



**AYDIN ADNAN MENDERES UNIVERSITY**  
**GRADUATE SCHOOL OF HEALTH SCIENCES**  
**VETERINARY PHYSIOLOGY**  
**PHYSIOLOGY (VETERINARY)**  
**PHYSIOLOGY (VETERINARY) MASTER**  
**COURSE INFORMATION FORM**

|  |   |          |              |        |                                |          |   |            |   |
|--|---|----------|--------------|--------|--------------------------------|----------|---|------------|---|
| Course Title                                     | Lung Mechanics and Principles of Gas Exchanges  |          |              |        |                                |          |   |            |   |
| Course Code                                      | VFZ523  |          | Course Level |        | Second Cycle (Master's Degree) |          |   |            |   |
| ECTS Credit                                      | 6   | Workload | 150 (Hours)  | Theory | 1                              | Practice | 2 | Laboratory | 0 |
| Objectives of the Course                         | Investigation of the importance of the function of gas exchanges in the lung and respiratory during physiological processes   |          |              |        |                                |          |   |            |   |
| Course Content                                   | Lung volumes and capacities, the molecular basis of diffusion of gases, the composition of alveolar air, diffusion of gases through the respiratory membrane, regulation of respiration |          |              |        |                                |          |   |            |   |
| Work Placement                                   | N/A   |          |              |        |                                |          |   |            |   |
| Planned Learning Activities and Teaching Methods | Explanation (Presentation), Experiment, Demonstration, Discussion, Case Study, Individual Study, Problem Solving  |          |              |        |                                |          |   |            |   |
| Name of Lecturer(s)                              |   |          |              |        |                                |          |   |            |   |

#### Assessment Methods and Criteria

| Method              | Quantity | Percentage (%) |
|---------------------|----------|----------------|
| Midterm Examination | 1        | 38             |
| Final Examination   | 1        | 60             |
| Quiz                | 2        | 1              |
| Term Assignment     | 1        | 1              |

#### Recommended or Required Reading

|   |  |
|---|--|
| 1 | Reece W.O. (2008) Dukes Veteriner Fizyoloji Cilt I ve II, Onikinci Baskı (Türkçe Çeviri). Ed: Yıldız S. Medipres, Malatya      |
| 2 | Guyton AC, Hall JE (2001) Tıbbi Fizyoloji Onuncu baskı (Türkçe Çeviri). Ed: Çavuşoğlu H. Nobel Tıp Kitabevi, İstanbul          |
| 3 | Noyan A. (2003). Yaşamda ve Hekimlikte Fizyoloji. 13. baskı, Meteksan-Ankara   |
| 4 | Randall D., Burggren W., French K, Fernald R., (1997). Eckert Animal Physiology. Mechanisms and Adaptations. 4th Ed., New York |
| 5 | G.C. Whittow et al. (1998). Sturke's Avian Physiology  |
| 6 | Willmer P., Stone G., Johnston I. (2005). Environmental Physiology of Animals. 2nd Ed. Blackwell Publishing                    |
| 7 | Despopoulos A., Silbernagl S. (2003). Color Atlas of Physiology 5th Ed. Thieme, Stuttgart New York                             |
| 8 | Vander et al. (2001). Human Physiology: The Mechanism of Body Function, 8th Ed. The McGraw-Hill Companies                      |
| 9 | Nilsson G.E. (2010). Respiratory Physiology of Vertebrates. Life with and without Oxygen. Cambridge Uni. Press                 |

| Week | Weekly Detailed Course Contents |   |
|------|---------------------------------|---|
| 1    | Theoretical                     | The evolution of the lung                                       |
|      | Practice                        | Respiratory movements   |
| 2    | Theoretical                     | Physiological functions of respiratory system                   |
| 3    | Theoretical                     | Pulmonary blood flow kan akışı                                  |
|      | Practice                        | The effect of exercise on breathing                             |
| 4    | Theoretical                     | Gas exchange in alveol  |
|      | Practice                        | The effects of respiratory-related acidosis on the respiration  |
| 5    | Theoretical                     | Gas transportation in lung                                      |
|      | Practice                        | The effects of respiratory-related alkalosis on the respiration |



