Course Syllabus

Code - Course Title	**FTK509 - Analytical Toxicology Methods**
Course Type	I. SEMESTER
Laboratory + Practice	3+0
ECTS	**6.0**
Language of Instruction	Türkçe
Course Type	Required Courses
Course Instructor(s)	DR. ÖĞR. ÜYESİ MERVE BAYSAL

Mode of Delivery	The course is delivered face-to-face.
Place of Delivery	On Campus
Used Educational Platforms	Face-to-face
Prerequisites	There is no prerequisite or co-requisite for this course.
Courses Recomended	Clinical Toxicology
Recommended Resources	Klaassen CD (ed.). Casarett & Doull’s Toxicology: The Basic Science of Poisons. 9th ed. New York: McGraw-Hill Education; 2019.Bogusz M (ed.). Handbook of Analytical Separation Sciences: Forensic Sciences. 2nd ed. Amsterdam: Elsevier Science; 2007.Thomas R. Practical Guide to ICP-MS: A Tutorial for Beginners. Boca Raton: CRC Press; 2008.Fanali S, Chankvetadze B, Haddad PR, Poole C, Riekkola M-L (eds.). Handbooks in Separation Science: Liquid Chromatography. 3rd ed. Vol. 2. Amsterdam: Elsevier; 2023.Flanagan RJ, Taylor AA, Watson ID, Whelpton R. Fundamentals of Analytical Toxicology. New York: Wiley-Blackwell; 2008.
Work Placement	Not Applicable.
Aims of the Course	The aim of this course is to provide students with knowledge regarding sample preparation techniques, analytical instruments, and the operating principles of methods used in toxicological analysis processes.

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1	**LO-1**	Introduction to analytical toxicology, the purpose and scope of toxicological analyses	Lecture, Question & Answer
Week - 2	**LO-2** **LO-3**	Sample preparation methods in toxicological analyses	Lecture, Question & Answer
Week - 3	**LO-2** **LO-3**	Sample preparation methods in toxicological analyses	Lecture, Question & Answer
Week - 4	**LO-1** **LO-6**	Classical analysis methods and color reactions used in toxicological analyses	Lecture, Question & Answer
Week - 5	**LO-5** **LO-6**	Spectroscopic analysis methods	Lecture, Question & Answer
Week - 6	**LO-5** **LO-6**	Spectroscopic analysis methods	Lecture, Question & Answer
Week - 7	**LO-4** **LO-6**	Introduction to chromatographic analysis methods and thin-layer chromatography (TLC)	Lecture, Question & Answer
Week - 8	**LO-4** **LO-6**	High-performance liquid chromatography (HPLC) and its use in toxicological analyses	Lecture, Question & Answer

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Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 9	LO-4 LO-6	Gas chromatography (GC) and its use in toxicological analyses	Lecture, Question & Answer
Week - 10	LO-4 LO-6	Mass spectrometry (MS) and chromatography-mass spectrometry systems (GC-MS, LC-MS/MS)	Lecture, Question & Answer
Week - 11	LO-1 LO-6	Immunoassay methods and their use in toxicological analyses	Lecture, Question & Answer
Week - 12	LO-1 LO-6	Student presentations and reviews of scientific articles related to the topics	Lecture, Question & Answer, Discussion, Case Study
Week - 13	LO-1 LO-6	Student presentations and reviews of scientific articles related to the topics	Lecture, Question & Answer, Discussion, Case Study
Week - 14	LO-1 LO-6	Student presentations and reviews of scientific articles related to the topics	Lecture, Question & Answer, Discussion, Case Study

Learning Outcomes

#	Learning Outcome
1	Students will be able to evaluate the techniques and methods used in toxicological analyses.
2	The student will be able to explain the isolation and identification of significant toxins from biological materials.
3	The student will be able to explain the sample preparation and extraction methods used in toxicological analyses.
4	Students will be able to evaluate the application areas of chromatographic methods in toxicological analyses.
5	The student will be able to explain the fundamental principles of spectroscopic and spectrometric analysis methods.
6	Students will be able to evaluate the factors affecting the reliability of toxicological analysis results.

Sustainable Development Goals

No content has been provided.

Course Theme

✓ Health Sciences and Medical Technologies

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Teorik Derse Katılım	3.00	14	42
Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı)	1.00	14	14

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Ödevler	20.00	1	20
Proje - Rapor - Sunum Hazırlama	20.00	2	40
Ara Sınav Hazırlığı (sınav süresi dahil)	20.00	1	20
Final Sınavı Hazırlığı (sınav süresi dahil)	20.00	1	20
Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.)	0.00	0	0
Staj Uygulaması	0.00	0	0
		Calculated ECTS	**6.0**

Assessment Method and Passing Requirements

✓ Open-Ended Test ✓ Multiple Choice Test ✓ True-False Test ✓ Fill-in-the-Blank Test ✓ Homework ✓ Presentation