



South Calcutta Girls' College

Department of Chemistry

PROGRAMME OUTCOME:

PO-1: In our college Chemistry is offered as a Generic Elective / Minor subject to the students of Botany and Zoology Honours.

PO-2: The basic knowledge of the Chemistry subject is developed by this course.

PO-3: Theoretical knowledge and practical training in Chemistry helps or encourages our students to the development in research and teaching in Chemical Science as well as Bio-science as modern Biology overlaps with Chemistry in explaining the structure and function of all cellular processes at the molecular level.

PO-4: A student has scope for both research and industrial jobs as Biochemist by this course.

PROGRAMME SPECIFIC OUTCOME:

On graduating from the B. Sc. Chemistry General Program (Under CBCS or CCF) students will be able to think high of the role of Chemistry in our daily life. Some details of which are given below.

PSO-1: Students are expected to gain knowledge of the fundamental concepts of chemistry and applied chemistry through theory and practical.

PSO-2: Students are expected to achieve critical thinking ability to design and analyze the results of chemical reactions and they can overcome many difficulties with the help of their sharp scientific knowledge and logical approaches.

PSO-3: Students are expected to have sufficient knowledge to synthesize a chemical compound and perform necessary characterization. They have sufficient knowledge to identify the metal (qualitatively or quantitatively) or any anion (qualitatively) in a solution by which they can be detected the adulterants of any food.

PSO-4: Students are expected to be developing a responsible and ethical scientific temper for team work.

PSO-5: Students are expected to be more aware about finding green chemical reactions, for sustainable development, to save our green world.

COURSE OUTCOME:

COURSE OUTCOME OF CHEMISTRY GENERAL ELECTIVE (UNDER CBCS):

Semester 1:

Course Code: GE 1

CO1: To understand the kinetic behavior of ideal and real gas molecules, critical state of matters.

CO2: To understand the properties of liquids, like surface tension, viscosity and their variation with temperature.

CO3: To understand chemical kinetics, rate and molecularity of reaction.

CO4: To understand the basic concept of structure of matter in atomic level and different related models, equations and theorems to explain the structure.

CO5: To learn the basic concept of periodic table and periodicity of chemical behavior of elements.

CO6: To understand the acid –base behavior of different compounds and the related theories.

CO7: To understand the fundamentals of organic chemistry and their stereochemistry.

CO8: To understand different reaction mechanism and examples of nucleophilic substitution reaction and elimination reaction.

CO9: To learn practically about the quantitative estimation of ions in a solution by using iodometric titration, permanganate titration and dichromate titration.

Semester 2:

Course Code: GE 2

CO1: To understand chemical thermodynamics, laws of thermochemistry and spontaneity of a reaction.

CO2: To understand chemical equilibrium and different laws of chemical equilibrium.

CO3: To learn about ideal and non-ideal solution, Nernst distribution, criteria of phase equilibrium.

CO4: To understand the structure of solid crystal system, lattice system and Bragg's law.

CO5: To understand synthesis and properties of aliphatic.

CO6: To understand error analysis in chemical reaction and computer application.

CO7: To understand redox reactions, Nernst equation and ion-electron method of balancing equation of redox reaction.

CO8: To learn practically about the surface tension, viscosity, kinetics of acid-catalyzed ester hydrolysis, kinetics of decomposition of H_2O_2 and pH of a buffer solution.

Semester 3:**Course Code: GE 3**

CO1: To understand nature of chemical bonding and structure of molecular frame work by VB approach and concept on MO theory.

CO2: To understand the basic chemistry of p-block elements.

CO3: To learn about the basic chemistry of transition elements, lanthanides and actinides.

CO4: To learn about Werner's coordination theory, Valence Bond Theory and IUPAC nomenclature and different geometry of coordination compounds.

CO5: To understand chemical cells and conductance, degree of hydrolysis of salts and principle of buffer solutions.

CO6: To understand synthesis and properties of aromatic hydrocarbons, alkyl halides and organometallic compounds and synthetic applications of Grignard reagent.

CO7: To learn practically about the qualitative detection of known and unknown acid and basic radicals.

Semester 4:**Course Code: GE 4**

CO1: To understand the synthesis, properties and identification of alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids and their derivatives, aliphatic and aromatic amines, and diazonium salts.

CO2: To learn about the chemistry of amino acids and carbohydrates.

CO3: To understand introduction of quantum chemistry and molecular spectroscopy.

CO4: To learn practically about the qualitative detection of single known and unknown organic compounds and the identification of pure solid and liquid organic compounds.

COURSE OUTCOME OF CHEMISTRY MINOR (UNDER CCF):**Semester 1 & 3:****Course Code: MN 1**

CO1: To understand the basic concept of structure of matter in atomic level and different related models, equations, laws and theorems to explain the structure. To learn the basic concept of periodic table and periodicity of chemical behavior of elements.

CO2: To learn about Valence Bond Theory, electronic displacement, MO theorem and stereochemistry of organic compounds.

CO3: To understand chemical thermodynamics, laws of thermochemistry and spontaneity of a reaction. To learn the chemical kinetics, rate and molecularity of reaction.

CO4: To learn practically about preparation of primary standard solution, acid-base titration and the quantitative estimation of ions in a solution by using iodometric titration, permanganate titration and dichromate titration.

Semester 2 & 4:

Course Code: MN 2

CO1: To understand the kinetic behavior of ideal and real gas molecules, critical state of matters. To understand the Virial equation.

CO2: To understand the chemistry of chemical bonding (ionic and covalent bonding). To learn the theoretical principles of inorganic qualitative analysis.

CO3: To learn the stereochemistry and general treatment of reaction mechanism (reaction intermediate, reaction thermodynamics, reaction kinetics and substitution reaction)

CO4: To learn practically about the qualitative detection of known and unknown acid and basic radicals.

Semester 5:

Course Code: MN 3

CO1: To understand the electrophilic and nucleophilic aromatic substitution. To learn about organic acids and bases and tautomerism.

CO2: To understand the different conformations of organic compounds and substitution and elimination reaction.

CO3: To learn about general chemistry, synthesis and properties of alkenes and alkynes.

CO4: To learn practically about the identification of pure solid and liquid organic compounds.

Semester 6:

Course Code: MN 4

CO1: To learn the MO theory, metallic bond and weak chemical forces.

CO2: To understand the acid –base behavior of different inorganic compounds and the related theories and acid-base equilibrium in aqueous solution.

CO3: To learn about nuclear stability, nuclear reactions and radiocarbon dating of radioactive elements.

CO4: To learn practically about the quantitative estimation of ions in a solution by using complexometric titration.