A.D.M. COLLEGE FOR WOMEN

(Autonomous)

Affiliated to Bharathidasan University

(Nationally Accredited with "A" Grade by NAAC – 3rd Cycle)

NAGAPATTINAM 611 001.

LOCAL/NATIONAL/REGIONAL/GLOBAL RELEVANCE

PG DEPARTMENT OF CHEMISTRY

Programme: B.Sc Chemistry **Year: 2021-2022**

Course Code	Title of the Course	Local/Regional/ National /Global	Rationale	Course Outcomes	PSOs Addressed	Cognitive Level
QUA	General chemistry I	Local	To study atomic structure, chemical bonding and molecular structure To understand the basic properties of alkali metals. To understand the basic properties and naming of organic compounds. To learn various methods of preparation and	• CO1: To understand the address of the electron and the concept of indicators and dilution.	PSO 1,2	U
				• CO2: To know the physical and chemical properties and uses of alkali metals, alkaline earth metals	PSO1,2,	R

			mechanism of reactions of Hydrocarbons. To study about colloidal state and macromolecules	• CO3: Recognize the basic practical skills for the synthesis of alkenes, alkynes and cycloalkanes.	PSO1,2,5	Ap
				• CO4: Predict the geometry and hybridization of molecules in organic chemistry.	PSO1,2,5,	C
				• CO5:Apply the concept and uses of colloids in the applied field.	PSO1,2,4,	An
QUD	General Chemistry III	Regional	To learn about nature and formation of compounds of oxygen and Inter halogen compounds. To become aware of the fundamental aspects of stereochemistry and its influence chemical	• CO1: To equip the learners with concepts of p block elements through comparative study.	PSO 1,2,3,4	An

			properties. To acquire knowledge about qualitative analysis.	• CO2: Physical and chemical properties of Pseudo halogen and Interhalogen compounds.	PSO1,2,5	U
				• CO3: Aware of the fundamental aspects of stereochemistry.	PSO1,2,5	C
				• CO4:To understand the aspects of gaseous state	PSO 1,2	An
				• CO5:Learn about solids, their properties, close packing in crystals, use of X-rays in crystal structure determination and Properties of Liquid Crystal.	PSO 1,2,3,5	C
QUS1	Pharmaceutical Chemistry	Global	To learn the terminology and routes of administration of drug.	• CO1: To know the terminology in Pharmaceutical chemistry.	PSO 1,3,5	U

			To learn the use of Indian Medicinal plants. To know about designation of drugs To know about common body ailment sand treatment. To gain knowledge in vitamins, micronutrients and antioxidant.	• CO2: To understand the assay of drugs, administration of drugs.	PSO 1,2,3,5	Ap
				• CO3: To classify drugs based on biological and chemical methods.	PSO 1,2,3,4,5	Ap
				• CO4: To recognize the chemotherapy of some common diseases.	PSO 1,3,4,5	An
				• CO5: To learn depth concepts of nutrients and organic pharmaceutical aids.	PSO 1,2,3,4,5	U
QUI	Physical Chemistry	Regional	Students gain knowledge in Photo chemistry and Group theory. Students understand the efficient way of converting work into energy and vice versa	• CO1: Learn about Photochemistry	PSO1,2,5	Ap
				• CO2: Predict the symmetry elements and symmetry operations	PSO1,2,5	Ap
				• CO3: Apply the concept of Second law of thermodynamics	PSO1,2,5	Ap

			from the thermo dynamic perspective. Students get to know the energy changes involved in the natural and the industrial processes– that are the applications of thermodynamics. Students understand the method of enhancing the efficiency of the certain industrial processes. Students learn about solutions, their types, colligative properties, effect of added salt and molecular weight determination.	• CO4:Know the partial molar quantities. • CO5: Recognize the component system using phase rule.	PSO1,2,3,5 PSO1,2,3	Ap R

QUS3	Polymer chemistry	Global	Students learn the chemistry of polymers. Students learn about Polymer structure, properties and methods of molecular weight determination of polymers. Students shall know the kinetics of polymers. Students gain knowledge about the natural and synthetic polymers. Students learn the constituents and importance of Plastics	• CO1: To help students explore about polymers and macromolecules.	PSO1,2,3,4,5	U
				• CO2: To assess the molecular weight of polymers, structure and its stereochemistry.	PSO1,2,5	An
				• CO3: To recognize the kinetics of polymerization.	PSO1,2,5	R
				• CO4:To distinguish the natural and synthetic polymer.	PSO1,2,3,4	Ap
				• CO5:How to make plastics and resins.	PSO1,2,3,4	Ap
QUS2	Applied chemistry	Local	Students learn about types and hardness techniques of water	• CO1: Develop an understanding about type of water.	PSO1,2,3,4,5	U

