Department of Chemistry

B.Sc. Programme

Vision

The Department of Chemistry aspires to be among the top in the nation by preparing the students in such a way that they are self-reliant, highly informed and a better choice in the demanding and ever-changing world.

Mission

The teaching of Chemistry aims to: gear the students to be liberative, transformative and empowering the Learner and the Learned (Teacher).

Program Educational Objectives:

The graduates of B.Sc. Chemistry are expected to attain the following PEOs within five to seven years of their graduation. The main objectives of the programme are

PEO1	To prepare the students to have in depth knowledge and skills in the core areas of chemical science
PEO2	To develop the students to have multi-disciplinary subject knowledge both in the diverse fields of chemical science such as analytical chemistry, pharmaceutical chemistry, leather chemistry and also its allied subjects like mathematics, physics and biology
PEO3	To provide knowledge and skills in the frontier areas of chemical research
PEO4	To develop critical thinking, problem solving ability and analytical reasoning in solving the problems pertaining to the environment, sustainable development, their chosen career and higher studies
PEO5	To develop professional, practical, leadership and entrepreneurial skills in their chosen field and practice it with moral and ethical virtues

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Program Outcomes:

PO1	***Ethics and social responsibilities*** Commitment to sustainability and rich ethical standards in social and professional practices
PO2	***Communicative and writing skills*** Understand the language usage with development of communicative and written skills
PO3	***Inter and trans disciplinary development*** Understand principles and theories of organic, inorganic, physical, analytical, pharmaceutical, leather and environmental chemistry with cross cutting approach
PO4	***Problem solving analysis*** Solve complex scientific problems by conducting scientific derivation or chemical analysis
PO5	***Individual and team work*** Function effectively as member or leaders in diverse teams, and in multi-disciplinary environment
PO6	***Chemicals and tools usage*** Acquire skills pertaining to safe handling of chemicals, apparatus, instruments and modern tools with proper functionality
PO7	***Disciplinary knowledge development*** Apply possessed knowledge of fundamentals in chemistry to solve associated problems
PO8	***Professional skill development*** To impart professional skill sets in chemistry and meet out the current chemical industries needs

Program Specific Outcomes:

PSO - 01	***Life long learning*** Develop the practices of lifelong learning in laboratory, analytical/pharmaceutical/leather chemistry skills and interpret knowledge in the working environment
PSO - 02	***Education and Employment*** Ability to pursue higher studies of specialization and take of employment in analytical/pharmaceutical/leather industry

HoD

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2020 - BATCH

V & VI SEMESTERS

Programme code:	B.Sc.	Programme Title:	CHEMISTRY	
Course Code:	20UCY507	Title	Batch:	2020-2023
Hrs/Week	4	Core Paper –V Coordination and Bioinorganic Chemistry	Semester	V
			Credits:	5

Course Objective:

To develop the skill to aesthetically appreciate Coordination and Bioinorganic chemistry

Course Outcome

Knowledge Level	CO Number	CO Statement
K1	CO1	To understand the basic concepts of coordination chemistry
K2	CO2	To understand different theories and applications of coordination compounds
K3	CO3	To understand the properties of coordination compounds
K4	CO4	To gain knowledge in Bioinorganic chemistry and metal carbonyls

Mapping with Programme Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	H	M	H
CO2	M	H	M	H	M
CO3	H	H	H	H	M
CO4	H	M	M	H	M

Low-L, Medium-M, High-H

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Programme code:	B.Sc.	Programme Title :	CHEMISTRY	
Course Code:	20UCY508	Title	Batch :	2020-2023
		Core Paper – VI	Semester	V
Hrs/Week:	4	Organic Chemistry-I	Credits:	5

Course Objective

To make the students to

- understand the mechanisms of molecularrearrangements
- acquire knowledge on heterocycliccompounds
- gain knowledge in carbohydratechemistry
- acquire knowledge on structural elucidation of naturalproducts