|    |             |  |
|----|-------------|--|
| 6  | Theoretical | Other functions of respiratory system                              |
|    | Practice    | Structure of the experimental design                               |
| 7  | Theoretical | Nervous control of respiration                                     |
|    | Practice    | The effects of hiccups on respiration                              |
| 8  | Theoretical | Midterm  |
|    | Practice    | Midterm  |
| 9  | Theoretical | Lung volume and capacities   |
|    | Practice    | Clinical use of respiratory volumes and capacities                 |
| 10 | Theoretical | Chemical regulation of respiration                                 |
|    | Practice    | Respiratory volumes: Tidal volume and inspiratory reserve volume   |
| 11 | Theoretical | Respiratory acidosis and its compensation mechanisms-I             |
|    | Practice    | Respiratory volumes: Expiratory reserve volume and residual volume |
| 12 | Theoretical | Respiratory acidosis and its compensation mechanisms -II           |
|    | Practice    | Respiratory capacities -I  |
| 13 | Theoretical | Respiratory alkalosis and its compensation mechanisms -I           |
|    | Practice    | Respiratory capacities -II   |
| 14 | Theoretical | Respiratory alkalosis and its compensation mechanisms -II          |
|    | Practice    | The effects of air content on the respiratory volumes              |
| 15 | Theoretical | Presentations  |
|    | Practice    | The effects of surfactant on the respiratory volumes               |

### Workload Calculation

| Activity                                | Quantity | Preparation | Duration | Total Workload |
|---|----------|-------------|----------|----------------|
| Lecture - Theory                        | 14       | 0           | 1        | 14             |
| Lecture - Practice                      | 14       | 0.5         | 2        | 35             |
| Assignment                              | 4        | 8           | 1        | 36             |
| Term Project                            | 1        | 30          | 1        | 31             |
| Quiz                                    | 2        | 2           | 1        | 6              |
| Midterm Examination                     | 1        | 12          | 1        | 13             |
| Final Examination                       | 1        | 14          | 1        | 15             |
| Total Workload (Hours)                  |          |             |          | 150            |
| [Total Workload (Hours) / 25*] = ECTS   |          |             |          | 6              |
| *25 hour workload is accepted as 1 ECTS |          |             |          |                |

### Learning Outcomes

|   |  |
|---|--|
| 1 | To have knowledge about ain function of lung   |
| 2 | To learn the roles of lungs in the important physiological mechanisms except its respiratory functions |
| 3 | To know about physiological mechanisms in transportation of oxygen and carbon dioxide                  |
| 4 | To have knowledge about regulation of respiration the basis the body needs                             |
| 5 | To learn the respiration mechanics   |



**Programme Outcomes (Physiology (Veterinary) Master)**

|    |  |
|----|--|
| 1  | Understands and defines the interdisciplinary interaction with the associated fields   |
| 2  | Uses theoretical and practical information learned in the education  |
| 3  | Creates solution proposals by using background education   |
| 4  | Combines and interprets the information from different disciplines, and creates solution proposals and scientific information to contribute the solution process, when needed  |
| 5  | Involves in professional organizations and institutions related with the educational background  |
| 6  | Takes responsibility for individual and group work, and do the assignments in line with the skills   |
| 7  | Communicates with the professionals out of the field when it is necessary, and contributes to the solution as a team member  |
| 8  | Understands the production and publishing methods of scientific information  |
| 9  | Determines the source and the type of information that is needed related with the field and chooses the activities that s/he wants to participate, by using his/her critical thinking abilities that is developed in the education   |
| 10 | Excels technological devices both for professional and social purposes   |
| 11 | Compiles any kind of data related with the field (field observations, produced scientific information etc.) and analyzes and interprets the results according to the aims of the research  |
| 12 | Determines the environmental health rules and applies them for prevention  |
| 13 | Applies the knowledge gained in professional level with the awareness of the needs of the region and the country, and develops a defense capability  |
| 14 | Conceptualizes the phenomena and the events related with the field, studies scientific methods and techniques, interprets results; analyzes and hypothesizes methods in accordance with the results and designs solution or treatment alternatives addressing the problems |
| 15 | Follows up the updates of information in the field by using all kinds of sources (scientific information, legislations etc.), and uses when needed   |

**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  | 2  | 2  | 2  | 2  | 2  |
| P2  | 3  | 3  | 3  | 3  | 3  |
| P3  | 3  | 3  | 3  | 3  | 3  |
| P4  | 2  | 2  | 2  | 2  | 2  |
| P5  | 2  | 2  | 2  | 2  | 2  |
| P6  | 1  | 1  | 1  | 1  | 1  |
| P7  | 1  | 1  | 1  | 1  | 1  |
| P8  | 1  | 1  | 1  | 1  | 1  |
| P9  | 2  | 2  | 2  | 2  | 2  |
| P10 | 1  | 1  | 1  | 1  | 1  |
| P11 | 4  | 4  | 4  | 4  | 4  |
| P12 | 1  | 1  | 1  | 1  | 1  |
| P13 | 1  | 1  | 1  | 1  | 1  |
| P14 | 1  | 1  | 1  | 1  | 1  |
| P15 | 3  | 3  | 3  | 3  | 3  |

