M. Sc CHEMISTRY

FROM THE ACADEMIC YEAR 2023-2024

Programme Outcomes (POs)

PO1: Problem Solving Skill Apply knowledge of Management theories and Human Resource practices to solve business problems through research in Global context.

PO2: Decision Making Skill Foster analytical and critical thinking abilities for data-based decision-making. PO3: Ethical Value Ability to incorporate quality, ethical and legal value-based perspectives to all organizational activities.

PO4: Communication Skill Ability to develop communication, managerial and interpersonal skills. PO5: Individual and Team Leadership Skill Capability to lead themselves and the team to achieve organizational goals.

PO6: Employability Skill Inculcate contemporary business practices to enhance employability skills in the competitive environment.

PO7: Entrepreneurial Skill Equip with skills and competencies to become an entrepreneur.

PO8: Contribution to Society Succeed in career endeavors and contribute significantly to society.

PO9: Multicultural competence Possess knowledge of the values and beliefs of multiple cultures and a global perspective.

PO10: Moral and ethical awareness/reasoning Ability to embrace moral/ethical values in conducting one's life.

Programme Specific Outcomes (PSOs)

PSO1 – Placement Prepare the students who will demonstrate respectful engagement with others' ideas, behaviors, beliefs and apply diverse frames of reference to decisions and actions.

PSO2 – Entrepreneur Create effective entrepreneurs by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations.

PSO3 – Research and Development Design and implement HR systems and practices grounded in research that comply with employment laws, leading the organization towards growth and development.

PSO4 – Contribution to Business World Produce employable, ethical and innovative professionals to sustain in the dynamic business world.

PSO5 – Contribution to the Society Contribute to the development of the society by collaborating with stakeholders for mutual benefit.

Course Outcomes (for Mapping with POs and PSOs)

CO1: To recall the basic principles of organic chemistry.
CO2: To understand the formation and detection of reaction intermediates of organic reactions.
CO3: To predict the reaction mechanism of organic reactions and stereochemistry of organic compounds.
CO4: To apply the principles of kinetic and non-kinetic methods to determine the mechanism of reactions.
CO5: To design and synthesize new organic compounds by correlating the stereochemistry of organic compounds.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

Strong – 3,   Medium-2,   Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Methods of Assessment

Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions.
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, short summary or overview.
Application (K3)	Suggest idea/concept with examples, suggest formulae, solve problems, Observe, Explain.
Analyze (K4)	Problem-solving questions, finish a procedure in many steps, Differentiate between various ideas, Map knowledge.
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons.
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations.

In order to avoid pull the score down of each PO, it is suggested that the usage L-Low (1) to the minimum.

The S, M, L is based on the course outcome. The mapping is based on the revised Bloom's Taxonomy Verbs used to describe your course outcome.

- Remember and Understanding – Lower level
- Apply and Analyze – Medium Level
- Evaluate and Create – Strong Level

Year I

SEMESTER I

Core I – CC1: ORGANIC REACTION MECHANISM – I

Course Outcomes (for Mapping with POs and PSOs)
Students will be able

CO1: To recall the basic principles of organic chemistry.
CO2: To understand the formation and detection of reaction intermediates of organic reactions.
CO3: To predict the reaction mechanism of organic reactions and stereochemistry of organic compounds.
CO4: To apply the principles of kinetic and non-kinetic methods to determine the mechanism of reactions.
CO5: To design and synthesize new organic compounds by correlating the stereochemistry of organic compounds.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

Strong – 3,   Medium-2,   Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Method of Assessment

Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions.
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, short summary or overview.
Application (K3)	Suggest idea/concept with examples, suggest formulae, solve problems, Observe, Explain.
Analyze (K4)	Problem-solving questions, finish a procedure in many steps, Differentiate between various ideas, Map knowledge.
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons.
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations.

