



## Course Specification of Physiology (2)

I. Course Identification and General Information:						
1	<b>Course Title:</b>	Physiology ( 2 )				
2	<b>Course Number &amp; Code:</b>	PH243				
3	<b>Credit hours:</b>	C.H				Total
		Theoretical	Practical	Training	Seminar	
		3		1	4	
4	<b>Study level/ semester at which this course is offered:</b>	Second Year/ Second semester				
5	<b>Pre –requisite (if any):</b>	PH241, PH242				
6	<b>Co –requisite (if any):</b>	None				
7	<b>Program (s) in which the course is offered:</b>	Bachelor of Veterinary Medicine				
8	<b>Language of teaching the course:</b>	English language				
9	<b>Location of teaching the course:</b>	Faculty of Veterinary Medicine Building				
10	<b>Prepared by:</b>	Dr. kamal Alsamawi				
11	<b>Date of approval:</b>					

### II. Course description:

This course offers a comprehensive understanding of normal mammalian physiologic function with emphasis upon application in the clinical setting. Through clinical case examples, the connection between physiologic knowledge and the practice of veterinary medicine. Topics to be covered in this course include 1) Renal physiology, 2) Respiratory physiology, 3) Reproductive physiology, 4) Lactation physiology and 5) Gastrointestinal physiology. Laboratory experiences provide opportunities for application of material addressed in lecture, application of quantitative skills and the practice of communication skills. This course is considered to be an important pre-technology course that enables the student to understand other related sciences and to explain many phenomena related to these sciences such

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as microbiology, pathology, pharmacy, infectious diseases, epidemiology, clinical pathology, and internal medicine.

**III. Intended learning outcomes (ILOs) of the course:**

**(A) Knowledge and Understanding:**

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: **Knowledge and Understanding.**

Program Intended Learning Outcomes (Sub-PILOs) in: Knowledge and Understanding		Course Intended Learning Outcomes (CILOs) in: Knowledge and Understanding	
After completing this program, students will be able to:		After completing this course, students will be able to:	
<b>A1-</b>	Demonstrate a sound knowledge and understanding of concepts and principles of general culture, basic science, and that support veterinary medicine.	<b>a1-</b>	Demonstrate the proper knowledge and understanding of concepts and principles of renal physiology, respiratory physiology, reproductive physiology, lactation physiology and gastrointestinal physiology and major organ systemic function.
<b>A2-</b>	Clarifies basic concepts, principles, and theories related to animal production, animal health and nutrition, behavior management, breeding and care that is related to animal ethical codes.	<b>a2-</b>	Clarification basic concepts, principles, and theories of renal physiology, respiratory physiology, reproductive physiology, lactation physiology, gastrointestinal physiology and major organ systemic function and related to animal production, animal health and nutrition, behavior management, breeding, and care.

**Teaching And Assessment Methods For Achieving Learning Outcomes:**

Alignment of Learning Outcomes of Knowledge and Understanding to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Knowledge and Understanding		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		-Lectures using board, data shows and multimedia aids. - brainstorm.	- Written exam - Practical exam - Oral exam
<b>a1-</b>	Demonstrate the proper knowledge and understanding of concepts and principles of		

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	renal physiology, respiratory physiology, reproductive physiology, lactation physiology and gastrointestinal physiology and major organ systemic function.	- discussion. -Self-learning by preparing essay and presentations (computer and faculty library)	- Quizzes - Report assignments - Discussion
a2-	Clarification basic concepts, principles, and theories of renal physiology, respiratory physiology, reproductive physiology, lactation physiology, gastrointestinal physiology and major organ systemic function and related to animal production, animal health and nutrition, behavior management, breeding, and care.	-Practical training (Clinical demonstrations, practice of skills, and discussions). (a) Field visits (farms and villages) (b) General experimental animal teaching (c) Clinical and small group sessions (d) Outpatient clinic	

**(B) Intellectual Skills:**

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: **Intellectual skills**

Program Intended Learning Outcomes (Sub-PILOs) in Intellectual skills		Course Intended Learning Outcomes (CILOs) of Intellectual Skills	
After completing this program, students will be able to:		After completing this course, students will be able to:	
<b>B1-</b>	Competently practices analytical and critical thinking skills in studying and assessing health problems and reading the results of animal medical examinations and in related sciences.	<b>b1-</b>	Competently practices analytical and critical thinking skills in studying and assessing health problems using the proper knowledge and understanding of concepts and principles of renal physiology, respiratory physiology, reproductive physiology, lactation physiology, gastrointestinal physiology and major organ systemic function.
<b>B2-</b>	Predicts an appropriate medical diagnosis for the most common disease states through analysis of clinical story data and the results of medical examinations of sick animal.	<b>b2-</b>	Predicts an appropriate medical diagnosis for the most common disease states through compared between normal case for renal system, respiratory system, reproductive system, mammary gland, gastrointestinal system and abnormal case.

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**Teaching And Assessment Methods For Achieving Learning Outcomes:**

**Alignment of Learning Outcomes of Intellectual Skills to Teaching Methods and Assessment Methods:**

Course Intended Learning Outcomes (CILOs) in Intellectual Skills.		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:			
b1-	Competently practices analytical and critical thinking skills in studying and assessing health problems using the proper knowledge and understanding of concepts and principles of renal physiology, respiratory physiology, reproductive physiology, lactation physiology, gastrointestinal physiology and major organ systemic function.	-Lectures using board, data shows and multimedia aids. - brainstorm. - discussion. -Self-learning by preparing essay and presentations (computer and faculty library) -Practical training (Clinical demonstrations, practice of skills, and discussions).	- Written exam - Practical exam - Oral exam - Quizzes - Report assignments - Discussion
b2-	Predicts an appropriate medical diagnosis for the most common disease states through compared between normal case for renal system, respiratory system, reproductive system, mammary gland, gastrointestinal system and abnormal case.	(a) Field visits (farms and villages) (b) General experimental animal teaching (c) Clinical and small group sessions (d) Outpatient clinic	

**(C) Professional and Practical Skills:**

**Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: Professional and Practical Skills**

Program Intended Learning Outcomes (Sub-PILOs) in Professional and Practical Skills		Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills	
After completing this program, students will be able to:		After completing this course, students will be able to:	
C1-	Accurately records a comprehensive pathological story of a sick animal including information on healthy behavior and the necessary checks.	c1-	Accurately records a comprehensive pathological story of a sick animal for the renal system or respiratory system or reproductive system or mammary gland or gastrointestinal

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			system, including information on healthy behavior and the necessary checks.
C2-	Practicing practical, diagnostic, clinical and research skills, including the collection of samples in various fields of veterinary medicine and related sciences, in a safe and effective manner, taking into account the ethics of the profession.	c2-	Collect appropriate samples and perform suitable hematological diagnostic tests and hormonal diagnostic tests related with the renal system function, respiratory system function, reproductive system function, mammary gland function, gastrointestinal system function for clinical cases.

**Teaching And Assessment Methods For Achieving Learning Outcomes:**

**Alignment of Learning Outcomes of Professional and Practical Skills to Teaching and Assessment Methods:**

Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:			
c1-	Accurately records a comprehensive pathological story of a sick animal for the renal system or respiratory system or reproductive system or mammary gland or gastrointestinal system, including information on healthy behavior and the necessary checks.	-Lectures using board, data shows and multimedia aids. - brainstorm. - discussion. -Self-learning by preparing essay and presentations (computer and faculty library)	- Written exam - Practical exam - Oral exam - Quizzes - Report assignments - Discussion
c2-	Collect appropriate samples and perform suitable hematological diagnostic tests and hormonal diagnostic tests related with the renal system function, respiratory system function, reproductive system function, mammary gland function, gastrointestinal system function for clinical cases.	-Practical training (Clinical demonstrations, practice of skills, and discussions). (a) Field visits (farms and villages) (b) General experimental animal teaching (c) Clinical and small group sessions (d) Outpatient clinic	