			Students learn how to determine TDS, COD and BOD. Students understand about the application of Leather Chemistry. Students shall know about the physio chemical properties of milk. Students understand about the constituent of diary pro	• CO2: Experience in water analysis such as TDS, Total hardness, BOD and COD	PSO1,2,5	An
				• CO3: Expertise in Leather manufacture and processing.	PSO1,2,5	R
				• CO4: Learn about constituent physical and chemical properties of milk.	PSO1,2,3,4	Ap
				• CO5: Skills in preparation of dairy products such as butter, ghee, ice-cream.	PSO1,2,3,4	Ap
QUE5	Agricultural chemistry	Global	Students learn about the composition and properties of soil. Students understand the source and properties of	• CO1: Students acquire the basic knowledge of Composition, Physical and Chemical properties of soil.	PSO 1,3	U

			Micronutrient fertilizer. Students know the importance of Green manure. Students study about the pest management and its control. Students know the chemistry of Fungicide, Herbicide	• CO2: Students able to understand the secondary and micronutrient fertilizer.	PSO 1,2,3,5	Ap
				• CO3: Students can accumulate skills about green manure.	PSO1,2,3	Ap
				• CO4:Students should be able to apply the knowledge of Pest Management and control.	PSO 1,3,4,5	U
				• CO5:Students should know the preparation and applications of fungicides and herbicides.	PSO 1,2,3,5	Ap

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Programme: M.Sc., Chemistry **Year: 2021-2022**

Course Code	Title of the Course	Local/Regional/ National /Global	Rationale	Course Outcomes	PSOs Addressed	Cognitive Level
PGQB	Inorganic chemistry	Regional	To give a overview of the basic trends in inorganic chemistry. Interpret collection of data in terms of common theory involved The students will be able to understand	• CO1: Gain idea about the recent advances in Inorganic chemistry	PSO4,5	U
				• CO2: Identify the synthesis, structure and bonding of carbon-pi-donor complexes	PSO4,5	AN
				• CO3: Calculate magnetic moment & crystal field	PSO5	AP

			chemical bonds, bonding theories &basic molecular structure.	Stabilization energy of metal complexes.		
				• CO4: Explain about different type of electron transfer Reaction (one electron transfer reaction & direct electron transfer reaction) and factors affecting them.	PSO4	U
				• CO5: Acquire knowledge about the basic principles of photo inorganic chemistry	PSO2	AP
PGQE1	Non conventional energy sources	Global	The chapter focus on application potential of community viable for developing renewable energy in India is to advance economic development, improve energy security and mitigate climate change.	• CO1: Ensure the students understand the basic concept of energy.	PSO-1	R
				• CO2: Understand the solar devices such as solar cooker, solar water heater.	PSO-3	U

				• CO3: Get a awareness about the wind energy and conversion to the generation of power.	PSO-4	AP
				• CO4: An introduction of composition of biogas and generation of power.	PSO-2	U
				• CO5: Study about the principles of geo Thermal and tidal power plant	PSO-5	AP
PGQE3	Molecular modeling and drug design	Global	The main goal of this course is to gain some knowledge on modern approaches used in molecular modeling. Powerful computer based technology used to identify and design	• CO 1:Identify the steps for designing new drugs, target identification and validation	PSO-1	R
				• CO2:Acquire the capacity to apply the ideas of atomic displacement, Quantum	PSO-3	U

			molecules for new medications greatly shortening the discovery computer based technology	and Molecular Mechanics, bonded interactions, hydrogen bondings and its significance in the application of drug development		
				• CO3:Execute protein structure prediction and would be able to predict the derivatives of the molecular mechanics energy function	PSO-4	AP
				• CO4:Understand the Molecular Dynamics simulation using the simple models, continuous potential sat constant temperature and pressure	PSO-2	U

				• CO5:Capable to present the docking strategies based on the ligand, receptor and denovo ligand design.	PSO-5	AP
PGQE2	Bio inorganic chemistry	Global	The main goal of the course is to provide basic training in this interdisciplinary area by applying previous general knowledge in chemistry to selected cases in bioinorganic chemistry	• CO1: Understand the effect of various ligand field strengths on d-metal ions and find out ground state terms with their energies, microstates, degeneracy and microstate table for different transition metal ions and complexes.	PSO-1	R
				• CO2: Understand electroni spectra of complexes w.r.t. spin and orbital selection rules, various transitions, charge transfer spectra an luminescence spectra with LASER application.	PSO-3	U

				• CO3: Know the magnetic properties of complexes and understand spin-only and effective magnetic moments, Zeeman effect, properties of complexes with A, E, and T terms.	PSO-4	AP
				• CO4: Understand of Bioinorganic Chemistry: Use of metals in biological systems, various aspects of coordination chemistry related to bioinorganic research, metallobio polymers, their structure, function, role of metal ion, etc.	PSO-2	U
				• CO5**:** Get the knowledge of Biochemistry of metals like Na, K, Fe, Ca and Mn.	PSO-5	AP