Jordan University of Science and Technology
Faculty of Veterinary Medicine
Department of clinical Veterinary Medical Sciences
1st Semester 2019-2020

Course Information	
Course Title	Food Animal Theriogenology
Course Number	VM 491
Prerequisites	VM 354, VM 374
Course website	
Course Instructor	Dr. A. Talafha
Office location	G2 L2
Office Phone	22025
Office hours	Sunday and Tuesday 12:30- 1:30
E-mail	talafha@just.edu.jo
Teaching Assistant	

Course Aims	
This course is the first of three classes directed toward clinical animal reproduction	
Course Objectives	**weight**
In general, this class is designed to explain 1. Physiology of the cow estrous cycle	5.5%
2. Various programs used to synchronize the cow estrous cycle	5.5%
3. Causes and management options of anestrus in cows	5.5%
4. Pathogenesis and clinical findings associated with freemartinism in cows	5.5%
5. Pathogenesis and clinical findings associated with bovine venereal diseases (trichomoniasis and campylobacteriosis)	5.5%
6. Pathogenesis, clinical signs and treatment of cystic ovarian disease	5.5%
7. Causes and management options of repeat breeding in cows	5.5%
8. Physiology of pregnancy and hormonal control of parturition in cows	5.5%
9. stages of parturition in the cow and normal postpartum events in cows	5.5%
10. post-partum care of the dam and calf	5.5%
11. Causes and pathogenesis of embryonic / fetal death, mummification, maceration, stillbirth	5.5%
12. Pathogenesis and treatment options for vagino-cervical prolapse, uterine torsion, hydroaminion and hydroallantois in cows	5.5%

13. pathogenesis and control options for infectious causes of bovine abortion	5.5%
14. pathogenesis & treatment options of postpartum uterine infection in cows	5.5%
15. Physiology of sheep and goat estrous cycle	5.5%
16. Various programs used to synchronize estrous cycle of sheep & goat	5.5%
17. Pathogenesis and clinical findings associated with reproductive dysfunction in sheep and goat	5.5%
18. pathogenesis and control options for infectious causes of abortion in sheep and goat	5.5%
19. Physiology and pathology of reproductive system of old world camels	5.5%

Course Description

This course covers the physiology and pathology of female reproductive systems in cattle and small ruminants. This course is divided into two major parts: the first part deals with gynecological aspects of the non-pregnant female, fertility monitoring and control programs; in the second part, normal and abnormal pregnancy, parturition and postpartum period will be covered.
This class will take advantage of all previous courses that covered related materials to animal reproduction. This includes anatomy, physiology, pharmacology and pathology.

Text Book	
Title	Current Therapy In Large Animal Theriogenology
Author(s)	R. S. Youngquist and W. R. Threlfall
Publisher	Saunders Elsevier
Year	2007
Edition	Second
Book Website	www.elsevier.com
References	Arthur's Veterinary Reproduction and Obstetrics, David E. Noakes, Timothy J. Parkinson and Gary C.W. England, 8th edition; 2001
	Pathways to Pregnancy and Parturition; P.L. Senger, 2nd ed, 2003
	Theriogenology of Sheep and Goats, CH 8 In Sheep and goat medicine; D.G. Pugh, 2nd ed 2012

Intended Student Learning Outcomes(ISLOs)
Upon successful completion of this course, students should be able to:

describe biological mechanisms that underlie animal health and diseases at the cell, organism and population levels
apply the knowledge of normal versus disease status of animal in terms of structure, function, homeostasis and pathophysiology
use problem solving skills in examining and using appropriate clinical and laboratory testing to reach a diagnosis.
develop and perform a comprehensive treatment plan
apply the learned practical knowledge of reproductive anatomy and physiology in both companion animal and domestic animal species and the ability to utilize diagnostic techniques used in theriogenology

identify ways to prevent disease, identify organisms that require biosecurity measures, identify zoonotic disease and food safety issues and to promote awareness of the public and animal health

