

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma in Automobile Engineering

Semester: 3

Subject Code

Subject Name AUTOMOBILE ENGINES

Sr. No.	Course content
1.	PRINCIPLES OF I.C. ENGINES FOR AUTOMOBILES AND TYPE OF ENGINES USED IN AUTOMOBILES : Principles of I.C. engines for automobiles, Mechanism of piston type engine and related terms, 2 stroke and 4 stroke otto cycle, 2 stroke and 4 stroke diesel cycle, P.V. diagram of otto cycle engine and diesel cycle engine, Types of engines used in automobiles, Merits and demerits of single and multi cylinder engines, Engine balancing and firing order
2.	CONSTRUTIONAL AND FUNCTIONAL DETAILS OF MAJOR AND MINOR COMPONENTS OF I.C. ENGINES : Major and minor components of I.C. Engine - Constructional details. - Functional details.
3.	COMBUSTION PROCESS IN PETROL ENGINES : Properties of petrol, Process of combustion in Petrol Engine, Types of combustion chamber
4.	COMBUSTION PROCESS IN DIESEL ENGINE : Properties of diesel fuel, Combustion process in C.I.Engine, Method of fuel injection and types of combustion chamber
5.	FUEL SYSTEM FOR PETROL ENGINE : Fuel system used for petrol engine, Construction and function of units of the fuel feed system, Carburetion and mixture quality for engine, Construction and function of simple carburetor , Types of inlet manifold and methods of vaporization, Working of air cleaner, Gasoline Fuel Injection System, Classification of Fuel Injection System, Fuel Injection Requirements, Throttle Body Injection (TBI) System, Sensor Designs, Types & Functions of Sensor, Port Fuel Injection (PFI) System, ECU Functioning, Construction & Functions of electronic Injectors.
6.	FUEL INJECTION SYSTEM FOR DIESEL ENGINE : Fuel flow diagram, Constructional and functional details of different types of fuel injection pump for diesel engine, Details of different types of injectors, Various types of governors , Types of diesel filters, Working of fuel feed pump for diesel engine, Construction & Functions of CRDI, Diesel electronic control system(DECS)
7.	COOLING SYSTEM OF ENGINE : Necessity of cooling system in I.C. engines, Types of cooling system, Constructional & functional details of cooling system, Pressurized Cooling System, Types & Characteristics of Coolant

8.	LUBRICATING SYSTEM OF ENGINES : Necessity of lubricating system in Engine, Properties of an engine oil, Types of a lubricating system, Constructional & Functional details of Lubricating system.
9.	SUPER CHARGING OF I.C. ENGINE : The purpose of super charging, Merits & limitations of super charger, Types of super charger, Principle & Construction of Turbocharger, Intercoolers.

SUGGESTIVE LIST OF LABORATORY EXPERIMENTS :

1. Demonstration of two & four stroke engines
2. Demonstration of piston, connecting rod & crank shaft
3. Demonstration of valve gear (Camshaft, Timing gear)
4. Demonstration of carburetor
5. Demonstration of Gasoline Fuel Injection System.
5. Demonstration of fuel injector, its nozzle & fuel filters
6. Demonstration of fuel injection pump and governors.
7. Demonstration of cooling system and its components.
8. Demonstration of various lubricating system & its components.

Reference Books:

Sr.No.	Name of Book	Author
1.	Auto motive Mechanics	W.H.Crouse & D.L. Anglin
2.	Elements of Automotive Mechanics	J. Heitner
3.	Automotive Mechanics	R. B. Gupta
4.	Motor Vehicle Technology	Newton & Steeds
5.	High Speed diesel engines	A. W. Judge
6.	Automobile Engineering	K. M. Gupta
7.	Motor Automotive Technology	Anthony E.Schwaller