Course Outcome

On the successful completion of the course, students will be able to

Knowledge Level	CO Number	CO Statement
K1, K4	CO1	recollect and interpret the mechanisms of molecular rearrangements
K2	CO2	understand the significance of heterocyclic compounds
K2	CO3	understand the importance of carbohydrate chemistry
K3,K4	CO4	apply and interpret various chemical methods in deducing the structures of natural products

Mapping with Programme Outcomes

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	H
CO2	H	H	H	M	H
CO3	H	H	H	H	M
CO4	M	H	M	H	H

Low-L, Medium-M, High-H

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Programme code:	B.Sc.	Programme Title :	CHEMISTRY	
Course Code:	20UCY509	Title	Batch :	2020-2023
		Core Paper – VII	Semester	V
Hrs/Week:	4	Electro Chemistry	Credits:	4

Course Objective

(i) To understand the concepts between electrochemistry andthermodynamics.

(ii) To apply electro chemical principles to fuel cells, batteries and mechanism ofcorrosion.

Course Outcome

Knowledge Level	CO Number	CO Statement
K1	CO1	Able to write balanced half –cell reactions, determine overall cell reactions and calculate the standard reduction potential
K2	CO2	To understand the principles and applications of conductance Measurements
K3	CO3	To describe and understand the operation of electrochemical systems for the production of electric energy, i.e. batteries and fuel cells
K4	CO4	To describe general corrosion in terms of electrochemistry and methods for minimizing corrosion

Mapping with Programme Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	H	M	H
CO2	M	H	M	H	M
CO3	H	H	H	M	H
CO4	H	M	M	H	M

Low-L,Medium-M,High- H

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Programme Code	B.Sc.	Programme Title	CHEMISTRY	
Course Code	20UCY510	Title	Batch:	2020 -2023
		Core Paper – VIII	Semester	V
Hrs/Week	4	Dye Chemistry	Credits:	4

Course Objective

To encourage the students to opt their career as dye chemists in dyeing and textile industry

Course Outcome

Knowledge Level	CO Number	CO Statement
K1	CO1	To learn the basic concepts and theories of colour and its constitution
K2	CO2	To understand the preparation and properties of various types of dyes
K3	CO3	To know the classification and application of different dyes
K4	CO4	To learn about types of fibres and dyeing processes

Mapping with Programme Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	H	M	H
CO2	M	H	M	H	M
CO3	M	H	H	H	H
CO4	H	H	M	H	M

Low-L, Medium-M, High-H

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Programme code:	B.Sc.	Programme Title :	CHEMISTRY	
Course Code:	20UCY5E1	Title	Batch :	2020-2023
		Core Elective Paper – I	Semester	V
Hrs/Week:	4	Analytical chemistry- I	Credits:	5

Course Objective

To develop the skill to aesthetically appreciate Analytical chemistry

Course Outcome

Knowledge Level	CO Number	CO Statement
K1	CO1	To learn instrumentation and basic principles and applications of modern analytical tools such as thermogravimetry andpolarography
K2	CO2	To have knowledge on uses of nephlometry and flame photometry
K3	CO3	To understand the polarography, electrogravimetry and chromatography
K4	CO4	To acquire knowledge and applications of various analytical tools

Mapping with ProgrammeOutcomes

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	H
CO2	H	M	H	H	M
CO3	H	H	M	H	H
CO4	M	H	H	M	H

Low-L,Medium-M,High- H

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Programme code:	B.Sc.,	Programme Title :	CHEMISTRY	
Course Code:	20 UCY5S1	Title	Batch :	2020-2023
		Network and Information Security	Semester	V
Hrs/Week:	1		Credits:	2

Course Objective

- To impart knowledge of Network security, Wi-Fi security, hackers, secure networking and passwordmanagers.

