Jordan University of Science and Technology
Faculty of Veterinary Medicine
Department of Basic Medical Veterinary Sciences
First Semester

Course Information	
Course Title	Systemic Histology and Embryology
Course Number	VM 215
Prerequisites	VM114
Course Website	JUST ELearning
Instructor	Dr. Mohammad Borhan Al-Zghoul
Office Location	G1-L3
Office Phone	22010
Office Hours	Sunday: 12:30-13:30 Tuesday: 12:30-13:30 Thursday: 12:30-13:30 or by appointment
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Teaching Assistant	

Course Description

This course presents basic facts and concepts of embryology, from fertilization to parturition, focusing on issues relevant to veterinary medicine including early embryonic development, comparative placentation, and major organ development (face, mouth, pharynx, respiratory system, musculoskeletal system, digestive system, vascular system urogenital system and nervous system).

This course is an undergraduate course designed to provide a basic background in the normal histological structure of cells, tissues and organs of the animal body. Because there is an inseparable relationship between structure and function, emphasis is placed on structural-functional correlates at both the light and electron microscopic levels. This course is intended to give you enough experience with the material so that at the end of it students would be able to identify normal tissues and organs prepared by standard methods for light microscopy.

Text Book	
Title	Textbook of Veterinary Histology
Author(s)	Dellman and Eurell
Publisher	Lippincott Williams & Wilkins
Year	2006
Edition	6th Edition
Book Website	
References	

Text Book

Title	Wheater's Functional Histology: **A** text and colour Atlas
Author(s)	Young and Woodford
Publisher	W.B. Saunders Company
Year	2013
Edition	6th Edition
Book Website	
References	

Text Book	
Title	Veterinary Embryology
Author(s)	T. A. McGeady, P. J. Quinn, E. S. Fitzpatrick, M. T. Ryan, S. Cahalan
Publisher	Blackwell publishing
Year	2017
Edition	2nd Edition
Book Website	N/A
References	

Assessment Policy		
Assessment Type	**Expected Due Date**	**Weight**
Quizzes		15%
Midterm Exam		35%
Final Exam		50%

Course Objectives	**Weights**
1. to develop a visual and mental understanding of the four basic tissues of the body such that students will be able to successfully identify these tissues now and in the future.	10%
2. to develop a visual and mental understanding of how the four basic tissues of the body interrelate to construct the various organs and organ systems of the animal body such that students will be able to successfully identify these tissues now and in the future.	15%
3. to develop a comprehensive understanding of histological terminology such that it will assist students in the correct identification of the specimen in question now and in the future.	10%
4. to develop a mental picture of all of the specimens studied in the laboratory so that students will be able to give a minimum of three good histological reasons for your correct identification of the specimen in question.	15%
Describe the major events related to early embryogenesis including fertilization, implantation, gastrulation, neurulation, and body folding.	20%
Describe the major events related to organogenesis.	15%
Define the embryonic derivatives of major adult anatomical structures.	15%

Teaching & Learning Methods

Power Point lectures

Virtual microscope websites

Laboratory sessions include a combination of demonstration and hands on exercises

Learning Outcomes:

Upon successful completion of this course, the student will be able to:

- Identify the organelles within a eukaryotic cell and list the basic function of each
- Outline what makes each epithelial, connective, nervous, and muscle tissue unique, where each is found within the body, and how each interacts with other tissue types
- Point out circulatory system features, including intercalated disks and valves, as well as the differences among different vessel types
- Define how the tissues and anatomical features that make up the gastrointestinal, respiratory and renal systems come together structurally to support the function of these organ systems
- Define how the tissues and anatomical features that make up the male and female reproductive systems come together structurally to support the function of these organ systems
- Explain how the structural arrangement of the lymphatic system and lymph node supports its physiological role of filtering
- Describe the basic structure of endocrine organs
- Identify the features of the epidermis and dermis of the skin, including the cells, layers, glands, and other features of each layer
- Demonstrate knowledge of the sequence of development of the animal body from fertilization through the establishment of the major organ systems and continuing through birth to adulthood.
- Demonstrate understanding of the contribution of various germ layers and precursors to definitive structures, including the role of cell interactions, induction, growth, and differentiation.
- Be able to correlate developmental events with the structural organization of the animal body as observed in the study of gross anatomy and histology.

Useful Resources

https://histology.medicine.umich.edu/full-slide-list
https://histologyguide.com/slidebox/slidebox.html
https://sites.temple.edu/embryology/online-lectures/

http://www.indiana.edu/~anat550/embryo_main/

https://embryology.med.unsw.edu.au/embryology/index.php/Movies

http://www.uco.es/~an1gamoj/MyWeb/spermatogenesis.html

https://www.mediafire.com/folder/5fek7xl3xk1dh/Embryology_Animations

Course Content		
Week	Topics	**Chapter in Text**
1	Digestive System I: Accessory Glands	10
2	Digestive System II: Accessory Glands	10
3	Respiratory System	9
4	Male and female Reproductive Organs	12 & 13
5	Female reproductive system and Urinary System	13, 11
6	Endocrine System	15
7	Lymphatic System	8
8	Integumentary System	16

Course Content		
Lecture	**Topics**	**Chapter in Text (Veterinary Embryology)**
1	An introduction to embryology and Fertilization	1, 2, 3
2	Cleavage, implantation, and gastrulation	4, 5
3	Fetal membranes and placentation	9, 10
4	Development of cardiovascular system	11
5 & 6	Development of nervous system	13
7	Development of muscular and skeletal system	14
8 & 9	Development of digestive system	15
10	Development of respiratory system	16
11	Development of urinary system	17
12	Development of male reproductive system	18
13	Development of female reproductive system	18
14	Development of integumentary system	22
15	Development of endocrine system	20