



Department of Chemistry
Kamrup College Chamata
Course Outcomes (CO)

Paper Code: CHE-HC-1016

Paper Title: INORGANIC CHEMISTRY-I

Course Learning Outcomes

- CO-1:** This course helps to learn the structure of atoms including wave mechanics.
- CO-2:** It introduces the periodicity of elements and periodic properties.
- CO-3:** It introduces the different types of chemical bonding including weak chemical forces and basic concept of redox reactions.
- CO-4:** It helps to learn the theory of titrimetric analysis of acid-base and oxidation-reduction titrations.

Paper Code: CHE-HC-1026

Paper Title: PHYSICAL CHEMISTRY-I

Course Learning Outcomes

- CO-1:** This course introduces the basic concept of kinetic theory of gases and learn to solve numerical problems related to the topic.
- CO-2:** It aids in learning the structural and physical properties of liquid.
- CO-3:** It helps to understand the elementary idea of molecular and crystal symmetry with symmetric operation along with the basic concept of solid state crystallography.
- CO-4:** It helps to understand the ionic behavior of solution, salt hydrolysis, buffer solution and multistage equilibria in polyelectrolyte system.

Paper Code: CHE-HC-2016

Paper Title: ORGANIC CHEMISTRY-I

Course Learning Outcomes

CO-1: This course introduces the basic concept of organic chemistry including reaction intermediates and introduction to the different types of organic reactions.

CO-2: It aids in learning the stereochemistry of chiral compounds arising due to the presence of stereo-axis and optical activity of chiral compounds.

CO-3: It helps to understand the chemistry of aliphatic and aromatic hydrocarbons with their different types of isomerism and to study the various reaction mechanisms of organic reactions.

CO-4: It helps to learn the experimental purification techniques and synthesis of organic compounds, calculation of experimental yields and determination of melting points of purified organic compounds.

Paper Code: CHE-HC-2026

Paper Title: PHYSICAL CHEMISTRY-II

Course Learning Outcomes

CO-1: This course introduces the basic concepts of thermodynamics including thermochemistry and system of variable composition.

CO-2: It provides the basic concepts of chemical equilibrium including its thermodynamic parameters.

CO-3: It introduces the study of colligative properties of solutions.

CO-4: It helps in learning experimental determination of heat capacity of a calorimeter, enthalpy of neutralization, ionization of acid and enthalpy of solution experimentally.

Paper Code: CHE-HC-3016

Paper Title: INORGANIC CHEMISTRY-II

Course Learning Outcomes

CO-1: This course introduces the general principles of metallurgy, extraction and refining methods of different metals.

CO-2: It introduces the chemistry of s and p-block elements, noble gas elements and their compounds along with acid base theory.

CO-3: It provides a deep understanding of the chemistry of inorganic polymers and comparative study with organic polymers.

CO-4: It helps to gain the basic understandings of iodometric and iodimetric titrations experimentally and inorganic preparations.

Paper Code: CHE-HC-3026

Paper Title: ORGANIC CHEMISTRY-II

Course Learning Outcomes

CO-1: This course introduces in details the chemistry of halogenated hydrocarbons, synthesis and specific reactions.

CO-2: It provides a detailed study of the chemistry of alcohols, phenols, ethers and epoxides, carbonyl compounds, carboxylic acids and their derivatives along with preparations, properties and specific reactions.

CO-3: It helps to study the preliminary reactions and synthesis of Sulphur containing compounds.

CO-4: It provides an introduction to the determination of the presence of different organic functional groups in compounds experimentally and preparations of organic compounds.

Paper Code: CHE-HC-3036

Paper Title: PHYSICAL CHEMISTRY-III

Course Learning Outcomes

- CO-1**: This course introduces in details the basic concepts of phase equilibria.
- CO-2**: It provides the basic concepts of chemical kinetics of various types of reactions.
- CO-3**: It helps to study the catalysis process, properties and function of catalysts and surface chemistry.
- CO-4**: It helps to study experimentally the kinetics of chemical reactions.

