar