YNEAR EAST UNIVERSITY
Faculty of Veterinary Medicine Course Syllabus

1.	**Course Name**	EMBRYOLOGY
2.	**Course Code**	VTE108
3.	**Type of Course**	Obligatory
4.	**Course Level**	Undergraduate
5.	**Year the course was taught**	1
6.	**The semester in which the course is given**	Spring, 2VET
7.	**ECTS Credits**	2
8.	**National Credit**	2
9.	**Theoretical Lesson Hours (hours/week)**	2h/week
10.	**Practical Course Hour (hour/week)**	-
11.	**Course Prerequisite**	No
12.	**Other Recommended Considerations for the Course**	No
13.	**Language of the Course**	English
14.	**Mode of Delivery of the Course**	Face to Face
15.	**Course Coordinator**	Dr. Hüseyin ŞAH
16.	**Other Lecturers Teaching the Course**	
17.	**Coordinator's Contact Information**	huseyin.sah@neu.edu.tr

18.	**Course Website**	
19.	**The aim of the course**	To explain the determined concepts. To discuss the validity of the identified concepts. Developing selected skills. Examine selected topics in detail. To improve the existing knowledge of the students about the determined subjects. To develop students' ideas in the context of selected concepts. To renew the existing knowledge with the students about the determined concepts, theories or subjects.
20.	**Contribution of the Course to Professional Development**	It will enable you to have an idea about this subject in the future by recognizing every stage of the chain of events from the formation of the sex cells to the birth of the offspring.

21.	**Course Learning Outcomes**	**LO1**	Will be able to understand related concepts/theories.
		LO2	Will be able to discuss the validity of related concepts/theories.
		LO3	Will be able to discuss possible real-life applications of related concepts/theories and offer suggestions.
		LO4	Preparation for the presentation(s).
		LO5	Will be able to evaluate their own work according to the given criteria.
		LO6	Will be able to work as a group on a given work.
		LO7	Will be able to count and explain related concepts.

22.	**Course Content**	**WEEK**	**THEORETICAL COURSE CONTENT**	**PRACTİCAL CONTENT**
		1.	The aim of the course and the introduction of reference books, the place of embryology in the veterinary curriculum and its relationship with other disciplines, the definition and history of embryology, the female genital system, gametogenesis, ovulation, genital cycle (ovary and uterus cycle), estrus cycle.	
		2.	Male genital system, gametogenesis, appendage glands and structure of spermatozoa.	
		3.	Transport of spermatozoon and oocyte in female genital tract in mammals, fertilization process, acrosome, reaction, zona reaction, sex discrimination.	

		4.	Types of oocytes, post-zygote divisions according to species, division types (amphioxus, frog, mammal and poultry).	
		5.	Formation of morula, blastula and gastrulation by species (Amphioxus and amphibian, winged and mammalian).	
		6.	Neurolation and formation of somites, formation of chorda dorsalis and neural plate, notochord and neural induction, sclerotome, myotome.	
		7.	Extraembryonic sacs (amnion, chorion, allantois and vitellus sacs) and umbilical cord, implantation, placentation, and placental types, congenital anomalies.	
		8.	Midterm	
		9.	Formation of nervous system, formation of neural tube, neuroblast and neuroglia cells, development of brain and brain regions, peripheral nerves.	
		10.	Sense organs; Eye, Formation of primary optic vesicle, optic stalk and lens, Formation of choroid, sclera, cornea and retina, formation of inner, middle and outer ear, formation and development of skin and epidermal organs.	
		11.	Development of organs related to the oral cavity: palate, nasal cavity, cheek and gingiva, teeth, salivary glands, pharyngeal arches, pharyngeal pockets, pharyngeal clefts, tongue. Formation of the pituitary gland, adrenal, thyroid, parathyroid and thymus.	

		12.	Formation of the digestive system: Foregut and esophagus, stomach, omentum and mesenteries, intestines, cloaca, liver and gall bladder, development of pancreas, formation of respiratory system: Trachea and lungs, pulmonary morphogenesis, formation of alveoli, formation of larynx.	
		13.	Formation of the cardiovascular system: hematopoiesis and angiogenesis in the embryo, formation of arteries, formation of the heart, formation of the venous system and lymphatics.	
		14.	Formation of urinary system: Pronephrosis, mesonephros, metanephros, urogental sinus, formation of female and male genital systems: Primordial germ cells, gonadogenesis, development of external genitalia, indifferent stage, different stage, formation of mammary glands.	
		15.	Final Exam	
23.	**Textbook, References and/or Other Resources**	1. Özer A,Yazarlar: Özfiliz N, Erdost H, Zık . Veteriner Embriyoloji (genişletilmiş dördüncü baskı) ISBN 978-9944-77-205-1 2. 2. Çeviri Editörü: Başaklar C. Langman's Medikal Embriyoloji. Palme Yayıncılık, Ankara, 2011 3. Çeviri editörü.: İ. Çelik, Y.Öznurlu. Veteriner Embriyoloji. Medipres yayıncılık, 2011. 4. Color Atlas of Embryology by Ulrich Drews 1995.		

		SEMESTER STUDIES	**NUMBER**	**PERCENTAGE OF CONTRIBUTION**
	Evaluation	Midterm	1	40
		Quiz	-	-
		Homework, Performance	-	-
		Final Exam	1	60
		Total	2	100
24.		Evaluation Approaches	Exams are usually held in the form of tests.	

		Activity	NUMBER	Duration [Hours]	Total Workload [Hours]
25.	**ECTS / Workload Table**	Theoretical Courses	14	2	28
		Practical Courses	-	-	-
		Out of Class Study Time (Pre-study, reinforcement)	14	2	28
		Homework, Performance	-	-	-
		Projects	-	-	-
		Field Studies	-	-	-
		Midterm	1	2	2
		Other	-	-	-
		Final Exams	1	2	2
		Total Workload			60
		Total Workload / 30 hours			60/30
		ECTS Credits of the Course			2