Paper Code: CHE-SE-3034

Paper Title: BASIC ANALYTICAL CHEMISTRY (SEC)

Course Learning Outcomes

- CO-1**: This course provides the concept of analytical chemistry, its interdisciplinary nature, and different micro and semi micro analytical techniques.
- CO-2**: It helps to develop the ability to use modern instrumental methods for chemical analysis of food, soil, air, water and cosmetics.
- CO-3**: It helps to learn the basic working principle of chromatography.
- CO-4**: It provides skill to the usage of theoretical knowledge in practical fields with project works.

Paper Code: CHE-HC-4016

Paper Title: INORGANIC CHEMISTRY-III

Course Learning Outcomes

CO-1: This course introduces the chemistry of coordination compounds, with various aspects like nomenclature, theories of structure and bonding, varieties and reactivities of the coordination compounds.

CO-2: It provides the study of the transition elements and inner transition elements with their various aspects.

CO-3: It provides the basic concepts of bioinorganic chemistry, applications and harmful effects of metals in biological systems.

CO-4: It helps to gain experimental experience in gravimetric estimation of metal ions and preparation of some inorganic complexes.

Paper Code: CHE-HC-4026

Paper Title: ORGANIC CHEMISTRY-III

Course Learning Outcomes

CO-1: This course introduces the chemistry of different nitrogen-containing compounds, alkaloids and terpenoids, their potential applications, structures, synthesis and reactivities.

CO-2: It provides the study of the chemistry of different polynuclear hydrocarbons

CO-3: It provides the study of the chemistry of heterocyclic compounds with their structures and reactions.

CO-4: It helps to gain experimental experience in the detection of important elements like nitrogen and sulphur and functional groups in organic compounds.

Paper Code: CHE-HC-4036

Paper Title: PHYSICAL CHEMISTRY-IV

Course Learning Outcomes

- CO-1:** This course introduces the basic concepts of electrochemistry.
- CO-2:** It introduces the basic concepts of conductance.
- CO-3:** It helps to study electrical and magnetic properties of atoms and molecules.
- CO-4:** It provides experimental knowledge in the determination of cell constant, equivalent conductance, its application and potentiometric titrations.

Paper Code: CHE-SE-4064

Paper Title: FUEL CHEMISTRY (SEC)

Course Learning Outcomes

- CO-1:** This course introduces the concept of renewable and non-renewable energy sources, classification of fuels and calorific value.
- CO-2:** It provides an idea on the composition of coal and petroleum products, their extraction, purification methods and usage.
- CO-3:** It provides an idea on the classifications and applications of natural and synthetic lubricants.
- CO-4:** It aids in learning the determination and significance of various industrially relevant physical parameters for different fuels and lubricants.

Paper Code: CHE-HC-5016

Paper Title: ORGANIC CHEMISTRY-IV

Course Learning Outcomes

CO-1: This course introduces the chemistry of significant biomolecules such as nucleic acids, amino acids, enzymes and lipids.

CO-2: It gives an idea study the concept of energy in biosystems.

CO-3: It introduces the chemistry of different pharmaceutical compounds.

CO-4: It allows to learn basic experimentation techniques for the determination of some biological entities like glycine, protein, salivary amylase and DNA.

Paper Code: CHE-HC-5026

Paper Title: PHYSICAL CHEMISTRY-V

Course Learning Outcomes

CO-1: It introduces the concept of quantum chemistry, the postulates of quantum mechanics and the application of quantum mechanical ideas in some simple systems such as particle in a box, rigid rotator and simple harmonic oscillator.

CO-2: It introduces the concept of spectroscopy viz. rotational, vibrational, Raman, electronic, spin resonance and electronic spectroscopy.

CO-3: It introduces the different concepts of photochemistry.

CO-4: It allows to develop deep learning on UV/Visible spectroscopy and colorimetric experiments.

