Subject Code	Courses	L	T	P	Hrs.	Credits
ME5CT02	**Advance Thermodynamics**	**4**	**0**	**0**	**4**	**4**

UNIT I:-

Exergy: Work potential of energy, Reversible work and irreversibility, second law efficiency, exergy change of system, exergy transferred by Heat, Work & Mass, Exergy balance in open and close system.

UNIT II:-

Thermodynamics Property Relations: partial derivatives, Maxwell relations, Clapeyron Equation, General relations for du, dh, ds, C_v & C_p, Joule Thomson coefficient, Δh, , Δu, Δs for real gases.

UNIT III:-

Chemical Reactions: Fuels and combustion, Theoretical & actual combustion processes, enthalpy of formation & enthalpy of combustion, First & Second law analysis of reacting system, Adiabatic flame temperature.

UNIT IV-

Properties of Gas Mixtures: Avogadro's Law, equation of state, Virial expansions, Law of corresponding states, Dalton's law of partial pressure, internal energy, enthalpy & specific heats of gases forming mixture, entropy of mixture of gases, Gibbs Function.

UNIT V-

Vapour & combined Power cycle: Second law analysis of vapor power cycles, Cogeneration combined Gas Vapor Power cycles, Second law analysis of Gas power cycles.

Reference Books:-

1. Thermodynamics:- An Engineering approach "Yunus A. Cengel & Michael A. Boles" , McGraw Hill Educations
2. Thermal Science "Merle C. Potter & Elaine P. Scolt", Cengatge Learning
3. Engineering Thermodynamics "P K Nag" , McGraw Hill Educations