Government College
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Ref No…… Date……

Chemistry- Course Outcome

The chemistry course curriculum for the undergraduates includes the main areas of chemistry: organic, inorganic, physical chemistry. The purpose of the program is to provide the key knowledge base and laboratory resources to prepare students for careers as professionals in the field of chemistry. The students are taught how to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.

- After completion of degree, students shall gain the theoretical as well as practical knowledge of handling chemicals.
- Achieve the skills required to succeed in graduate school, professional school and the chemical industry like cement industries, agro product, Paint industries, Rubber industries, Petrochemical industries, Food processing industries, cosmetic industries, Fertilizer industries etc.
- Got exposures of a breadth of experimental techniques using modern instrumentation. Understand the importance of the elements in the periodic table including their physical and chemical nature and roles in the daily life.

Semester 1st	**Course: Atomic structure, Periodic table and atomic properties, Covalent bond, Ionic Solids, Gaseous, liquid and solid state, Structure and bonding, Stereochemistry, Mechanism of organic reactions, Alkanes and cycloalkanes** The course aims making the students understand the basic idea of atomic structure, elements and their properties and how this can be helpful in understanding the covalent and ionic bonding in various molecules. Students should be able in predicting geometries of simple molecules. Students should be able to understand the solid, liquid and gaseous states of matter. Further, study of course of organic chemistry is helpful in making students skilled in area of stereochemistry, assigning mechanism to organic reactions and synthesis of alkanes and cycloalkanes.
Semester 2nd	**Course: Hydrogen bonding and Vander Waals forces, Metallic bonding and semiconductors, s,p-block elements, Chemistry of noble gases, Chemical kinetics, Electrochemistry-I, Alkene, Alkynes, Dienes, Arenes, Aromaticity, Alkyl and aryl halides** The course lays an emphasis on various types of bondings, properties and structure of compounds of s and p-block elements. The students are become able to understand the concept of activation energy, steady state, and zero, first and second order rate laws. The students will be made to understand the basic concepts of electrochemistry and its applications. Students become

	familiar with synthesis, physical and chemical properties of alkene, alkynes, dienes, arenes, aromaticity, alkyl and aryl halides.
Semester 3rd	**Course: d-block elements, Coordination compounds, Non-aqueous solvents, Thermodynamics-I, Chemical equilibrium, Distribution law, Alcohols, phenols and epoxides, UV spectroscopy, Aldehydes and ketones** This course is designed to impart knowledge regarding d-block elements and coordination compounds. Students shall understand about chemistry of non-aqueous solvents, thermodynamical aspects and equilibrium in chemical reactions. Students are expected to learn about synthesis, physical and chemical properties of alcohols, phenols and epoxides, aldehydes and ketones. With the help of UV-spectroscopy students will find the conjugation in organic compounds
Semester 4th	**Course: Chemistry of f-block elements, Theory of qualitative and quantitative analysis, Thermodynamics-II, Electrochemistry-II, Infrared spectroscopy, Amines, Carboxylic acids and their derivatives, Diazonium salts.** Upon successful completion students should be able to state and understand the properties of f-block elements and their salts. Apply the laws of thermodynamics; perform calculations with ideal and real gases; design practical engines by using thermodynamic cycles; predict chemical equilibrium and spontaneity of reactions by using thermodynamic principles. Students should be able to apply the concepts of electrochemistry; predicting the functional groups of organic compounds. Students should become familiar with synthesis, physical and chemical properties of amines, Diazonium salts, Carboxylic acids and their derivatives.
Semester 5th	**Course: Metal-ligand bonding, electronic spectra and magnetic properties of transition metal complexes, Thermodynamic and kinetic aspects of metal complexes, Quantum Chemistry, Spectroscopy (Rotational, Vibrational, Raman), Physical properties and molecular structure, NMR spectroscopy, Carbohydrates, Organometallic compounds.** Students should become able in predicting in type of bonding in metal-ligands, electronic spectra and magnetic properties of transition metal complexes. Further students understand about concept of quantum chemistry. On the basis of spectroscopy, students become able in predicting the structure of various type of organic and inorganic compounds. To understand the use of carbohydrates in real life situations and apply the methods to use organometallic reagents in various preparations.
Semester 6th	**Course: Acids and bases, Organometallic chemistry, Bioinorganic chemistry, Silicons, Phosphazenes, Solutions, Phase equilibrium, Photochemistry, Introduction to stastical mechanics, Organic synthesis via enolates, Heterocyclic compounds, Amino acids, peptides & proteins, Synthetic Polymers, Sulphur Compounds** Students became familiar to the use of acids and bases in everyday life and apply the methods to use organometallic reagents in various inorganic preparations. Students became able to understand the uses of various elements in our body organs. Students can choose various types of silicone polymers as per their use as well as phosphazenes. Students become able to

	prepare solutions of various concentrations, extraction by using lead-silver process and water-sulphur system. Students may apply the synthesis methods via enolates, synthesize heterocyclic compounds of medicinal use and synthesize amino acids, peptides and proteins. Students should understand properties of various polymers and sulphur compounds.