Tarih: 21 Ağustos 2025 13:31

Department of Food Engineering / Department of Food Engineering /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
GM-101	INTRODUCTION TO FOOD ENGINEERING	2.00	0.00	0.00	2.00	3.00

Course Detail

Course Language	:	Turkish
Qualification Degree	:	Bachelor
Course Type	:	Compulsory
Preconditions	:	Not
Objectives of the Course	:	The aim of this course is that basic mechanisms of all food processes in food industry, their fundamentals and equipment / materials used in these processes are introduced to students.
Course Contents	:	This class covers definitions and fundamentals of all unit processes in food technology.
Recommended or Required Reading	:	Gıda Mühendisliğine Giriş Ders Notları Gıda Mühendisliğine Giriş kitabı (R.P., Singh, Heldman, D.R., 2015. Introduction to Food Engineering, Academic Press, Inc., USA.)
Planned Learning Activities and Teaching Methods	:	Lectures, Group discussions, Case studies
Recommended Optional Programme Components	:	.....
Course Instructors	:	Doç. Dr. Kamil Emre Gerçekaslan
Instructor's Assistants	:	None.
Presentation Of Course	:	Face to face
Update Date	:	8/21/2025 1:17:32 PM
Dosya İndirilme Tarihi	:	8/21/2025

Course Outcomes

Upon the completion of this course a student :

1 The student will be able to explain the fundamental concepts and terminology concerning preliminary treatments applied to foods, raw material handling, and cleaning operations.

2 The student will be able to explain the fundamental concepts and terminology regarding the transportation of fluid foods and the equipment employed in these operations.

3 The student will be able to explain the fundamental concepts and terminology concerning mechanical separation processes and the systems employed.

4 The student will be able to explain the fundamental concepts and terminology regarding basic processes such as distillation, extraction, heating, and cooling.

5 The student will acquire general knowledge about fundamental systems, including size reduction, mixing, emulsion formation, drying, crystallization, and extrusion systems.

Preconditions

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS

Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
1.Week	*Geometric properties of food, other physical properties of raw materials, functional properties of food raw materials, cultivation characteristics of raw materials, mechanization, and raw material.			*Lecture Slides 1–14	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1
2.Week	*The benefits of cleaning, foreign materials in food raw materials, cleaning methods, dry and wet cleaning methods, and classification of foods			*Lecture Slides 15–27	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1
3.Week	*Liquid transport systems, pipes, pumps, and the properties of liquids.			*Lecture Slides 28–41	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2
4.Week	*The importance of pressure in fluid transport, viscosity, and viscosity measurement.			*Lecture Slides 28–41	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.2
5.Week	*Filtration equipment and their design features, pressure and vacuum filters, filtration applications in the food industry, ultrafiltration, reverse osmosis, nanofiltration, and the applications of membrane separation techniques in foods.			*Lecture Slides 42–61	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
6.Week	*Sedimentation, sedimentation for low- and high-concentration suspensions, centrifugation processes, operating principles and design features of equipment, centrifugation applications in the food industry, sieving, and sieving applications in the food industry.			*Lecture Slides 62-76	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.3
7.Week	*Distillation, distillation methods, distillation applications in the food industry, extraction, extraction equipment and design features, extraction applications in the food industry, extraction using presses, and press equipment.			*Lecture Slides 77-87	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.4
8.Week	*Midterm Exam					
9.Week	*Size reduction equipment, grinding systems, size reduction applications in the food industry, and size reduction of fibrous materials through slicing, grating, and pulping.			*Lecture Slides 88-97	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.5
10.Week	*Mixers, impellers, agitators, turbines, flow characteristics in agitated tanks, mixers for low- and medium-viscosity liquids, mixers for viscous fluids and plastic solids, and mixers for dry solids			*Lecture Slides 98-107	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.5
11.Week	*Emulsion formation, factors affecting emulsions, emulsion equipment and design features, and emulsion applications in the food industry.			*Lecture Slides 108-117	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.5
12.Week	*Drying, variables affecting drying rate, sorption isotherms and water activity, drying systems, drying applications in the food industry, evaporation, evaporators, and evaporation applications in the food industry			*Lecture Slides 117-139	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.5
13.Week	*Crystallization, crystallization applications in the food industry, freezing, freezers with contact to chilled solids (plate freezers), freezers with contact to chilled liquids (immersion freezers), and freezers with contact to chilled gases (air-blast freezers).			*Lecture Slides 140-160	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.5
14.Week	*Crystallization, crystallization applications in the food industry, freezing, freezers with contact to chilled solids (plate freezers), freezers with contact to chilled liquids (immersion freezers), and freezers with contact to chilled gases (air-blast freezers).			*Lecture Slides 140-160	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.5
15.Week	*Principle of the extrusion process, equipment used in extrusion, cold extrusion, hot extrusion, single-screw extruders, and twin-screw extruders.			*Lecture Slides 160-166	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.5

Assesment Methods %

1 Ara Sınav : 40.000

3 Final : 60.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Vize	1	1.00	1.00
Final	1	2.00	2.00
Derse Katılım	14	2.00	28.00
Ara Sınav Hazırlık	7	3.00	21.00
Final Sınavı Hazırlık	7	5.00	35.00

Activities	Count	Time(Hour)	Sum of Workload
		Total :	87.00
		Sum of Workload / 30 (Hour) :	3
		ECTS :	3.00

Program And OutcomeRelation

	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	5	3	0	0	2	0	0	0	0	0	0	0	3	0
L.O. 2	5	3	0	0	2	0	0	0	0	0	0	0	3	0
L.O. 3	5	3	0	0	2	0	0	0	0	0	0	0	3	0
L.O. 4	5	3	0	0	2	0	0	0	0	0	0	0	3	0
L.O. 5	5	3	0	0	2	0	0	0	0	0	0	0	3	0
Avarage	5.00	3.00	0	0	2.00	0	0	0	0	0	0	0	3.00	0

BEWARE OF PLAGIARISM! Please pay attention to proper academic citation rules and avoid plagiarism, an unethical and academically fraudulent behavior, when completing reports, assignments, or other academic works, and it is treated with the same disciplinary action as cheating in a classroom setting. It is imperative to refrain from presenting another person s ideas, language, expressions, or any other form of intellectual property as your own. Regardless of quality, your assignments/projects/research should reflect your original work. Perfection is not a requirement, and in case of any uncertainties regarding academic writing guidelines, you may seek clarification from your course instructor.

Engel Durumu/Uyarlama Talebi : Engel durumuna ilişkin herhangi bir uyarlama talebinde bulunmak isteyen öğrenciler, dersin öğretim elemanı ya da Nevsehir Engelli Öğrenci Birimi ile en kısa sürede iletişime geçmelidir.