

Department of Chemistry

PROGRAMME OUTCOME

Programme in chemistry is designed to

- Provide broad and balanced knowledge in basic and applied chemistry by understanding chemicals concepts, related to principles and theories
- Develop student's ability to acquire expertise over detecting and solving problems related theories and practical.
- Provide knowledge and skills that support self employment and service to the nation.

PROGRAMME SPECIFIC OUTCOME

Programme is specified to

- Provide sound knowledge on the fundamentals and applications of chemicals and related theories.
- Interdisciplinary approach of Science and Technology is related to Chemistry.
- Easy assesses to the properties of all elements discovered.
- Application of appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries.
- Provide broad knowledge on different branches of and social application of chemistry
- Understanding the causes of environmental pollution, Contribution of chemistry towards pollution and its solution.
- Acquire the ability to synthesise, separate and characterize compounds using laboratory and instrumentation techniques.

COURSE OUTCOMES, CHEMISTRY, UG

The core courses are the main strength of this framework, whereas discipline specific electives and generic electives are there for academic excellence in the subject together with multi-dimensional and multidisciplinary approach. The core papers are designed to provide an in-depth knowledge on chemistry. The discipline specific electives are introduced in the course to provide additional knowledge about applied aspects of the program as well as its applicability in both academia and industrial fields. Generic electives are introduced to integrate various interdisciplinary courses.

The course pattern of core papers mainly covers theories and practical under sections like Inorganic Chemistry, Organic Chemistry, Physical Chemistry and Analytical Chemistry.

Inorganic Chemistry:

This part is designed to provide broad and in-depth knowledge on composition, structure and properties of different matters, Periodicity in properties of elements and their deviations, Characterization of bonding in simple and complex molecules, Chemistry of main block elements transition and inner transition elements.

Inorganic Chemistry Practical includes Quantitative analysis, Qualitative analysis and synthesis of salts, complex compounds and polymers.

Organic Chemistry:

This part is designed to provide fundamental knowledge on composition, structure, properties and synthesis of organic compounds, Study of reaction paths, including formation and characterization of attacking reagents, reaction intermediates and products, Structure and synthesis of various natural products.

Organic Chemistry Practical covers Purification of organic compounds, Chromatography, Identification of organic compounds by elements (N, S, and halogen) detection, and Functional group detection, derivative preparation and Synthesis of organic compounds

Physical Chemistry

This part includes study of different theories and laws related to composition properties and structural aspects of different elements and compounds. Phase rule, phase diagrams of one component, two component and three component systems, Kinetic and thermodynamic studies of different physical and chemical process, Electro chemical process and related theories.

Physical chemistry Practical includes, study of kinetics of reaction, surface tension, viscosity, conductometry, pH metry, Spectrophotometry,

Analytical Chemistry (Molecular Spectroscopy & Photochemistry)

On completion of this course, the students will be able to understand the basic principles and application of various spectroscopic methods, Basics of electro-analytical techniques and its applications, Understanding principles of separation technology (chromatography) and its use in advanced instrumentations.

Laboratory experiments include application of various instruments for qualitative and quantitative application.

Discipline Specific Elective

Discipline specific electives are there to introduce academic excellence in the subject together with multi-dimensional and multidisciplinary approach. The discipline specific electives are introduced in the course to provide additional knowledge about applied aspects of the program as well as its applicability in academia, industry and social fields. Discipline specific elective covers Green chemistry, polymer chemistry and industrial chemistry including their environmental impact. Green Chemistry is introduced for Understanding green chemistry and its principles, Understanding and

designing of green synthesis. Polymer Chemistry is introduced for skill development in synthesis, characterization of polymers used in society. Industrial chemistry includes chemical application for industrial purpose and its hazardous effect on environment.

COURSE OUTCOMES CHEMISTRY PG

The PG courses in chemistry are designed to develop human resources with ability for diagnosis and solution of chemistry related problems in our society. The courses are designed to provide an advance, up to date, in-depth knowledge on chemistry as well as its applicability in both academia and industrial fields. The main strength of this framework are theoretical and practical approaches under a number of sections including Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry and spectroscopy.

Inorganic Chemistry:

This part is designed to provide advance and up to date knowledge on stereochemistry and bonding in main group elements, Metal ligands bonding, thermodynamic and kinetic aspects of inorganic reaction and its mechanism, Spectroscopic and magnetic properties of transition metal complex, Metal clusters, organometallic, Bioinorganic and supramolecular chemistry, Enzymes and Enzymatic activities. Inorganic Chemistry Practical includes Quantitative analysis, Qualitative analysis and synthesis of complex compounds and polymers.

Organic Chemistry:

This part is designed to provide advanced knowledge on structure and reactivity in organic molecules, reaction mechanisms in aliphatic and aromatic organic compounds, Pericyclic reactions and photochemical reactions, organic synthesis and synthesis of complex molecules. Organic Chemistry Practical covers Identification of organic compounds by elements (N, S, and halogen) detection, and Functional group detection, derivative preparation and Synthesis of organic compounds.

Physical Chemistry

This part includes study of importance and application of quantum mechanics in chemistry, Classical and statistical thermodynamics, Electro chemistry, surface chemistry, Chemical dynamics, Electro chemical techniques used in quantitative and qualitative methodology. Physical chemistry Practical includes, study of kinetics of reaction, surface tension, viscosity, conductometry, pH metry, Spectrophotometry,


Analytical Chemistry

Nimapara Autonomous College, Nimapara, Puri.

On completion of this course, the students will have sound theoretical knowledge and be activated with different laboratory techniques like Thermal analysis, Electro analytical methods and spectroscopic methods.

Spectroscopy

The courses on spectroscopy is so designed that students can acquire a sound information on theoretical aspects as well as practical application of atomic spectroscopy, Molecular spectroscopy, microwave spectroscopy, NMR spectroscopy, ESR spectroscopy, Raman spectroscopy, Vibration and rotational spectroscopy, Mossbauer spectroscopy.


05/01/23.