



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



FATIMA COLLEGE (AUTONOMOUS), MADURAI – 625018

NAME OF THE PROGRAMME: M.Sc. CHEMISTRY

PROGRAMME CODE: PSCH

PROGRAMME OUTCOMES:

Students will be able to

- PO1:** Apply acquired scientific knowledge to solve major and complex issues in the society/industry.
- PO2:** Attain research skills to solve complex cultural, societal and environmental issues.
- PO3:** Employ latest and updated tools and technologies to solve complex issues.
- PO4:** Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives.

PROGRAMME SPECIFIC OUTCOMES:

- PSO1:** Equipped with an in-depth knowledge of varied fields namely Organic Chemistry, Inorganic Chemistry, Physical and nano chemistry.
- PSO1:** Training in problem solving procedures enables to interpret the experimental data into structures and mechanisms.
- PSO2:** Provides a tremendous exposure and cultivates analytical and synthesising measures necessary to take up project work in reputed institutions.
- PSO3:** Programme renders diversified thinking thereby promotes creative skills.



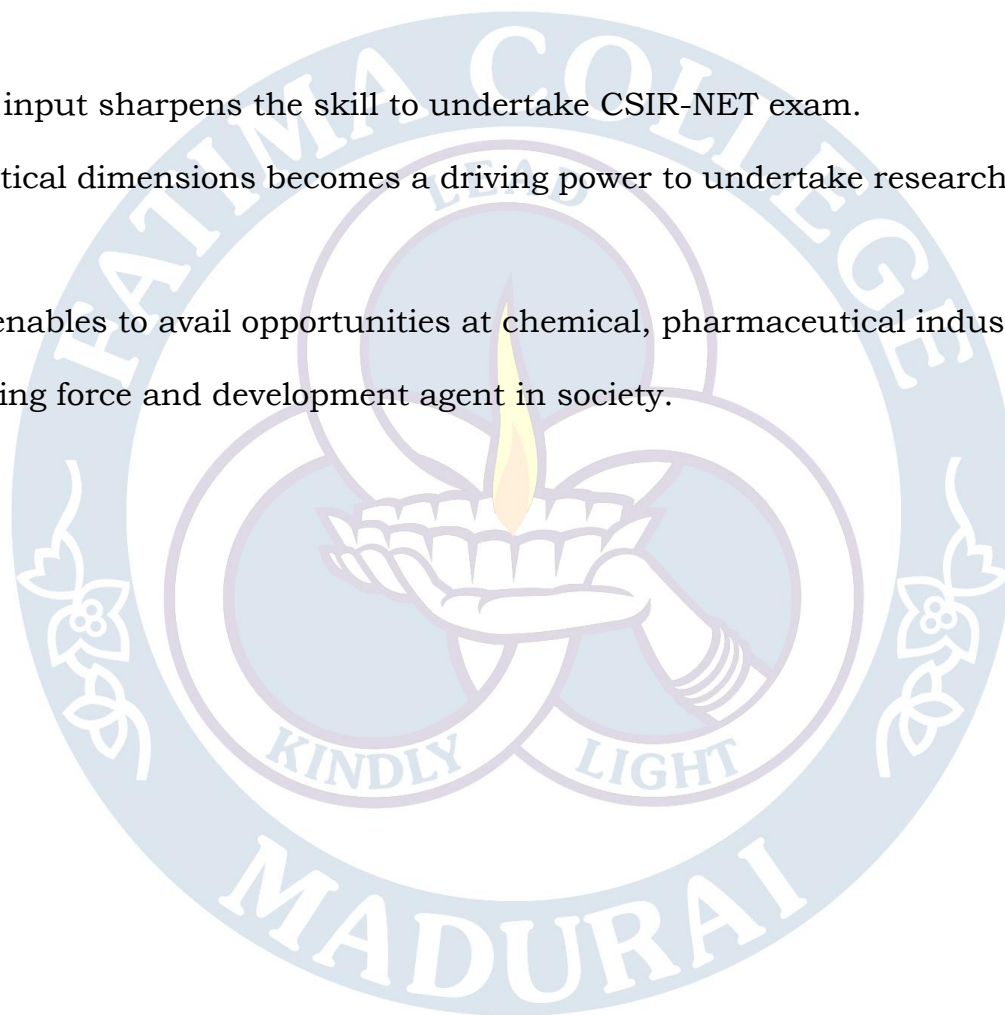
Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



- PSO4:** Directed to solve the problems that cause a negative impact on surroundings to pursue salient steps to safeguard environment,.
- PSO5:** Application-oriented input sharpens the skill to undertake CSIR-NET exam.
- PSO6:** Knowledge with practical dimensions becomes a driving power to undertake research in different areas at a global level.
- PSO7:** Multi-layered input enables to avail opportunities at chemical, pharmaceutical industries.
- PSO8:** Becomes a contributing force and development agent in society.





Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



2019-2020

COURSE CODE	COURSE TITLE	COURSE OUTCOMES
19PG1C1	Inorganic Chemistry-I	<p>CO1: To analyse all chemical species involved in organic and Inorganic reactions and to identify those as acid and bases</p> <p>CO2: To classify the bonds as ionic and covalent and to compare the theories</p> <p>CO3: To categorize the solid systems, to calculate the lattice energy and draw conclusions on their stability</p> <p>CO4: To predict the structures and magnetic properties of Inorganic compounds</p> <p>CO5: To gain in-depth knowledge of nuclear reactions, reactors and the applications of radio isotopes in all fields</p>
19PG1C2	Organic Chemistry-I	<p>CO1: To interpret the concept of aromaticity and the main properties of aromatic compounds.</p> <p>CO2: To explore reactivity patterns of conjugated ,aromatic molecules</p>



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<p>and to evaluate the kinetics and thermodynamics controlled reactions.</p> <p>CO3: To define the fundamentals of hilarity, prochirality, symmetry elements and applications of atropisomers.</p> <p>CO4: To comprehend of nucleophiles, electrophiles, electronegativity, and resonance</p> <p>CO5: To sketch the preparation and properties of heterocyclic compounds.</p>
19PG1C3	Physical Chemistry-I	<p>CO1: To gain knowledge Kohlrausch's law and electrolytic conductance</p> <p>CO2: Calculate the molar conductance, degree of dissociation and electrical potential Possess thorough understanding of Debye-Huckel equation</p> <p>CO3: To gain knowledge of Electro catalysis and Electro synthesis</p> <p>CO4: Describe in detail about the three laws of thermodynamics</p> <p>CO5: Restate in their own words about the concept of distribution,</p>



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<p>thermodynamic probability and most probable distribution</p> <p>CO6: Correlate and explain the partial molar properties, chemical potential</p> <p>CO7: Categorize and compare various partition functions - translational, rotational, vibrational and electronic partition functions</p> <p>CO8: Distinguish various Fermi-Dirac and Bose-Einstein statistics and Maxwell-Boltzmann statistics based on the nature of the particles.</p>
19PG1C4	Inorganic Practicals-I	<p>CO1: To study the principle of distribution of common and rare metal ions in different groups.</p> <p>CO2: To know the inter- and intra group precipitation and separation of metal ions.</p> <p>CO3: To improve the skill in the qualitative analysis of rare metal ions in different groups.</p> <p>CO4: To identify the methodology to analyse a metal ion in the presence of another metal ion.</p>



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



19PG1C5	Organic Practicals-I	<p>CO1: To be skilled in the separation of binary organic mixtures</p> <p>CO2: To gain knowledge on the skills of doing micro level analysis</p> <p>CO3: To know the methods of qualitative analysis of organic compounds</p> <p>CO4: To learn about the preparation of suitable derivative of the organic functional groups</p> <p>CO5: To prepare organic compounds.</p>
19C1EDC	Essentials Of Life	<p>CO1: To acquire knowledge of common medicine.</p> <p>CO2: To express the concentration of solution in volumetric analysis.</p> <p>CO3: To differentiate column and TLC technique.</p> <p>CO4: To classify the different types of polymers and its characteristics.</p> <p>CO5: To analyze the different types of soil and differentiate natural fertilizer from artificial fertilizer.</p>
19PG2C6	Inorganic Chemistry-Ii	<p>CO1: Compare the stabilities of complexes using stability constants</p>