Course Outcomes (CO)

K1	CO1	To remember the basic concepts of network
K2	CO2	To understand the network hacking techniques
K3	CO3	To deploy information and network security
K4	CO4	To interpret the common threats today in computer network

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	H	H
CO2	H	M	H	H	H
CO3	M	H	M	M	M
CO4	M	H	H	H	H

Low-L,Medium-M,High- H

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Programme code:	B.Sc.,	**Programme Title :**	CHEMISTRY
Course Code:	20UCY5S2	**Title**	**Batch :** 2020-2023
		Cyber security – Ethical Hacking	**Semester** V
Hrs/Week:	1		**Credits:** 2

Course Objective

- To understand the basics of cyber security and how ethical hacking is done on Cyber space and how to secure and protect them like securityexperts

Course Outcomes (CO)

K1	CO1	To remember the basic concepts of cyber security
K2	CO2	To understand the knowledge about ethical hacking
K3	CO3	To deploy the use of hacking tools
K4	CO4	To analyze the details about internet connection

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	M	H	H
CO2	H	M	H	M	H
CO3	M	H	M	M	M
CO4	M	M	H	H	H

Low-L,Medium-M,High- H

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Programme code:	B.Sc.	Programme Title :	CHEMISTRY	
Course Code:	20UCY611	Title	Batch :	2020-2023
		Core Paper – IX Physical Methods and Chemical Structure	Semester	VI
Hrs/Week:	4		Credits:	5

Course Objective

To make the students to

- acquire knowledge on basic concepts inspectroscopy
- gain basic knowledge in various spectroscopic techniques like rotational,vibrational, Raman, UV-visible, NMR andEPR
- understand the electrical and magnetic properties ofmolecules

Course Outcome

On the successful completion of the course, students will be able to

Knowledge Level	CO Number	CO Statement
K1, K2	CO1	recollect and understand the basic theoretical concepts in various types of spectroscopy
K4	CO2	interpret the structure of the unknown molecules from the given spectra
K4	CO3	evaluate various parameters like bond length, vibrational frequency from spectroscopic techniques
K3	CO4	apply electrical and magnetic properties in solving the structures of the molecules

Mapping with Programme Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	H
CO2	H	H	M	H	M
CO3	H	H	H	H	H
CO4	M	M	H	H	M

L-Low;M-Medium; H-High

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Programme code:	B.Sc.	**Programme Title :**	CHEMISTRY	
Course Code:	20UCY612	**Title**	**Batch :**	2020-2023
		Core Paper – X	**Semester**	VI
Hrs/Week:	4	**Organic chemistry-II**	**Credits:**	4

Course Objective

To develop the skill to aesthetically appreciate Organic chemistry

Course Outcome

Knowledge Level	CO Number	CO Statement
K1	CO1	To develop the knowledge in solving the problems in organicchemistry
K2	CO2	To understand the structure and properties of proteins,DNA, Vitamins and lipids
K3	CO3	To create awareness regarding chemotherapy
K4	CO4	To help the students to opt their career as biotechnologists, pharmacologists or medical representative

Mapping with Programme Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	M	H
CO2	M	H	M	H	H
CO3	M	H	H	H	M
CO4	H	M	M	M	M

Low-L, Medium-M, High-H

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Programme code:	B.Sc	Programme Title:	CHEMISTRY	
Course Code:	20UCY613	Title	Batch:	2020-2023
Hrs/Week	4	Core Paper –XI Chemical kinetics and Quantum mechanics	Semester	VI
			Credits:	5

Course Objective

To develop the skill to aesthetically appreciate Chemical Kinetics, photochemistry and Quantum mechanics

Course Outcome

Knowledge Level	CO Number	CO Statement
K1	CO1	To understand the basic terminologies of chemical kinetics
K2	CO2	To understand the theories of reaction rates and catalysis
K3	CO3	To understand the basics and concepts of photochemistry
K4	CO4	To become familiar with the quantum mechanical functions and operators

Mapping with Programme Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	H	M	H
CO2	M	H	M	H	M
CO3	H	H	H	H	H
CO4	H	M	M	H	M

Low-L, Medium-M, High-H

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Programme code:	B.Sc.	**Programme Title :**	CHEMISTRY
Course Code:	20UCY614	**Title**	**Batch :** 2020-2023
Hrs/Week:	4	**Core paper – XII Polymer Chemistry**	**Semester** V I **Credits:** 5

