

**KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)**

Re-accredited to NAAC with “A<sup>+</sup>” Grade (4th Cycle)

College of Excellence (UGC)

Coimbatore – 641 029.

**PG & RESEARCH DEPARTMENT OF CHEMISTRY**

**COURSE OUTCOMES (CO) OF M.Sc., CHEMISTRY**

**For the students admitted in the year**

**2023-24**

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code: 23PCH101</b>		<b>Core Paper 1 – Organic Chemistry I</b>		
Batch	Semester	Hours / Cycle	Total Hours	Credits
2023-2025	I	5	75	5

### Course Objectives

1. To motivate the students to comprehend a knowledge on aromaticity and reaction mechanism.
2. To gain understanding in electrophilic and nucleophilic substitution reactions and disconnection approach.
3. To enable the students to elucidate the structure of some terpenoids compounds.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Recall the concepts of aromaticity, chemistry of intermediates, substitution reactions, retrosynthesis and terpenoids
	<b>CO2</b>	Review the mechanism of electrophilic substitution reactions
	<b>CO3</b>	Illustrate the mechanisms of aliphatic and aromatic nucleophilic substitution reactions
	<b>CO4</b>	Connect the guidelines of retro synthetic approach to solve problems in the planning of organic synthesis
	<b>CO5</b>	Appraise the structural elucidation and synthesis of some important terpenoid compounds

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code : 23PCH102</b>		<b>Core Paper 2 – Inorganic Chemistry I</b>		
Batch 2023-2025	Semester I	Hours/Cycle 5	Total Hours 75	Credits 5

### Course Objectives

1. To introduce the principles and applications of solid state and nuclear chemistry.
2. To learn about inorganic crystals and structural determination methods
3. To acquire the knowledge of periodic properties and f-block elements, nuclear model, modes of decay and detection, measurement of radio activity, nuclear reactors and applications.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Enumerate the fundamentals of acid-base concepts, solid state chemistry, nuclear chemistry and <i>f</i> -block chemistry
	<b>CO2</b>	Describe the structures of some ionic solids, spinels and related structures
	<b>CO3</b>	Discover several diffraction techniques for structure determination
	<b>CO4</b>	Examine the concepts of Nuclear Chemistry and the applications of radioisotopes
	<b>CO5</b>	Assess the chemistry of <i>f</i> -block elements

<b>Programme Code:</b> 04		<b>M.Sc., Chemistry</b>		
<b>Course Code :</b> 23PCH103		<b>Core Paper 3 – Physical Chemistry I</b>		
Batch	Semester	Hours/Cycle	Total Hours	Credits
2023-2025	I	5	75	5

### Course Objectives

1. To make the students to comprehend knowledge on symmetry elements, symmetry operations and rate of the reactions
2. To illustrate symmetry concepts and to demonstrate the scope of the symmetry and group theory to inorganic chemistry
3. To know the principles of chemical kinetics to allow exploration of gas-phase and liquid-phase reactions.

### Course Outcomes (CO)

<b>K1</b> <b>to</b> <b>K5</b>	<b>CO1</b>	Narrate the fundamentals of group theory and chemical kinetics
	<b>CO2</b>	Relate the relationship between symmetry and point groups and discuss the applications of group theory
	<b>CO3</b>	Experiment different theories of reaction rates and the kinetics of fast reactions
	<b>CO4</b>	Correlate various catalysis mechanisms with the kinetics
	<b>CO5</b>	Appraise the kinetics of polymerization reaction

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code:23PCH204</b>		<b>Core Paper 4 – Organic Chemistry II</b>		
Batch	Semester	Hours/Cycle	Total Hours	Credits
2023-2025	II	5	75	5

#### Course Objectives

1. To gain knowledge about mechanism of elimination and addition reactions.
2. To enable a comprehensive knowledge on conformational analysis and stereochemistry, concerted reactions and pericyclic reactions of organic compounds to the students.
3. To give a thorough introduction to the study of organic photochemistry and isolation, general structural elucidation of alkaloids.

#### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Outline the essentials of addition and elimination reactions, stereochemistry, pericyclic reactions, photochemistry and alkaloids
	<b>CO2</b>	Identify the different types of notations in stereochemistry
	<b>CO3</b>	Relate correlation and FMO approach with electrocyclic, cycloaddition and Sigmatropic reactions
	<b>CO4</b>	Illustrate the mechanisms of various organic photochemical reactions
	<b>CO5</b>	Describe the structural features of some important compounds of alkaloids

<b>Programme Code:</b> 04		<b>M.Sc., Chemistry</b>		
<b>Course Code :</b> 23PCH205		<b>Core Paper 5 – Inorganic Chemistry II</b>		
Batch 2023-2025	Semester II	Hours/Cycle 5	Total Hours 75	Credits 5

### Course Objectives

1. To promote an awareness about bonding in coordination complexes to the students.
2. To gain knowledge in term symbols and electronic spectra of complexes.
3. On successful completion of the syllabus, the students should have known about theories of bonding in inorganic complexes and application, substitution reaction mechanism of coordination complexes, electron transfer mechanism of coordination complexes and magnetic behavior.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Read the elemental ideas of coordination chemistry and reaction mechanisms
	<b>CO2</b>	Cite the postulates of Crystal Field Theory and Molecular Orbital Theory
	<b>CO3</b>	Compute Term symbols and construct Orgel and Tanabe-Sugano diagrams of coordination complexes
	<b>CO4</b>	Elucidate the mechanisms of reactions of transition metal complexes and calculate their stability constants
	<b>CO5</b>	Compare and contrast the different types of electron transfer reactions

<b>Programme Code:</b> 04		<b>M.Sc., Chemistry</b>		
<b>Course Code :</b> 23PCH2CL		<b>Core Practical 1 – Organic Chemistry Practical I</b>		
Batch 2023-2025	Semester I & II	Hours/Cycle 3 or 5	Total Hours 120	Credits 3

#### Course Objectives

1. To make the students aware about separation of mixture of organic compounds and analyzing the unknown compounds.
2. To allow the students to know and practice the techniques of preparation of some organic compounds.

#### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Describe systematic procedures for carrying out experiments
	<b>CO2</b>	Identify organic compounds by their characteristic reactions towards standard reagents
	<b>CO3</b>	Relate the principle of separation for separating two organic compounds in a given mixture
	<b>CO4</b>	Categorize the components present in the organic mixture and report the same
	<b>CO5</b>	Evaluate the crude and recrystallised form of the given organic compound

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code : 23PCH2CM</b>		<b>Core Practical 2– Inorganic Chemistry Practical I</b>		
Batch	Semester	Hours / Cycle	Total Hours	Credits
2023-2025	I and II	3or 5	120	3

### Course Objectives

1. To give an idea to the students about the separation and analysis of cations from the given mixture.
2. To allow the students to know and practice the techniques in preparation of some inorganic complexes.
3. To know about the colorimetric principle in estimation of metal ions.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Read the procedure for the group separation and systematic analysis of cations
	<b>CO2</b>	Identify the appropriate preparation method of complexes
	<b>CO3</b>	Experiment the preparation of some inorganic complexes
	<b>CO4</b>	Analyze and report two familiar metal cations and two less familiar metal cations
	<b>CO5</b>	Estimate the amount of metal ions present in the whole of the given solution by colorimetric method



<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code : 23PCH2CN</b>		<b>Core Practical 3 – Physical Chemistry Practical I</b>		
Batch	Semester	Hours / Cycle	Total Hours	Credits
2023-2025	I & II	4 or 5	135	2

### Course Objectives

1. To promote an awareness about potentiometric titrations to the students.
2. To arm the future chemist with the knowledge of electrical conductance measurement and conductometric titrations.
3. On successful completion of the syllabus, the students should have known to interpret, evaluate and report upon observations and experimental results of determination of molecular weight, partition coefficient, unknown composition in Simple Eutectic System and acid-base, precipitation and redox titrations.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Recall the disciplinary regulations to be followed inside a physical chemistry lab
	<b>CO2</b>	Describe the determination of equilibrium constant of a reaction
	<b>CO3</b>	Use the principle of potentiometric titrations for estimating the strength of solutions
	<b>CO4</b>	Calculate the molecular weight of a compound by Rast's method
	<b>CO5</b>	Evaluate the properties of matter by Simple Eutectic System