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<p>and to identify the types of isomers</p> <p>CO2: To describe the theories of co-ordination compounds to understand the colours and magnetic properties and their position in the spectra chemical series</p> <p>CO3: Investigate the structures of complexes using IR,NMR ,E SR and other spectral techniques</p> <p>CO4: To .Possess a thorough understanding of electronic spectra of complexes</p> <p>CO5: To arrive at the mechanisms of substitution reactions in six and four coordinated complexes using kinetic studies</p>
19PG2C7	Organic Chemistry-II	<p>CO1: To comprehend the mechanism of elimination and substitution reactions and to apply the stereochemistry in E1, E2, ionic and pyrolytic eliminations.</p> <p>CO2: To interpret the concept of nucleophilic and free radical addition reactions and metal hydride reduction and to discriminate the reactivity of organometallic reagents.</p> <p>CO3: To explore reactivity patterns of substituted cyclohexanes and to</p>



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<p>employ conformational reactivity in cis and trans decalins and to apply conformations in SN1, SN2, ionic, pyrolytic eliminations and NGP reactions.</p> <p>CO4: To acquire a complete knowledge of the principles of UV, IR spectroscopy and to examine the various functional groups present in organic molecules using λ_{max} and IR frequency values .</p> <p>CO5: To differentiate the molecular rearrangements and to solve the simple problems and to recall the various naming reactions and to interpret the products.</p>
19PG2C8	Physical Chemistry-II	<p>CO1: To acquire knowledge about the basic concepts of chemical kinetics</p> <p>CO2: To identify and analyze the effect of physical parameters μ, \square, D on rate of reaction</p> <p>CO3: To derive rate constant for reactions using Lindeman, Hinshelwood, RRK, RRKM Theories</p> <p>CO4: To develop a knowledge and understanding of the concept</p>



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<p>Normalisation and orthogonalisation and to solve Schrodinger wave equation for particle in a one dimensional box, three dimensional box and Rigid rotator.</p> <p>CO5: To apply variation and perturbation method to He atom</p> <p>CO6: To calculate Delocalisation energy and π- bond order of conjugated molecules like cyclobutadiene, cyclopropenyl system and 1,3 butadiene.</p>
19PG2C9	Inorganic Practicals-Ii	<p>CO1: To enable the students to acquire the quantitative skills in volumetric analysis and gravimetric analysis</p> <p>CO2: To improve the skill in quantitative estimation of metal ions by various titric methods</p> <p>CO3: To identify the methodology to estimate a metal ion in the presence of another metal ion.</p> <p>CO4: To be skilled in synthesis of inorganic complexes.</p>
19PG2C10	Organic Practicals-Ii	<p>CO1: To develop the ability for synthesizing organic compounds by single stage.</p>



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		CO2: To develop the ability for synthesizing Organic compounds by double stage. CO3: To study the reaction mechanism.
19C2EDC	Essentials Of Life	CO1: To acquire knowledge of common medicine. CO2: To express the concentration of solution in volumetric analysis. CO3: To differentiate column and TLC technique. CO4: To classify the different types of polymer s and its characteristics. CO5:To analyze the different types of soil and differentiate natural fertilizer from artificial fertilizer.
COURSE CODE	COURSE TITLE	COURSE OBJECTIVES
PG3C11	Organic Chemistry-III	<ul style="list-style-type: none"> To acquire a complete knowledge of the working principles of ¹H-NMR, ¹³C-NMR and Mass spectroscopy. To develop an understanding of the significance of the number, positions, intensities and splitting of signals in nuclear magnetic



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		resonance spectra.
PG3C12	Physical Chemistry-III	<ul style="list-style-type: none"> To differentiate the types of elements and symmetry operations. To recognize the reducible & irreducible Representation.
PG3CE1	Material Chemistry	<ul style="list-style-type: none"> To gain knowledge about the basic principles of nano chemistry and classification of nano materials. To describe several synthesis of inorganic nano particles, one-dimensional nanostructures (nano tubes, nano rods, nano wires), thin films, nano porous materials, and nano structured bulk materials.
PG3CE2	Bio-Organic Chemistry	<ul style="list-style-type: none"> To tabulate the functions and uses of enzymes To design of drugs using molecular modelling
PG4C13	Inorganic Chemistry-Iii	<ul style="list-style-type: none"> To calculate the SEP and identification of structure of boranes and carboranes To describe the basic concepts of bio-inorganic compounds
PG4C14	Organic Chemistry-Iv	<ul style="list-style-type: none"> To know the Retro synthesis of achiral open chain molecules and cyclic target molecules,