Course Objective

(i) To highlight the commercially important polymers and their various forms

ii) To understand various industrial polymerization processes

Course Outcome

Knowledge Level	CO Number	CO Statement
K1	CO1	To recognize the principles of polymer recycling and can select appropriate recycle or reuse methods to balance economics and environmental responsibility
K2	CO2	To describe the mechanisms of chain polymerizations, and can predict reaction rates
K3	CO3	To identify the repeat units of particular polymers and specify the isomeric structures which can exist for those repeat units
K4	CO4	To estimate the number- and weight-average molecular masses of polymer samples given the degree of polymerisation and mass fraction of chains present

Mapping with Programme Outcomes

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	H	M	H
CO2	M	H	M	H	M
CO3	H	H	H	M	H
CO4	H	M	M	H	M

Low-L,Medium-M,High- H

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Programme code:	B.Sc.	Programme Title :	CHEMISTRY	
Course Code:	20UCY6E2	Title	Batch :	2020-2023
		Core Elective – II	Semester	VI
Hrs/Week:	4	Analytical chemistry-II	Credits:	4

Course Objective

To make the students to

- acquire knowledge on basic concepts involumetric analysis
- gain basic knowledge in various types of titrations
- gain knowledge in separation techniques
- understand the basic principles of instrumentation

Course Outcome

On the successful completion of the course, students will be able to

Knowledge Level	CO Number	CO Statement
K1, K2	CO1	recollect and understand the basic theoretical concepts in inorganic qualitative analysis
K4	CO2	Understand the basic priniciples involved in volumetric analysis
K4	CO3	Apply separation techniques for the extraction of solvents
K3	CO4	derstand the basic principles of instrumentation

Mapping with Programme Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	H	H
CO2	H	M	H	M	H
CO3	H	H	M	H	M
CO4	H	H	H	M	H

Low-L, Medium-M, High-

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Programme code:	B.Sc.	Programme Title :	CHEMISTRY	
Course Code:	20UCY615	Title	Batch :	2020-2023
		Core Practical – III	Semester	VI
Hrs/Week:	6	Gravimetric analysis and physical chemistry	Credits:	5

Course Objective

To develop analytical skills in gravimetric analysis and Physical Chemistry

Course Outcome

Knowledge Level	CO Number	CO Statement
K1	CO1	To understand the basic concept of gravimetric analysis
K2	CO2	To get the idea about Physical chemistry experiments
K3	CO3	To enable the students to acquire analytical skills (qualitative and quantitative skills)
K4	CO4	To develop practical skills in analytical and Physicl chemistry experiments

Mapping with Programme Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	H
CO2	H	M	H	M	H
CO3	H	H	M	H	M
CO4	M	H	H	H	H

Low-L,Medium-M,High- H

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Programme code:	B.Sc.	Programme Title :	CHEMISTRY	
Course Code:	20UCY6S3	Title	Batch :	2020-2023
		Skill Based Elective –II	Semester	VI
Hrs/Week:	1	Green Chemistry	Credits:	2

Course Objective

To develop the skill to aesthetically appreciate Green Chemistry.

Course Outcome

Knowledge Level	CO Number	CO Statement
K1	CO1	To recollect the principles of green chemistry
K2	CO2	To understand the awareness on environment friendly technologies and working conditions
K3	CO3	To apply eco-friendly and less wasteful manufacturing process for the sustainable development of our country
K4	CO4	To acquire awareness about research in the field of green chemistry

Mapping with Programme Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	H
CO2	H	M	H	H	H
CO3	H	H	M	H	H
CO4	H	H	M	M	H

Low-L, Medium-M, High- H

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Programme code:	B.Sc.	Programme Title :	CHEMISTRY	
Course Code:	20UCY6S4	Title	Batch :	2020-2023
		Skill Based Elective-II Theory behind practical chemistry	Semester	VI
Hrs/Week:	1		Credits:	2