Core II – CC2 : STRUCTURE AND BONDING IN INORGANIC COMPOUNDS

Course Learning Outcomes (for Mapping with POs and PSOs)
Students will be able
CO1: To predict the geometry of main group compounds and clusters.
CO2: To explain about the packing of ions in crystals and apply the radius ratio rule to predict the coordination number of cations.
CO3: To understand the various types of ionic crystal systems and analyze their structural features.
CO4: To explain the crystal growth methods.
CO5: To understand the various types of defects in crystals.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Core III - CC3 : ORGANIC CHEMISTRY PRACTICAL-I

Course Learning Outcomes (for Mapping with POs and PSOs)

Students will be able:

CO1: To explain the basic separation procedures of organic mixtures.
CO2: To select the separation methods to separate the organic mixtures.
CO3: To classify the functional groups using systematic procedure.
CO4: To determine the physical properties of organic compounds.
CO5: To analyze the separated organic components systematically and derivative them suitably.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 – Low

Core IV- CC4 : PHYSICAL CHEMISTRY PRACTICAL

Course Learning Outcomes (for Mapping with POs and PSOs)

Students will be able:

CO1: To recall the principles associated with various physical chemistry experiments.

CO2: To explain the principles of conductometric titrations and estimate the strength of solutions.

CO3: To observe and record systematically the readings in all the experiments.

CO4: To calculate and process the experimentally measured values and compare with graphical data.

CO5: To interpret the experimental data scientifically to improve students' efficiency for societal developments.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 – Low

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 – Low

Elective I – EC1 : PHARMACEUTICAL CHEMISTRY

Course Learning Outcomes (for Mapping with POs and PSOs)
Students will be able:

CO1: To identify the suitable drugs for various diseases.
CO2: To apply the principles of various drug action and drug design.
CO3: To acquire the knowledge on product development based on SAR.
CO4: To apply the knowledge on applications of computers in chemistry.
CO5: To synthesize new drugs after understanding the concepts SAR.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level Of Correlation Between PSO's And CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Elective I – EC1 : NANO MATERIALS AND NANO TECHNOLOGY

Course Learning Outcomes (for Mapping with POs and PSOs)

Students will be able:
CO1: To explain methods of fabricating nanostructures.
CO2: To relate the unique properties of nanomaterials to reduce dimensionality of the material.
CO3: To describe tools for properties of nanostructures.
CO4: To discuss applications of nanomaterials.
CO5: To understand the health and safety related to nanomaterial.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Elective II - EC2 : ELECTROCHEMISTRY

Course Learning Outcomes (for Mapping with POs and PSOs)

Students will be able:

CO1: To understand the behaviour of electrolytes in solution and compare the structures of electrical double layer of different models.

CO2: To predict the kinetics of electrode reactions applying Butler-Volmer and Tafel equations

CO3: To study the mechanism of multi- step electrode reactions.

CO4: To discuss the theories of electrolytes, electrical double layer, electrodics and activity coefficient of electrolytes

CO5: To have knowledge on storage devices and electrochemical reaction mechanism.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Elective II – EC2 : MOLECULAR SPECTROSCOPY

Course Learning Outcomes (for Mapping with POs and PSOs)

Students will be able:

CO1: To understand the importance of rotational and Raman spectroscopy.

CO2: To apply the vibrational spectroscopic techniques to diatomic and polyatomic molecules.

CO3: To evaluate different electronic spectra of simple molecules using electronic spectroscopy.

CO4: To outline the NMR, ^{13}C NMR, 2D NMR – COSY, NOESY, Introduction to ^{31}P, ^{19}F NMR and ESR spectroscopic techniques.

CO5: To develop the knowledge on principle, instrumentation and structural elucidation of simple molecules using Mass Spectrometry, EPR and Mossbauer Spectroscopy techniques.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

SEMESTER – II

Core V – CC5 : ORGANIC REACTION MECHANISM – II

Course Learning Outcomes (for Mapping with POs and PSOs)
Students will be able:
CO1: To recall the basic principles of chemical reactions.
CO2: To understand the mechanism of various types of organic reactions.
CO3: To predict the suitable reagents for the conversion of selective organic compounds.
CO4: To correlate the principles of substitution, elimination, and addition reactions.
CO5: To design new routes to synthesis organic compounds.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Core VI – CC6 : PHYSICAL CHEMISTRY-I

Course Learning Outcomes (for Mapping with POs and PSOs)

