Course Specifications

General Information

Course name	Physical Chemistry(1)
Course number	CHEM2304
Faculty	
Department	
Course type	Major Needs
Course level	2
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - 1. Discuss the three laws of thermodynamics and their development. 2. Define and use the second and third laws of thermodynamics, and the concept of entropy. 3. be able to derive relationships between thermodynamic quantities. 4. Interpret phase diagrams and discuss phase equilibrium in terms of chemical potentials. 5. Define, understand, and solve problems relating to the ideal gas laws, critical phenomena, and the law of corresponding states. 6. Discuss and use the concepts of exactness, work, heat, the first law, enthalpy, heat capacity, and adiabatic processes. C. Solve problems in thermochemistry.

Intended Learning Outcomes

Knowledge and Understanding

* Obtain a vision of matter energy relationship in physical and chemical systems.
* Identify and use correct units for data that will be analyzed.
* Analyze themodynamics parameters to determine appropriate ways in which problems may could solved.

Course Contents

1 - Thermodynamic quantities, first law of thermodynamic, isothermal and adiabatic and reversible and irreversible process, Joule-Thomson experiment, thermo chemistry. Hess law lavoiser and laplace, effect of temperature on heat of reaction (Kirchhoff equation), the second law of thermodynamic, carnot cycle, the entropy change of a system, evaluating the entropy and Gibbs function, combination of the first and second laws, Gibbs-Helmholts equation, thermodynamic solution, partial molar property, determination of partial molar volume and free energy etc. ideal and non ideal solution, properties of dilute solutions, colligative properties

Students Assessment

Assessment Method	TIME	MARKS
exam	first mid term	20%
exam	second mid term	20%
homework & others		10%
exam	final	50%

Books and References

Essential books	Physical Chemistry, P.W. Atkins, ELBS
	Essentials of physical chemistry, Arun Bahl