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<ul style="list-style-type: none"> To identify the suitable reagents in synthesis of organic compounds
PG4C15	Physical Chemistry-Iv	<ul style="list-style-type: none"> To calculate the bond lengths of diatomics from the value of their rotational constant. To Outline the selection rules for rotational and vibrational spectra and rationalize the role of the molecular dipole moment in the selection rules.
PG4CE3	Analytical Chemistry	<ul style="list-style-type: none"> To educate to calculate error analysis for various tests To identify the applications of C-programming in chemistry
PG4CE4	Chemical Engineering	<ul style="list-style-type: none"> To demonstrate an understanding of computer programming language concepts To explain the aim of water treatment, and discuss the required characteristics should the drinking water have.
PG4C16	Physical Practicals	<ul style="list-style-type: none"> To demonstrate conduct metric Titration of Strong acid with a Strong Base. To determine CST for the partial miscible solutions



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



PG4C17	Project	<ul style="list-style-type: none"> To carry out scientific experiments To accurately record and analyze the results of such experiments.
--------	---------	--

2018-2019

COURSE CODE	COURSE TITLE	COURSE OBJECTIVES
PG1C1	Inorganic Chemistry-I	<ul style="list-style-type: none"> To analyse all chemical species involved in organic and Inorganic reactions and to identify those as acid and bases To classify the bonds as ionic and covalent and to compare the theories
PG1C2	Organic Chemistry-I	<ul style="list-style-type: none"> To interpret the concept of aromaticity and the main properties of aromatic compounds. To explore reactivity patterns of conjugated, aromatic molecules and to evaluate the kinetics and thermodynamics controlled reactions.
PG1C3	Physical Chemistry-I	<ul style="list-style-type: none"> To gain knowledge Kohlrausch's law and electrolytic conductance Calculate the molar conductance , degree of dissociation and



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		electrical potential
PG1C4	Inorganic Practicals-I	<ul style="list-style-type: none"> To study the principle of distribution of common and rare metal ions in different groups. To know the inter- and intra group precipitation and separation of metal ions.
PG1C5	Organic Practicals-I	<ul style="list-style-type: none"> To be skilled in the separation of binary organic mixtures To gain knowledge on the skills of doing micro level analysis
PGCEDC	Analytical Techniques	<ul style="list-style-type: none"> To be skilled in the various types of chromatographic techniques To attain knowledge on optical spectroscopy, EPR, Mass spectroscopy.
PG2C6	Inorganic Chemistry-Ii	<ul style="list-style-type: none"> Compare the stabilities of complexes using stability constants and to identify the types of isomers To describe the theories of co-ordination compounds to understand the colours and magnetic properties and their position in the spectro chemical series
PG2C7	Organic Chemistry-Ii	<ul style="list-style-type: none"> To comprehend the mechanism of elimination and substitution



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<p>reactions and to apply the stereochemistry in E1, E2, ionic and pyrolytic eliminations.</p> <ul style="list-style-type: none"> To interpret the concept of nucleophilic and free radical addition reactions and metal hydride reduction and to discriminate the reactivity of organometallic reagents.
PG2C8	Physical Chemistry-Ii	<ul style="list-style-type: none"> To acquire knowledge about the basic concepts of chemical kinetics To identify and analyze the effect of physical parameters μ, \square, D on rate of reaction
PG2C9	Inorganic Practicals-Ii	<ul style="list-style-type: none"> To enable the students to acquire the quantitative skills in volumetric analysis and gravimetric analysis To improve the skill in quantitative estimation of metal ions by various titric methods
PG2C10	Organic Practicals-Ii	<ul style="list-style-type: none"> Students understand the quantitative analysis To develop the ability for synthesizing organic compounds by single stage.



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



PGCEDC	Analytical Techniques	<ul style="list-style-type: none"> To be skilled in the various types of chromatographic techniques To attain knowledge on optical spectroscopy, EPR, Mass spectroscopy
PG3C11	Organic Chemistry-Iii	<ul style="list-style-type: none"> To acquire a complete knowledge of the working principles of ¹H-NMR, ¹³C-NMR and Mass spectroscopy. To develop an understanding of the significance of the number, positions, intensities and splitting of signals in nuclear magnetic resonance spectra.
PG3C12	Physical Chemistry-Iii	<ul style="list-style-type: none"> To differentiate the types of elements and symmetry operations. To recognize the reducible & irreducible Representation.
PG3CE1	Material Chemistry	<ul style="list-style-type: none"> To gain knowledge about the basic principles of nanochemistry and classification of nanomaterials. To describe several synthesis of inorganic nanoparticles, one-dimensional nanostructures (nanotubes, nanorods, nanowires), thin films, nanoporous materials, and nanostructured bulk materials.



