| | |
|---|---|
| 3 | Substantial / High |

**Assessment Rubrics:**

- Quiz / Assignment/ Quiz/ Discussion / Seminar
- Midterm Exam
- Programming Assignments
- Final Exam

**Mapping of COs to Assessment Rubrics:**

| | Internal Exam | Assignment | Project Evaluation | End Semester Examinations |
|---|---|---|---|---|
| CO 1 | √ | √ | | √ |
| CO 2 | √ | √ | | √ |
| CO 3 | √ | √ | | √ |
| CO 4 | √ | | √ | √ |
| CO 5 | √ | | | √ |



**University of Kerala**

| | |
|---|---|
| Discipline | CHEMISTRY |
| Course Code | **UK2MDCCHE100** |
| Course Title | **CHEMISTRY IN EVERYDAY LIFE** |

| | | | | | |
|---|---|---|---|---|---|
| Type of Course | **MDC** | | | | |
| Semester | 2 | | | | |
| Academic Level | 100 - 199 | | | | |
| Course Details | Credit | Lecture per week | Tutorial per week | Practical per week | Total Hours/Week |
| | 3 | 3 hours | - | - | 3 |
| Pre-requisites | 1. Basic knowledge and interest in science | | | | |
| Course Summary | Chemistry in Everyday Life provides a comprehensive understanding of how chemistry permeates various aspects of our daily life. | | | | |

**Detailed Syllabus:**

| Module | Unit | Content<br>CHEMISTRY IN EVERYDAY LIFE | 45 Hrs |
|---|---|---|---|
| **I** | **CHEMICALS IN DAILY LIFE** | | **6** |
| | 1 | Chemicals and their role in Cleansing Agents - Soaps and detergents. | 2 |
| | 2 | Chemical and their role in Cosmetics - Tooth paste, Talcum powder, Moisturizer, Sun screen lotion, Lipstick Nail polish and Hair dye. | 2 |
| | 3 | Harmful effects of cosmetics. Herbal Cosmetics- Definition, Natural Ingredients Used- Aloe Vera, Turmeric, Henna, Amla, Neem, Clove | 2 |
| **II** | **CHEMISTRY IN AGRICULTURE** | | **6** |
| | 4 | Fertilizers – Introduction, Types of Fertilizers - Natural, Synthetic, NPK Fertilizers. | 2 |
| | 5 | Excessive Use of Fertilizers and Its Impact on the Environment, Bio Fertilizers and Organic Manures. | 2 |
| | 6 | Pesticides – Introduction, Classification (Brief idea only) - Insecticides, Fungicides, Herbicides (Structures not needed). | 1 |
| | 7 | Excessive Use of Pesticides - Environmental Hazards. Bio Pesticides. | 1 |
| **III** | **CHEMISTRY OF BIOMOLECULES** | | **6** |
| | 8 | Carbohydrates - Classification- Monosaccharides, Disaccharides, Oligosaccharides, Polysaccharides, Importance of Carbohydrates. | 2 |
| | 9 | Elementary idea of Amino acids, Peptide bond, Polypeptides, Proteins - Classification- Fibrous and Globular Proteins, Simple, Conjugate and Derived protein, Denaturation of protein. | 2 |
| | 10 | Vitamins – Classification, functions and deficiency diseases. | 1 |
| | 11 | Enzymes, Hormones and Nucleic acids (Basic concept only). | 1 |
| **IV** | **DYES, PIGMENTS AND MEDICINES** | | **18** |
| | 12 | Definition of Dye, Requirements of a Good Dye, Classification of Dyes based on Origin, Application and Chemical properties. | 3 |
| | 13 | Biomedical Uses of Dyes - Dyes Used in Formulations (Tablets, Capsules, Syrups etc), Biological Staining Agents (Methylene blue, Crystal violet and Safranin T) (structure not needed). Health and Environmental Hazards of Synthetic Dyes. | 3 |
| | 14 | Pigments - White pigments (White lead, ZnO, Lithopone, $TiO_2$), Blue, Red, Yellow and Green pigments. | 3 |

