

Govt. T. R. S. (Autonomous) College Rewa (M.P.)
(Affiliated to A.P.S. University Rewa)
Department of Chemistry
Syllabus for B.Sc. (Hons.) Chemistry
(CBCS & NEP 2020)
Session-2023-24

Part A - Introduction			
Program- UG	Class- ALL	Semester IV	Session: 2023-24
Subject : Chemistry (Honours)			
1	Course code	CHST-06	
2	Course title	CHEMISTRY OF MILK	
3	Course type	Skill Enhancement Course (SEC)	
4	Pre-requisite (if any)	This course is Open for all	
5	Course Objective	This course is help to emphasize knowledge about dairy products especially milk made dairy products.	
6	Course Learning Outcomes (CLO)	By the end of the this paper Students will be able to <ul style="list-style-type: none"> • Learn about the importance & relevance of milk and its products in History & Culture of India. • Understand different production methods of dairy products • Learn about the composition of milk and its products • Get an overview of its processing methods. • Learn different methods of estimation of milk components 	
7	Credit Value	04	
8	Total Marks	Maximum Marks: University Exam (UE)- 60, CCE-40	Min. Passing Marks: 33
Part B – Content of the Course			
Total No. of Lectures-Tutorials-Practical (02 hours per week):			
L-T-P: 60-0-0 (Total Hours)			
Unit	Topic	No. of Lectures	
1	Historical Background: History of Dairy in India, Importance and relevance of milk and milk products inthe culture of India. Introduction: Definition of Dairy, Composition, Milk lipids, Milk proteins, vitamins and minerals.Factors affecting the composition of milk, adulterants, preservatives	12	

2	<p>Properties of milk: Flavour and aroma, acidity, specific gravity, viscosity and conductivity. Estimation of fat, acidity and total solids in milk.</p>	12
3	<p>Processing of milk: Effect of heat on milk, chemical changes taking place in milk due to processing, sterilization, homogenization and pasteurization, vacuum pasteurization and Ultra high temperature pasteurization.</p>	12
4	<p>Milk Products I: Cream; definition, chemistry of creaming process. Butter; definition, composition, theory of churning, desi butter, salted butter. Ghee; major constituents, common adulterants and their detection. Cheese: definition, composition, types</p>	12
5	<p>Milk Products II : Fermented milk products: Fermentation of milk; definition and conditions. Ice-creams: definition, composition, types, Manufacture of ice - cream, stabilizers, emulsifiers, and their role. Milk powder; definition, process of making milk powder. Condensed Milk: definition, process of making condensed powder.</p>	12
<p>NPTEL:</p> <ul style="list-style-type: none"> ● https://nptel.ac.in/courses/126/105/126105013/ ● https://onlinecourses.nptel.ac.in/noc20_ag02/preview 		
<p>MIT:</p> <ul style="list-style-type: none"> ● https://ocw.mit.edu/courses/experimental-study-group/es-287-kitchen-chemistry-spring-2009/related-resources/ 		
<p>Web resources: (all URLs accessed in May 2021)</p> <ul style="list-style-type: none"> ● http://lib.unipune.ac.in:8080/jspui/bitstream/123456789/5072/7/07_chapter%201.pdf ● https://www.myvmc.com/lifestyles/milk-and-milk-products-dairy-products/ ● https://www.britannica.com/topic/dairy-product ● https://academic.oup.com/advances/article/5/2/131/4557960 ● http://www.fao.org/dairy-production-products/products/types-and-characteristics/en/ 		

Keywords:

Ice-creams, stabilizer, emulsifier, milk powder Cream, Butter, Ghee, adulterant, Cheese sterilization, homogenization, pasteurization aroma, acidity, specific gravity, viscosity, conductivity Composition, Milk lipids, Milk proteins, vitamins, mineral.

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Session 2023-24

Part A - Introduction			
Program- UG		Class- ALL	Semester- IV
Session: 2023-24			
Subject : Chemistry (Honours)			
1	Course code	CHSP 06	
2	Course title	Chemistry of Milk (Practical)	
3	Course type	Skill Enhancement Course (SEC)	
4	Pre-requisite (if any)	This course is Open for all	
5	Course Objective	To aware about the various easy experiments about milk.	
6	Course Learning Outcomes (CLO)	<p>By the end of the this paper Students will be able to:</p> <ul style="list-style-type: none"> • Learn historical perspective of Food processing in India • Understand the fundamentals of Government Regulations • Learn about various nutrients present in the food. • Have an basic understanding of food processing Techniques • Know about various additives used in the food industry • Have an overview of food related hazards and safety assurance 	
7	Credit Value	01	
8	Total Marks	Maximum Marks: Total - 100 University Exam (UE)- 40, CCE-60	Min. Passing Marks: 33
Part B – Content of the Course			
Total No. of Lectures-Tutorials-Practical (04 hours per week):			
L-T-P: 60-0-0 (Total hours)			
Unit	Topic		No. of Lectures
1	1. To determine anti-bacterial properties of turmeric that can preserve milk. 2. Milk reception. 3. plateform tests for milk <ul style="list-style-type: none"> • clot on boiling (COB) test • Alcohol test • Determination of preservatives and adulterants. 4. Chemical analysis of milk and its products; <ul style="list-style-type: none"> • Urea 		12

	<ul style="list-style-type: none"> • Starch • Sugar • Mineral Oil <p>5. microbiological analysis of milk and its products</p> <ul style="list-style-type: none"> • Determination of milk fat • Determination of ash content • Determination of protein in milk <p>6. Chemical analysis of milk product</p> <ul style="list-style-type: none"> • Testing of butter <ul style="list-style-type: none"> ➤ Determination of moisture ➤ Determination of fat ➤ Titrable acidity • Testing of paneer <ul style="list-style-type: none"> ➤ Determination of moisture ➤ Determination of fat ➤ Determination of acidity • Testing of ghee <ul style="list-style-type: none"> ➤ Determination of moisture ➤ Free fatty acids percent as olic acid ➤ RM test <p>7. Estimation of casein in milk.</p>	
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Part C – Learning Resource

Text Books, Reference Books, Other Resources

Suggested equivalent online courses:
(all URLs accessed in May 2021)

MOOCs

- <http://egyankosh.ac.in/bitstream/123456789/62017/1/Chemistry%20of%20Milk.pdf>
- <https://agrimoon.com/chemistry-of-milk-pdf-book/>
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