

**School of Pharmacy / School of Pharmacy (English)**

**2024 - 2025 Academic Year**

**TOXICOLOGY LAB.**

**Syllabus**

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
TOXICOLOGY LAB.	PHA4214877	Spring Semester	0+3	1,5	3
<b>Prerequisites Courses</b>	FARMAKOLOJİ III				
<b>Recommended Elective Courses</b>					
<b>Language of Instruction</b>	English				
<b>Course Level</b>	First Cycle (Bachelor's Degree)				
<b>Course Type</b>	Required				
<b>Course Coordinator</b>	Prof.Dr. Gülden Zehra OMURTAG				
<b>Name of Lecturer(s)</b>	Prof.Dr. Gülden Zehra OMURTAG				
<b>Assistant(s)</b>	Res. assist. Meryem Nur Baş, Res. assist. Özce Esmâ PALA				
<b>Aim</b>	The aim of this course is to give information about systematic toxicology, the determination of metallic, natural, and synthetic poisons in biological materials using chemical and instrumental methods and to perform their applications.				
<b>Course Content</b>	This course contains; In vitro cytotoxicity tests, Genotoxicity techniques, basic cell culture, Acute toxicity (LD50) determination, Various techniques used in screening methods of poisons, Determination of poisons in biological materials and their isolation techniques, Analysis of toxic compounds in biological materials: Volatile poisons, Analysis of toxic compounds in biological materials: Nonvolatile poisons, Polymerase chain reaction (PCR), Quantitation of salicylate and paracetamol - Interpretation of DONE nomogram, Determination of volatile substances in biological samples by microdiffusion techniques, Determination of non volatile metallic poisons in biological samples, Qualitative determination of acidic and basic drugs by chromatographic method, Methemoglobin quantification and cyanide determination in blood, Isolation of DNA from blood.				
<b>Course Learning Outcomes</b>			<b>Teaching Methods</b>	<b>Assessment Methods</b>	
1. Explains the general tests used in cell studies and their principles.			17, 5, 9	A, D	
1.1. Explains in vitro cytotoxicity tests and the principles on which they are based.			17, 5, 9	A, D	
1.2. Explains in vitro genotoxicity tests and the principles on which they are based.			17, 5, 9	A, D	
1.3. Explains the polymerase chain reaction (PCR), the basis of the reaction, its stages and its areas of use in toxicology.			17, 5, 9	A, D	
2. Performs quantitative and qualitative determinations of xenobiotics from biological materials.			17, 5, 9	A, D	
2.1. Analyzes volatile poisons in biological material.			17, 5, 9	A, D	
2.2. Performs qualitative and quantitative analyses of salicylate and paracetamol.			17, 5, 9	A, D	
2.3. Analyzes important non-volatile poisons in biological material.			17, 5, 9	A, D	
3. Defines the concepts of acute toxicity and LD50.			17, 5, 9	A, D	
4. Explains the devices and principles used in poison screening methods in the context of toxicology.			17, 5, 9	A, D	
4.1. Determines acetic and basic drugs qualitatively by chromatographic method.			17, 5, 9	A, D	
5 Explains the methods of direct detection and isolation of poisons in biological material.			17, 5, 9	A, D	
5.1. Determines the amount of methemoglobin in the blood and the presence of cyanide in the blood.			17, 5, 9	A, D	
5.2. Isolates DNA from blood and explains its principles.			17, 5, 9	A, D	
5.3. Explains the principles of microdiffusion technique and determines volatile substances in biological samples using microdiffusion technique.			17, 5, 9	A, D	
<b>Teaching Methods</b>	17: Experimental Technique, 5: Cooperative Learning, 9: Lecture Method				
<b>Assessment Methods</b>	A: Traditional Written Exam, D: Oral Exam				
<b>Lecture Schedule</b>					
Sequence	Topics	Preliminary Preparation			
1	In vitro cytotoxicity tests	1,2			
2	Genotoxicity techniques, basic cell culture	1,2			
3	Acute toxicity (LD50) determination	1,2			
4	Various techniques used in screening methods of poisons	1,2			
5	Determination of poisons in biological materials and their isolation techniques	1,2			
6	Analysis of toxic compounds in biological materials: Volatile poisons	1,2			
7	Analysis of toxic compounds in biological materials: Nonvolatile poisons	1,2			
8	Polymerase chain reaction (PCR)	1,2			
9	Quantitation of salicylate and paracetamol - Interpretation of DONE nomogram	1,2			
10	Determination of volatile substances in biological samples by microdiffusion techniques	1,2			
11	Determination of non volatile metallic poisons in biological samples	1,2			
12	Qualitative determination of acidic and basic drugs by chromatographic method	1,2			
13	Methemoglobin quantification and cyanide determination in blood	1,2			
14	Isolation of DNA from blood	1,2			
<b>Evaluation Methods</b>		<b>Weight(%)</b>			
Midterm Exam		60			
General Exam		40			

**Resources**

1. The laboratory notes.
2. Demonstration