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



PG3CE2	Bio-Organic Chemistry	<ul style="list-style-type: none"> To tabulate the functions and uses of enzymes To design of drugs using molecular modelling
PG4C13	Inorganic Chemistry-Iii	<ul style="list-style-type: none"> To calculate the SEP and identification of structure of boranes and carboranes To describe the basic concepts of bio-inorganic compounds
PG4C14	Organic Chemistry-Iv	<ul style="list-style-type: none"> To know the Retro synthesis of achiral open chain molecules and cyclic target molecules, To identify the suitable reagents in synthesis of organic compounds
PG4C15	Physical Chemistry-Iv	<ul style="list-style-type: none"> To calculate the bond lengths of diatomics from the value of their rotational constant. To Outline the selection rules for rotational and vibrational spectra and rationalize the role of the molecular dipole moment in the selection rules.
PG4CE3	Analytical Chemistry	<ul style="list-style-type: none"> To educate to calculate error analysis for various tests To identify the applications of C-programming in chemistry



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



PG4CE4	Chemical Engineering	<ul style="list-style-type: none"> To demonstrate an understanding of computer programming language concepts To explain the aim of water treatment, and discuss the required characteristics should the drinking water have.
PG4C16	Physical Practicals	<ul style="list-style-type: none"> To demonstrate conduct metric Titration of Strong acid with a Strong Base. To determine CST for the partial miscible solutions
PG4C17	Project	<ul style="list-style-type: none"> To carry out scientific experiments To accurately record and analyze the results of such experiments.

2017-2018

COURSE CODE	COURSE TITLE	COURSE OBJECTIVES
PG1C1	Inorganic Chemistry-I	<ul style="list-style-type: none"> To analyse all chemical species involved in organic and Inorganic reactions and to identify those as acid and bases To classify the bonds as ionic and covalent and to compare the



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		theories
PG1C2	Organic Chemistry-I	<ul style="list-style-type: none"> To interpret the concept of aromaticity and the main properties of aromatic compounds. To explore reactivity patterns of conjugated, aromatic molecules and to evaluate the kinetics and thermodynamics controlled reactions.
PG1C3	Physical Chemistry-I	<ul style="list-style-type: none"> To gain knowledge Kohlrausch's law and electrolytic conductance Calculate the molar conductance , degree of dissociation and electrical potential
PG1C4	Inorganic Practicals-I	<ul style="list-style-type: none"> To study the principle of distribution of common and rare metal ions in different groups. To know the inter- and intra group precipitation and separation of metal ions.
PG1C5	Organic Practicals-I	<ul style="list-style-type: none"> To be skilled in the separation of binary organic mixtures To gain knowledge on the skills of doing micro level analysis
PGCEDC	Analytical Techniques	<ul style="list-style-type: none"> To be skilled in the various types of chromatographic techniques



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<ul style="list-style-type: none"> To attain knowledge on optical spectroscopy, EPR, Mass spectroscopy.
PG2C6	Inorganic Chemistry-II	<ul style="list-style-type: none"> Compare the stabilities of complexes using stability constants and to identify the types of isomers To describe the theories of co-ordination compounds to understand the colours and magnetic properties and their position in the spectrochemical series
PG2C7	Organic Chemistry-II	<ul style="list-style-type: none"> To comprehend the mechanism of elimination and substitution reactions and to apply the stereochemistry in E1, E2, ionic and pyrolytic eliminations. To interpret the concept of nucleophilic and free radical addition reactions and metal hydride reduction and to discriminate the reactivity of organometallic reagents.
PG2C8	Physical Chemistry-II	<ul style="list-style-type: none"> To acquire knowledge about the basic concepts of chemical kinetics To identify and analyze the effect of physical parameters μ, \square, D on rate of reaction



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



PG2C9	Inorganic Practicals-II	<ul style="list-style-type: none"> To enable the students to acquire the quantitative skills in volumetric analysis and gravimetric analysis To improve the skill in quantitative estimation of metal ions by various titric methods
PG2C10	Organic Practicals-II	<ul style="list-style-type: none"> Students understand the quantitative analysis To develop the ability for synthesizing organic compounds by single stage.
PGCEDC	Analytical Techniques	<ul style="list-style-type: none"> To be skilled in the various types of chromatographic techniques To attain knowledge on optical spectroscopy, EPR, Mass spectroscopy
PG3C11	Organic Chemistry-III	<ul style="list-style-type: none"> To acquire a complete knowledge of the working principles of ^1H-NMR, ^{13}C-NMR and Mass spectroscopy. To develop an understanding of the significance of the number, positions, intensities and splitting of signals in nuclear magnetic resonance spectra.
PG3C12	Physical Chemistry-Iii	<ul style="list-style-type: none"> To differentiate the types of elements and symmetry operations.