**(D) General / Transferable Skills:**

**Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: General and**

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**Transferable skills**

Program Intended Learning Outcomes (PILOs) in General / Transferable skills		Course Intended Learning Outcomes (CILOs) in General / Transferable skills	
<b>After completing this program, students will be able to:</b>		<b>After completing this course, students will be able to:</b>	
<b>D1-</b>	Communicates effectively with Professional colleagues and animal owners and expresses his ideas clearly and objectively.	<b>d1-</b>	Communicate effectively with logistic & working teams and scientifically discuss in scientific manner in scientific discussions and meetings.
<b>D4-</b>	Works in normal conditions, crises and epidemics, alone and effectively within a medical team.	<b>d2-</b>	Demonstrate appropriate professional attitudes and behaviors in different practice situations.

**Teaching And Assessment Methods For Achieving Learning Outcomes:**

**Alignment of Learning Outcomes of General and Transferable skills to Teaching and Assessment Methods:**

Course Intended Learning Outcomes (CILOs) in General and Transferable Skills		Teaching strategies/methods to be used	Methods of assessment
<b>After completing this course, students will be able to:</b>			
<b>d1-</b>	Communicate effectively with logistic & working teams and scientifically discuss in scientific manner in scientific discussions and meetings.	-Lectures using board, data shows and multimedia aids. - brainstorm. - discussion. -Self-learning by preparing essay and presentations (computer and faculty library) -Practical training (Clinical demonstrations, practice of skills, and discussions). (a) Field visits (farms and villages) (b) General experimental animal teaching (c) Clinical and small group sessions (d) Outpatient clinic	- Written exam - Practical exam - Oral exam - Quizzes - Report assignments - Discussion
<b>d2-</b>	Demonstrate appropriate professional attitudes and behaviors in different practice situations.		

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**IV. Course Content:**

**1 – Course Topics/Items:**

**a – Theoretical Aspect**

Order	Topic List / Units	CILOs (symbols)	Sub-topic List	Number of weeks	Contact hours
1	Gastrointestinal physiology	a1, a2, b1, b2, c1, c2, d1, d2	<ul style="list-style-type: none"> <li>- Definition of digestion</li> <li>- Types of digestion:               <ol style="list-style-type: none"> <li>1) Mechanical digestion</li> <li>2) Microbiological digestion</li> <li>3) Chemical digestion</li> </ol> </li> <li>- Types of the digestive system:               <ol style="list-style-type: none"> <li>1) Monogastric (horses and rabbits)</li> <li>2) Ruminants (cows - sheep - goat).</li> <li>3) The digestive system in birds.</li> </ol> </li> <li>- Types of digestion:</li> <li>- Digestion in the rumen.</li> <li>- Rumination</li> <li>- The results of microbial digestion</li> <li>- The results of microbial digestion</li> <li>- Digestion in the real stomach (Abomasum)</li> <li>- The results of enzymatic digestion</li> <li>- Digestion in the Small Intestine</li> <li>- Digestion of:</li> </ul>	4	12

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			<ul style="list-style-type: none"> <li>1) Proteins 2) Fat 3) Sugars</li> <li>- Absorption in the small intestine</li> <li>- Absorption of:                             <ul style="list-style-type: none"> <li>1) Amino acid 2) Fatty acid</li> <li>3) Sugars 4) Vitamins</li> <li>5) Minerals</li> </ul> </li> </ul>		
2	<b>Respiratory physiology</b>	a1, a2, b1, b2, c1, c2, d1, d2	<ul style="list-style-type: none"> <li>- Respiration, Respiration type.</li> <li>- Respiratory system organs.</li> <li>- The mechanism of respiration, Transport of Gases in Blood.</li> <li>- Control of respiration, Respiration Rate.</li> <li>- Avian respiratory system organs.</li> <li>- Avian respiratory system function.</li> </ul>	2	6
3	<b>Lactation physiology</b>	a1, a2, b1, b2, c1, c2, d1, d2	<ul style="list-style-type: none"> <li>- Mammary gland.</li> <li>- Development of mammary gland, mammary gland structure.</li> <li>- Milk secretion, Milk Lactation.</li> <li>- Regulation neuro of lactation.</li> <li>- Regulation hormonal of lactation.</li> <li>- Chemical composition of milk.</li> </ul>	1	3
4	<b>Reproductive physiology</b>	a1, a2, b1, b2, c1, c2, d1, d2	<ul style="list-style-type: none"> <li>- Female reproductive system.</li> <li>- Male reproductive system.</li> <li>- Gonadal hormones,</li> </ul>	5	15

