

Course Code	Course Name	Credits
26CH901	CHEMISTRY IN DAILY LIFE	04

Course Objectives

- Understand the basic concepts of chemistry in daily life and its relevance to society.
- Apply chemical principles in the manufacture and use of commercial products.
- Gain knowledge of micronutrients, fertilizers, dyes, disinfectants, and detergents.
- Evaluate properties, applications, and limitations of applied chemical products and byproducts.

Learning Outcomes

Upon successful completion of this course it is intended that a student will be able to:

- Introduce the concepts, definition, and importance of chemistry in various products.
- Understand the occurrence, sources, types, uses, and limitations of industrial products.
- Gain knowledge of applying basic chemistry in the manufacture of commercial products.
- Analyze the structure–property relationship of commercial materials and the biological role of micronutrients.

Unit 1 - Basic of chemistry (12 Hrs.)

Periodic table; atom and molecules; chemical bonding; properties and chemical reactions; simple examples and illustrations.

Unit 2 – Chemistry in Heritage and Industry (12 Hrs.)

Extraction and uses of metals like iron and stone in ancient times; metals and stones in ornaments, medicines and weapons; chemistry for preservatives; basics of preservation and examples of preservatives; chemistry for industry; food additives; dyes and pigments; paints and coatings; polymers and plastics; uses and environmental issues.

Unit 3 - Chemistry at Home (12 Hrs.)

Chemistry in the kitchen; butter and cooking oil; saturated and unsaturated fatty acids; hydrogenation of oil; chemistry of cooking; physical and chemical changes; stability of nutrients during cooking; food sterilization and preservation; water purification; chemistry in the laundry; soaps and detergents and their mode of actions; chemistry in cosmetics; deodorants and antiperspirants; chemistry of sunscreens; hair products for bleaching, colouring and moisturizing; chemistry in the garden; fertilizers, composting, pesticides and their toxicities; chemistry in the medicine box; types of medicines at home such as Aspirin, antibiotics, analgesics and antacids; their chemistry and toxicity evaluation.

Unit 4 – Chemistry in Biosphere (12 Hrs.)

Pollution: water, air and soil pollution and their chemical sources; acid rain; ozone layer; global warming; biomagnification and metal toxicity with examples and illustrations; monitoring of air, water and soil pollution; remediation of air, water and soil pollution with examples and illustrations; relevant international conventions.

Unit 5 - Future of chemistry (12 Hrs.)

Basics of green and sustainable chemistry; reuse and recycling of by-products; zero-waste chemistry; alternatives to single-use plastics; sources of energy including coal, petrol and natural gas; nuclear fusion and fission; solar, geothermal, tidal and hydel energy; alternate fuels and energy-providing chemicals such as biodiesel and hydrogen.

Reference Books:

1. K.Bagavathi Sundari, Applied Chemistry, 2006 MJP Publishers.
2. Ley E.Manahan, Fundamentals of Environmental Chemistry, Third Edition, 2009 CRC Press, Taylor & Francis Group.
3. M.Lancaster, Green Chemistry, Introductory Text, Royal Society of Chemistry, London.
4. M.A. Ryan and M. Tinnesan, Introduction to green chemistry, American Chemical Society, Washington.
5. J.Clark and D. Macquarrie, Handbook of Green Chemistry and Technology, Black well Publication.
6. K. Burgess, Solid-Phase Organic Synthesis, Wiley-Interscience.
7. F.M. Kerton, Alternative Solvents for Green Chemistry, Royal Society of Chemistry, London.
8. Jayashree Ghosh, Text book of pharmaceutical chemistry, 3rd Ed. 1997-1999. S.Chand & Co.Ltd., New Delhi,
9. B.K.Sharma, Industrial chemistry, 1st Ed.,1983 Goel publication Meerut.
10. S.Lakshmi. Pharmaceutical Chemistry, 3rd Ed., Oxford & I Bh publishing, New Delhi.
11. B.K.Sharma, Industrial Chemistry, Goel publishing House, Meerut.

Websites and eLearning Sources:

1. <https://nptel.ac.in/courses/104103020>
2. <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/hydrogenation>
3. <https://youtu.be/bKKJkxqIg94?si=UY8IEqAwBftcE4Le>

COs and Bloom's Taxonomy Mapping – 26CH901		
Course Outcomes	On completing U.G. program the students will be able to	BTL
CO1	Understand and remember the fundamental concepts related to the chemistry in daily life	K1, K2
CO2	Gain knowledge about basic concept of chemistry and apply in the manufacture of commercial products	K3
CO3	Analyze the structural relationship of the commercial materials with the effect of applications and the biological implications of micronutrients	K4
CO4	Evaluate and monitor different types of pollution	K5
CO5	Design green and sustainable chemistry of by products	K6

BTL K1 and K2 – remembering and understanding, K3- Applying, K4 – Analyse, K5- Evaluate and K6- Create

Relationship Matrix – 26CH901													
Course Outcomes	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)						Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	
CO1	3	2	2	2	2	2	3	2	2	2	2	1	2.08
CO2	3	2	3	2	2	2	2	2	3	2	2	2	2.25
CO3	3	3	2	2	2	2	3	2	2	2	2	2	2.25
CO4	3	3	3	2	2	2	3	2	2	3	2	3	2.50
CO5	3	3	3	2	2	3	3	3	3	3	3	3	2.83
Total													2.38

Mean Score: 3- High, 2- Medium/Moderate, 1-Low