DEPARTMENT OF CHEMISTRY

PROGRAMME SPECIFIC OUTCOME

Chemistry is not just a subject to study. It is the subject which is related to everything that is happening in nature in each moment. Chemistry sees the world at the molecular level. It is fascinating to imagine that in every second thousands of reactions occurring in our surroundings as well as within our body too. Chemistry allows us to understand the working process of the nature, properties of elements, substances and the physical and chemical changes they undergo. From medieval alchemy to modern chemistry, through a huge development, chemistry takes the lead of scientific researches regarding environment, energy production, pharmaceuticals, agriculture and so many important fields.

Programme Specific Outcome

1. A comprehensive understanding of the core content included in three branches of chemistry – Organic, Inorganic and Physical Chemistry will help the students to analyze the physical and chemical processes occurring in the surroundings.
2. Chemistry Honours students are able to recognize and apply the principles of atomic and molecular structure to predict chemical properties and chemical reactivity.
3. Students will be able to employ their critical thinking and scientific inquiry in the performance, design, interpretation, documentation of laboratory experiments which will make them suitable for industrial jobs.
4. Knowledge of analytical chemistry will prepare them for quantitative laboratory work which is highly recommended for chemical industries.
5. The theoretical knowledge of instruments that are commonly used in most chemistry fields will be helpful to the students for higher studies, research work or in industrial jobs for proper handling and data interpretation.
6. Proper understanding and knowledge of the subject will be helpful for the student in teaching profession, higher studies, lab work in chemical industries and research work.

COURSE OUTCOME

1. Atomic structure, Chemical Periodicity will introduce the atoms, orbital and properties of atoms to the students which are the most basic and fundamental part of chemistry.
2. Detailed discussion about the elements of periodic table and their properties will be covered in Group Chemistry including transition elements, lanthanides and actinides.
3. Students will learn about the molecules formed by the atoms, their formation, shape, properties through Chemical bonding including VBT, MOT.

4. Fundamentals of Organic Chemistry will help the students to get a clear idea about the formations of organic molecules, their nature and properties and the factors which influences the reactions.
5. Detailed study of the reagents, reaction intermediates, reaction mechanism pathways – SN1, SN2, SNi, E1, E2, E1CB etc. will make the backbone of organic reaction and synthesis. Students will learn how to carry out a synthesis, prediction of reaction.
6. Knowledge of Chemistry of functional groups like carbonyl, nitrogenous functional group, various name reactions will be highly effective for organic synthesis.
7. Students will learn how to identify the molecules by the application of electromagnetic radiation from 'Molecular spectroscopy' and 'Spectroscopy of Organic molecules – UV, IR, H-NMR which will give a huge support to students in their project/research work in higher studies.
8. Students will be able to analyze the feasibility of any reaction, rate determination , energetic, reaction mechanism determination through Chemical Thermodynamics and Chemical kinetics.
9. Clear concept of Stereochemistry will help the students to deal with crystals, drugs, Biomolecules, polymers and organic syntheses.
10. Provide a background necessary in dealing with different types of Physicochemical phenomena through conventional theoretical approaches, statistical or quantum mechanical formulations.
11. Acid-Base chemistry, Redox reactions will lead the way to maintain a proper way of reaction and to explain or justify any reaction's behaviour in different reaction environment.
12. Students will be introduced to the vast world of d-block elements complex compounds, their properties, utilities, their reactions, their uses as catalysts through Co-ordination chemistry and Organometallic chemistry.
13. Carbohydrate chemistry, Protein-amino acids, bio-inorganic chemistry, bio-physical chemistry links chemistry with the biological world and that knowledge will help students to understand how does the nature works.

SCOPES OF CHEMISTRY

After B.Sc in Chemistry (Hons.) door of so many opportunities will be opened for the students. For a better future in the field of chemistry or for many job requirements M.Sc is highly recommended. Some of the opportunities are -

- Higher Studies–M.Sc in Chemistry in Universities with specialization in any branch of chemistry
- Integrated M.Sc-Ph.D courses/ M.Sc from IIT after graduation by qualifying JAM
- Research/Ph.D after qualifying NET
- Teaching Profession (in Schools/Colleges/Universities - according to required qualification)
- After M.Sc, Ph.D in IITs after qualifying GATE
- Job in ONGC (Oil and Natural Gas Commission) after qualifying GATE
- Jobs at ISRO, BARC

- Job opportunities in Chemical industries, Polymer industries, petroleum industries, Paint industries, Pharmaceutical companies, Cosmetics and Perfume industry etc.
- Employment in Chemical laboratories, Clinical Laboratories, Health care industries
- Quality controller
- Analytical chemist
- Forensic Department
- Water treatment plant
- Food and beverage companies
- Environment and pollution control firms
- Various Govt. jobs after graduation
- Private firms like Dabur, Patanjali, Hindustan Unilever etc.