

Course Title	Course Code	Credit Hours
Applied Chemistry	CH-109	2-0

Textbook:

- W. H. Brown, and L. S. Brown, "Chemistry for Engineering Students", Cengage Learning

Reference Books/Materials:

- O. V. Roussak, and H. D. Gesser, "Applied Chemistry: A Textbook for Engineers and Technologists", Springer
- Steven S. Zumdahl, Susan A. Zumdahl, and Donald J. DeCoste, "Chemistry: An Atoms First Approach", Cengage Learning
- Nivaldo J. Tro, "Chemistry: A Molecular Approach", Pearson
- Mary. J. Shultz, "Chemistry for Engineers: and Applied Approach", Cengage Learning
- A. Bahl, B. S. Bahl, and G. D. Tuli, "Essential of Physical Chemistry", S. Chand Publishing, India

Course Objectives:

This course aims at imparting introductory and applied knowledge about Applied Engineering Chemistry enabling them to comprehend chemical principles and their applications in solving engineering problems.

Course Outline:

- Atmospheric Chemistry:
 - Atmospheric composition
 - Ozone Layer, ozone hole, ozone protection and consequences of ozone depletion
 - Environmental pollution and control
- Thermo-Chemistry:
 - Chemical Thermodynamics, Hess's Law, Heat of Formation and Reaction
 - Relation Between H and U, Measurement of Heat Reaction, Bomb Calorimeter
- Electrochemistry: Laws of Electrolysis

- Corrosion: Types of Corrosion and corrosion prevention; Composition cells
- Fuels & Combustion:
 - Classification of Fuels and Criteria for the selection of fuels
 - Parameters of lubricant quality (dropping point, viscosity index etc)
- Chemistry of Engineering Materials: Different grades of iron, Ferrous and Nonferrous alloys
 - Polymers: Types of Polymers, Addition polymerization and condensation polymerization
 - Thermoplastic and thermosetting behavior
- The First Law of Thermodynamics
 - Heat of combustion, Heat of formation, Heat of Neutralization.
- Concept of Reduction Potentials
 - The Hydrogen electrode, Standard Reduction Potentials Table, Cell Potentials.
- Batteries and their Various Types