AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Account of Cell and Area By Image Analising System								
Course Code	VHE649		Couse Level		Third Cycle (Doctorate Degree)				
ECTS Credit	4	Workload	100 *(Hours)*	Theory	1	Practice	2	Laboratory	0
Objectives of the Course	Research microscope cell counts and the measurement of tissue sections to learn in practice.								
Course Content	Calibration, frame, transferring to computer of image from the video camera, acquiring an image, detection, amendment, cell counting at unit area, interactive measurement (length, area, perimeter, diameter)								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Demonstration, Discussion, Individual Study								
Name of Lecturer(s)	Lec. Göksel DOĞAN, Prof. Levent KARAGENÇ								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	70

Recommended or Required Reading	
1	Leica QWin Image Proccessing and Analysis System User Guide, Leica, 1996

Week	Weekly Detailed Course Contents & Teaching Methods	
1	Theoretical	Introduction of light microscope and its parts
	Practice	Introduction of light microscope and its parts
2	Theoretical	Cell counts and area measurements must be considered
	Practice	Introduction of light microscope and its parts
3	Theoretical	Characteristics of the image analysis program QWin
	Practice	Characteristics of the image analysis program QWin
4	Theoretical	Calibration
	Practice	Calibration
5	Theoretical	Frame
	Practice	Frame
6	Theoretical	Transferring to computer of image from the video camera
	Practice	Transferring to computer of image from the video camera
7	Theoretical	Acquiring an image
	Practice	Acquiring an image
8	Theoretical & Practice	Repetition of subjects and Midterm exam
9	Theoretical	Detection
	Practice	Detection
10	Theoretical	Amendment
	Practice	Amendment
11	Theoretical	Cell counting at unit area
	Practice	Cell counting at unit area
12	Theoretical	Interactive measurement (length, area, perimeter, diameter)
	Practice	Interactive measurement (length, area, perimeter, diameter)
13	Theoretical	The measurement of cell count with the help of image analysis system and application problems and troubleshooting-1
	Practice	Perform measurements on preparations
14	Theoretical	The measurement of cell count with the help of image analysis system and application problems and troubleshooting-2,3
	Practice	Perform measurements on preparations
15	Final Exam	Final exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	0	1	13
Lecture - Practice	13	0	2	26
Assignment	3	0	2	6
Reading	3	0	2	6
Midterm Examination	1	16	0	16
Final Examination	1	33	0	33
			Total Workload (Hours)	100
			[Total Workload (Hours) / 25*] = **ECTS**	4
25 hour workload is accepted as 1 ECTS				

Learning Outcomes	
1	The measurement of light microscopy and cell counts and understand the issues need to be considered
2	QWin image analysis system for the measurement of cell count, and learns to use.
3	Counts the cells automatically using QWin image analysis system
4	Measures the lengths of cells using QWin image analysis system
5	Measures the epithelial thickness of the cells using the QWin image analysis system.

Programme Outcomes *(Histology and Embryology (Veterinary Medicine) Doctorate)*	
1	Gains expert knowledge on the function and basic histological features of cells, tissues and systems in animals.
2	Gains expert knowledge on the stages of embryonal and fetal development in both mammals and birds.
3	Based on his/her training during the Master of Science program, he/she has in depth knowledge in the field of histology/embryology as well as in areas related to his/her area of expertise.
4	Using basic knowledge gained during the undergraduate and master of science program, develops ,critically evaluates and tests novel ideas in his/her area of expertise.
5	Endowed with theoretical and practical knowledge as for the scientific research and methodology to be able to conduct an independent research project.
6	Has theoretical knowledge concerning skills (leadership, entrepreneurship, ability to reach information technologies, organization, industrial correspondence etc.). Knows laws and regulations concerning his/her area of expertise and related subjects.
7	Determines and uses laboratory equipment and consumables in a histology laboratory. Has the ability to solve problems in his/her area of expertise.
8	Has the ability to design and develop scientific methodology concerning new developments in his/her area of expertise. Has the ability to put established methods in use to tackle current problems in his/her area of expertise.
9	Designs and conducts an independent research project on his/her own.
10	Critically evaluates and reaches to a synthesis of new ideas in his/her area of expertise and related fields.
11	Uses and develops modern technologies in his/her area of expertise towards the industry in a systematic and critical manner.
12	Performs his/her expertise with the recognition of the rights and responsibilities obtained with the completion of doctorate program in histology/embryology.
13	Is able to break down new and immature ideas into simple components and suggest alternative solutions by using his/her ability to recognize possible relationships among these components.
14	If the need arises, designs an interdisciplinary research project , forms a team, leads and finalizes the research project to solve an old or a new problem in the field of histology/embryology.
15	Attends to activities such as congresses, panels, symposiums, workshops, seminars, journal clubs in his/her area of expertise, shares information in his/her area of expertise and contributes to the solution of a problem by interacting with experts in other fields.
16	Expands a growing body of information in his/her area of expertise by publishing scientific articles in national and international journals.
17	Is in recognition of taking professional and ethical responsibilities.
18	Develop new ideas and methods that has the potential to ignite social and cultural progress or add values to the information society by using practical and theoretical knowledge gained throughout his/her training and his/her skill to work independently and to take responsibilities.
19	Makes the concept of life-long learning a matter of principle and recognizes the fact that evidence-based information is the most important gain of education.
20	Provides information and manages information exchanges on issues of public and animal health in committees with the aim of defining and solving a problem using his/her expertise.

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

	L1	L2
P3	3	3
P5	4	4
P8	4	4
P10	3	3

P11	3	3
P12	3	3
P14	3	3
P19	3	3