Tarih: 5 Şubat 2026 12:58

Year

Department of Food Engineering / Department of Food Engineering /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
GM536	CHEMISTRY AND TECHNOLOGY OF STARCH	3.00	0.00	0.00	3.00	6.00

Course Detail

Course Language	:	Turkish
Qualification Degree	:	Master
Course Type	:	Optional
Preconditions	:	Not
Objectives of the Course	:	The aim of this course is to provide an in-depth understanding of the molecular structure, chemical and physical properties of starch, starch transformations and modifications, and their technological applications in food and non-food industries. Structural changes occurring during processing of starch-based systems and their impact on product quality are discussed on a scientific basis.
Course Contents	:	Botanical sources and biosynthesis of starch, granular structure, amylose and amylopectin fractions, gelatinization, retrogradation, glass transition, starch–water interactions, enzymatic and chemical hydrolysis, modified starches, starch-based edible films and biodegradable materials, and technological functionality of starch in foods (bread, pasta, sauces, snacks).
Recommended or Required Reading	:	Lecture notes that utilize various articles and books as sources. Starch derivatization; Fascinating and unique industrial opportunities. K.F. Gotlieb and A. Capelle. Wageningen Academic Publishers The Netherlands, 2005.
Planned Learning Activities and Teaching Methods	:	Lectures, Literature-based article discussions, Case studies and product-oriented discussions, Student presentations
Recommended Optional Programme Components	:	.....
Course Instructors	:	Doç. Dr. Kamil Emre Gerçekaslan
Update Date	:	1/29/2026 10:51:31 AM
Dosya İndirilme Tarihi	:	2/5/2026

Course Outcomes

Upon the completion of this course a student :

1 Explains the molecular and granular structure of starch.

2 Interprets the thermal and rheological behavior of starch.

3 Evaluates the technological effects of different starch modifications.

4 Analyzes the functional role of starch in food products.

5 Proposes solutions to starch-related problems using scientific literature.

Pre / Side Conditions

Course Code	Course Name	Condition	Teorical	Practice	Laboratory	Credits	ECTS

Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
1.Week	*Introduction, importance of starch				*Lecture-Discussion, Research and literature review.	Ö.Ç.1 Ö.Ç.5 Ö.Ç.1 Ö.Ç.5
2.Week	*Botanical sources and biosynthesis				*Lecture-Discussion, Research and literature review.	Ö.Ç.1 Ö.Ç.1
3.Week	*Granular structure, amylose and amylopectin				*Lecture-Discussion, Research and literature review.	Ö.Ç.1
4.Week	*Starch–water interactions				*Lecture-Discussion, Research and literature review.	Ö.Ç.1 Ö.Ç.2
5.Week	*Gelatinization				*Lecture-Discussion, Research and literature review.	Ö.Ç.2
6.Week	*Retrogradation and staling				*Lecture-Discussion, Research and literature review.	Ö.Ç.2 Ö.Ç.4
7.Week	*Thermal and rheological analyses				*Lecture-Discussion, Research and literature review.	Ö.Ç.2 Ö.Ç.5
8.Week	*Midterm exam					Ö.Ç.1 Ö.Ç.2 Ö.Ç.3
9.Week	*Enzymatic and chemical hydrolysis				*Lecture-Discussion, Research and literature review.	Ö.Ç.3
10.Week	*Modified starches				*Lecture-Discussion, Research and literature review.	Ö.Ç.3 Ö.Ç.4
11.Week	*Starch-based films and biomaterials				*Lecture-Discussion, Research and literature review.	Ö.Ç.3 Ö.Ç.5
12.Week	*Functionality in foods				*Lecture-Discussion, Research and literature review.	Ö.Ç.4
13.Week	*Recent studies and student presentations				*Lecture-Discussion, Research and literature review.	Ö.Ç.5
14.Week	*General evaluation				*Lecture-Discussion, Research and literature review.	Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5
15.Week	*Final exam					Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5

Assesment Methods %

1 Vize : 40.000

2 Final : 60.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Final	1	2.00	2.00
Derse Katılım	14	3.00	42.00
Ders Öncesi Bireysel Çalışma	14	2.00	28.00
Ara Sınav Hazırlık	7	4.00	28.00
Final Sınavı Hazırlık	7	5.00	35.00
Vize	1	2.00	2.00
Ders Sonrası Bireysel Çalışma	14	2.00	28.00
		Total :	165.00
		Sum of Workload / 30 (Hour) :	6
		ECTS :	6.00

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
	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	3	3	1	0	0	1	5	5	0	5	3	5	5	3
L.O. 2	3	3	1	0	0	1	5	5	0	5	3	5	5	3
L.O. 3	3	3	1	0	0	1	5	5	0	5	3	5	5	3
L.O. 4	3	3	1	0	0	1	5	5	0	5	3	5	5	3
L.O. 5	3	3	1	0	0	1	5	5	0	5	3	5	5	3
Avarage	3.00	3.00	1.00	0	0	1.00	5.00	5.00	0	5.00	3.00	5.00	5.00	3.00

Ders/Program Çıktıları İlişkisi

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

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.