AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Laboratory Technical and Practices								
Course Code	VFT695		Couse Level		Third Cycle (Doctorate Degree)				
ECTS Credit	2	Workload	51 *(Hours)*	Theory	1	Practice	2	Laboratory	0
Objectives of the Course	To be information about pharmacology and toxicology laboratory, the various analyzes (pesticides, mycotoxins, etc.) and associated equipment (HPLC, TLC, spectrophotometry, centrifugation, etc.) and materials, operating principles, basic principles and laboratory use.								
Course Content	Basic rules of the laboratory, pharmacology and toxicology laboratory performed various analyzes (pesticides, mycotoxins, etc.) and associated equipment (HPLC, TLC, spectrophotometry, centrifugation, etc.) and the working principles of devices are examined.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Experiment, Demonstration, Discussion, Individual Study, Problem Solving								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading	
1	Principles and Methods of Toxicology, A. Wallace HAYES, Edward BROTHERS; Ann Arbor Press, 2001.
2	Modern Toxicology, Ernest HODGSON, Patricia E. LEVI; Elsevier, London, 1987.
3	Handbook of Experimental Pharmacology – 199; Comparative and Veterinary Pharmacology, Fiona CUNNINGHAM, Jonathan ELLIOTT, Peter LEES (Editors); Springer Press, 2009.
4	Plant Phenolics and Human Health: Biochemistry, Nutrition, Pharmacology, Cesar G FRAGA (Editor); A John Willey & Sons Inc. Publication, 2010.
5	Principles of Biochemical Toxicology, 3rd Edition, John TIMBRELL; Taylor & Francis Group Press, London, 2000
6	Veteriner Hekimliğinde Toksikoloji, Prof. Dr. Sezai KAYA, Prof. Dr. İbrahim PİRİNÇCİ, Prof. Dr. Ayhan ÜNSAL, Prof. Dr. Ali BİLGİLİ, Prof. Dr. Ferda AKAR, Prof. Dr. Abdullah DOĞAN, Doç. Dr. Ender YARSAN; Medisan Yayınevi, 2002.

Week	Weekly Detailed Course Contents	
1	Theoretical	Basic rules in the laboratory
	Practice	The introduction of materials used in laboratory
2	Theoretical	The introduction of materials used in laboratory
	Practice	Maintenance and cleaning of materials used in the laboratory
3	Theoretical	Risks of solid chemicals used in laboratory
	Practice	And properties of solid chemicals used in laboratory, the recognition
4	Theoretical	Risks of liquid and volatile chemicals used in laboratory
	Practice	The liquid used in the laboratory and volatile chemicals and their properties, the recognition
5	Theoretical	Basic laboratory equipment and their working principles
	Practice	Use of basic laboratory equipment
6	Theoretical	Basic laboratory equipment and their working principles
	Practice	Use of basic laboratory equipment
7	Theoretical	Article discussion
	Practice	Paper presentation
8	Intermediate Exam	Midterm exam
9	Theoretical	Toxicological methods for investigation of samples
	Practice	Toxicological sample preparation
10	Theoretical	Effective examination of the sample analysis methods
	Practice	Toxicological sample preparation
11	Theoretical	Advanced analysis techniques and devices used

11	Practice	Advanced analysis techniques and the use of the devices used
12	Theoretical	Thin layer chromatography (TLC)
	Practice	ITK analysis of the specimen
13	Theoretical	High performance liquid chromatography (HPLC)
	Practice	HPLC analysis of the specimen
14	Theoretical	Gas chromatography (GC)
	Practice	GC analysis of the specimen
15	Theoretical	Article discussion
	Practice	Paper presentation

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	5	2	1	15
Lecture - Practice	5	3	2	25
Midterm Examination	1	3	1	4
Final Examination	1	5	2	7
			Total Workload (Hours)	51
			[Total Workload (Hours) / 25*] = **ECTS**	2

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes

1	Learn about the basic rules that must be followed in the laboratory.
2	Recognize and learn about the risks of chemicals used in the laboratory.
3	Acquires knowledge about the basic devices used in laboratory and their working principles.
4	Laboratory equipment for the various analyzes (HPLC, TLC, GC, spectrophotometer, centrifuge, etc.) and learn about the working principles of materials.
5	To give lectures and/or presentations and discuss with professionals in the area

Programme Outcomes *(Pharmacology and Toxicology (Veterinary Medicine) Doctorate)*

1	Gains expert knowledge on field of pharmacology and toxicology in veterinary medicine and, gains expert knowledge on interdisciplinary interaction in pharmacology and toxicology
2	To be equipped with the knowledge to develop original ideas about necessary issues in the field by using of both graduate and expertise levels knowledge, to be able to develop original definitions, products and diagnostic procedures, etc. via deepening and questioning these knowledge.
3	Develops and uses strategies in his/her field of expertise in PhD Program of Pharmacology and Toxicology
4	Reviews, evaluates and interprets any data (field observations, available scientific information etc.) towards a specific purpose.
5	Gains expert knowledge on the function and basic pharmacological features of pharmacology and sub-branches of science, relationship between the drug and poison, pharmacokinetic, effects of the drugs, the dose-intensity and dose-effect relationship.
6	Gains expert knowledge on the function and basic toxicological features of poison, classifications and types of poisoning, toxicokinetic, general principles of treatment of poisoning.
7	Can offer training to technical staff who will work in pharmacology and toxicology laboratory
8	Reach to competence to prepare courses at the undergraduate level
9	Determines and uses laboratory equipment and consumables in a pharmacology and toxicology laboratory.
10	To be able to plan an interdisciplinary project and build team for the known or new defined problems and to manage and complete such a project when necessary.
11	To share his/her knowledge in the field with others by attending at field-related or other congresses, panels, symposiums, workshops, seminars, article discussions and problem solving sessions, etc., and to contribute to the solution in the team by establishing relations with the experts in different fields.
12	To contribute the scientific knowledge in the field via publications in national and international peer-reviewed scientific journals.
13	Takes roles in vocational organizations and institution.
14	Forms ideas to solve complex problems using theoretical and practical information gained throughout the pharmacology and toxicology education.
15	To adopt lifelong learning as a principle and acknowledge that the information gained through research is the most valuable gain.
16	Knows and protects rights of ideas and industrial property (patent right)

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	5				
P6		4			
P7	5	5			
P8		4			5
P9			5	5	
P11					5
P13			4	5	
P14					4