



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Light Microscopes							
Course Code		VHE502		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	4	Workload	100 ( <i>Hours</i> )	Theory	1	Practice	0	Laboratory	0
Objectives of the Course		To teach features of light microscopy and the concept of resolution as well as to provide information on working principles of various light microscopes.							
Course Content		1. Features of light microscope, 2. Resolution, 3. Bright-field microscope, 4. Dark-field microscope, 5. Phase contrast microscope, 6. Polarized microscope , 7. Fluorescence microscope, 8. Inverted microscope, 9. Interference microscope, 10. Ultraviolet microscope, 11. Confocal microscop and their vorking principles.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Demonstration, Discussion, Individual Study					
Name of Lecturer(s)									

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

### Recommended or Required Reading

1	Alberts B, Bray D, Lewis J, Raff M, Roberts K, Watson JD. (1989) Molecular Biology of the Cell, Garland Publishing, Inc. London.
2	Banks, W.J. (1986). Applied Veterinary Histology, Williams&Wilkins, U.S.A.
3	Eren Ü (1998) Mikroskop Bilgisi. (Yardımcı Ders Kitabı), ADÜ Basımevi, Aydın
4	Junqueira LC, Carneiro J. (2005) Basic Histology, The McGraw-Hill Companies, USA
5	Kierszenbaum, A. L. (2007) Histology and Cell Biology. An introduction to Pathology, Mosby, Elsevier, Canada.
6	Ross MH, Reith EJ, Romrell LJ. (1989) Histology. A Text and Atlas, Williams & Wilkins, London

Week	Weekly Detailed Course Contents	
1	Theoretical	Features of light microscopes
2	Theoretical	The concept of resolution
3	Theoretical	Bright field microscopy
4	Theoretical	Bright field microscopy
5	Theoretical	Dark field microscopy
6	Theoretical	Phase-contrast microscopy
7	Theoretical	Polarized microscopy
8	Intermediate Exam	Midterm exam
9	Theoretical	Fluorescence microscopy
10	Theoretical	Fluorescence microscopy
11	Theoretical	Inverted microscopy
12	Theoretical	Interference microscopy
13	Theoretical	Ultraviolet microscopy
14	Theoretical	Confocal microscopy
15	Theoretical	Image monitoring
16	Final Exam	Final exam



**Workload Calculation**

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	1	14
Assignment	5	5	0	25
Midterm Examination	1	28	1	29
Final Examination	1	30	2	32
Total Workload (Hours)				100
[Total Workload (Hours) / 25*] = ECTS				4

\*25 hour workload is accepted as 1 ECTS

**Learning Outcomes**

1	The student learns various features of microscopes,
2	The student learns the concept of resolution,
3	The student learns working principles of different types of microscopes
4	The student learns to use of light microscope.
5	The student learns different types of microscopes.

**Programme Outcomes (Histology and Embryology (Veterinary Medicine) Master's Without Thesis)**

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	Comprehends and defines interactions among disciplines related to histology-embryology.
4	Knows national and international laws and regulations concerning histology and embryology.
5	Determines and uses laboratory equipment and consumables in a histology laboratory.
6	Forms ideas to solve complex problems using theoretical and practical information gained throughout the histology/embryology education.
7	Integrates and interprets information in the area of histology/embryology with information in different fields and, if the need arises, provides scientific information and solutions to solve problems.
8	Performs his/her expertise with the recognition of the rights and responsibilities obtained with the completion of the master of Science in histology/embryology.
9	Develop alternative strategies to solve national and international problems in the field of histology/embryology using expert knowledge and expertise in histology/embryology obtained during his/her training, solves them and evaluates the data . If the need arises, takes a part as a team member to solve problems outside his/her field.
10	Takes responsibility in individual and collective work and completes his/her duties. Takes professional and ethical responsibilities.
11	Comprehends methods associated with attainment and presentation of scientific information.
12	Evaluates his/her expert information gained during the master of Science critically and determines new information and sources of information and attends to activities to complement his/her educational deficiencies
13	For his/her professional development, evaluates and uses any available information and activity in his/her studies.
14	If the need arises, gives information and organizes activities to define a problem in his/her field of expertise.
15	Takes responsibilities in professional organizations and committees related to his/her field of expertise.
16	Relying on his/her professional skills and rights, he/she plans and realizes projects with the conciseness of social responsibility. He/she follows the developments in the world and is sensitive to events.
17	In order to maintain his/her professional development and to have social interactions, he/she uses at least one foreign language.
18	Uses advanced technological means that might be necessary for both professional applications and social interactions.
19	Reviews, evaluates and interprets any data (field observations, available scientific information etc.) towards a specific purpose. Develops and uses strategies in his/her field of expertise.
20	Applies and defines his/her expert knowledge with realizing the needs of the region and the country.

**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	5	5	5	5
P2	2	2	2	2	2
P3	4	4	4	4	4
P5	4	4	4	4	4
P6	3	3	3	3	3
P7	4	4	4	4	4



P8	4	4	4	4	4
P10	4	4	4	4	4
P11	4	4	4	4	4
P12	4	4	4	4	4
P13	4	4	4	4	4
P19	4	4	4	4	4