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code : 23PCH306</b>		<b>Core Paper 6– Physical Chemistry II</b>		
Batch 2023-2025	Semester III	Hours/Cycle 5	Total Hours 75	Credits 5

### Course Objectives

1. To enable a comprehensive knowledge on quantum mechanics and students will be able to remember concepts of electrochemistry and surface chemistry
2. To understand electrochemical systems of electric energy production
3. To know the electrochemical processes of surface treatment and production of materials

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Recall the elementary aspects of quantum chemistry and electrochemistry
	<b>CO2</b>	Illustrate the quantum mechanical operations in solving Schrodinger wave equations
	<b>CO3</b>	Apply various approximation methods to Helium atom
	<b>CO4</b>	Outline different electrochemical theories and point out their importance
	<b>CO5</b>	Describe the methods of coulometry, voltametry and polarography

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code:23PCH307</b>		<b>Core Paper 7– Organic Chemistry III</b>		
Batch	Semester	Hours/Cycle	Total Hours	Credits
2023-2025	III	5	75	5

#### Course Objectives

1. To foster an awareness in the student the ideas of molecular rearrangement and oxidation and reduction reactions of organic compounds.
2. To introduce steroids and to enable the students to elucidate their structures.
3. To gain knowledge about the classification, characterization of proteins, vitamins and some heterocyclic compounds.

#### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Enumerate the mechanisms of various molecular rearrangements, reagents and biologically important compounds
	<b>CO2</b>	Discuss the synthetic utility of different reagents in oxidation and reduction reactions
	<b>CO3</b>	Sketch and elucidate the structure of selected steroids
	<b>CO4</b>	Classify proteins and vitamins; examine their structures and biological importance
	<b>CO5</b>	Appraise the chemistry of some plant pigments and reagents for organic synthesis

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code : 23PCH308</b>		<b>Core Paper 8– Inorganic Chemistry III</b>		
Batch 2023-2025	Semester III	Hours/Cycle 5	Total Hours 75	Credits 4

### Course Objectives

1. To create an awareness in the student the fundamental concepts of inorganic photochemistry and bioinorganic chemistry.
2. To allow the students to get introduced to the study of organometallic complexes and their applications as catalysts for chemical reactions.
3. On successful completion of the syllabus, the students should have acquired knowledge in the nature, preparation and properties of metal carbonyl complexes, photochemistry of metal complexes and various applications and the role metals in biological systems.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Record the essentials of organometallic chemistry, bioinorganic chemistry and inorganic polymers
	<b>CO2</b>	Explain the structure, reactions and bonding in several organometallic compounds
	<b>CO3</b>	Illustrate the role of organometallic compounds in catalysis
	<b>CO4</b>	Discover the chemistry and significance of bioinorganic compounds
	<b>CO5</b>	Appraise the chemistry of inorganic polymers; justify the structures of cages and clusters using Wade's rules

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code: 23PCH3CO</b>		<b>C. Pr.4 –Physical Chemistry Practical II</b>		
Batch	Semester	Hours/Cycle	Total Hours	Credits
2023-2025	III	4	60	2

#### Course Objectives

1. To arm the future chemist with the knowledge of electrical conductance measurements and conductometric titrations.
2. To gain knowledge in making and recording observations in conductometric titrations and chemical kinetics.

#### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Read the various laws used for measuring electrical conductance
	<b>CO2</b>	Relate the principle of conductometric titrations to the estimation of the strengths of solutions
	<b>CO3</b>	Apply Freundlich adsorption isotherm for the adsorption of oxalic acid on charcoal
	<b>CO4</b>	Examine the reaction kinetics of two different solutions
	<b>CO5</b>	Evaluate the electrical properties of solution and estimate the strength of the given solution

<b>Programme Code:</b> 04		<b>M.Sc., Chemistry</b>		
<b>Course Code :</b> 23PCH409		<b>Core Paper 9–Physical Chemistry III</b>		
Batch 2023-2025	Semester IV	Hours/Cycle 5	Total Hours 75	Credits 5

