



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Method Development and Validation in Pharmacological and Toxicological Analysis							
Course Code		VFT671		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	6	Workload	150 (<i>Hours</i>)	Theory	1	Practice	2	Laboratory	0
Objectives of the Course		Pharmacological and toxicological test measures the importance of the purpose and importance of method validation, statistical calculations used in pharmacological and toxicological measurements, the performance parameters of the method, validation experiments, planning, and reporting the results to re-determining the criteria for validation, transfer and use of validated methods, the system suitability tests and determination of the period of application of knowledge and skills to win.							
Course Content		Pharmacology and toxicology analysis methods, chromatographic methods, chromatographic methods, method development, method validation of chromatographic methods.							
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	Veterinary Pharmacology and Therapeutics, 8th Edition, Jim E. Riviere (Editor), Mark G. Papich (Editor), 2009.
2	Modern Pharmacology, 6th Edition, Lippincott Williams and Wilkins, 2004 (Ed. C.R. Craig and R.E. Stitzel)
3	Basic and Clinical Pharmacology, 9th Edition, McGraw-Hill, New York, 2004 (Ed. B. Katzung)
4	Goodman and Gilman's The Pharmacological Basis of Therapeutics 11th Edition, McGraw-Hill, 2006 (Eds. Brunton, Lazo, Parker, Buxton and Blumenthal)
5	Lippincott's Illustrated Reviews: Pharmacology, 3rd Edition, Lippincott Williams and Wilkins, 2005 (Eds. Howard, Mycek, Harvey & Champe)
6	The Veterinary Formulary edited by Yolande Bishop. London Pharmaceutical Press in association with the British Veterinary Association 2001
7	Pharmacology. Franklin A. Ahrens. Baltimore, Md. London Williams & Wilkins 1996.
8	The physiological basis of veterinary clinical pharmacology J. Desmond Baggot. Oxford Blackwell Science 2001.
9	Veterinary pharmacology and therapeutics edited by H. Richard Adams. Ames, Iowa Iowa State University Press 2001.
10	Veterinary Drug Therapy, 1994. Ths. B. Barragry.

Week	Weekly Detailed Course Contents	
1	Theoretical	Pharmacology and toxicology analysis methods
	Practice	The materials used in pharmacology and toxicology analysis
2	Theoretical	Chromatographic methods
	Practice	ITK application
3	Theoretical	GC and HPLC
	Practice	Parts of the introduction of GK
4	Theoretical	Liquid-phase extraction methods
	Practice	Introduction to HPLC components
5	Theoretical	Solid phase extraction methods
	Practice	HPLC-conditioning
6	Theoretical	Linearity calculation and preparation of reference standards
	Practice	HPLC application
7	Theoretical	Calculation of the ratio of buy-back
	Practice	HPLC application
8	Intermediate Exam	Mid-term exam
9	Theoretical	LOD and LOQ calculations



9	Practice	GK application
10	Theoretical	Detection range, and precision (precision) calculation
	Practice	GK application
11	Theoretical	Linearity, Specificity / Selectivity
	Practice	chromatogram evaluation
12	Theoretical	To determine the sensitivity and Reality
	Practice	chromatogram evaluation
13	Theoretical	Reproducible results, the calculation producibility
	Practice	Liquid-liquid phase extraction
14	Theoretical	Preparation of SOPs
	Practice	The solid-liquid phase extraction
15	Theoretical	Discussion
	Practice	Discussion
16	Final Exam	FINAL

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	1	56
Lecture - Practice	15	3	2	75
Midterm Examination	1	8	1	9
Final Examination	1	9	1	10
Total Workload (Hours)				150
[Total Workload (Hours) / 25*] = ECTS				6

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Pharmacology and toxicology analysis methods
2	Chromatographic methods
3	Chromatographic methods, method development
4	Chromatographic method validation methods on the knowledge and skills.
5	To learn knowledge and propose suggestions on 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	4	3	4	5	
P3					5
P4	5			5	4
P5	4	5	5	4	
P8	4	4	4		
P9	5	4	4	5	
P11					5
P14		3	5	5	4