Course Objective

To develop the theoretical knowledge in practical chemistry

Course Outcome

Knowledge Level	CO Number	CO Statement
K1	CO1	To remember the basic chemical principles in analysis
K2	CO2	To understand the theoretical concepts pertaining to practical chemistry
K3	CO3	To develop reasoning ability in practical chemistry
K4	CO4	To ensure

Mapping with Programme Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	M
CO2	H	M	H	H	H
CO3	M	H	M	H	H
CO4	H	H	H	M	H

Low-L, Medium-M, High- H

HoD

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2021 - BATCH

III & IV SEMESTERS

Programme Code:	B.Sc.			Programme Title:	Bachelor of Chemistry	
Course Code:	21UCY304			Title	Batch:	2021 – 2024
				Core Paper- III Inorganic and Physical Chemistry	Semester:	III
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	2		Credits:	4

Course Objective

To impart knowledge on basic metallurgical process, alloys, fuels and fertilizers and to expound conceptions or thermodynamics of solutions, phase equlibria and colligative properties to succeed at an entry-level position ir chemical industry or a chemistry graduate program.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recall the basic metallurgical operations and understand the preparation and properties of alloys.	K1& K2
CO2	Understand the classification and properties of fuels and fertilizers	K2
CO3	Apply the concept of law of mass action to various equilibria	K3
CO4	Understand the concepts of thermodynamics of solution and construct and analyse the phase diagram.	K2 &K5
CO5	Correlate the relationship between colligative properties of dilute solutions and molecular mass of solute.	K5

Mapping with POs / PSOs Vs COs

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	M	M	M	H	H	M	H	-	M
CO2	H	H	H	M	M	M	H	H	-	M
CO3	M	H	H	M	H	M	M	M	-	M
CO4	H	H	M	H	H	M	M	H	-	M
CO5	H	H	M	M	H	M	M	M	-	M

H – High; M – Medium; L – Low

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Programme Code:	B.Sc.	Programme Title:	Bachelor of Chemistry	
Course Code:	21UCY3N1	Title	Batch:	2021 – 2024
		Non Major Elective - I	Semester:	III
Lecture Hrs./Week	1	Introduction to Nanotechnology	Credits:	2

Course Objective

To create basic awareness about Nanoscience and Technology and its current applications.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recollect the basics of nanoscience and nanomaterials	K1
CO2	Understand the various types of nanomaterials and the approaches towards the preparation of nanomaterials	K2
CO3	Sketch the specific properties of nanomaterials	K3
CO4	Illustrate the properties and uses of carbon nanomaterials	K3
CO5	Explain the applications of nanomaterials based on their properties	K3

Mapping with POs / PSOs Vs COs

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	H	H	-	-	-	-	-	-	L
CO2	H	H	H	-	-	-	-	-	-	L
CO3	H	H	H	-	-	-	-	-	-	L
CO4	H	H	H	-	-	-	-	M	-	L
CO5	H	H	H	-	-	-	-	M	-	L

H – High; M – Medium; L – Low

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Programme Code:	B.Sc.	Programme Title:	Bachelor of Chemistry	
Course Code:	21UCY3N2	Title	Batch:	2021 – 2024
		Non Major Elective – I Chemistry of Consumer Products	Semester:	III
Lecture Hrs./Week	1		Credits:	2

Course Objective

To acquire the basic knowledge in consumer product chemistry

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Label the ingredients present in consumer products	K1
CO2	Understand the action of soaps and detergents	K2
CO3	Demonstrate the formultion and uses of consumer products.	K3
CO4	Identify the required characteristics of cosmetics	K1
CO5	Describe the quality control and health hazards in cosmetics	K2

Mapping with POs / PSOs Vs COs

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	H	H	-	-	-	-	M	-	-
CO2	H	H	H	-	-	-	-	M	-	-
CO3	H	H	H	-	-	-	-	M	-	-
CO4	H	H	H	-	-	-	-	M	-	-
CO5	H	H	H	-	-	-	-	M	-	-

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Programme Code:	B.Sc.			Programme Title:	Bachelor of Chemistry	
Course Code:	21UCY405			Title	Batch:	2021 – 2024
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	1	Core Paper – IV Inorganic, Organic and Physical Chemistry	Semester:	IV
					Credits:	4

