

JSS COLLEGE FOR WOMEN (AUTONOMOUS)

Saraswathipuram, Mysuru - 570009

PG DEPARTMENT OF Chemistry

Program Outcomes (POs) for MSc in Chemistry

GUIDELINES AND REGULATIONS LEADING TO MASTER OF SCIENCE IN CHEMISTRY (TWO YEARS - SEMESTER SCHEME UNDER CBCS-CAGP)

Programme details

Programme Outcomes (POs):

After successful completion of the M.Sc. Chemistry programme, students will be able to:

PO1: Advanced Chemical Knowledge

Demonstrate comprehensive knowledge and understanding of fundamental concepts, theories, principles, and applications of organic, inorganic, physical, analytical, materials, bioinorganic, and medicinal chemistry.

PO2: Scientific Reasoning and Problem Solving

Apply chemical principles, mathematical approaches, and logical reasoning to analyse chemical problems, interpret experimental data, and develop appropriate solutions.

PO3: Experimental and Analytical Skills

Develop proficiency in laboratory techniques, instrumentation, quantitative analysis, synthesis, characterization, and interpretation of chemical data using modern analytical methods.

PO4: Research and Innovation Skills

Develop the ability to identify research problems, review scientific literature, design experiments, and apply innovative approaches in chemical research and development.

PO5: Instrumentation and Data Interpretation

Understand and apply advanced characterization techniques such as UV-Visible spectroscopy, IR, NMR, Mass spectrometry, XRD, electrochemical methods, and chromatographic techniques for structural and analytical investigations.

PO6: Interdisciplinary Applications

Apply chemical knowledge to interdisciplinary areas including medicinal chemistry, nanotechnology, environmental science, biotechnology, materials science, and pharmaceutical sciences.

PO7: Environmental and Sustainable Chemistry

Understand principles of green chemistry, environmental analysis, sustainable materials, pollution control, and responsible chemical practices.

PO8: Communication and Professional Skills

Communicate scientific concepts effectively through presentations, technical writing, research reports, seminars, and collaborative activities.

PO9: Ethical and Safety Practices

Practice ethical conduct in scientific research and demonstrate awareness of laboratory safety, chemical hazards, radiation safety, and environmental responsibility.

PO10: Lifelong Learning

Develop the ability to pursue continuous learning, adapt to emerging technologies, and engage with current developments in chemistry and related fields.

Programme Specific Outcomes (PSOs) :

After completion of the M.Sc. Chemistry programme, students will be able to:

PSO1: Advanced Understanding of Chemical Systems

Apply advanced concepts of organic, inorganic, physical, analytical, and biological chemistry to understand chemical structures, reactions, mechanisms, and molecular interactions.

PSO2: Synthesis and Characterization Skills

Design and perform chemical synthesis, purification, and characterization of organic molecules, coordination compounds, nanomaterials, polymers, and bioactive compounds using modern techniques.

PSO3: Application of Spectroscopic and Analytical Techniques

Interpret spectral and analytical data obtained from UV-Visible, IR, NMR, Mass spectroscopy, XRD, electrochemical, chromatographic, and thermal analysis techniques for structural elucidation and material characterization.

PSO4: Research-Oriented Skills in Emerging Areas

Apply knowledge of nanochemistry, bioinorganic chemistry, medicinal chemistry, photochemistry, catalysis, and materials chemistry for solving contemporary scientific problems.

PSO5: Industrial and Societal Applications

Utilize chemical knowledge in areas such as pharmaceuticals, environmental monitoring, food analysis, energy materials, industrial catalysis, and quality control.

PSO6: Sustainable Chemical Practices

Develop awareness and skills in green synthesis, renewable materials, environmental protection, and sustainable approaches in chemical research and industry.