GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 2

Mechanical Engineering (I.C.Engine & Automobile)

Subject Name High Speed Diesel Engine

Sr.No	Course content
1.	Introduction of diesel engine; basic operations; thermodynamic cycles (Ideal and actual); various losses; limitations; compression ratio; Combustion in diesel engine; various stages; Delay period and different factors affecting it; its influence on performance; Various performance parameters.
2.	Introduction of combustion chamber in diesel engine; combustion chamber requirements; necessity and types of air motion; Swirl flow; swirl ratio; selection of method of swirl; types of swirl; Types, design and constructional features and relative merits of open, pre-combustion, swirl, air cell and energy cell combustion chamber; M-combustion chamber; latest combustion chamber.
3.	Functions of components; Plunger and distributor pumps; pressure valves; Fuel injector; types of injection nozzle; spray characteristics; valve opening and closing pressures; quantity and duration of fuel injection; injection timing; nozzle cooling.
4.	Supercharging and Turbocharging of diesel engine; necessity and limitations; supercharging methods; relative merits; turbocharing methods; turbocharger selection.
5.	Performance and maintenance of diesel engine; piston cooling; Engine with different types of combustion chamber; Multi fuel engines; pilot injection; special features of agricultural and industrial engines.

Reference Books:

1. Diesel Engine Operation and Maintenance, V.L.Maleev,
2. Introduction to Internal Combustion Engines", Richard Stone, McMillan, London
3. Internal Combustion Engines Fundamentals – John B. Heyhood, McGraw Hill
4. High Speed Diesel Engines, A.W.Judge,
5. high Speed Diesel Engines, P.M.Heldt,
6. Combustion engine processes, Lichty,
7. Supercharging, Vincent,