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<ul style="list-style-type: none"> To recognize the reducible & irreducible Representation.
PG3CE1	Material Chemistry	<ul style="list-style-type: none"> To gain knowledge about the basic principles of nanochemistry and classification of nonmaterial's. To describe several syntheses of inorganic nanoparticles, one-dimensional nanostructures (nanotubes, nanorods, nanowires), thin films, nanoporous materials, and nanostructured bulk materials.
PG3CE2	Bio-Organic Chemistry	<ul style="list-style-type: none"> To tabulate the functions and uses of enzymes To design of drugs using molecular modelling
PG4C13	Inorganic Chemistry-III	<ul style="list-style-type: none"> To calculate the SEP and identification of structure of boranes and carboranes To describe the basic concepts of bio-inorganic compounds
PG4C14	Organic Chemistry-IV	<ul style="list-style-type: none"> To know the Retrosynthesis of achiral open chain molecules and cyclic target molecules, To identify the suitable reagents in synthesis of organic compounds



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



PG4C15	Physical Chemistry-IV	<ul style="list-style-type: none"> To calculate the bond lengths of diatomics from the value of their rotational constant. To Outline the selection rules for rotational and vibrational spectra and rationalize the role of the molecular dipole moment in the selection rules.
PG4CE3	Analytical Chemistry	<ul style="list-style-type: none"> To educate to calculate error analysis for various tests To identify the applications of C-programming in chemistry
PG4CE4	Chemical Engineering	<ul style="list-style-type: none"> To demonstrate an understanding of computer programming language concepts To explain the aim of water treatment, and discuss the required characteristics the drinking water has.
PG4C16	Physical Practicals	<ul style="list-style-type: none"> To demonstrate conduct metric Titration of Strong acid with a Strong Base. To determine CST for the partial miscible solutions
PG4C17	Project	<ul style="list-style-type: none"> To carry out scientific experiments To accurately record and analyze the results of such experiments.



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



2016-2017

COURSE CODE	COURSE TITLE	COURSE OBJECTIVES
PG1C1	Inorganic Chemistry-I	<ul style="list-style-type: none"> To analyse all chemical species involved in organic and Inorganic reactions and to identify those as acid and bases To classify the bonds as ionic and covalent and to compare the theories
PG1C2	Organic Chemistry-I	<ul style="list-style-type: none"> To interpret the concept of aromaticity and the main properties of aromatic compounds. To explore reactivity patterns of conjugated, aromatic molecules and to evaluate the kinetics and thermodynamics controlled reactions.
PG1C3	Physical Chemistry-I	<ul style="list-style-type: none"> To gain knowledge Kohlrausch's law and electrolytic conductance Calculate the molar conductance , degree of dissociation and electrical potential
PG1C4	Inorganic Practicals-I	<ul style="list-style-type: none"> To study the principle of distribution of common and rare



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<p>metal ions in different groups.</p> <ul style="list-style-type: none"> To know the inter- and intra group precipitation and separation of metal ions.
PG1C5	Organic Practicals-I	<ul style="list-style-type: none"> To be skilled in the separation of binary organic mixtures To gain knowledge on the skills of doing micro level analysis
PGCEDC	Analytical Techniques	<ul style="list-style-type: none"> To be skilled in the various types of chromatographic techniques To attain knowledge on optical spectroscopy, EPR, Mass spectroscopy.
PG2C6	Inorganic Chemistry-II	<ul style="list-style-type: none"> Compare the stabilities of complexes using stability constants and to identify the types of isomers To describe the theories of co-ordination compounds to understand the colours and magnetic properties and their position in the spectrochemical series
PG2C7	Organic Chemistry-II	<ul style="list-style-type: none"> To comprehend the mechanism of elimination and substitution reactions and to apply the stereochemistry in E1, E2, ionic and pyrolytic eliminations.