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			<ul style="list-style-type: none"> <li>Pregnancy, Parturition and Lactation hormones.</li> <li>Reproductive Cycles in mammals, Sexual puberty, Sexual maturity.</li> <li>Spermatogenesis, Oogenesis.</li> <li>Fertilization, Pregnancy.</li> </ul>		
5	<b>Renal physiology</b>	a1, a2, b1, b2, c1, c2, d1, d2	<ul style="list-style-type: none"> <li>Urinary system organs, Kidney Structure, Urinary passage.</li> <li>Filtration, Reabsorption, Secretion.</li> <li>Regulation neuro of urinary system function.</li> <li>Regulation hormonal of urinary system function.</li> <li>Avian Urinary system organs.</li> <li>Avian Urinary system function.</li> </ul>	2	6
<b>Number of Weeks /and Units Per Semester</b>				<b>14</b>	<b>42</b>

**b- Training Aspect:**

Order	Training Tasks	CILOs (symbols)	Number of weeks	Contact hours
1	Introduction to the Physiology Laboratory	a1, a2	1	1
2	Digestive system components. Differentiate the components of the digestive system of ruminants and monogastric.	a1, a2, b1, b2, c1, c2, d1, d2	4	4
3	Respiratory components of mammals. Respiratory components of birds. Differentiate the respiratory components of the mammals and birds.	a1, a2, b1, b2, c1, c2, d1, d2	2	2

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	Methods for measuring the respiratory rate.			
4	The components of the mammary gland Milking methods Milk ingredients Mastitis infections test Health signs of the udder Automatic milking	a1, a2, b1, b2, c1, c2, d1, d2	1	1
5	The components of the female reproductive system for mammals. Female reproductive system components for birds. Male reproductive organs. Male reproductive system components for birds. Various methods for collecting semen Semen examination Semen evaluation Signs of estrus in different animals	a1, a2, b1, b2, c1, c2, d1, d2	4	4
	Urinary system components of the mammals. Urinary system components for birds. Urine formation.	a1, a2, b1, b2, c1, c2, d1, d2	2	1
<b>Number of Weeks /and Units Per Semester</b>			<b>14</b>	<b>14</b>

#### V. Teaching strategies of the course:

- Lectures using data shows and multimedia.
- Self-learning by preparing an essay and presentations.
- Brainstorming
- Discussion
- Collaborative learning
- Practical training (Tests, Clinical demonstrations, practice of skills, and discussions) by:
  - (a) Conducting experiments and tests in the laboratory.
  - (b) Field visits (farms, villages, and Slaughters).
  - (c) General experimental animal teaching.

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(d) Clinical sessions.

### 3-Assessment Methods:

- Written exam
- Quizzes
- Oral exam
- Practical exam
- Report assignments
- Discussion

### VI. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes (CILOs symbols)
1	Participation, quizzes and assignments	2-14	10	10%	a1, a2, b1, b2
2	Mid-Term Exam	8	10	10%	a1, a2, b1, b2, c1, c2, d1, d2
3	Mid-Term Practical Exam	8	10	10%	a1, a2, b1, b2, c1, c2, d1, d2
4	Final Practical Exam	13	10	10%	a1, a2, b1, b2, c1, c2, d1, d2
5	Oral Exam	13	5	5%	a1, a2, b1, b2, c1, c2, d1, d2
	Final Exam	16	55	55%	a1, a2, b1, b2, c1, c2, d1, d2
	<b>Total</b>		<b>100</b>	<b>100%</b>	

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<b>VII. Students' Support:</b>	
<b>Office Hours/week</b>	<b>Other Procedures (if any)</b>
Sunday -Tuesday from 8:00 a.m. - 2 p.m.	Student can contact me by visit my office or via email or social media.

