

Title of the Course: VSCII : Analysis of Milk Sample

Credits-2 (Theory 30 Hrs)

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Programme Outcomes (POs 1-8)

Course Outcomes (COs) / Programme Outcomes (POs)	1	2	3	4	5	6	7	8
1. Understand the composition of milk and its variations based on different factors	√	√						
2. Learn various analytical techniques used in the analysis of milk samples	√	√		√				
3. Develop proficiency in conducting laboratory tests to determine the quality and safety of milk.	√					√		
4. Interpret and evaluate the results obtained from milk sample analysis.	√	√		√				
5. Apply appropriate standards and regulations in milk sample analysis.	√	√		√				√

Title of the Course: VSC II: Analysis of Milk Sample

Credits-2 (Theory 30 Hrs)

Course Description:

This course provides an in-depth understanding of the analysis of milk samples. Students will learn various techniques and methods used to analyze the composition, quality, and safety of milk. The course emphasizes both theoretical knowledge and practical skills through laboratory experiments. Students will gain hands-on experience in analyzing milk samples, interpreting results, and ensuring compliance with regulatory standards.

Unit 1: Introduction to Milk Analysis

5

Introduction to milk composition and its significance, Factors affecting milk quality and variations, Regulatory standards and guidelines for milk analysis, Sampling techniques and sample preparation methods.

Unit II: Chemical Analysis of Milk

5

Principles of fat extraction methods (e.g., Gerber method, Babcock method), Protein analysis techniques (e.g., Kjeldahl method, Bradford method), Carbohydrate analysis methods, Mineral and vitamin analysis techniques, Sensory analysis of milk

Unit III: Physical Analysis of Milk

5

Density and specific gravity determination, Measurement of pH and acidity, Viscosity measurement, Cryoscopic point determination, Refractive index measurement

Practical Course:

Experiment 1: Determination of Fat Content in Milk

Application of Gerber method for fat extraction
Calculation of fat content based on measured values

Experiment 2: Protein Analysis in Milk

Use of Kjeldahl method for protein determination
Quantitative analysis of protein content in milk samples
Evaluation and interpretation of protein analysis results

Experiment 3: Determination of Density and Specific Gravity

Measurement of milk density and specific gravity using hydrometers
Calculation of solids-not-fat (SNF) content based on density and specific gravity values
Correlation of results with milk quality indicators.

References:-

- 1) Textbook of Dairy Chemistry M.P.Mathur
- 2) Dairy Chemistry Dr.K.K.Ilavelnil
- 3) Handbook on Analysis of Milk Products- M.K.Srivastava
- 4) Fundamentals of Dairy Chemistry- N.OP.Wong, R.Jenness

Rayat Shikshan Sanstha's
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Skill Enhancement Course (SEC) in Synthesis of House hold materials

B. Sc. - I

“Synthesis of household useful material in laboratory”

Syllabus

Theory:

Unit I : The science of soap

5

Introduction, safety precautions, and experimental procedure of Preparation of a soap, Properties of soap, Preparation of testing solution, Application, advantage and disadvantage of soap,

Unit II: Essence Stick Preparation

5

Understanding the composition and structure of essence sticks, Selection and preparation of suitable base materials (e.g., bamboo sticks, incense blanks), Application of fragrance oils onto the sticks using various methods (e.g., dipping, spraying, soaking), Drying, curing, and packaging of the prepared essence sticks

Unit III: Candle-Making Techniques

5

Introduction to different types of candle waxes (e.g., soy wax, beeswax, paraffin, Candle wick selection and preparation, Melting, pouring, and cooling of candle wax

Practical: 30

1. Preparation of a soap - 3 Practicals
2. Preparation of essence sticks- 3 Practicals
3. Preparation of candle- 3 Practicals

Value Education Course (VEC)

Title of the Course: VECI : Water Pollution

Credits-2 (Theory 30 Hrs)

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Programme Outcomes (POs 1-8)

Course Outcomes (COs) / Programme Outcomes (POs)	1	2	3	4	5	6	7	8
1. Define sources of water	√	√	√					
2. Describe fundamental terms in water pollution.	√	√	√					
3. Analyze water quality parameter.	√			√			√	√
4. Apply the correct method for waste water treatment	√			√			√	√

Title of the Course: VECI : Water Pollution

Credits-2 (Theory 30 Hrs)

The course intends to prepare a student in acquiring skills on the art of water monitoring and quantitative analysis of critical water quality parameters. It also brings in those aspects of chemistry which are important for water quality management and pollution control.

Learning Objectives:

At the end of the course the student will be able to:

- ❖ Explain the general properties of water and understand water resources and water conservation. Develop awareness about water quality criteria and standards, and their relation to public health and environment
- ❖ Understand important parameters for measuring water quality.
- ❖ Know about the methods for the determination of water quality parameters
- ❖ Learn how to run accurate water quality tests and to determine how the parameters relate to each other.

Unit I: Water Sources and Pollution

Sources of water, Meaning of pure water, Impurities in water, Meaning of the terms: Potability, sewage, effluent, sample, contamination, pollutants, pollution. Sources of water pollution. Major water pollutants. Types of water pollution : Ground water pollution, fresh water pollution, surface water pollution (river pollution, Pond and Lake pollution).

Unit II: Municipal water and waste water treatment Techniques

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Municipal water: specifications for drinking water, treatment of water for domestic purpose: pre-treatment, removal of suspended impurities, methods of disinfection of water.

Waste water: Introduction, characteristics of wastewater, need for wastewater treatment, preliminary treatment: grit chamber floatation skimming tank, screening primary treatment, sedimentation, coagulation, secondary treatment aerobic, chlorination, and ozonisation.

References:

1. Environmental sciences; S.C. Santra, New Central Book Agency.
2. A text book of environmental studies: D.S. Asthan, s. Chand & Camp Ltd.
3. Water and waste water engineering Fair/Geyer/Okum.
4. Methodology of water analysis; M.S. Kondarkar, IAAB Publication, hyderabad.
5. Waste water engineering; Metcalf and Eddy, Inc . Pub.