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<ul style="list-style-type: none"> To interpret the concept of nucleophilic and free radical addition reactions and metal hydride reduction and to discriminate the reactivity of organometallic reagents.
PG2C8	Physical Chemistry-II	<ul style="list-style-type: none"> To acquire knowledge about the basic concepts of chemical kinetics To identify and analyze the effect of physical parameters μ, \square, D on rate of reaction
PG2C9	Inorganic Practicals-II	<ul style="list-style-type: none"> To enable the students to acquire the quantitative skills in volumetric analysis and gravimetric analysis To improve the skill in quantitative estimation of metal ions by various titric methods
PG2C10	Organic Practicals-II	<ul style="list-style-type: none"> Students understand the quantitative analysis To develop the ability for synthesizing organic compounds by single stage.
PGCEDC	Analytical Techniques	<ul style="list-style-type: none"> To be skilled in the various types of chromatographic techniques To attain knowledge on optical spectroscopy, EPR, Mass



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		spectroscopy
PG3C11	Organic Chemistry-III	<ul style="list-style-type: none"> To acquire a complete knowledge of the working principles of ¹H-NMR, ¹³C-NMR and Mass spectroscopy. To develop an understanding of the significance of the number, positions, intensities and splitting of signals in nuclear magnetic resonance spectra.
PG3C12	Physical Chemistry-III	<ul style="list-style-type: none"> To differentiate the types of elements and symmetry operations. To recognize the reducible & irreducible Representation.
PG3CE1	Material Chemistry	<ul style="list-style-type: none"> To gain knowledge about the basic principles of nanochemistry and classification of nanomaterials. To describe several synthesis of inorganic nanoparticles, one-dimensional nanostructures (nanotubes, nanorods, nanowires), thin films, nanoporous materials, and nanostructured bulk materials.
PG3CE2	Bio-Organic Chemistry	<ul style="list-style-type: none"> To tabulate the functions and uses of enzymes



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<ul style="list-style-type: none"> To design of drugs using molecular modelling
PG4C13	Inorganic Chemistry-III	<ul style="list-style-type: none"> To calculate the SEP and identification of structure of boranes and carboranes To describe the basic concepts of bio-inorganic compounds
PG4C14	Organic Chemistry-IV	<ul style="list-style-type: none"> To know the Retrosynthesis of achiral open chain molecules and cyclic target molecules, To identify the suitable reagents in synthesis of organic compounds
PG4C15	Physical Chemistry-IV	<ul style="list-style-type: none"> To Calculate the bond lengths of diatomics from the value of their rotational constant. To Outline the selection rules for rotational and vibrational spectra and rationalize the role of the molecular dipole moment in the selection rules.
PG4CE3	Analytical Chemistry	<ul style="list-style-type: none"> To educate to calculate error analysis for various tests To identify the applications of C-programming in chemistry
PG4CE4	Chemical Engineering	<ul style="list-style-type: none"> To demonstrate an understanding of computer programming



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<p>language concepts</p> <ul style="list-style-type: none"> To explain the aim of water treatment, and discuss the required characteristics should the drinking water have.
PG4C16	Physical Practicals	<ul style="list-style-type: none"> To demonstrate conduct to metric Titration of Strong acid with a Strong Base. To determine CST for the partial miscible solutions
PG4C17	Project	<ul style="list-style-type: none"> To carry out scientific experiments To accurately record and analyze the results of such experiments.

2015-2016

COURSE CODE	COURSE TITLE	COURSE OBJECTIVES
PG1C1	Inorganic Chemistry-I	<ul style="list-style-type: none"> To analyse all chemical species involved in organic and Inorganic reactions and to identify those as acid and bases To classify the bonds as ionic and covalent and to compare the theories



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



PG1C2	Organic Chemistry-I	<ul style="list-style-type: none"> To interpret the concept of aromaticity and the main properties of aromatic compounds. To explore reactivity patterns of conjugated ,aromatic molecules and to evaluate the kinetics and thermodynamics controlled reactions.
PG1C3	Physical Chemistry-I	<ul style="list-style-type: none"> To gain knowledge Kohlrausch's law and electrolytic conductance Calculate the molar conductance , degree of dissociation and electrical potential
PG1C4	Inorganic Practicals-I	<ul style="list-style-type: none"> To study the principle of distribution of common and rare metal ions in different groups. To know the inter- and intra group precipitation and separation of metal ions.
PG1C5	Organic Practicals-I	<ul style="list-style-type: none"> To be skilled in the separation of binary organic mixtures To gain knowledge on the skills of doing micro level analysis
PGCEDC	Analytical Techniques	<ul style="list-style-type: none"> To be skilled in the various types of chromatographic



