

General Info

Objectives of the Course

The course includes information on the formation mechanism of milk, milk preservation, milk processing, drinking milk, fermented milk products, cheese and butter production processes.

Course Contents

Basic composition of milk (fat, protein, lactose, enzymes), chemical, physicochemical, and biochemical properties and effects of technological processes applied to milk (cooling, homogenization, separation, heat treatment, membrane techniques, etc.) and production of major dairy products (pasteurized milk, UHT milk, yogurt, cheese, ice cream, butter, and milk powder).

Recommended or Required Reading

Textbook, Projection. - Milk and Dairy Technology (Prof. Dr. Mustafa Üçüncü) - Ice Cream Science and Technology (Prof. Dr. Nihat Akın) - The Technology of Dairy Products (edited by R. Early, 2nd edition) - Milk Technology (Composition and Processing of Milk) (Prof. Dr. Mustafa Metin)

Planned Learning Activities and Teaching Methods

Presentation and Experimental Methods

Recommended Optional Programme Components

Not available

Instructor's Assistants

Not available

Presentation Of Course

Face to face

Dersi Veren Öğretim Elemanları

Prof. Dr. Hilal Yıldız

Program Outcomes

1. Can explain properties of milk
2. can interpret the changes in the chemical, physical, and biochemical properties of milk during production.
3. can determine the quality of the milk in the factory and realize its acceptance.
4. can produce important dairy products (cheese, yogurt, butter, concentrated butter, ice cream, condensed milk, and milk powder).
5. can understand the composition of milk.
6. Can perform quality analysis on milk and its products.

Weekly Contents

Order	PreparationInfo	Laboratory	TeachingMethods	Theoretical	Practise
1	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Determination of acidity in milk	Presentation and experimental practice	Definition and composition of milk	
2	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Determination of pH in milk	Presentation and experimental practice	Physico-chemical properties of milk	
3	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Fat determination in milk	Presentation and experimental practice	Milk lipids	
4	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Protein determination in milk	Presentation and experimental practice	Nitrogen compounds in milk	
5	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Determination of lactose in milk by spectrophotometry	Presentation and experimental practice	Milk Carbohydrates	
6	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Determination of ash in milk	Presentation and experimental practice	Milk minerals and enzymes	

Order	PreparationInfo	Laboratory	TeachingMethods	Theoretical	Practise
7	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Antibiotic test in milk	Presentation and experimental practice	Minor components of milk, functions of vitamins and contaminants in milk	
8	During the midterm week, students are expected to review lecture notes provided at the beginning of the semester, consolidate concepts, and revise topics covered up to that point for the exam.			Midterm Exam	
9	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Pasteurized milk production	Presentation and experimental practice	Technological and heat treatments applied to milk, latest trends in milk processing	
10	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Cheese production processes	Presentation and experimental practice	Cheese technology (definition, classification, additives used in cheese making, selection of milk to be processed into cheese)	
11	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Microbiological analysis of cheese samples	Presentation and experimental practice	Cheese Production Technology: Cheese Defects and Prevention Methods	
12	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Determination of oxidation in butter	Presentation and experimental practice	Butter technology	
13	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Determination of acidity in yogurt Lactic acid bacteria count	Presentation and experimental practice	Yogurt technology	
14	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Determination of microbiological quality of milk powder	Presentation and experimental practice	Milk Powder Production Technology	
15	The content of each week will be covered using lecture notes prepared by the instructor. These notes have been provided to students at the beginning of the semester, with weekly topics clearly indicated.	Sensory analysis in ice cream	Presentation and experimental practice	Ice Cream Technology	

Workload

Activities	Number	PLEASE SELECT TWO DISTINCT LANGUAGES
Vize	1	1,00
Final	1	2,00
Ders Öncesi Bireysel Çalışma	14	2,00
Ders Sonrası Bireysel Çalışma	14	2,00
Derse Katılım	14	2,00
Uygulama / Pratik	14	2,00

Assesments

Activities	Weight (%)
Ara Sınav	40,00
Final	60,00

	P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14
L.O. 1	4	5	4	4	4			4	4		4	4		4
L.O. 2	4	4	5	4	4			4	5		4	4	4	5
L.O. 3	5	5	5	4	4	4		4		5	4	5	5	5
L.O. 4	5	4	4	5	4	4		4	5		4	5	5	5
L.O. 5	4	4	4	4	4			4	5				4	5
L.O. 6	5	5	5	4	4	4		4	5		4	4	5	5

Table :

P.O. 1 : Gıda Mühendisliği ile ilgili temel mühendislik konularında yeterli alt yapıya sahiptir.

P.O. 2 : Alanı ile ilgili problemleri belirleme, tanımlama ve çözme becerisine sahiptir.

P.O. 3 : Nitelikli araştırma planlama, uygulama ve sonuçları analiz etme bilgi ve becerisine sahiptir.

P.O. 4 : Modern teknik ve araçları seçer, kullanır ve bilişim teknolojilerinden etkin biçimde yararlanır.

P.O. 5 : Bilgiye erişebilme yöntemlerini kavrar.

P.O. 6 : Bireysel olarak farklı çalışma gruplarında etkin çalışabilir ve sorumluluk alma özgüvenine sahiptir.

P.O. 7 : Etkin sözlü ve yazılı iletişim kurma becerisine ve en az bir yabancı dil bilgisine sahiptir.

P.O. 8 : Yaşam boyu öğrenmenin gerekliliği bilincindedir; bilim ve teknolojideki gelişmeleri izler ve kendini sürekli yeniler.

P.O. 9 : Mesleki ve etik sorumluluk bilincine sahiptir.

P.O. 10 : Proje hazırlama ve değerlendirme bilgi ve yeteneklerine sahiptir.

P.O. 11 : İşletme yönetimi, çalışanların sağlığı, çevre ve iş güvenliği konularında bilinç sahibidir.

P.O. 12 : Mühendislik çözümlerinin ve uygulamalarının evrensel ve toplumsal boyutlardaki etkilerini kavrar.

P.O. 13 : Gıda üretim prosesleri, kalite kontrolü, ürün kalitesinin artırılması, ürün geliştirme ve gıda analizleri alanlarında yeterli düzeyde bilgi ve beceriye sahiptir.

P.O. 14 : Gıda güvenilirliği açısından önem arz eden risklerin ortadan kaldırılması veya minimum düzeye indirilmesine yönelik bilgi birikimi ve uygulama becerisine sahiptir.

L.O. 1 : Sütün niteliklerini anlatabilir.

L.O. 2 : Üretim esnasında sütün kimyasal, fiziksel ve biyokimyasal özelliklerinde meydana gelecek değişimleri yorumlayabilir.

L.O. 3 : Fabrikada sütün kalitesini belirleyebilir ve kabulünü gerçekleştirebilir.

L.O. 4 : Önemli süt ürünlerini (peynir, yoğurt, tereyağ, sadeyağ, dondurma, koyulaştırılmış süt ve süttozu) üretebilir.

L.O. 5 : Sütün bileşimini kavrar.

L.O. 6 : Süt ve ürünlerine yönelik kalite analizlerini gerçekleştirebilir.