I – Academic Planner

Teaching Plan (Year: 2021-2022 Semester: Odd)

Teacher's Name: Ram Sunil Kumar L. , Department: Chemistry

S. No.	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1.		CHEMISTRY-DSE Green Chemistry	DSE	**Unit 3:** **Examples of Green Synthesis/ Reactions** • Green Synthesis of the following compounds: adipic acid, catechol, disodium iminodiacetate (alternative to Strecker synthesis). • Green Reagents: Non-phosgene Isocyanate Synthesis, Selective Methylation using dimethyl carbonate. • Microwave assisted solvent free synthesis of copper phthalocyanine • Microwave assisted reactions in water: Hofmann Elimination, methyl benzoate to benzoic acid and Decarboxylation reaction • Ultrasound assisted reactions: sonochemical Simmons-Smith Reaction (Ultrasonic alternative to Iodine)	26/07/2021	20.09.2021
				Test	27.09.2021	27.09.2021
				Unit 4:	04.10.2021	15.11.2021

				Real world case studies based on the Presidential green chemistry awards of EPA • Surfactants for Carbon Dioxide – replacing smog producing and ozone depleting solvents with CO_2 for precision cleaning and dry cleaning of garments. • An efficient, green synthesis of a compostable and widely applicable plastic (polylactic acid) made from corn. • Healthier Fats and oils by Green Chemistry: Enzymatic Inter esterification for production of No Trans-Fats and Oils. • Development of Fully Recyclable Carpet: Cradle to Cradle Carpeting.		
2.		CHEMISTRY-DSE Green Chemistry	DSE	CHEMISTRY PRACTICAL - DSE LAB: GREEN 1. Preparation and characterization of nanoparticles of gold using tea leaves/silver nanoparticles using plant extracts. **Using renewable resources** 2. Preparation of biodiesel from waste cooking oil and characterization (TLC, pH, Solubility, Combustion Test, Density, Viscosity, Gel Formation at Low Temperature and IR can be provided). **Use of enzymes as catalysts** 3. Benzoin condensation using Thiamine Hydrochloride as a catalyst instead of cyanide. **Alternative green solvents** 4. Extraction of D-limonene from orange peel using liquid CO_2 prepared form dry ice. 5. Mechanochemical solvent free, solid–solid synthesis of azomethine using p- toluidine and	26.07.2021	15.11.2021

				o-vanillin/vanillin (various other combinations of primary amine and aldehyde can also be tried). **Alternative sources of energy** 6. Solvent free, microwave assisted one pot synthesis of phthalocyanine complex of copper(II). 7. Photoreduction of benzophenone to benzopinacol in the presence of sunlight. Reducing waste 8. Designing and conducting an experiment by utilizing the products and by products obtained in above preparations which become waste otherwise if not used. This is done by critical thinking and literature survey. Some representative examples: • Use of nanoparticles as catalyst for a reaction • Benzoin converted into Benzil and Benzil into Benzilic acid by a green method • Use of azomethine for complex formation • Rearrangement reaction from Benzopinacol to Benzopinacolone • Conversion of by-product of biodiesel to a useful product • Students should be taught to do spot tests for qualitative inorganic analysis for cations and anions, and qualitative organic analysis for preliminary test and functional group analysis.		
3a.		BSc Prog Life Sciences Sem III		1. Classification, and general properties 2. Glucose and fructose (open chain and cyclic structure) 3. Determination of configuration of monosaccharide 4. Absolute configuration of glucose and fructose 5. Mutarotation	19/08/2021	23/09/2021

				6. Ascending and descending in monosaccharides 7. Structure of disaccharides (sucrose, cellobiose, maltose, lactose) 8. Polysaccharides (starch and cellulose) excluding their structure elucidation.		
3b.		BSc Prog Life Sciences Sem III		1. Zwitterion, isoelectric point and electrophoresis 2. Preparation of amino acids: a. Strecker synthesis b.Gabriel's phthalimide synthesis 3. Reactions of amino acids: a. ester of –COOH group b. acetylation of –NH2 group c. complexation with Cu2+ ions d. ninhydrin test. 4. Overview of Primary, Secondary, Tertiary and Quaternary Structure of proteins 5. Determination of primary structure of peptides by degradation Edmann degradation (N- terminal) and C– terminal (thiohydantoin 6. With carboxypeptidase enzyme). 7. Synthesis of simple peptides (upto dipeptides) by N-protection (t-butyloxycarbonyl and phthaloyl) 8. C- activating groups 9. Merrifield solid phase synthesis. Carboxylic Acids derivatives , Amines and derivatives	30/09/2021	07/12/2021
4.	32171302	Organic Chemistry II: Oxygen Containing Functional Groups	Core	1. Organic Preparations: (a) Benzoylation of aniline (b) Acetylation of Aniline (c) Acetylation of Aniline (d) Hydrolysis of Ester (e) Hydrolysis of Amide (f) Partial reduction of *m*-dinitrobenzene (g) Semi carbazone Preparation	25.08.2021	07.12.2021

