# EMBRYOLOGY

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| 1 | Course Title: | EMBRYOLOGY |
| 2 | Course Code: | VET1010 |
| 3 | Type of Course: | Compulsory |
| 4 | Level of Course: | First Cycle |
| 5 | Year of Study: | 1 |
| 6 | Semester: | 2 |
| 7 | ECTS Credits Allocated: | 2.00 |
| 8 | Theoretical (hour/week): | 2.00 |
| 9 | Practice (hour/week): | 0.00 |
| 10 | Laboratory (hour/week): | 0 |
| 11 | Prerequisites: | None |
| 12 | Language: | Turkish |
| 13 | Mode of Delivery: | Face to face |
| 14 | Course Coordinator: | Prof. Dr. BERRIN ZIK |
| 15 | Course Lecturers: | Prof. Dr. Berrin ZIK<br>Dr. Ögr. Üyesi Sabire GÜLER |
| 16 | Contact information of the Course Coordinator: | bzik@uludag.edu.tr<br>Uludağ Ünv. Veteriner Fak. Histoloji Embriyoloji Anabilim Dalı |
| 17 | Website: | http://www.veteriner.uludag.edu.tr |
| 18 | Objective of the Course: | To investigate the life before birth in domestic animal and before hatching in birds, following zygote and to observe the differences among them |
| 19 | Contribution of the Course to Professional Development: | |
| 20 | Learning Outcomes: | |
| | 1 | Mammals and birds will have prior knowledge about the reproductive system |
| | 2 | Gametogenezis learn |
| | 3 | Fertilization and learns to divisions according to animal species, |
| | 4 | Identify the types of placental mammals and domesticate animals |
| | 5 | Implantation learn |
| | 6 | Umbilical cord and learns ekstraembriyonal vesicles, |
| | 7 | Germ leaves define |
| | 8 | Germ of the system learns from leaves, |
| | 9 | Identify the causes of congenital malformations, |

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| | **10** | Learns the embryonic stages and organogenesis |

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| **21** | Course Content: |

**Course Content:**

| Week | Theoretical | Practice |
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| **1** | It begins with introduced and aim of the lesson, introduced of source books, definition and history of embryology and used terms in embryology | |
| **2** | The reproductive system of the female, gametogenesis,, ovulation, genital cycle (ovarian cycle and uterinal cycle), estrous cycle, | |
| **3** | The reproductive system of the male, gametogenesis, and internal (accessory glands) and structure of spermatozoa | |
| **4** | The transport in the female genital tract of the oocyt and sperm, the fertilization process, the acrosome reactions, zona reaction, gender discrimination | |
| **5** | Egg types, cleavage shape according to species and developments following to zygote in amphioxus, frog, mammals and bird | |
| **6** | According to species (amphioxus and chorda dorsalis, and the formation of the neural plate, notochord, and neural induction | |
| **7** | Development of extra embryonic membranes (chorion, allantois and yolk sac) and umbilical cord. Implantation and placentation according placenta types . Congenital malformations. | |
| **8** | Development of central nervous system and neuroblast, neuroglial cells, brain and brain parts. Skin and epidermal organs | |
| **9** | Formation of the primary optic vesicle, optic cup, lens, choroid, sclera, cornea and retina. Development of the ears; the outer ear, the middle ear, the inner ear. Development of the skin and epidermoidal structure. | |
| **11** | Development of the related organs with oral cavity and the oral cavity; palate, teeth, gingiva, pharynx and pharyngeal pouches, salivary glands, tongue. Formation of pituitary gland, adrenal gland, thyroid, parathyroid gland and thymus. | |

| Activites | Number | Duration (hour) | Total Work Load (hour) |
|---|---|---|---|
| Theoretical | 14 | 2.00 | 28.00 |
| Practicals/Labs | 0 | 0.00 | 0.00 |
| Self study and preperation | 14 | 1.00 | 14.00 |
| Homeworks | 0 | 0.00 | 0.00 |
| Projects | 0 | 0.00 | 0.00 |
| Field Studies | 0 | 0.00 | 0.00 |
| Midterm exams | 1 | 5.00 | 5.00 |
| Others | 2 | 3.00 | 6.00 |
| Final Exams | 1 | 7.00 | 7.00 |
| Total Work Load | | | 65.00 |
| Total work load / 30 hr | | | 2.00 |
| ECTS Credit of the Course | | | 2.00 |

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| **12** | Development of the gastrointestinal tract; foregut, esophagus, stomach, midgut, hindgut, septation of the cloaca. Development of the liver, gallbladder and pancreas. Development of respiratory system; trachea and lungs, pulmonary morphogenesis, formation of alveoli and larynx. | |
| **13** | Development of cardiovascular system; Angiogenesis and hematopoiesis. Formation of aortic arches and great arteries, venous systems, heart and lymphatic system. | |
| **14** | Development of Urinary systems; Pronephros, mesonephros, metanephros,urogenital sinus. Development of male and female genital system;Formation of primordial germ cells, gonadogenesis, indifferent stage, different stage, external genital organs,mammary glands. | |

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| **22** | Textbooks, References and/or Other Materials: | 1. Editör: Özer A,Yazarlar: Özfiliz N, Erdost H, Zık .Veteriner Embriyoloji (genişletilmiş dördüncü baskı) ISBN 978-9944-77-205-1<br>2. Çeviri Editörü: Başaklar C. Langman's Medikal Embriyoloji. Palme Yayıncılık, Ankara, 2011<br>3. Çeviri editörü.: İ. Çelik, Y.Öznurlu. Veteriner Embriyoloji. Medipres yayıncılık, 2011.<br>4.Color Atlas of Embryology by Ulrich Drews 1995 |
| **23** | Assesment | |

| **TERM LEARNING ACTIVITIES** | **NUMBER** | **WEIGHT** |
|---|---|---|
| Midterm Exam | 1 | 30.00 |
| Quiz | 2 | 10.00 |
| Home work-project | 0 | 0.00 |
| Final Exam | 1 | 60.00 |
| Total | 4 | 100.00 |
| Contribution of Term (Year) Learning Activities to Success Grade | | 40.00 |
| Contribution of Final Exam to Success Grade | | 60.00 |
| Total | | 100.00 |
| Measurement and Evaluation Techniques Used in the Course | | |

**24 ECTS / WORK LOAD TABLE**

**25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**

| | **PQ1** | **PQ2** | **PQ3** | **PQ4** | **PQ5** | **PQ6** | **PQ7** | **PQ8** | **PQ9** | **PQ10** | **PQ11** | **PQ12** | **PQ13** | **PQ14** | **PQ15** | **PQ16** |
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| **ÖK1** | 5 | 4 | 2 | 1 | 3 | 2 | 0 | 3 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| **ÖK2** | 5 | 4 | 2 | 1 | 3 | 3 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| **ÖK3** | 5 | 3 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| **ÖK4** | 5 | 3 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |

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| **ÖK5** | 5 | 0 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| **ÖK6** | 5 | 2 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| **ÖK7** | 5 | 3 | 4 | 3 | 2 | 5 | 0 | 4 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| **ÖK8** | 5 | 1 | 3 | 1 | 2 | 1 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| **ÖK9** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK10** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**LO: Learning Objectives PQ: Program Qualifications**

| **Contribution Level:** | **1 very low** | **2 low** | **3 Medium** | **4 High** | **5 Very High** |
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