<b>VIII. Learning Resource (MLA style or APA style)S:</b>	
<b>1- Required Textbook(s) (maximum two)</b>	
	<ul style="list-style-type: none"> <li>Richard W. Hill, Gordon A. Wyse, Anderson M, (2016). Animal Physiology. 4th Edition, USA.</li> <li>Aspinall V, Cappello M, (2019). Introduction to Animal and Veterinary Anatomy and Physiology, 4th Edition, USA.</li> </ul>
<b>2- Recommended Readings and Reference Materials</b>	
	<ul style="list-style-type: none"> <li>Campbell A.M, Paradise C.J, 2016. Animal Physiology.</li> <li>Zdenek Deyl, (1988). Methods In Animal Physiology.</li> </ul>
<b>3- Essential References</b>	
	<ul style="list-style-type: none"> <li>Richard W. Hill, Gordon A. Wyse, Anderson M., (2012). Animal Physiology, 3rd Edition, USA.</li> <li>Edward M. Barrows, (2011). Animal Behavior Desk Reference, A Dictionary of Animal Behavior, Ecology, and Evolution, Third Edition.</li> </ul>
<b>4- Electronic Materials and Web Sites etc.</b>	
	<p>Journal of Veterinary Internal Medicine (<a href="http://www.wiley.com/bw/journal.asp">http://www.wiley.com/bw/journal.asp</a>)</p> <ul style="list-style-type: none"> <li>- <a href="#">American College of Veterinary Internal Medicine</a></li> <li>- <a href="http://www.criticalcarevets.com">Internal Medicine www.criticalcarevets.com</a></li> <li>- <a href="http://www.animal-emergency.com">Internal Medicine www.animal-emergency.com</a></li> <li>- <a href="#">Central Texas Veterinary Specialty Hospital - Internal Medicine</a></li> <li>- <a href="#">IVIS Bookstore: Ruminant Medicine - International Veterinary</a></li> <li>- <a href="#">Alberta Agriculture, Food and Rural Development</a></li> <li>- <a href="https://www.oie.int/scientific-expertise/veterinary-products/diagnostic-tests/">https://www.oie.int/scientific-expertise/veterinary-products/diagnostic-tests/</a></li> <li>- <a href="https://www.routledge.com/search?kw=Animal+Physiology">https://www.routledge.com/search?kw=Animal+Physiology</a></li> <li>- <a href="https://vetbooks.ir/">https://vetbooks.ir/</a></li> </ul>
<b>5- Other Learning Material:</b>	

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- <https://www.oie.int/scientific-expertise/veterinary-products/diagnostic-tests/>

X. Course Policies:	
1	<b>Class Attendance:</b> MANDATORY TO ATTEND ALL COURSE LECTURES
2	<b>Tardy:</b> Not allowed at all. Students must be in class 10 minutes prior to the beginning of lectures.
3	<b>Exam Attendance/Punctuality:</b> Attendance is mandatory; absence is accepted with valid excuse.
4	<b>Assignments &amp; Projects:</b> All assignments and projects are to be submitted on their due date. Any assignment turned in after the due date will not be accepted without valid and reasonable excuse.
5	<b>Cheating:</b> Not tolerated and may lead to EXPELLING the student from the program
6	<b>Plagiarism:</b> Not tolerated AT ALL and may lead to EXPELLING the student from the program
7	<b>Other policies:</b> <ol style="list-style-type: none"> <li>1. All devices must be on silent or at least on vibration during lectures/labs.</li> <li>2. Before any exam (written, practical, oral) student's identity will be checked (student's card, ID, passport). Without any of these documents, the student will not be allowed in the exam room.</li> <li>3. Any of type/ form of cheating is not allowed no matter what.</li> <li>4. Maintain silence during lectures and disturbance is not allowed.</li> </ol>

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## Course Plan of physiology (2)

X. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. kamal Alsamawi	Office Hours					
Location & Telephone No.	Dhamar university	SAT	SUN	MON	TUE	WED	THU
E-mail							