| | | | |
|---|---|---|---|
| | 15 | Medicines and Drugs, Sources of Drugs - Microbial, Plant, Marine and Synthetic. | 2 |
| | 16 | Classification of Drugs - Analgesics, Antipyretic, Antihistamines, Antacids, Antiseptics, Antibiotics, Anti fertility drugs, Antihypertensive Drugs with examples (Structure not needed). | 3 |
| | 17 | Psychotropic Drugs - Tranquilizers, Antidepressants and Stimulants with examples (Structures Not needed).<br>Anti-Cancerous Drugs. | 3 |
| | 18 | Drug Addiction and Abuse, Prevention and Treatment. | 1 |
| **V** | **OPEN ENDED MODULE:** | | **9** |
| | 19 | Seminar presentations, group discussions, debates, quizzes, case studies, local field visits etc on<br>a. Importance of chemical safety and responsible usage in daily life<br>b. Impact of specific chemicals (e.g., pesticides, fertilizers, pharmaceuticals) on the environment.<br>c. Natural sources of dyes (e.g., turmeric, beetroot, spinach) and methods for extracting and synthesizing dyes from these sources.<br>d. Extraction of DNA, proteins, or lipids from various sources such as fruits, vegetables, or even their own cells (e.g., buccal swabs).<br>e. Natural compounds that have pesticidal properties, such as neem oil, and compare their effectiveness with synthetic pesticides.<br>**(Or any other similar topics suggested by the teacher)** | |

**References**


1. B. K.Sharma, "*Industrial Chemistry, 11th Edition*".
2. K.H. Buchel, *Chemistry of Pesticides*, John Wiley & Sons, New York, 1983.
3. S.P. Bhutani, "*Chemistry of Biomolecule*".
4. S.B. Bhat, B. A. Nagasampagi, S. Meenakshi, "*Natural Products*".
5. S. Banarjee, "*Biomolecules*".
6. D.R. Waring and G. Hallas, "*The Chemistry and Application of Dyes*",
7. D.E. Newton, "*Chemistry of Drugs*".
8. A. Kour, "*Medicinal Chemistry*".
9. Dr. R. Kumara, "*Introduction to Cosmetic Chemistry*"


## Course Outcomes

| No. | Upon completion of the course the graduate will be able to | Cognitive Level | PSO addressed |
|---|---|---|---|

| | | | |
|---|---|---|---|
| CO-1 | Understand the components of commonly used cosmetics and their effects. | An | PSO-5 |
| CO-2 | Understand the uses of fertilizers and pesticides and their impact on environment. | An, E | PSO-1&5 |
| CO-3 | Acquire knowledge on biomolecules. | An | PSO-1&3 |
| CO-4 | Acquire knowledge on the chemistry of commonly used medicines, drugs, dyes and pigments. | An, C | PSO-1&5 |
| CO-5 | Basic knowledge on the chemistry and usage of chemicals in everyday life. | An | PSO-1&5 |

**R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create**

**Name of the Course: CHEMISTRY IN EVERYDAY LIFE**

**Credits: 3:0:0 (Lecture:Tutorial:Practical)**

| CO No. | CO | PO/ PSO | Cognitive Level | Knowledge Category | Lecture (L)/ Tutorial (T) | Practical (P) |
|---|---|---|---|---|---|---|
| 1 | CO-1 | PO-3<br>PSO-5 | An | C | L | |
| 2 | CO-2 | PO-2&3<br>PSO-1&5 | An, E | C, M | L | |
| 3 | CO-3 | PO-1<br>PSO-1&3 | An | C | L | |
| 4 | CO-4 | PO-2&3<br>PSO-1&5 | An, C | C | L | |
| 5 | CO-5 | PO-1 &2<br>PSO-1&5 | An | C | L | |

**F-Factual, C- Conceptual, P-Procedural, M-Metacognitive**

**Mapping of COs with PSOs and POs:**

| | PSO 1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO 1** | - | - | - | - | 3 | - | - | 3 | - | - | - | - | - |
| **CO 2** | 2 | - | - | - | 2 | - | 2 | 2 | - | - | - | - | - |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO 3** | 2 | - | 2 | - | - | 2 | - | - | - | - | - | - | - |
| **CO 4** | 2 | - | - | - | 2 | - | 2 | 2 | - | - | - | - | - |
| **CO 5** | 2 | - | - | - | 2 | 2 | 2 | - | - | - | - | - | - |

**Correlation Levels:**

| Level | Correlation |
|---|---|
| - | Nil |
| 1 | Slightly / Low |
| 2 | Moderate / Medium |
| 3 | Substantial / High |

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| CO 4 | √ | | | √ |
| CO 5 | √ | | √ | √ |



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