### Course Objectives

1. To enable a complete knowledge on chemical and statistical thermodynamics
2. To make the students understand the third law of thermodynamics, probability theorems, distribution laws, partition functions
3. To foster an awareness in the student the fundamental concepts of photochemistry

### Course Outcomes (CO)

<b>K1</b> <b>to</b> <b>K5</b>	<b>CO1</b>	Define the vitals of chemical thermodynamics, statistical thermodynamics and photochemistry
	<b>CO2</b>	Discuss the third law of thermodynamics, theories of probability and thermodynamic probability
	<b>CO3</b>	Apply the principles of statistical thermodynamics to derive distribution laws
	<b>CO4</b>	Derive the expressions for the partition functions of molecules
	<b>CO5</b>	Summarize various photophysical processes taking place in excited molecules

<b>Programme Code:</b> 04		<b>M.Sc., Chemistry</b>		
<b>Course Code :</b> 23PCH410		<b>Core Paper 10 – Spectroscopy</b>		
Batch 2023-2025	Semester IV	Hours/Cycle 5	Total Hours 75	Credits 5

### Course Objectives

1. To understand the principles and instrumentation of various spectroscopic techniques.
2. To gain knowledge of the applications of IR, UV and NMR spectra.
3. To identify the structure of compounds using various spectral techniques.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	List the fundamental concepts of IR, UV, Mass and NMR spectroscopic techniques
	<b>CO2</b>	Discuss the theories and rules for solving UV spectrum of a compound
	<b>CO3</b>	Interpret the fragmentation pattern in a mass spectrum and determine the structural features of some compounds
	<b>CO4</b>	Elucidate the $^1\text{H}$ spectra of simple organic molecules
	<b>CO5</b>	Solve the $^{13}\text{C}$ NMR spectra of organic compounds

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code : 23PCH4CP</b>		<b>Core Practical 5 - Organic Chemistry Practical- II</b>		
Batch	Semester	Hours/Cycle	Total Hours	Credits
2023-2025	III and IV	3 or 5	120	3

### Course Objectives

1. To attain knowledge in estimating organic compounds quantitatively.
2. To learn and practice the methods of preparation of some organic compounds.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Define clearly, the procedures of quantitative estimations
	<b>CO2</b>	Report the significance of the preparation of Aspirin and Paracetamol drugs
	<b>CO3</b>	Apply the principle involved in double stage preparation of some organic compounds and prepare the compounds
	<b>CO4</b>	Analyze Reichert-Meisel value, saponification value and iodine value in the given oil or fat
	<b>CO5</b>	Evaluate quantitatively the amount of organic compounds present in the whole of the given solution



23PCH4CQ

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code : 23PCH4CQ</b>		<b>Core Practical 6 – Inorganic Chemistry Practical II</b>		
Batch	Semester	Hours/Cycle	Total Hours	Credits
2023-2025	III & IV	3 or 5	120	2

**Course Objectives**

1. To make the students aware about separation of mixture of inorganic compounds and quantifying them using volumetric and gravimetric principles
2. To know and apply the principle of UV-Visible Spectral studies
3. To learn about the preparation and analyse the properties of inorganic complexes

**Course Outcomes (CO)**

<b>K1 to K5</b>	<b>CO1</b>	Recall the principles of Gravimetry
	<b>CO2</b>	Demonstrate the chromatographic separation techniques for the prepared compounds
	<b>CO3</b>	Apply the principle of UV-Visible Spectroscopy to solve the structures of complexes
	<b>CO4</b>	Comment on the physical properties such as melting point, etc., of the prepared inorganic complexes
	<b>CO5</b>	Estimate the amount of cations present in a solution mixture

**23PCH4Z1**

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>
<b>Course Code : 23PCH4Z1</b>		<b>Project &amp; viva-voce</b>
Batch 2023-2025	Semester IV	Credits 4

### **Course Objectives**

1. To make the students acquire the basic tools needed to carry out independent chemical research.
2. On successful completion of the course, the students will be able to be proficient in their specialized area of chemistry and successfully complete the project.