XI. Course Identification and General Information:						
1-	Course Title:	Physiology (2)				
2-	Course Number & Code:	PH243				
3-	Credit hours:	C.H				Total
		Th.	Seminar	Pr.	F. Tr.	
		3		1		4
4-	Study level/year at which this course is offered:	Second Year/ Second semester				
5-	Pre –requisite (if any):	PH241, PH242				
6-	Co –requisite (if any):	None				
7-	Program (s) in which the course is offered	Bachelor Veterinary Medicine				
8-	Language of teaching the course:	English language				
9-	System of Study:	Regular / Semesters				
10-	Mode of delivery:	Lectures and Practical				
11-	Location of teaching the course:	Faculty of Veterinary Medicine Building				

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## II. Course Description:

This course offers a comprehensive understanding of normal mammalian physiologic function with emphasis upon application in the clinical setting. Through clinical case examples, the connection between physiologic knowledge and the practice of veterinary medicine. Topics to be covered in this course include 1) Renal physiology, 2) Respiratory physiology, 3) Reproductive physiology, 4) Lactation physiology and 5) Gastrointestinal physiology. Laboratory experiences provide opportunities for application of material addressed in lecture, application of quantitative skills and the practice of communication skills. This course is considered to be an important pre-technology course that enables the student to understand other related sciences and to explain many phenomena related to these sciences such as microbiology, pathology, pharmacy, infectious diseases, epidemiology, clinical pathology, and internal medicine.

## II. Intended learning outcomes (ILOs) of the course:

**After completing this course, students will be able to:**

- a1- Demonstrate the proper knowledge and understanding of concepts and principles of renal physiology, respiratory physiology, reproductive physiology, lactation physiology and gastrointestinal physiology and major organ systemic function.
- a2- Clarification basic concepts, principles, and theories of renal physiology, respiratory physiology, reproductive physiology, lactation physiology, gastrointestinal physiology and major organ systemic function and related to animal production, animal health and nutrition, behavior management, breeding, and care.
- b1- Competently practices analytical and critical thinking skills in studying and assessing health problems using the proper knowledge and understanding of concepts and principles of renal physiology, respiratory physiology, reproductive physiology, lactation physiology, gastrointestinal physiology and major organ systemic function.
- b2- Predicts an appropriate medical diagnosis for the most common disease states through compared between normal case for renal system, respiratory system, reproductive system, mammary gland, gastrointestinal system and abnormal case.

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- c1- Accurately records a comprehensive pathological story of a sick animal for the renal system or respiratory system or reproductive system or mammary gland or gastrointestinal system, including information on healthy behavior and the necessary checks.
- c2- Collect appropriate samples and perform suitable hematological diagnostic tests and hormonal diagnostic tests related with the renal system function, respiratory system function, reproductive system function, mammary gland function, gastrointestinal system function for clinical cases.
- d1- Communicate effectively with logistic & working teams and scientifically discuss in scientific manner in scientific discussions and meetings.
- d2- Demonstrate appropriate professional attitudes and behaviors in different practice situations.

**V. Course Content:**

**A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	<p><b>Gastrointestinal physiology:</b></p> <ul style="list-style-type: none"> <li>- Definition of digestion</li> <li>- Types of digestion:                             <ol style="list-style-type: none"> <li>1) Mechanical digestion</li> <li>2) Microbiological digestion</li> <li>3) Chemical digestion</li> </ol> </li> <li>- Types of the digestive system:                             <ol style="list-style-type: none"> <li>1) Monogastric (horses and rabbits)</li> <li>2) Ruminants (cows - sheep - goat).</li> <li>3) The digestive system in birds.</li> </ol> </li> <li>- Types of digestion:</li> <li>- Digestion in the rumen.</li> <li>- Rumination</li> </ul>	1,4	12