Course Objective

To explain the periodic properties of elements, various reactions and stereoisomerism of organic compounds phase rule, radioactivity and nuclear reactions

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recollect the properties of transition and inner transition elements	K1
CO2	Understand the preparation, properties and various reactions of phenols, aliphatic and aromatic nitro compounds	K2
CO3	Analyse the classification of amines, separation, basic nature and optical and geometrical isomerism of certain organic compounds.	K4
CO4	Apply the concepts of phase rule, phase equilibria and its applications to various systems.	K3
CO5	Explain the radioactivity, types of nuclear reactions and the applications of isotopes.	K2, K5

Mapping with PO / PSO Vs CO

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	H	H	M	H	M	H	H	-	-
CO2	H	H	H	H	H	H	H	H	-	-
CO3	H	H	H	H	H	M	H	H	-	-
CO4	H	H	H	M	H	M	H	H	-	-
CO5	H	H	H	H	H	M	H	H	-	-

H – High; M – Medium; L – Low

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Programme Code:	B.Sc.	Programme Title:	Bachelor of Chemistry	
Course Code:	21UCY406	Title	Batch:	2021 – 2024
		Core Practical –II	Semester:	IV
Practical Hrs/week	3	Volumetric, Organic Qualitative Analysis and Organic Preparations	Credits:	5

Course Objective

To develop the analytical skills in volumetric, organic qualitative analysis and organic preparations to succeed at a entry-level position as analyst in industry.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the apparatus used in volumetric analysis	K1
CO2	Understand the titrimetric principle and procedure	K2
CO3	Get the idea about organic qualitative analysis	K3
CO4	Analyse the elements and functional groups of organic compounds.	K4
CO5	Prepare an organic compound following the prescribed procedure.	K5

Mapping with POs / PSOs Vs COs

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	M	M	H	H	H	H	H	H	H
CO2	M	M	M	H	M	H	M	M	H	H
CO3	H	M	M	M	M	M	H	H	H	H
CO4	M	M	H	H	H	H	H	H	H	H
CO5	H	H	M	M	H	M	M	M	H	H

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Programme Code:	B.Sc.	Programme Title:	Bachelor of Chemistry	
Course Code:	21UCY4N1	Title	Batch:	2021 – 2024
		Non Major Elective - II Textile Chemistry	Semester:	IV
Lecture Hrs./Week	1		Credits:	2

Course Objective

To develop basic awarness in the area of Textile chemistry.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recollect the types of polymers, fibres and dyes	K1
CO2	Understand the morphology and properties of fibres	K2
CO3	Compare the natural and manmade fibres	K3
CO4	Classify dyes and dyeing processes	K3
CO5	Explain the nature of fibre and dye to attain a quality product	K3

Mapping with POs / PSOs Vs COs

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	H	H	-	-	-	-	-	-	-
CO2	H	H	H	-	-	-	-	-	-	-
CO3	H	H	H	-	-	-	-	-	-	-
CO4	H	H	H	-	-	-	-	-	-	-
CO5	H	H	H	-	-	-	-	-	-	-

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Programme Code:	B.Sc.	Programme Title:	Bachelor of Chemistry	
Course Code:	21UCY4N2	Title	Batch:	2021 – 2024
		Non Major Elective - II	Semester:	IV
Lecture Hrs./Week	1	Food Science and Technology	Credits:	2

Course Objective

To create an awareness on food and nutrition to non chemistry students.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the sources, functions of food , food preservation and adultration	K1
CO2	Understand the metabolic activities, methods of food preservation, and effects and identification of food adulteration	K2
CO3	Illustrate the various food additives and adulterants	K3
CO4	Explain the types of adulteration and tests for detection	K2
CO5	Interpret the functions of food corporation of India, ISI and Agmark standards.	K3