				(h) Preparation of *S*-Benzylthiouronium salt of water soluble carboxylic acid (i) Preparation of *S*-Benzylthiouronium salt of water insoluble carboxylic acid 2. Functional group tests for alcohols, phenols, carbonyl and carboxylic acid group		
5.		GE sem III		Practicals		
6.	-	BSc Prog Physical Sciences Sem I	Core	Organic Chemistry		

B. FDP/Seminar/Workshops/Lectures to be attended and/or to be conducted by Teachers

Event Topic					
Type / Nature (FDP/Webinar/Workshop etc.)					
Organizing In-charge					
Details regarding invited Resource Person					
Nature of Participation (e.g. Invited Speaker, Participant etc.)					
Date/s	24.07.2020 to 30.07.2020	Timing/s	9am -5 pm	Mode	Online

B. Internal Assessment: House Exam (Test/Presentation etc.) & Assignment*

Course Code	Course Name	Unique Paper Code	Topic Name	Day and Date	Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks, Returning/Retaining

*Marks of the Internal Assessment to be submitted to the College 15 days before the last working day of every semester

C. Organization of Department/College Society Meetings by Staff Advisor/Convener

Department/Society	Meeting Date	Purpose

D. College Functions

College Function	Function Date	Role to be played

For Departments

A. Department activities for students – Election/Freshers/Welcome/Farewell/Department Seminars/Society functions

Event	Date	Timing	Venue	Event In-charge / Supervisor
Department Election				
Fresher's Welcome				
Farewell				
Department Society functions				

Department Seminars				
Any Other ( )				

B. Outstation Field Visit for Students

Project Name / Paper Name			
Destination		Travel Mode	
Departure Month		Return	
Faculty-in-Charge		Number of Students going	

C. FDP/Seminar/Workshops/Lectures to be attended and/or to be conducted by Department

Event Topic	
Type / Nature (FDP/Webinar/Workshop etc.)	
Organizing In-charge	

Details regarding invited Resource Person					
Nature of Participation (e.g. Invited Speaker, Participant etc.)					
Date/s		Timing/s		Mode	

I – Academic Planner

A. Teaching Plan (Year: 2021-2022 Semester: Even)

Teacher's Name: RAM SUNIL KUMAR LALJI Department: Chemistry

Sl. No.	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
	42177926	Organometallics, Bioinorganic Chemistry, Polynuclear Hydrocarbons and UV, IR Spectroscopy	LS Core	**1. compounds UV-Visible and IR 2. Polynuclear and heteronuclear aromatic 3. Video Presentation 4. Active methylene compounds Preparation**	Jan 2022	May 2022
	32175912	Molecules of Life	GE	**1. Carbohydrates 2. Amino Acids, Peptides and Proteins 3. Nucleic Acids Components of Nucleic acids**	Jan 2022	May 2022
	42171205	Organic Chemistry	AC Core	**1. Aromatic HC Structure and aromatic character of benzene 2. Aldehydes and ketones, Phenols, ethers**	April 2022	July 2022
	32171401	Organic Chemistry III	Core Lab	**1. Detection of extra elements. 2. Functional group test for nitro, amine and amide groups. 3. Qualitative analysis of unknown organic compounds containing simple functional groups (alcohols, carboxylic acids, phenols and carbonyl compounds) Assignment work**	Jan 2022	April 2022

	4217 1205	Chemical energetics, equilibria & functional organic chemistry	DSC Lab	**1. Physical Chemistry** 2. **Organic Chemistry**	April 2022	July 2022

B. Outstation Field visits for students

Project Name / Paper Name			
Destination		**Travel Mode**	
Departure Month		**Return**	
Faculty-in-Charge		**Number of Students going**	

C. Internal Assessment: House Exam (Test/Presentation etc.) & Assignment

Course Code	Course Name	Unique Paper Code	Topic Name	Day and Date	Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks, Returning/Retaining

D. Organization of Department/College Society Meetings by Staff Advisor/Convener

Department/Society	Meeting Date	Purpose