Paper Code: CHE-HE-5026

Paper Title: ANALYTICAL METHODS IN CHEMISTRY (DSE 1)

Course Learning Outcomes

CO-1: This course helps to learn more about the qualitative/quantitative aspects of analysis.

CO-2: It helps to understand the various separation techniques.

CO-3: It covers some of the widely used instrumental techniques for characterization of samples.

CO-4: It familiarizes the users with different experiments using instrumental techniques and chemical analysis.

Paper Code: CHE-HE-5046

Paper Title: NOVEL INORGANIC SOLIDS (DSE 2)

Course Learning Outcomes

CO-1: This course introduces the synthesis and modifications of inorganic solids and their technological importance.

CO-2: It throws an overview of nanostructures and nanomaterials, preparation, classification, control of self-assembly and use of nanomaterials as bio-nanocomposite, nanotube, nanowire and other bio-functional materials.

CO-3: It helps to learn the engineering materials especially composite materials for mechanical construction and manufacturing, properties, classification and application of conducting polymer materials.

CO-4: It introduces an idea on the different types of composite materials and their applications.

Paper Code: CHE-HC-6016

Paper Title: INORGANIC CHEMISTRY-IV

Course Learning Outcomes

CO-1: This course gives an introduction to inorganic reactions, the kinetic and thermodynamic factors governing the reaction path, stability of inorganic compounds and mechanisms of inorganic reactions.

CO-2: It introduces the concept of organometallic chemistry and the importance of transition metal complexes and their applications as catalysts.

CO-3: It gives an idea about the differential reactivity under different condition of pH and the factors leading to stability of organometallic compounds, their synthesis, reactivity and uses.

CO-4: It allows to study experimentally the qualitative detection of unknown radicals and insoluble materials in a mixture and preparation of different coordination compounds.

Paper Code: CHE-HC-6026

Paper Title: ORGANIC CHEMISTRY-V

Course Learning Outcomes

CO-1: This course introduces molecular spectroscopy in details.

CO-2: It helps to understand carbohydrates in details including monosaccharides, disaccharides and polysaccharides and their reactions.

CO-3: It introduces the details of different types of dyes, polymers and polymerization reactions.

CO-4: It aims to give an experimental idea about the synthesis and extraction of polymers from raw materials and identification of organic compounds by spectroscopy.

Paper Code: CHE-HE-6026

Paper Title: INDUSTRIAL CHEMICALS AND ENVIRONMENT

Course Learning Outcomes

CO-1: This course provides an introduction to the various industrial gases and inorganic chemicals, their manufacturing processes, applications, storage and the hazards of handling them.

CO-2: It allows to study the involvement of industrial chemicals in air and water pollution and their effects on living organisms and the environment.

CO-3: It introduces the concept of biocatalysis and their importance in green chemistry and chemical industry.

CO-4: It gives an experimental idea about the determination of different particles and gases in air and water.

Paper Code: CHE-HE-6056

Paper Title: DISSERTATION

Course Learning Outcomes

CO-1: This course helps to learn how to carry out a project work.

CO-2: It helps to write a review article on a particular field/topic as assigned by the teacher.

CO-3: It helps to prepare a presentation and to present before a panel of experts as set by the institution.

Paper Code: CHE

Paper Title: CHEMISTRY I

Course Learning Outcomes

CO-1: This course helps to learn about the basic component of an atom.

CO-2: It helps to learn how electron occupy orbitals for atom.

CO-3: It helps to learn the bonding characteristics of molecules through different types of sharing of electrons between the orbitals.

CO-4: It helps to learn the structure of atoms and molecules in 3D space.

CO-5: It helps to learn various phenomenon related to gaseous and liquid state of matter.

CO-6: This course also helps students to learn about the basic setups of laboratory.

Paper Code: CHE

Paper Title: CHEMISTRY II

Course Learning Outcomes

CO-1: This course helps to learn about concept of aromaticity in organic compounds.

CO-2: It helps to learn about the colligative properties of solutions.

CO-3: It helps to learn about the preparation of various functional group and possible applications.
