

GOVERNMENT GENERAL DEGREE COLLEGE, MANGALKOTE

Department of Chemistry

Course Outcomes of Generic Electives in Chemistry

For

Three-Year Degree Course in Zoology (Hons)

Under Choice Based Credit System (CBCS)



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Chemistry is the branch of science that systematically study the composition, properties, and reactivity of matter at the atomic and molecular levels. It helps us to understand the science around us and also inside the living organism. It consists of mainly four key branches Organic Chemistry, Inorganic Chemistry, Physical Chemistry and Analytical Chemistry. In our institute, chemistry is taught as a generic elective course for three-year B.Sc (Hons) students in Zoology under CBCS in Sem-I and Sem-III.

Semester-wise Course Outcomes

Semester – I

Generic Elective –T1 (60 classes, 4 credits)

After successful completion of the course, the students will be able to:

- know the structure of atoms and different atomic models.
- learn about quantum numbers and their significance, electronic configuration of different elements.
- understand the periodic table and the variation of periodic properties of the elements in groups and periods.
- understand different concepts of acids and bases.
- find out the relative strength of acids and bases.
- learn how to balance a redox reaction by ion electron method or by oxidation number method.
- understand the basics of organic chemistry and bonding in organic molecules.
- know properties and structures of reactive intermediates.
- get a very good understanding of the stereochemistry of organic molecules.
- know details about substitution and elimination reactions.
- get knowledge about the preparation and reactions of alkanes, alkenes and alkynes.
- learn and formulate mechanisms of different organic reactions.

Generic Elective –P1 (2 credits)

By the end of the course, the students will be able to:

- get knowledge about normality, equivalent weight of compounds and prepare standard solutions.
- learn about volumetric analysis.
- estimate oxalic acid, Fe(II) and Cu(II) quantitatively by redox titration method.
- analyze organic compounds.
- identify functional groups experimentally in solid organic compounds.

Semester – III

Generic Elective –T3 (60 classes, 4 credits)

After successful completion of the course, the students will be able to:

- understand the basic laws of thermodynamics and thermochemistry.
- learn concepts of heat (q), work (w), internal energy (U), enthalpy (H) and Gibbs free energy (G).
- derive the relation between C_p and C_v .
- know the physical concepts of entropy (S).
- solve the mathematical problems in thermodynamics.
- understand thermodynamic conditions of chemical equilibrium.
- Know about different equilibrium constants and also able to derive relations among K_p , K_c , K_x & K_n .
- learn about Le Chatelier's principle and the effect of temperature, pressure & inert gases on the equilibrium.
- get knowledge about electrolytes, degree of ionization and ionic equilibrium.
- derive the expression of degree of ionization and ionization constant for weak acids and weak bases.
- familiar with pH, pK_a and pK_b .
- derive the expression for the hydrolysis constant of salts.



- learn about Aromatic electrophilic substitution reaction and activated aromatic SN2 reaction and its application
- learn about Friedel-Craft's reaction and its application in the synthesis of aromatic hydrocarbons.
- learn about Phenolic compounds and its mechanistic aspects
- know the preparation and application of Grignard reagents in organic chemistry.
- learn about Oppenauer oxidation and pinacol- pinacolone rearrangement.
- understand the chemistry of carbonyl compounds.
- understand the use of reagents in various organic transformation reactions.
- understand the reaction mechanism involved in different organic reactions.

Generic Elective –P3 (2 credits)

Upon successful completion of the course, the students will be able to:

- measure the pH of different solutions like aerated drinks, fruit juices, etc.
- prepare buffer solution and find out the pH of unknown buffer solutions.
- identify pure solid and liquid organic compounds by chemical tests.



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