Mapping with POs / PSOs Vs COs

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	H	H	-	-	-	-	M	-	-
CO2	H	H	H	-	-	-	-	-	-	-
CO3	H	H	H	-	-	-	-	-	-	-
CO4	H	H	H	-	-	-	-	-	-	-
CO5	H	H	H	-	-	-	-	M	-	-

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Programme code:	B.Sc.	Programme Title :	Bachelor of Chemistry	
Course Code:	21UPS3A4/ 21UBY3A4/ 21UZY3A4	Title	Batch :	2021-2024
		Allied Chemistry Paper – I Inorganic, Organic and Physical Chemistry	Semester	III
Hrs/Week:	6		Credits:	4

Course Objective

To learn the chemistry of chemical bonding and co-ordination compounds. To understand basic principles of volumetric analysis and water treatment. To learn the chemistry of basic aromatic compounds. To know about some common diseases and the drugs used. To study about electrochemical conductance.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the principle of chemical bonding, coordination chemistry and applications of biologically important molecules.	K1,K2
CO2	Gain Knowledge on volumetric analysis and water treatment process	K2, K3
CO3	Sketch the synthesis of heterocyclic compounds and reactions of aromatic compounds and heterocycles.	K3
CO4	Explain pharmaceutical chemistry with some important drugs	K4
CO5	Know the basic principle of electro chemistry and corrosion	K4

Mapping with PO / PSO Vs CO

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	M	H	M	M	M	M	M	H	-	-
CO2	M	H	M	M	M	M	M	M	-	-
CO3	M	H	H	M	M	M	M	M	-	-
CO4	M	H	H	M	M	M	M	H	-	-
CO5	M	H	H	M	M	M	M	H	-	-

High- H,Medium-M, Low-L

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Programme Code:	B.Sc.	ProgrammeTitle :	Bachelor of Chemistry	
Course Code:	21UPS4A5/ 21UBY4A5/ 21UZY4A5	Title	Batch :	2021-2024
		Allied Chemistry Paper – II Inorganic, Organic and Physical Chemistry	Semester	IV
Hrs/Week:	6		Credits:	4

Course Objective

To study about fuels, fertilizers, cement and glass. To learn about the importance of dyes and polymer science. To know about carbohydrates, amino acids, proteins and nucleic acid. To understand the different kinds of colloids and catalysis.

Course Outcome

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand and apply the basics of fuel, fertilizers, glass and cement	K2, K3
CO2	Recognize the basic ideas on synthetic dyes and synthetic polymers.	K1
CO3	Demonstrate the chemistry of amino acids and proteins.	K3
CO4	Illustrate the carbohydrates, their types and properties	K3
CO5	Explain colloids, catalysis and phase rule	K4

Mapping with PO / PSO Vs CO

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	H	H	M	M	M	M	H	-	-
CO2	H	H	H	M	M	M	H	H	-	-
CO3	H	H	H	M	M	M	M	M	-	-
CO4	H	H	H	M	M	M	M	M	-	-
CO5	H	H	H	M	M	M	M	H	-	-

High- H, Medium-M, Low-L

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Programme code:	B.Sc.	Programme Title :	Bachelor of Science	
Course Code:	21UPS 4A6/ 21UBY4A6/ 21UZY4A6	Title	Batch :	2021-2024
Hrs/Week:	2	Allied Chemistry Practical	Semester	III & IV
			Credits:	2

Course Objective

To understand the principles of volumetric analysis. To enable the students to have hands-on training on qualitative analysis of organic compounds.

Course Outcome

On the successful completion of the course, students will be able

CO Number	CO Statement	Knowledge Level
CO1	Learn how to conduct a volumetric estimation process precisely.	K1,K2
CO2	Understand reactions taking place during the experiment.	K2, K5
CO3	Get the idea about organic qualitative analysis	K2, K4
CO4	Distinguish between aliphatic and aromatic, saturated and unsaturated compounds.	K3
CO5	Evaluate the reactivity of various functional groups	K2, K5

