Tarih: 21 Ağustos 2025 13:42

Department of Food Engineering / Department of Food Engineering /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
GM-305	INSTRUMENTAL ANALYSIS I	2.00	2.00	0.00	3.00	4.00

Course Detail

Course Language	:	Turkish
Qualification Degree	:	Bachelor
Course Type	:	Compulsory
Preconditions	:	Not
Objectives of the Course	:	This course will provide information on the methods and equipment used in food analysis, sample preparation for analysis is intended to teach and evaluate the data obtained.
Course Contents	:	Theory of physical and chemical methods for determination of food components, the application of modern separation and instrumental analysis techniques, the basic principles of instrumental analysis techniques, Introduction to Spectrochemical methods, optical spectrometry, refractometers, interferometry, turbidimetry, polarimetry, Molecular absorption spectroscopy, UV-VIS absorption, Atomic absorption spectrometry, mass spectrometry techniques and applications.
Recommended or Required Reading	:	Instrumental Analysis Lecture Notes Hışıl, Y., 2008. Instrumental Food Analyses, E.Ü.M.F. Publications, Publication No: 48, İzmir.
Planned Learning Activities and Teaching Methods	:	Lectures, discussion
Recommended Optional Programme Components	:	.....
Course Instructors	:	Doç. Dr. Kamil Emre Gerçekaslan
Instructor's Assistants	:	none.
Presentation Of Course	:	face to face
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Course Outcomes

Upon the completion of this course a student :

1 The student will be able to explain instrumental analysis methods.

2 The student will be able to apply food analysis methods.

3 The student will be able to explain the operation of instruments used in food analyses.

4 The student will be able to prepare samples for analysis.

5 The student will be able to evaluate the data obtained from the analysis.

Preconditions

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Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
1.Week	*The theory and application of physical and chemical methods used in the analysis of food components.		*Laboratory introduction	*Lecture Slides 1–14	*Lecture, Question–Answer	Ö.Ç.1
2.Week	*Instrumental analysis techniques and basic principles		*Introduction to instrumental devices and key considerations for their proper use	*Lecture Slides 15-22	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.1
3.Week	*Instrumental analysis techniques and basic principles		*Introduction to instrumental devices and key considerations for their proper use	*Lecture Slides 23-32	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.1
4.Week	*Introduction to spectrochemical methods.		*Spectroscopy technique	*Lecture Slides 33-42	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.1 Ö.Ç.2
5.Week	*Refractometry		*Refractometer	*Lecture Slides 43-69	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.4 Ö.Ç.1 Ö.Ç.2 Ö.Ç.4

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
6.Week	*Polarimeter		*Polarimeter	*Lecture Slides 77-96	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5
7.Week	*Interferometry and turbidimetry.		*Measurement of turbidity using a turbidimeter.	*Lecture Slides 69-77	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5
8.Week	*Midterm exam					
9.Week	*Spectroscopy		*Use of a spectrophotometer.	*Lecture Slides 97-139	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5
10.Week	*Spectroscopy		*Use of a spectrophotometer.	*Lecture Slides 97-139	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5
11.Week	*IR spectroskopy		*Use of a spectrophotometer.	*Lecture Slides 140-162	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5
12.Week	*Absorption spectroscopy techniques.		*Use of absorption spectroscopy	*Lecture Slides 162-181	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5
13.Week	*Absorption spectroscopy techniques.		*Use of absorption spectroscopy	*Lecture Slides 162-181	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5
14.Week	*Absorption spectroscopy techniques.		*Use of absorption spectroscopy	*Lecture Slides 162-181	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
15.Week	*Nuclear Magnetic Resonance (NMR)		*Introduction to Nuclear Magnetic Resonance (NMR)	*Lecture Slides 182-186	*Lecture, Question–Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 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
Ara Sınav Hazırlık	7	2.00	14.00
Final Sınavı Hazırlık	7	3.00	21.00
Derse Katılım	14	4.00	56.00
Laboratuvar	14	2.00	28.00
		Total :	122.00
		Sum of Workload / 30 (Hour) :	4
		ECTS :	4.00

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	0	4	5	0	0	0	0	0	0	0	0	4	0
L.O. 2	5	0	4	5	0	0	0	0	0	0	0	0	4	0
L.O. 3	5	0	4	5	0	0	0	0	0	0	0	0	4	0
L.O. 4	5	0	4	5	0	0	0	0	0	0	0	0	4	0
L.O. 5	5	0	4	5	0	0	0	0	0	0	0	0	4	0
Avarage	5.00	0	4.00	5.00	0	0	0	0	0	0	0	0	4.00	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.