DEPARTMENT OF CHEMISTRY

B.Sc. Chemistry

Programme Outcomes (POs)

On successful completion of the BSc Programme, students will be able to:

PO1: Foundational Knowledge: Apply fundamental principles and methods across key areas of science and multidisciplinary fields.

PO2: Problem Solving and Analysis: Demonstrate analytical and logical skills to address scientific challenges and requirements.

PO3: Scientific Inquiry and Critical Thinking: Cultivate critical thinking and a scientific temper to evaluate and solve complex problems.

PO4: Effective Communication: Communicate scientific concepts clearly and effectively to diverse audiences.

PO5: Ethics and Sustainable Development: Recognize the importance of ethical responsibility and use technology judiciously to promote sustainability.

PO6: Research and Lifelong Learning: Uphold scientific integrity, engage in research, and commit to continuous learning amid technological advancements.

Program Specific Outcomes (PSOs)

PSO1: Understand the fundamental concepts of Chemistry and develop the skills necessary for success in future Chemistry careers.

PSO2: Develop the ability to identify and articulate the principles of both pure and applied Chemistry.

PSO3: Utilize Chemistry knowledge to identify and solve problems, engage in critical thinking, and function effectively in multidisciplinary contexts.

PSO4: Synthesize, compare, evaluate, classify, interpret, and effectively apply the fundamental laws, principles, processes, and mechanisms in the field of Chemistry.

PSO5: Establish a comprehensive foundation in Chemistry, enabling critical evaluation and analysis of scientific facts.

Programme Educational Objectives (PEOs)

The programme will enable the graduates to

PEO1: Acquire in-depth knowledge of the discipline, coupled with technical skills, communication abilities, logical thinking, and problem-solving competence.

PEO2: Develop entrepreneurial and employability traits, functioning as responsible citizens with the ability to tackle challenging tasks, transform rural communities, and adapt to contemporary technologies.

Graduate Attributes:

Attributes of chemistry graduate under the outcome-based teaching-learning framework may encompass the following:

1. **Core competency:** The chemistry graduates are expected to know the fundamental concepts of chemistry and applied chemistry. These fundamental concepts would reflect the latest understanding of the field, and therefore, are dynamic in nature and require frequent and time-bound revisions.

2. **Communication skills:** Chemistry graduates are expected to possess minimum standards of communication skills expected of a science graduate in the country. They are expected to read and understand documents with in-depth analyses and logical arguments. Graduates are expected to be well-versed in speaking and communicating their idea/finding/concepts to wider audience

3. **Critical thinking:** Chemistry graduates are expected to know basics of cognitive biases, mental models, logical fallacies, scientific methodology and constructing cogent scientific arguments.

4. **Psychological skills:** Graduates are expected to possess basic psychological skills required to face the world at large, as well as the skills to deal with individuals and students of various sociocultural, economic and educational levels. Psychological skills may include feedback loops, self-compassion, self-reflection, goal-setting, interpersonal relationships, and emotional management.

5. **Problem-solving:** Graduates are expected to be equipped with problem-solving philosophical approaches that are pertinent across the disciplines.

6. **Analytical reasoning:** Graduates are expected to acquire formulate cogent arguments and spot logical flaws, inconsistencies, circular reasoning etc.

7. **Research-skills:** Graduates are expected to be keenly observant about what is going on in the natural surroundings to awake their curiosity. Graduates are expected to design a

scientific experiment through statistical hypothesis testing and other a priori reasoning including logical deduction.

8. **Teamwork:** Graduates are expected to be team players, with productive cooperation involving members from diverse socio-cultural backgrounds.

9. **Digital Literacy:** Graduates are expected to be digitally literate for them to enroll and increase their core competency via e-learning resources such as MOOC and other digital tools for lifelong learning. Graduates should be able to spot data fabrication and fake news by applying rational skepticism and analytical reasoning.

10. **Moral and ethical awareness:** Graduates are expected to be responsible citizen of India and be aware of moral and ethical baseline of the country and the world. They are expected to define their core ethical virtues good enough to distinguish what construes as illegal and crime in Indian constitution. Emphasis be given on academic and research ethics, including fair Benefit Sharing, Plagiarism, Scientific Misconduct and so on.

11. **Leadership readiness:** Graduates are expected to be familiar with decision making process and basic managerial skills to become a better leader. Skills may include defining objective vision and mission, how to become charismatic inspiring leader and so on.