

## **B. Sc.**

### **Program Outcomes**

1. To obtain knowledge with facts and figures related to various subjects in basic sciences such as Physics, Chemistry, Botany, Zoology, Mathematics.
2. To understand the fundamental concepts, principles, and scientific theories related to various scientific phenomena and their relevance in daily life.
3. To acquire expertise in handling scientific instruments, planning and performing laboratory experiments with accuracy in observation & logical inferences from it.
4. To aware the faculty and students about environment and sustainability
5. To be able to think innovatively to propose novel ideas in explaining facts or providing new solution to the problems.

### **Course Outcomes**

#### **B. Sc. I (Chemistry)**

##### **C O 1**

Students get knowledge of basic aspects of Inorganic Chemistry

Students are also made aware of atomic structure, chemical bonding and periodic properties of the elements.

##### **C O 2**

Students are made aware of fundamental concepts of organic chemistry.

Student get knowledge of the structure, bonding, properties, structural effects, preparation methods, reactivity of alkanes, alkenes, alkyl halides, arenes and other organic compounds.

##### **C O 3**

Students get knowledge of many basic concepts of mathematics and physical chemistry.

Students are made aware about kinetics of chemical reactions, gaseous laws, solid and colloidal state.

#### **B. Sc. II(Chemistry)**

##### **C O 1**

Enable the student to understand the chemistry of lanthanides and actinides, basics of coordination compounds and acid base theory

##### **C O 2**

Student will understand the basics of different types of organic reactions of alcohols, acids, aldehydes, ethers, phenols etc and characterization of compound by using UV and IR techniques..

### **C O 3**

To acquaint knowledge on different theories of thermodynamics and electrochemistry.

### **B. Sc. III(Chemistry)**

#### **C O 1**

Students will get acquainted with the theoretical concepts of spectra of transition metal complexes, HSAB and general chemistry of silicones, phosphozenes and industrially important compounds (organometallic compound). They will also understand crystal field theory of coordination compound.

#### **C O 2**

Student will understand the basics of different types of biological molecules such as carbohydrates, amino acids, proteins etc and other important compounds such Organometallic and heterocyclic compounds. Students are also get knowledge of NMR spectroscopy.

#### **C O 3**

Students are made aware about introductory quantum mechanics and theories of spectroscopy, photochemistry, dipole moment, ideal and non ideal solutions.

### **M. Sc. (Chemistry)**

#### **Program Specific Outcomes**

1. The students pursuing this course would have to develop in depth understanding of various aspects of the subject.
2. It is two ways information sharing process which involves successfully delivering the intended message well receives by other party. Thus the students can deliver their knowledge of chemistry to the society using English or relevant language.
3. In this program students are made aware of pollution problems, waste water management, water treatment etc. They are also made aware importance of energy and water, food, fuels, drugs, general hygiene and cleanliness etc.
4. During the teaching of this course properties of various chemicals (old and newly synthesized) are discussed and also their beneficial and/or adverse effects on the human race/living world are also discussed.

# Course Outcomes

## M. Sc. Semester I

### CO 1

To acquaint knowledge on different theories of formation of Coordination compounds & their applications. They will also learn stereochemistry, molecular symmetry and comparative study of lanthanides and actinides.

### CO 2

Students will get the basic knowledge of nature of bonding, reaction mechanism and stereochemistry of organic compounds and various types of substitution reactions.

### CO 3

Enable the student to understand the laws of statistical thermodynamics, chemistry of macromolecules and basics of molecular spectroscopy.

### CO 4

Students are made aware of fundamental concepts of analytical chemistry. This course give practical knowledge of procedures used in laboratory as chromatography, solvent extraction, titration and spot tests etc.

## M. Sc. Semester II

### CO 1

Students will get acquainted with the basic concept of electronic spectroscopy and electronic spectra and mechanism of transition metal complexes. They will also get knowledge of metal clusters.

### CO 2

Students will understand mechanistic and stereochemical aspect of addition and elimination reactions in organic chemistry. They will also get the knowledge of pericyclic reactions and sigmatropic rearrangement.

### CO 3

Students will understand some important theories of physical chemistry such as quantum chemistry, Chemical kinetics, electrolysis and solid states.

### CO 4

On completion of this course students will be expected to know absorption laws, spectrophotometric instrumentation, sensors and biosensors .

### **M. Sc. Semester III**

#### **C O 1**

Students will get acquainted with the different types of spectroscopic techniques such as UV, IR, NMR and mass spectroscopy.

#### **C O 2**

On completion of this course students will understand molecular rearrangement and photochemical reactions.

#### **C O 3**

Students will understand basic concepts of polymers, theories of polymerization and application of inorganic and organic polymers.

#### **C O 4**

On completion of this course students will be expected to know storage and conversion of electrochemical energy, corrosion of metals and bio-electrochemistry.

#### **C O 5**

Enable the student to understand nomenclature, synthesis and chemistry of three, four, five and six membered heterocycles.

#### **C O 6**

Enable the student to understand the concept and theories of quantum mechanics. This course also helps the students to understand quantum mechanical treatment of diatomic molecules and pi electron systems.

#### **C O 7**

Students will get acquainted with the methods of analysis of food, Water pollution , soil and drugs.

### **M. Sc. Semester IV**

#### **C O 1**

Students will get acquainted with the synthesis, structure and bonding aspects of organometallic compounds, metal carbonyls and nitrosyls.

#### **C O 2**

Students will understand some specific reactions and reagents in organic and inorganic chemistry.

#### **C O 3**

Students will understand electronic, vibrational, ESR, NMR and Mossbauer spectroscopic techniques for elucidation of inorganic spectra.

#### **C O 4**

On completion of this course students will be expected to know the chemistry of natural products such as terpenoids, carotinoids, alkaloids, steroids, prostaglandins and anthocyanins.

#### **C O 5**

This course develops an understanding of supramolecular chemistry and strategies in chemical syntheses.

#### **C O 6**

This course develops an understanding of nano materials, solid state reactions, liquid crystals and crystal defects

#### **C O 7**

The main outcome of this course is to understand drug design and chemistry of cardiovascular, anti infective, psychoactive, antibiotic and anti cancerous drugs and medicines.

  
प्रोफेसर  
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स्नातकोत्तर महाविद्यालय  
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