Teaching & Learning Methods
Lectures

Assessment Policy "may change as per JUST regulations"		
Assessment Type	**Expected Due Date**	**Weight**
Midterm Exam	As per JUST Academic Calendar	50%
Final Exam	As per JUST Academic Calendar	50%

Useful Resources
Text books, course notes, lectures references lists and PowerPoint lectures

Food Animal Theriogenology Lectures

Table of content

Topic #	Topic
1	• **Cow Estrous Cycle and Estrus Synchronization**
	○ Estrous Cycle
	○ Hormonal changes during follicular phase
	○ Luteal phase
	○ Timing of Insemination
	○ Heat detection and AI in cows
	○ Estrus Synchronization programs
	○ Using bulls with synchronization programs
2	• **Anestrus**
	○ Anestrus
	○ Silent Heat (Sub-estrus)
	• **Freemartinism**
	• **Bovine Venereal Diseases**
	○ Trichomoniasis
	○ Campylobacteriosis
3	• **Cystic Ovarian Disease**
	• **Repeat breeder in cows**
4	• **Physiology of pregnancy and Induction of parturition in cows**
5	• **Parturition and Post Partum Period in cows**
	○ Cascade of events prompted by fetal cortisol
	○ Hormone profile during periparturient period
	○ Mammary gland changes
	○ Parturition
	○ Return of normal ovarian activity after parturition
	○ What should be done with calves after calving
	○ Specific monitoring points
	○ Signs of compromised newborn calf
	○ Post-calving care of the dam
6	• **Problems during pregnancy**
	○ Prenatal Death
	○ Fetal mummification
	○ Stillbirth
	○ Fetal maceration
	○ Congenital Abnormalities
	○ Cervico-vaginal (C-V) Prolapse
	○ Uterine Torsion
	○ Hydrops Conditions
	○ Hydrallantois
	○ Hydramnios

7	• **Bovine Abortion**
	○ Abortion
	○ Opportunistic Bacterial Infections
	○ Listeriosis
	○ Leptospirosis
	○ Chlamydophilosis
	○ *Ureaplasma diversum*
	○ Mycotic Abortion
	○ Bovine herpes virus type 1
	○ Bovine Viral Diarrhea (BVD)
	○ Neosporosis
8	• **Conditions That Occur In The Postpartum Period**
9	• **Postpartum uterine infection**
	○ Anatomical Barriers
	○ Classification
	○ Puerperal period
	○ Intermediate Period
	○ Postovulatory Period
	○ Endometritis
	○ Pyometra
	○ Metritis
	○ Predisposing Factors
	○ Consequences
	○ Diagnosis
	○ Treatment
10a	• **Awassi sheep and goat reproduction**
	○ Anatomy of the female Reproductive System
	○ Puberty
	○ The breeding season
	○ Physiology of the estrous cycle
	○ Reproductive performance
	○ Breeding soundness examination
	○ Breeding Management
	○ Estrus Synchronization Programs
10b	• **Reproductive dysfunction in sheep and goat**
	○ Sex anomalies
	○ Plants, pharmaceuticals and nutritional abnormalities affecting reproduction
	○ vaginitis
	○ Cystic Ovarian Disease
	○ Pseudopregnancy in goats
10c	• **Abortion in sheep and goat**
	○ Noninfectious causes of abortion
	○ Brucellosis
	○ *Chlamydophila*

	○ *Campylobacter*
	○ Toxoplasmosis
	○ Bluetongue
	○ Border Disease
	○ Akabane Virus Disease
11	• **Reproduction in Old World camels**
	○ Reproduction Anatomy in male and female camels
	○ Puberty
	○ Breeding season
	○ Ovarian Dynamics
	○ Synchronization Of Ovarian Activity
	○ Artificial Insemination
	○ Pregnancy and parturition
	○ Reproductive Disorders in Female Camel ▪ Repeat breeding syndrome ▪ Embryonic / fetal death, or abortion ▪ Abnormalities of genitalia
	○ Diseases of Pregnant Female
	○ Diseases of Postpartum Period