Students will be able:
CO1: To explain the classical and statistical concepts of thermodynamics.
CO2: To compare and correlate the thermodynamic concepts to study the kinetics of chemical reactions.
CO3: To discuss the various thermodynamic and kinetic determination.
CO4: To evaluate the thermodynamic methods for real gases ad mixtures.
CO5: To compare the theories of reactions rates and fast reactions.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Core VII – CC7 : ORGANIC CHEMISTRY PRACTICAL – II

Course Learning Outcomes (for Mapping with POs and PSOs)
Students will be able:
CO1: To recall the basic principles of organic quantitative analysis.
CO2: To explain the method of estimation of organic compounds.
CO3: To develop the skills to estimate organic compounds.
CO4: To develop the skills to handle corrosive and toxic chemicals in organic preparations.
CO5:To categorize organic reactions and their mechanisms relevant to organic preparations.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Core VIII – CC8 : INORGANIC CHEMISTRY PRACTICAL-I

Course Learning Outcomes (for Mapping with POs and PSOs)
Students will be able:
CO1: To explain the principles and techniques and have skills of qualitative analysis of familiar and less familiar cations in a mixture.
CO2: To analyze a metal ion in the presence of another metal ion.
CO3: To acquire the qualitative analytical skills by selecting suitable confirmatory tests and spot tests.
CO4: To describe the principles, techniques and skills related to quantitative determination of ions in a mixture by complexometric titration.
CO5: To estimate one metal ion in presence of another metal ion by complexometric method.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Elective III – EC3: MEDICINAL CHEMISTRY

Course Learning Outcomes (for Mapping with POs and PSOs)

Students will be able:

CO1: To predict drugs properties based on its structure.

CO2: To describe the factors that affect its absorption, distribution, metabolism, and excretion, and hence the considerations to be made in drug design.

CO3: To explain the relationship between drug's chemical structure and its therapeutic properties.

CO4: To give the knowledge of different theories of drug actions at molecular level.

CO5: To identify different targets for the development of new drugs for the treatment of cancer.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Elective III – EC3 : GREEN CHEMISTRY

Course Learning Outcomes (for Mapping with POs and PSOs)

Students will be able:

CO1: To recall the basic chemical techniques used in conventional industrial preparations and in green innovations.

CO2: To understand the various techniques used in chemical industries and in laboratory.

CO3: To compare the advantages of organic reactions assisted by renewable energy sources and non-renewable energy sources.

CO4: To apply the principles of PTC, ionic liquid, microwave and ultrasonic assisted organic synthesis.

CO5: To design and synthesize new organic compounds by green methods.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Elective IV – EC4 : BIO INORGANIC CHEMISTRY

Course Learning Outcomes (for Mapping with POs and PSOs)

Students will be able:
CO1: To analyze trace elements.
CO2: To explain the biological redox systems.
CO3: To gain skill in analyzing the toxicity in metals.
CO4: To get experience in diagnosis.
CO5: To explain nitrogen fixation and photosynthetic mechanism.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Elective IV – EC4 : MATERIAL SCIENCE

Course Learning Outcomes (for Mapping with POs and PSOs)

Students will be able:
CO1: To understand and recall the synthesis and characteristics of crystal structures, semiconductors, magnets and renewable energy materials.
CO2: To integrate and assess the structure of different materials and their properties.
CO3: To analyse and identify new materials for energy applications.
CO4: To explain the importance of crystal structures, piezoelectric and pyroelectric materials, nanomaterials, hard and soft magnets, superconductors, solar cells, electrodes, LED uses, structures and synthesis.
CO5: To design and develop new materials with improved property for energy applications.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

Skill Enhancement Course – SEC 1 : COMPUTATIONAL CHEMISTRY

Course Learning Outcomes (for Mapping with POs and PSOs)
Students will be able:
CO1: To describe the basic and need of Computational Chemistry.
CO2: To understand the applications of Computational Chemistry methods.
CO3: To gain knowledge about the Molecular docking.
CO4: To use chemical software for drawing chemical structures, reaction schemes and generation of their names.
CO5: To perform molecular docking in structural molecular biology and computer assisted drug design which enhance their employability in academia and industry.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	S	S	S	S	M	S	S	S	S	M
CO 2	M	S	S	S	S	M	S	S	S	S
CO 3	S	S	M	S	S	S	S	M	S	S
CO 4	M	S	S	S	S	M	S	S	S	S
CO 5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to PSOs	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low