Course Syllabus

Code - Course Title	**KİM271 - Analytical Chemistry II**
Course Type	III. SEMESTER
Laboratory + Practice	4+2
ECTS	**6.5**
Language of Instruction	Türkçe
Course Type	Required Courses
Course Instructor(s)	PROF. DR. DUYGU YENİCELİ, PROF. DR. EROL ŞENER

Mode of Delivery	The mode of delivery of this course is Face to face
Prerequisites	There is no prerequisite or co-requisite for this course.
Courses Recomended	There is no recommended optional programme component for this course.
Work Placement	Not Applicable

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1		Neutralization Titrations. Introduction to Quantitative Analysis Practices.	
Week - 2		Neutralization Titrations. Experimental Applications of Neutralization Titrations.	
Week - 3		Complexometric Titrations. Experimental Applications of Complexometric Titrations.	
Week - 4		Precipitation Titrations. Experimental Applications of Precipitation Titrations.	
Week - 5		Basic Electrochemistry. Experimental Applications of Redox Titrations.	
Week - 6		Basic Electrochemistry. Experimental Applications of Redox Titrations.	
Week - 7		Basic Electrochemistry. Experimental Applications of Redox Titrations.	
Week - 8		Other Electroanalytical Techniques. Experimental Applications of Conductometry.	
Week - 9		Introduction to Analytical Separations. Experimental Applications of UV-Visible Spectrometry.	
Week - 10		Column Chromatography. Experimental Applications of Liquid Chromatography.	
Week - 11		Column Chromatography. Experimental Applications of HPLC.	
Week - 12		Planar chromatography. Applications of Gas Chromatography.	
Week - 13		Electrophoretic methods. Experimental applications of thin layer chromatography.	
Week - 14		Electrophoretic methods. Experimental applications of thin layer chromatography.	

Learning Outcomes

#	Learning Outcome
1	Will explain the basic terms used in volumetric titrimetry.
2	Will explain the titration of a strong acid with a strong base.
3	Will explain the titration curves of weak acids.
4	Will explain the titration curves of weak bases.
5	Will explain the properties of polyprotic acids and bases.
6	Will explain the titration curves in polyprotic systems.
7	Will explain the applications of neutralization titrations.
8	Will explain the titration curves in complexometry.
9	Will explain the calculations in complexometric titration.
10	Will explain the titration curves in precipitation titrations.
11	Will explain the calculations in precipitation titration.
12	Will explain redox reactions.
13	Will explain the structures of electrochemical cells.
14	Will explain electrode potentials.
15	Will explain the Nernst equation.
16	Will explain the electrochemical cell potentials.
17	Will explain the redox equilibrium constants.
18	Will explain redox titrations.
19	Will explain potentiometry.
20	Will explain conductometry.
21	Will explain electrogravimetry.
22	Will explain coulometry.
23	Will explain the classification of separation techniques.
24	Will explain size-based separations.
25	Will explain mass and density-based separations.
26	Will explain phase change-based separations.
27	Will explain chemical state change-based separations.
28	Will explain masking methods.
29	Will explain phase distribution.
30	Will explain column chromatography.
31	Will explain liquid chromatography.
32	Will explain the structure of the liquid chromatography instrument.
33	Will explain the detectors used in liquid chromatography.
34	Will explain the columns and stationary phases in liquid chromatography.
35	Will explain qualitative and quantitative analyses using liquid chromatography.
36	Will explain gas chromatography.
37	Will explain the structure of the gas chromatography instrument.
38	Will explain the detectors used in gas chromatography.

Learning Outcomes

#	Learning Outcome
39	Will explain the columns and stationary phases in gas chromatography.
40	Will explain qualitative and quantitative analyses using gas chromatography.
41	Will explain paper chromatography.
42	Will explain thin layer chromatography (TLC).
43	Will explain the basic principles of electrophoresis.
44	Will explain paper and gel electrophoresis.
45	Will explain capillary electrophoresis.
46	Will explain the structure of the capillary electrophoresis instrument.
47	Will explain the applications of electrophoretic methods.
48	Will explain the basic concepts of quantitative analysis.
49	Will explain the basic procedures.
50	Will explain volumetric titration.
51	Will explain the preparation of the secondary standard (base) solution.
52	Will explain the preparation of the acid solution.
53	Will explain the quantitative determination of acidic analytes.
54	Will explain the quantitative determination of basic analytes.
55	Will explain complexometry.
56	Will explain complexometric calcium determination.
57	Will explain complexometric magnesium determination.
58	Will explain precipitation titrations.
59	Will explain the Mohr method.
60	Will explain chloride determination using the Mohr method.
61	Will explain permanganometry.
62	Will explain the permanganometric determination of hydrogen peroxide.
63	Will explain the permanganometric determination of iron sulfate.
64	Will explain iodimetry.
65	Will explain the iodimetric determination of ascorbic acid.
66	Will explain the iodimetric determination of sodium thiosulfate.
67	Will explain potentiometric measurements.
68	Will explain the quantitative determination using potentiometric titration.
69	Will explain the pKa determination using potentiometric titration.
70	Will explain conductometric measurements.
71	Will explain quantitative determination using conductometric titration.
72	Will explain the preparation of conditions for UV-Visible spectroscopy.
73	Will explain quantitative determination using UV-Visible spectroscopy.
74	Will explain the preparation of experimental conditions for column chromatography.
75	Will explain the separation of dyes using column chromatography.
76	Will explain the preparation of experimental conditions for HPLC.

Learning Outcomes

#	Learning Outcome
77	Will explain the analysis of samples using HPLC.
78	Will explain the evaluation of HPLC analysis results.
79	Will explain the preparation of experimental conditions for gas chromatography.
80	Will explain the analysis of samples using gas chromatography.
81	Will explain the evaluation of gas chromatography analysis results.
82	Will explain the qualitative determination of components using TLC.
83	Will explain the quantitative determination of components using TLC.

Sustainable Development Goals

No content has been provided.

Course Theme

No content has been provided.

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Teorik Derse Katılım	0	0	0
Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı)	0	0	0
Ödevler	0	0	0
Proje - Rapor - Sunum Hazırlama	0	0	0
Ara Sınav Hazırlığı (sınav süresi dahil)	0	0	0
Final Sınavı Hazırlığı (sınav süresi dahil)	0	0	0
Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.)	0	0	0
Staj Uygulaması	0	0	0
		Calculated ECTS	**0**

Assessment Method and Passing Requirements

No content has been provided.