### **Course Outcomes (CO)**

<b>K1 to K5</b>	<b>CO1</b>	Choose scrupulously, an appropriate research topic
	<b>CO2</b>	Summarize the findings of a thorough literature review
	<b>CO3</b>	State exactly, the problem of the experimental study/ research undertaken
	<b>CO4</b>	Interpret the results of the research using some basic tools
	<b>CO5</b>	Evaluate the research outcomes and present them in written and oral

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>
<b>Batch : 2023-2025</b>		<b>Major Elective –Analytical Chemistry</b>
Hours/Cycle	Total Hours	Credits
5	75	5

### Course Objectives

1. To introduce the ideas of error analysis to the students.
2. To enable the students to attain knowledge on various chromatographic techniques and thermoanalytical methods.
3. To gain knowledge in ESR and Mossbauer spectroscopy, AAS and polarimetry.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Define the ideas of error analysis, chromatography, thermogravimetry, ESR, AAS, ORD and CD
	<b>CO2</b>	Discuss the principles and instrumentation of several chromatographic methods
	<b>CO3</b>	Discover the principles, instrumentation and applications of various thermo analytical techniques
	<b>CO4</b>	Interpret ESR and Mossbauer spectra of several metal complexes
	<b>CO5</b>	Assess the principle and applications of AAS , ORD and CD

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>
<b>Batch: 2023-2025</b>		<b>Major Elective – Green and Nanochemistry</b>
Hours/Cycle	Total Hours	Credits
5	75	5

### Course Objectives

1. To introduce the concepts of green chemistry.
2. To stimulate the students to know about green synthesis.
3. To acquire a clear idea about various synthesis of nanomaterials and techniques.
4. To gain knowledge on principles of green chemistry, microwave assisted reactions and ultrasound assisted reactions.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	List the basic principles of green chemistry and the essentials of nanochemistry
	<b>CO2</b>	Relate the twelve principles of green chemistry with several green syntheses
	<b>CO3</b>	Discover the microwave and ultra sound assisted syntheses
	<b>CO4</b>	Elucidate the chemistry of nanomaterials and their synthetic methods
	<b>CO5</b>	Describe various characterization techniques for nanomaterials; summarize the applications of nanomaterials

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>
<b>Batch: 2023-2025</b>		<b>Major Elective – Bioinorganic Chemistry</b>
Hours/Cycle	Total Hours	Credits
5	75	5

### Course Objectives

1. To introduce the role of metal ions in biological systems.
2. To enable the students to know the structure, function and physiology of Haemoglobin and myoglobin.
3. To recognize electron transfer, respiration, photosynthesis, function of metalloenzymes and the applications of metals in medicine.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	State the role of metal ions in biological systems
	<b>CO2</b>	Identify the physiology and functions of haemoglobin and myoglobin
	<b>CO3</b>	Examine several electron transfer reactions in biological systems
	<b>CO4</b>	Discover the structure and functions of metalloenzymes
	<b>CO5</b>	Appraise the functions and applications of metals in medicine

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>
<b>Batch: 2023-2025</b>		<b>Major Elective – Drug design and development</b>
Hours/Cycle	Total Hours	Credits
5	75	5

### Course Objectives

1. To create awareness among the students about various drugs used for therapeutic purposes.
2. To enable the students to know the principle of drug designing and drug targeting.
3. On successful completion of the syllabus, the students should have learnt about various drugs, their design and development.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Describe the chemistry of drugs and their action as therapeutics
	<b>CO2</b>	Discuss the action mechanism of drugs
	<b>CO3</b>	Examine the physicochemical properties of drugs
	<b>CO4</b>	Outline the Structure Activity Relation of several therapeutic agents
	<b>CO5</b>	Assess drug design and drug target interaction

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>
<b>Batch: 2023-2025</b>		<b>Non Major Elective – Chemistry of Environment</b>
<b>Hours / Cycle</b>	<b>Total Hours</b>	<b>Credits</b>
4	60	4

### Course Objectives

1. To create awareness among the students about various environmental issues like pollution of air, water and soil which threaten the mankind.
2. To motivate the students to know the measures to prevent and control pollution.
3. On successful completion of the syllabus, the students should have learnt about various pollution, their sources, effects and control measures.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Enumerate the different sources of pollutants and their effects
	<b>CO2</b>	Classify water pollutants; Report their sources and harmful effects
	<b>CO3</b>	Identify different sources of soil pollution, their effects and control measures
	<b>CO4</b>	Discover the types and consequences of radioactive pollutants
	<b>CO5</b>	Assess the causes and harmful effects of thermal and noise pollution

<b>Programme Code:</b> 04	<b>M.Sc., Chemistry</b>	
<b>Batch:</b> 2023-2025	<b>Non Major Elective – Scientific Thesis Writing</b>	
Hours / Cycle 4	Total Hours 60	Credits 4

### Course Objectives

1. To introduce students the research prospectus and thesis/dissertation writing process with the focus on both the rhetorical framework and grammatical patterns germane to these tasks and the purpose of the research project.
2. To focus on the communication problems encountered in research and writing a thesis.
3. On successful completion of the syllabus, the students should have trained themselves how to write a thesis.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	Discover the ways to write the ‘Introduction’, ‘Review of Literature’ and other chapters of a thesis or dissertation
	<b>CO2</b>	Discuss the guidelines for writing ‘Materials and Methods’ chapter of a thesis
	<b>CO3</b>	Explain the strategies adopted for writing ‘Discussion’, ‘Abstract’, and ‘Synopsis’ sections of a thesis
	<b>CO4</b>	Elucidate the different types of reference citation in a thesis
	<b>CO5</b>	Distinguish between oral and poster presentation; Compare various article types in journal publication



<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>
<b>Batch : 2023-2025</b>		<b>Non Major Elective – Textile and Dye Chemistry</b>
Hours/Cycle	Total Hours	Credits
4	60	4

#### **Course Objectives**

1. To understand the classification, structure, properties of various textile fibres.
2. To enable the students to attain knowledge to understand the interaction between dye and textile fibres.
3. To learn about types of fibres and dyeing processes and after treatment techniques.

#### **Course Outcomes (CO)**

<b>K1 to K5</b>	<b>CO1</b>	Examine the chemistry of fibres and dyes
	<b>CO2</b>	Explain the manufacture and processing of fibres
	<b>CO3</b>	Illustrate various theories of colour and dye-fibre interactions
	<b>CO4</b>	Analyze the principle of dyeing
	<b>CO5</b>	Evaluate several treatment processes involved in dyeing

<b>Programme Code: 04</b>		<b>M.Sc., Chemistry</b>		
<b>Course Code: 22PGI4N2</b>		<b>Non Major Elective – Information Security</b>		
Batch	Semester	Hours/Cycle	Total Hours	Credits
2023-2025	IV	4	60	4

### Course Objectives

1. Students will identify the core concepts of Information security.
2. To examine the concepts of Information Security.
3. To design and implement the security features for IT and Industrial sectors.

### Course Outcomes (CO)

<b>K1 to K5</b>	<b>CO1</b>	To Learn the principles and fundamentals of information security.
	<b>CO2</b>	To Demonstrate the knowledge of Information security concepts
	<b>CO3</b>	To Understand about Information Security Architecture.
	<b>CO4</b>	To Analyze the various streams of security in IT and Industrial sector.
	<b>CO5</b>	To know about Cyber Laws and Regulations.

**JOB ORIENTED COURSE**

<b>Programme Code: 04</b>	<b>M.Sc., Chemistry</b>	
<b>Course Code : 23PCH0J1</b>	<b>Job Oriented Course – Pharmaceutical chemistry</b>	
Batch 2023-2025	Total Hours 30 (Out of Class hours)	Credits 2

**Course Outcomes**

1. To give the students a thorough introduction to the study of drugs.
2. To educate the students and to create an awareness about first aid.
3. On successful completion of the syllabus, the students should have been aware of the causes, treatment and prevention of some common diseases, biological role of some elements, the structure, uses and adverse effects of analgesics, antiseptics and disinfectants.