

Course Title	Fundamentals of Chemistry			Course Code	BST 11053		
Year	1	Semester	1	Credits	03	Theory (hr)	30
						Practical (hr)	30
						Independent Learning (hr)	

Aim of the Course:

To provide students with the basic principles, concepts and theories of chemistry as applicable to the discipline of Bio-Systems Technology

Intended Learning Outcomes:

After completion of this course, the learner should be able to:

- Explain the basic properties of states of matter.
- Identify the patterns of the periodic table.
- Describe the basic principles and concepts in organic, inorganic, physical, and analytical chemistry.
- Determine the rate of a chemical reaction and to control it using chemical kinetics.
- Determine the properties of systems in dynamic equilibria using the concepts of chemical equilibrium.
- Explain the basic biochemical reactions of the cell.
- Apply the knowledge to separate, analyze and/or synthesize important compounds, active ingredients and/or chemicals.

Course Capsule:

Theory
Matters and properties, SI Units and measurements; Atomic structure, Periodic table and properties; Molar concept, Molecular and ionic equations (Stoichiometry); Chemical bonding, Chemical reactions; Chemical Kinetics; Chemical equilibrium; Types of organic compounds; Nomenclature; Formulae and isomers; Chemical bonding in organic compounds; Organic reactions; Overview of metabolism; Instrumental analysis

Practical
Laboratory safety aspects and familiarization; Inorganic analysis – anion and cation identification; Preparation of standard solutions; Strong acid/strong base titration (titration curves); Strong acid / weak base titrations (titration curves); Complexometric titrations; Back titrations; Chromatographic techniques; spectrophotometric analysis of chemical compounds; Distillation and Fractional Distillation; Melting point; Preparation of Acetyl Salicylic Acid (aspirin); Extraction of a known mixture; Extraction of an unknown mixture; Synthesis of Esters; Synthesis of Soap

Assessment:

Continuous assessment: 30%
 End semester assessment: 70%