

1.	Title of the course	Chemical Engineering Thermodynamics
2.	Course number	CH204L
3.	Structure of credits	3-1-0-4
4.	Offered to	UG
5.	New course/modification to	Modification To CH2202/12
6.	To be offered by	Department of Chemical Engineering
7.	To take effect from	January 2022
8.	Prerequisite	Nil
9.	Course Objective(s): To apply thermodynamic laws to chemical processes. To demonstrate applications of thermodynamics concepts of phase and chemical reaction equilibria to chemical engineering problems.	
10.	Course Content: First Law: energy balance in open and closed systems, steady state and transient processes; Second law and entropy balance; Properties of pure fluids: phase diagrams, equations of state (EoS), generalized correlations, fundamental property relations, Maxwell's equations; Residual properties, thermodynamic property calculations; Thermodynamics of fluid flow and devices, power cycles; Introduction to fluid mixtures, partial molar properties, chemical potential, criterion for phase equilibrium, Gibbs' phase rule, fugacity, ideal solutions, excess properties, activity coefficients, modified Raoult's law, models for activity coefficients, thermodynamic consistency, liquid-liquid equilibrium (LLE), vapor-liquid-liquid equilibrium (VLLE); Chemical reaction equilibria.	
11.	Textbook(s): 1. Smith J M, Van Ness H C, Abbott M M, Swihart M and Bhatt B I, <i>Introduction to Chemical Engineering Thermodynamics</i> , 8th Edition, Tata McGraw Hill (2020).	
12.	Reference(s): 1. Elliot J R and Lira C T, <i>Introductory Chemical Engineering Thermodynamics</i> , 2nd Edition, Prentice Hall (2012). 2. Rao Y V C, <i>Chemical Engineering Thermodynamics</i> , 1st Edition, Universities Press (1997). 3. Tester J W and Modell M, <i>Thermodynamics and its Applications</i> , 3rd Edition, Prentice Hall (1997).	