FOUR YEAR UNDERGRADUATE PROGRAM(2024 – 28)
DEPARTMENT OFCHEMISTRY
COURSE CURRICULUM

PART-A: Introduction				
Program:Bachelor in Science *(Certificate / Diploma / Degree/Honors)*		**Semester-I/III/V**	Session: **2024-2025**	
1	**Course Code**	**CHVAC**		
2	**Course Title**	**Chemistry in Daily Life**		
3	**Course Type**	**Value Added Course(VAC)**		
4	**Pre-requisite(if,any)**	***As per Program***		
5	**Course Learning Outcomes(CLO)**	➢ ***To introduce the student about dairy product,beverages,food additives, artificial sweeteners, flavors, food colorants, paints, pigments, dyes etc.*** ➢ ***To make aware the students about air pollution, hydrological cycle, composition of soil, fertilizers etc.*** ➢ ***To introduce the students about carbohydrate, vitamins,drugs.*** ➢ ***To introduce students about concept of thermodynamics used in day to day life.***		
6	**Credit Value**	**2 Credits**	***Credit = 15 Hours -learning & Observation***	
7	**Total Marks**	**Max.Marks:50**	**Min Passing Marks:20**	

PART -B: Content of the Course

TotalNo.of Teaching–learning Periods(01 Hr. per period) - 30 Periods (30 Hours)

Unit	Topics(Course contents)	No. of Period
I	**Dairy Products:** Composition of milk and milk products. Analysis of fat content, minerals in milk and butter. Estimation of added water in milk. **Beverages:** Analysis of caffeine in coffee and tea, detection of chicory in coffee, chloral hydrate in toddy, estimation of methyl alcohol in alcoholic beverages. **Food additives, adulterants and contaminants:** Food preservatives like benzoates, propionates, sorbates, disulphites. **Artificial sweeteners:** spartame, saccharin, dulcin, sucralose and sodium cyclamate. **Flavors:** Vanillin, alkyl esters (fruit flavours) and monosodium glutamate. Artificial food colorants: Coal tar dyes and non-permitted colours and metallic salts. Analysis of pesticide residues in food. **Paints & Pigments:** White pigments (white lead, ZnO, lithopone, TiO_2). Blue, red, yellow and green pigments. Paints and distempers: Requirement of a good paint. Emulsion, latex; luminescent paints. Fire retardant paints and enamels, lacquers. Solvents and thinners for paints. **Dyes:** Colour and constitution (electronic concept). Classification of dyes. Methods of applying dyes to the fabrics. A general study of azo dyes, Mordant brown, Congo red and methyl orange.	08
II	**Air Pollution:** Air pollutants, prevention and control, Greenhouse gases and acid rain. Ozone hole and CFC's. Photochemical smog and PAN. Catalytic converters for mobile sources. Bhopal gas tragedy. Hydrologic cycle, sources, criteria and standards of water quality - safe drinking water. Public health significance and measurement of water quality parameters - (Colour, turbidity, total solids, acidity, alkalinity, hardness, sulphate, fluoride, phosphate, nitrite, nitrate, BOD and COD). Water purification for drinking and industrial purposes. Toxic chemicals in the environment. Detergents - pollution aspects, eutrophication. Pesticides and insecticides - pollution aspects. Heavy metal pollution. Solid pollutants - treatment and disposal. Treatment of industrial liquid wastes. Sewage and industrial effluent treatment.	07

	Composition of soil – inorganic and organic components in soil - micro and macronutrients. **Fertilizers:** Classification of fertilizers - Straight Fertilizers, Compound/Complex Fertilizers, Fertilizer Mixtures. Manufacture and general properties of fertilizer products - Urea and DAP.	
III	**Carbohydrates**: Structure, function and Chemistry of some important mono and disaccharides. **Vitamins:** Classification and Nomenclature.Sources, deficiency diseases and structures of Vitamin A_1, Vitamin B_1,VitaminC, Vitamin D, Vitamin E &Vitamin K_1. **Drugs:** Classification and nomenclature. Structure and function of: *Analgesics* –aspirin, paracetamol. *Anthelmentic drug*:mebendazole. *Antiallergic drug:* Chloropheneramine maleate. *Antibiotics:*PenicillinV,Chloromycetin,Streptomycin. *Anti-infalmmatory agent:* Oxypheno-butazone. *Antimalarials:* Primazuine phosphate & Chloroquine. **Oils and fats:** Composition of edible oils, detection of purity, rancidity of fats and oil. Tests for adulterants like aregemone oil and mineral oils. **Soaps & Detergents:** Structures and methods of use of soaps and detergents.	**08**
IV	**Chemical Thermodynamics**: Concept of fugacity and free energy, Activity and activity coefficient, spontaneity of processes-entropy and free energy changes. Partial molar quantities, colligative properties, Le-Chatelier principle, phase equilibrium. Enzyme catalyzed reactions. **Principles of Reactivity**: Basis kinetic concepts, rates of simple and complex chemical reactions, empirical rate equations.Temperature dependence of rates and activation parameters. Branched chain reactions – explosion limits. Oscillatory reactions. **Chemical energy system** and limitations, principles and applications of primary & secondary batteries and fuel cell. Basics of solar energy, future energy storer. aerospace materials. Problems of plastic waste management.Strategies for the development of environment friendly polymers.	**08**
Keywords	***Air pollution, carbohydrate,vitamins, LeChatteliar's law, Dairy product, artificial sweeteners. fertilizers,Paint,pigment ,dyes.***	

SignatureofConvener&Members (CBoS):

PART–C:Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

1. *Sharma, B. K. (1998). Introduction to Industrial Chemistry. Meerut: Goel Publishing.*
2. *Many, N. S., & Swamy, S. (1998). Foods: Facts and Principles (4th ed.). New Age International.*
3. *Kar, A. (2022). Medicinal Chemistry. NEW AGE International Pvt Ltd*

Reference books Recommended:

1. *Drugs and Pharmaceutical Sciences Series. (Year). Marcel Dekker, Vol. II. New York: INC.*
2. *Atkins, P., & de Paula, J. (2002). Physical Chemistry (7th ed.). Oxford University Press.*
3. *Swaminathan, & Goswamy. (2001). Handbook on Fertilizer Technology (6th ed.). FAI.*
4. *Finar, I. L. (Year). Organic Chemistry (Vol. 1&2).*
5. *Fired, J. R. (Year). Polymer Science and Technology. Prentice Hall.*

Online Resources:

https://onlinecourses.swayam2.ac.in/nos22_sc23/preview
https://www.researchgate.net/publication/343585969_Chemistry_in_Everyday_Life
https://www.youtube.com/watch?v=P3p1C87gc0U
https://www.slideshare.net/sanjaijosephManesh/food-chemistry-51688453

PART-D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:
Maximum Marks: 50 Marks
Continuous Internal Assessment(CIA):15 Marks
End Semester Exam(ESE):35Marks

Continuous InternalAssessment (CIA): **(By Course Teacher)**	Internal Test / Quiz-(2): **10 &10** Assignment/Seminar +Attendance- **05** Total Marks -**15**	Better marks out of thetwo Test / Quiz+obtained marks in Assignment shall be considered against **15** Marks
End Semester Exam (ESE):	**Two section – A & B** Section **A**: **Q1**. Objective – **05 x1= 05** Mark; **Q2**. Short answer type- **5x2 =10Marks** Section **B**: Descriptive answer type qts.,**1out of 2** from each unit-**4x05=20Marks**	

Name and Signature of Convener & Members of CBoS: