Course Syllabus

Code - Course Title	**ECZ237 - Instrumental Analysis Applications**
Course Type	III. SEMESTER
Laboratory + Practice	2+0
ECTS	**2.5**
Language of Instruction	Türkçe
Course Type	Required Courses
Course Instructor(s)	PROF. DR. DUYGU YENİCELİ, DOÇ. DR. SANİYE ÖZCAN

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		Introduction to spectroscopy, atomic spectroscopy.	
Week - 2		Atomic spectroscopy.	
Week - 3		Molecular absorption spectroscopy.	
Week - 4		Molecular absorption spectroscopy.	
Week - 5		Fluorescence and phosphorescence spectroscopy.	
Week - 6		Infrared spectrometry.	
Week - 7		Nuclear magnetic resonance (NMR) spectroscopy.	
Week - 8		Nuclear magnetic resonance (NMR) spectroscopy.	
Week - 9		Elemental CHNS analysis	
Week - 10		Mass spectrometry.	
Week - 11		Mass spectrometry.	
Week - 12		Polarimetry and refractometry.	
Week - 13		Voltametry and polarography.	
Week - 14		Voltametry and polarography.	

Learning Outcomes

#	Learning Outcome
1	Will explain spectroscopic methods.
2	Will explain the components of optical instruments.
3	Will explain optical atomic spectroscopy.
4	Will explain atomic absorption and atomic fluorescence spectrometry.
5	Will explain atomic emission spectrometry.
6	Will explain atomic mass spectrometry.
7	Will explain atomic X-ray spectrometry.
8	Will explain transmittance and absorbance measurements.
9	Will explain the Lambert-Beer law.
10	Will explain the effect of instrumental noise on spectrophotometric analysis.
11	Will explain the instrument used in molecular absorption spectroscopy.
12	Will explain absorbing species.
13	Will explain basic qualitative applications in absorption measurements.
14	Will explain basic quantitative applications in absorption measurements.
15	Will explain photometric titrations.
16	Will explain the theory of fluorescence and phosphorescence.
17	Will explain the instruments used for fluorescence and phosphorescence measurements.
18	Will explain applications and photoluminescence methods.
19	Will explain chemiluminescence.
20	Will explain infrared spectroscopy.
21	Will explain vibrations in infrared spectroscopy.
22	Will explain infrared spectrometers.
23	Will explain basic applications in infrared spectroscopy.
24	Will explain the fundamentals of NMR spectroscopy.
25	Will explain NMR spectroscopy.
26	Will explain NMR spectrometers.
27	Will explain the mass spectrometry.
28	Will explain ion sources.
29	Will explain mass spectrometers.
30	Will explain applications of molecular mass spectrometry.
31	Will explain CHNS analysis.
32	Will explain elemental analysis instrument.
33	Will explain refractometry.
34	Will explain polarimetry.
35	Will explain saccharimetry.
36	Will explain excitation signals in voltammetry and types of voltammetry.
37	Will explain voltammetric devices.
38	Will explain polarography.

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.