

Programme Specific Outcomes and Course Outcomes

Under Graduate Programme In Chemistry

Programme Outcomes of the B. Sc. Chemistry (model-I) programme

The Programme enables the students

- To understand basic facts and concepts in Chemistry while retaining the exciting aspects of Chemistry so as to develop interest in the study of chemistry as a discipline.
- To develop the ability to apply the principles of Chemistry.
- To appreciate the achievements in Chemistry and to know the role of Chemistry in nature and in society.
- To develop problem solving skills.
- To be familiarized with the emerging areas of Chemistry and their applications in various spheres of Chemical sciences and to apprise the students of its relevance in future studies.
- To develop skills in the proper handling of apparatus and chemicals.
- To be exposed to the different processes used in industries and their applications.

Semester – I

CH1CRT01 – General and Analytical chemistry

Course outcome

To impart students a broad outline of the methodology of science in general and Chemistry in particular. The students will learn the important analytical and instrumental tools used for practicing chemistry.

Semester – II

CH2CRT02-Theoretical and Inorganic Chemistry

Course Outcome

To develop interest among students in various branches of inorganic chemistry. To impart essential theoretical knowledge on atomic structure, periodic properties and chemical bonding.

Practical: CH2CRP01- Volumetric Analysis

Course outcome

To develop skills for quantitative estimation using the different branches of volumetric Analysis

Semester – III

CH3CRT03- Organic Chemistry-I

Course outcome

To make students capable of understanding and studying nomenclature , classification of organic compounds and reactions .To have exposure to various emerging new areas of organic chemistry.

Semester – IV

CH4CRT04 - Organic Chemistry -II

Course outcomes

To impart the students a thorough knowledge about the chemistry of some selected functional groups with a view to develop proper aptitude towards the study of organic compounds and their reactions.

Practical: CH4CRP02- Qualitative Organic Analysis

Course outcomes

To develop skills required for the qualitative analysis of organic compounds, determination of physical constants.

Semester – V

CH5CRT05 –Environment, Ecology and Human Rights

Course outcomes

To create environmental awareness to understand the fragility and sensitivity of environment, in particular the biosphere and the importance of its protection. To foster a sense of responsibility and proactive citizenship.

CH5CRT06- Organic Chemistry-III

Course outcome

To impart the students a thorough knowledge about the mechanisms of reactions of some selected functional groups in organic compounds and also to give an outline of applied organic chemistry and the applications of organic chemistry in various spheres of chemical sciences. To give an elementary idea of chemotherapy, organic compounds like carbohydrates, dyes and heterocyclic compounds.

CH5CRT07-Physical chemistry I

Course outcomes

To understand the general characteristics of different states of matter. To impart knowledge to the students about the intermolecular forces in gases and liquids, the structure of solids, Defects in solids and surface chemistry.

CH5CRT08-Physical chemistry II.

Course outcomes

To impart the students concepts of the fundamentals of quantum mechanics and its applications in the study of structure of atoms, bonding in molecules and molecular spectroscopy. To impart a thorough knowledge of the fundamentals of microwave, infra red, Raman, electronic, NMR, and ESR spectroscopy.

Semester VI

CH6CRT09- INORGANIC CHEMISTRY

Course outcomes

To give the students a thorough knowledge of the different theories to explain the bonding in coordination compounds. To improve the level of understanding of the chemistry of organometallic compounds, metal carbonyls and metal clusters. To give knowledge about some bioinorganic compounds and compounds of p-block elements.

CH 6CRT10 – organic Chemistry IV

Course outcome

To impart the students thorough idea in the chemistry of enzymes, amino acids, proteins and nucleic acids. To study the fundamentals of terpenoids, alkaloids, vitamins, lipids and steroids. To have an

elementary idea of supramolecular chemistry. Identification of organic compounds using spectroscopy.

CH6CRT11-Physical Chemistry III

Course outcomes

To provide an insight into the thermodynamic and kinetic aspects of chemical reactions and phase equilibria. To derive some thermochemical equations and kinetic equations. To study phase diagrams and elementary idea of catalysis.

CH6CRT12-physical chemistry IV

Course outcome

To provide an insight into the characteristics of different types of solutions and electrochemical phenomena. To learn ionic equilibria and electrical properties of ions in solution. To learn the concepts of photochemistry and group theory.

Practicals

CH6CRP03- Qualitative Inorganic Analysis

Course outcomes

To impart skill to students in the systematic qualitative analysis of mixtures containing two acid and two basic radicals with one interfering radical by semi-micro method

CH6CRP04: Preparation and Basic Laboratory Techniques

Course outcomes

The students will develop skills in distillation, solvent extraction, TLC and column chromatography. Enable the students in Organic preparations.

CH6 CRP05: Physical Chemistry Practicals

Course outcomes

To develop skills in doing experiments in kinetics, Potentiometry, transition temperature, critical solution temperature and Conductometry.. Enable the students to prepare data analysis using spreadsheet program.

CH6CRP06- Gravimetric Analysis

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The students will get training in the quantitative analysis of metal ions and anions using gravimetric method

CHOICE BASED COURSE

CH6CBT01- Polymer Chemistry

The students will get a basic understanding of polymer Chemistry and polymer technology. The course will give idea of Synthesis, properties, reactions and applications of different polymers.

OPEN COURSE

CH5OPT01: Chemistry in Everyday life

Course outcome

Chemistry is an integral part of everyday life. This course will give insight into the processes involved in the production of soaps, detergents, cosmetics etc. This will give us information regarding what is the difference between the various types of soaps, their mode of action. A student can also become enlightened about food science, nanomaterials, drugs, plastics, dyes and paper. This paper also gives elementary ideas on pesticides and fertilizers.

COMPLEMENTARY COURSES IN CHEMISTRY

Semester 1

CH1CMT01: Basic Theoretical and Analytical Chemistry

Course outcome

This course will provide an insight into some of the fundamental concepts and principles that are very essential in the study of chemistry. To learn atomic structure, chemical bonding and the concept of equilibrium. The students will understand the fundamentals of principles of analytical chemistry and chromatographic techniques.

Semester II

CH2CMT02: Basic Organic Chemistry

Course outcome

The students will understand some fundamental aspects of organic chemistry. They will learn mechanism and stereochemistry of some organic reactions, classification of polymers, structure and uses of some commercial and natural polymers.

Practical

CH2CMP01: Volumetric Analysis

Course outcome

The students will get skill in the quantitative analysis by doing titrations in the different branches of volumetric analysis.

Semester III

CH3CMT04: Inorganic and Organic Chemistry

Course outcome

This course will promote understanding facts and concepts in inorganic and organic chemistry. This will give the students a basic understanding of nuclear chemistry, Bioinorganic Compounds, drugs, fertilizers and heterocyclic compounds and various types of food additives.

Semester IV

CH4CMT06- Advanced bio organic chemistry

To impart the students thorough idea in the chemistry of enzymes, amino acids, proteins and nucleic acids. To study the fundamentals of terpenoids, alkaloids, vitamins, lipids, carbohydrates and steroids.

Practicals

CH4CMP03: Organic Chemistry Practicals

The students will get training for systematic qualitative analysis of simple organic compounds.