Mapping with PO / PSO Vs CO

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	H	H	H	H	H	M	H	H	H
CO2	H	H	H	H	M	H	M	H	H	H
CO3	H	H	H	H	M	H	M	H	H	H
CO4	H	H	H	H	M	H	M	H	H	M
CO5	H	H	H	H	H	H	M	H	H	H

High- H,Medium-M, Low-L

HoD

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2022 - BATCH

I & II SEMESTERS

Programme Code:	B.Sc			Programme Title:	Bachelor of Chemistry	
Course Code:	22UCY101			Title	Batch:	2022 – 2025
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	1	Core Paper – I Inorganic and Organic Chemistry	Semester:	I
					Credits:	5

Course Objective

To understand basic theoretical concepts on chemical bonding and hybridization, acquire knowledge on aromaticity, mechanistic pathway of aliphatic nucleophilic substitutions and aromatic electrophilic substitutions in organic reactions.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recollect the types of chemical bonding	K1,K2
CO2	Deduce the geometry of the molecules and apply MOT to Homonuclear and Heteronuclear molecules and understand the basic theoretical concepts in inorganic qualitative analysis.	K2, K3
CO3	Write the nomenclature of organic compounds and analyze the reactions of alkenes and examine the relevant name reaction	K2, K4
CO4	Apply the concepts in determining the mechanisms of aliphatic nucleophilic substitution reactions	K3
CO5	Interpret the factors affecting in determining the orientation and reactivity of the aromatic compounds	K2, K5

Mapping with PO / PSO Vs CO

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	H	H	M	M	M	M	M	-	-
CO2	H	H	H	M	M	M	H	H	-	-
CO3	H	H	H	H	M	H	M	M	-	-
CO4	H	H	H	M	M	M	M	M	-	-
CO5	H	H	H	M	M	M	M	M	-	-

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Programme Code:	B.Sc			Programme Title:	Bachelor of Chemistry	
Course Code:	22UCY202			Title	Batch:	2022 – 2025
				Core Paper – II	Semester:	II
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	1	Organic and Physical Chemistry	Credits:	4

Course Objective

To acquire knowledge on the mechanisms of reactions in carbonyl compounds, understand basics concepts on quantum chemistry and important laws of thermodynamics.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Discuss the preparation, properties of alcohols, dicarboxylic acids, hydroxy acids and esters	K2
CO2	Analyse the reactions of aldehydes / ketones and examine the relevant reactions and understand the basic principles involved in volumetric analysis	K4, K3
CO3	Apply quantum chemical treatment to sub-atomic particles of atom	K3
CO4	State and apply first law of thermodynamics, perform calculations for physical process	K3, K4
CO5	Analyse the feasibility of the reaction	K4

Mapping with PO / PSO Vs CO

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	H	H	M	M	M	M	H	-	-
CO2	H	H	H	M	M	H	H	H	H	-
CO3	H	H	H	M	M	M	M	M	-	-
CO4	H	M	H	M	M	M	M	M	-	-
CO5	H	H	H	M	M	M	M	H	-	-

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Programme Code:	B.Sc	Programme Title:	Bachelor of Chemistry	
Course Code:	22UCY203	Title	Batch:	2022 – 2025
Lecture Hrs./Week	3	Core Practical-I Inorganic Qualitative Analysis	Semester:	II
			Credits:	3

Course Objective

To know about the skills of using glassware's and apparatus used in qualitative analysis, develop the analytical skills in inorganic qualitative analysis and know the chemistry principles applied in qualitative analysis.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the procedure for the analysis	K1, K2
CO2	Understand and apply the theoretical knowledge to chemical reactions responsible for the reactions leading to identification of the given radicals	K2, K3
CO3	Separate the cations into groups and to identify them	K1, K4
CO4	apply the theoretical knowledge in the preparation of inorganic metal complexes	K3

Mapping with PO / PSO Vs CO

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	H	H	H	H	H	H	M	M	H	M
CO2	H	H	H	H	H	H	M	M	H	M
CO3	H	H	H	H	H	H	M	M	H	M
CO4	H	H	H	H	H	H	M	M	H	M

H – High; M – Medium; L – Low

HoD

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