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<p>techniques</p> <ul style="list-style-type: none"> To attain knowledge on optical spectroscopy, EPR, Mass spectroscopy.
PG2C6	Inorganic Chemistry-II	<ul style="list-style-type: none"> Compare the stabilities of complexes using stability constants and to identify the types of isomers To describe the theories of co-ordination compounds to understand the colours and magnetic properties and their position in the spectrochemical series
PG2C7	Organic Chemistry-II	<ul style="list-style-type: none"> CO1- To comprehend the mechanism of elimination and substitution reactions and to apply the stereochemistry in E1, E2, ionic and pyrolytic eliminations. CO2- To interpret the concept of nucleophilic and free radical addition reactions and metal hydride reduction and to discriminate the reactivity of organometallic reagents.
PG2C8	Physical Chemistry-II	<ul style="list-style-type: none"> To acquire knowledge about the basic concepts of chemical kinetics To identify and analyze the effect of physical parameters μ, \square,



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		D on rate of reaction
PG2C9	Inorganic Practicals-II	<ul style="list-style-type: none"> To enable the students to acquire the quantitative skills in volumetric analysis and gravimetric analysis To improve the skill in quantitative estimation of metal ions by various titric methods
PG2C10	Organic Practicals-II	<ul style="list-style-type: none"> Students understand the quantitative analysis To develop the ability for synthesizing organic compounds by single stage.
PGCEDC	Analytical Techniques	<ul style="list-style-type: none"> To be skilled in the various types of chromatographic techniques To attain knowledge on optical spectroscopy, EPR, Mass spectroscopy
PG3C11	Organic Chemistry-III	<ul style="list-style-type: none"> To acquire a complete knowledge of the working principles of ¹H-NMR, ¹³C-NMR and Mass spectroscopy. To develop an understanding of the significance of the number, positions, intensities and splitting of signals in



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		nuclear magnetic resonance spectra.
PG3C12	Physical Chemistry-III	<ul style="list-style-type: none"> To differentiate the types of elements and symmetry operations. To recognize the reducible & irreducible Representation.
PG3CE1	Material Chemistry	<ul style="list-style-type: none"> To gain knowledge about the basic principles of nanochemistry and classification of nanomaterials. To describe several synthesis of inorganic nanoparticles, one-dimensional nanostructures (nanotubes, nanorods, nanowires), thin films, nanoporous materials, and nanostructured bulk materials.
PG3CE2	Bio-Organic Chemistry	<ul style="list-style-type: none"> To tabulate the functions and uses of enzymes To design of drugs using molecular modelling
PG4C13	Inorganic Chemistry-III	<ul style="list-style-type: none"> To calculate the SEP and identification of structure of boranes and carboranes To describe the basic concepts of bio-inorganic compounds
PG4C14	Organic Chemistry-IV	<ul style="list-style-type: none"> To know the Retrosynthesis of achiral open chain molecules



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<p>and cyclic target molecules,</p> <ul style="list-style-type: none"> To identify the suitable reagents in synthesis of organic compounds
PG4C15	Physical Chemistry-IV	<ul style="list-style-type: none"> To calculate the bond lengths of diatomics from the value of their rotational constant. To Outline the selection rules for rotational and vibrational spectra and rationalize the role of the molecular dipole moment in the selection rules.
PG4CE3	Analytical Chemistry	<ul style="list-style-type: none"> To educate to calculate error analysis for various tests To identify the applications of C-programming in chemistry
PG4CE4	Chemical Engineering	<ul style="list-style-type: none"> To demonstrate an understanding of computer programming language concepts To explain the aim of water treatment, and discuss the required characteristics should the drinking water have.
PG4C16	Physical Practicals	<ul style="list-style-type: none"> To demonstrate conductometric Titration of Strong acid with a Strong Base.



Criterion : II – Teaching-Learning and Evaluation

Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – M. SC. CHEMISTRY

Year : 2015 - 2020



		<ul style="list-style-type: none"> To determine CST for the partial miscible solutions
PG4C17	Project	<ul style="list-style-type: none"> To carry out scientific experiments To accurately record and analyze the results of such experiments.

