

## **JSS college for women, Chamarajanagar**

### **Department of Chemistry**

#### **PROGRAM OUTCOMES (CBCS)**

Bachelor of Science (BSc) offers theoretical as well as practical knowledge about different subjects such as Physics, Chemistry and Mathematics. This programme is most beneficial for students who have a strong interest and background in Science.

Following are the various programme outcomes:

1. Demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of Physics.
  2. Develop and understand the value of Mathematical proof and demonstrate proficiency in writing and understanding proofs.
  3. The programme makes the students ready to take up jobs in various sectors such as research firms, health care industry, chemical industry, testing laboratories, Software Company, banks, etc.
  4. Demonstrate the ability to justify and explain their thinking and/or approach.
- 
1. Students are expected to have an understanding of the analytical methods required to interpret and analyze results and draw conclusions as supported by their data.
  2. Students are also expected to develop written and oral communication skills in science and mathematics related topics.
  3. Students are able to analyze inorganic and organic molecules.
  4. The programme develops the team spirit and co- ordination in students through experiential and investigative laboratory learning.
  5. Develop laboratory skills and professional communication skills.
  6. Appreciate the role of chemistry in the society.
  7. The ability to understand, analyze and develop software programs in the areas related to system software, web design, application program, database, graphics and networking for efficient design of technology of varying complexity.
  8. Students will use effective technology appropriately, such as PowerPoint, slides, posters, handouts, and transparencies in oral presentations.
  9. Develop personal skills such as the ability to work both independently and in a group.
  10. Acquire academic abilities, personal qualities and transferable skills, which will give them an opportunity to develop as responsible citizens.

## **COURSE OUTCOMES**

### **SEMESTER-I**

- Able to understand periodic properties and classification of elements according to properties & Structure of atom
- Application of Schrodinger equation and Learn about quantum numbers
- Understand the concepts of basic organic chemistry and importance of organic molecules in daily life.
- Learn about classification of liquid mixtures and their properties
- Application of Nernst distribution law with respect to solvent extraction process and
- Numerical problems
- To know the different Purification techniques of organic compounds.
- Able to understand the concept of Stoichiometry and its relation to reactions
- Learn to name organic compounds and their reactions.

### **SEMESTER-II**

- Know about chemical bonding and its importance
- Able to know the properties and mechanisms of Aromatic hydrocarbons & Alkyl halides
- Understand the kinetics of chemical reactions and their mechanism
- Able to understand electrolytes and types of electrolytic effects
- Capable of understand the concept of hydrolysis of salt and its types, degree of hydrolysis and its relationship with Hydrolysis of salt. pH of solutions and its calculations
- Know about Preparation and synthetic applications of organic reagents and their advantages over inorganic reagents
- Capable to understand the techniques to manufacture of soaps, detergents and waxes

### **SEMESTER-III**

- To be familiar with Chemistry of d and f-block elements.
- Understand the Electronic spectra of transition metal complexes
- Learn about organo - metallic compounds and their reactions
- Understand chemical reactions of Alcohols, Ethers, Epoxides, Crown ethers and carbonyl compounds on the basis of their functional groups
- Learn about to different theories of reaction rates and laws of thermodynamics
- Know about free energy concept
- Learn about Symmetry of elements, Miller indices, Bravais lattices and X-ray diffraction studies and Numerical problems
- Understand the principle, instrumentation and applications of different types of Chromatographic techniques
- Learn about Nanotechnology
- Understand the Structure and classification of Amino acids and proteins.

### **SEMESTER-IV**

- Learn about the Classification of ligands and the theories of coordinate bonding
- Understand the application of co-ordination complexes
- Capable of understand the terms related to structure, stereochemistry and reactions of Carbohydrates
- Know about the application of conductance measurements and conductometric titrations
- To know about physical and chemical properties of liquids

### **SEMESTER-V : PAPER V (DSE)**

- Know about classification of silicates.
- Learn about types and manufacture of ceramics, cement, surface coatings and different types of fertilizers and their manufacture.
- Understand the structure, properties, reactions & application of synthetic drugs, alkaloids, vitamins, hormones
- Learn about Isoprene rule, methods of isolation of terpenes and their structures
- Learn about classification and synthesis of heterocyclic compounds.
- Understand the principle, construction and working of spectrophotometry and photochemistry.
- Capable of understanding the principles and applications of rotational, vibrational, Raman and electronic spectroscopy.
- Understand the concept of radiation Chemistry.

### **SEMESTER-V : SEC -2**

- Learn about the classification of fuels and their calorific value.
- Know about the application of coal in various industries.
- Learn about the different types of petroleum products and their applications in petrochemical industry.
- Know about the classification and properties of lubricants.

### **SEMESTER-VI : PAPER VI (DSE)**

- Be able to understand the different methods of metallurgical process
- Know about the properties and classification of alloys.
- Able to understand the concept of Bio-inorganic Chemistry.
- Capable of understanding the concepts of UV, IR and NMR techniques
- Able to understand the structure, synthesis and importance of natural pigments, diazonium compounds, hydroxy acids, nucleic acids.
- Learn about the special techniques in organic synthesis.
- Able to understand the principles of electrochemistry and its applications
- Know about EMF, types of electrodes and application of electromotive force
- Learn about the concept phase equilibria, adsorption and kinetics of fast reactions and techniques.

### **SEMESTER-VI : SEC -3**

- Know about the concept of kinetics of polymerization.
- Learn about the properties of polymers.
- Understand the concept of polymer solution

## PROGRAMME SPECIFIC OUTCOMES

After completing the B.Sc (PCM) programme students are able to:

1. Take up competitive examinations as the knowledge of science is a definite advantage at the entrance examination of Indian Administrative Services and other state and central Govt. services.
2. Develop scientific temper and thus can prove to be more beneficial for the society.
3. Develop proficiency in the analysis of complex physical problems and the use of mathematical or other appropriate techniques to solve them.
4. Demonstrate skills in the use of Computers.
5. Create a hypothesis and appreciate how it relates to broader theories.
6. Apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries.
7. Develop proficiency in the analysis of complex physical problems and the use of mathematical or other appropriate techniques to solve them.
8. The programme leads the students to the advanced studies i.e. M. Sc and then do some research in multi and inter-disciplinary science for the welfare of the society.
9. Demonstrate professional behaviour such as being objective, unbiased and truthful in all aspects of work and avoiding unethical, irrational behaviour such as fabricating, falsifying or misrepresenting data