GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: III

Mechanical Engineering (I.C. Engine & Automobile)

Subject Name: **I.C. Engine Modeling and Simulation**

Sr. No.	Course Content
1.	Introduction to modeling; importance of modeling; Spray equation model; Thin and thick spray model; Droplet turbulence interactions; Droplet impingement on walls.
2.	Combustion modeling; Classifications; zero dimensional modeling; quasi dimensional modeling, Comparison of different combustion systems; Combustion efficiency.
3.	Laminar flow modeling; K-e model, probability density functions; effective viscosity; vortex structures; Compression generated turbulence.

Reference Books:

1. J.I Ramos – Internal Combustion Engine Modeling- Hemisphere Publishing Corporation, 1989.
2. John B. Heywood, Internal Combustion Engine Fundamentals – McGraw-Hill International Edition, Automotive technology series,1988.
3. James N Mattavi and Charles A Amann – Combustion Modeling in Reciprocating Engines – Plenum Press-1980.
4. Pkandylas G C Koltsakis and A M Stamatelos – Mathematical modeling of Precious metals catalytic converters for diesel Nox reduction – Proc. Institution of Mechanical Engineers.