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	<ul style="list-style-type: none"> <li>- The results of microbial digestion</li> <li>- The results of microbial digestion</li> <li>- Digestion in the real stomach (Abomasum)</li> <li>- The results of enzymatic digestion</li> <li>- Digestion in the Small Intestine</li> <li>- Digestion of:                             <ol style="list-style-type: none"> <li>1) Proteins</li> <li>2) Fat</li> <li>3) Sugars</li> </ol> </li> <li>- Absorption in the small intestine</li> <li>- Absorption of:                             <ol style="list-style-type: none"> <li>1) Amino acid</li> <li>2) Fatty acid</li> <li>3) Sugars</li> <li>4) Vitamins</li> <li>5) Minerals</li> </ol> </li> </ul>		
2	<p><b>Respiratory physiology:</b></p> <ul style="list-style-type: none"> <li>- Respiration, Respiration type.</li> <li>- Respiratory system organs.</li> <li>- The mechanism of respiration, Transport of Gases in Blood.</li> <li>- Control of respiration, Respiration Rate. Avian respiratory system organs.</li> <li>- Avian respiratory system function.</li> </ul>	5,6	6
3	<p><b>Lactation physiology</b></p> <ul style="list-style-type: none"> <li>- Mammary gland.</li> <li>- Development of mammary gland, mammary gland structure.</li> <li>- Milk secretion, Milk Lactation.</li> <li>- Regulation neuro of lactation.</li> <li>- Regulation hormonal of lactation.</li> <li>- Chemical composition of milk.</li> </ul>	7	3
4	<b>Mid-Term Exam</b>	8	3
5	<p><b>Reproductive physiology</b></p> <ul style="list-style-type: none"> <li>- Female reproductive system.</li> <li>- Male reproductive system.</li> <li>- Gonadal hormones, Pregnancy, Parturition and Lactation hormones.</li> <li>- Reproductive Cycles in mammals, Sexual puberty, Sexual maturity.</li> </ul>	9,13	15

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	<ul style="list-style-type: none"> <li>- Spermatogenesis, Oogenesis.</li> <li>- Fertilization, Pregnancy.</li> </ul>		
6	<b>Renal physiology:</b> <ul style="list-style-type: none"> <li>- Urinary system organs, Kidney Structure, Urinary passage.</li> <li>- Filtration, Reabsorption, Secretion.</li> <li>- Regulation neuro of urinary system function.</li> <li>- Regulation hormonal of urinary system function.</li> <li>- Avian Urinary system organs.</li> <li>- Avian Urinary system function.</li> </ul>	14,15	6
16	<b>Final Exam</b>	16	3
<b>Number of Weeks /and Units Per Semester</b>		<b>16</b>	<b>48</b>

<b>b- Training Aspect:</b>			
Order	Training Tasks	Week Due	Contact hours
1	Introduction to the Physiology Laboratory	1	1
2	Digestive system components. Differentiate the components of the digestive system of ruminants and monogastric.	2,5	4
3	Respiratory components of mammals. Respiratory components of birds. Differentiate the respiratory components of the mammals and birds. Methods for measuring the respiratory rate.	6,7	2
4	<b>Mid-Term Exam</b>	8	1
5	The components of the mammary gland Milking methods Milk ingredients Mastitis infections test Health signs of the udder Automatic milking	9	1

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6	The components of the female reproductive system for mammals. Female reproductive system components for birds. Male reproductive organs. Male reproductive system components for birds. Various methods for collecting semen Semen examination Semen evaluation Signs of estrus in different animals	10-13	4
7	Urinary system components of the mammals. Urinary system components for birds. Urine formation.	14,15	2
8	<b>Final Exam</b>	16	1
<b>Number of Weeks /and Units Per Semester</b>		<b>16</b>	<b>16</b>

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#### **V. Teaching strategies of the course:**

- Lectures using board, data shows and multimedia aids.
- Self-learning by preparing essay and presentations (computer and faculty library)
- Brainstorm
- Discussion
- Cooperative learning
- Practical training (Clinical demonstrations, practice of skills, and discussions).
  - (a) Field visits (farms and villages)
  - (b) General experimental animal teaching
  - (c) Clinical and small group sessions
  - (d) Outpatient clinic
- Tutorial classes (small group teaching)

#### **VI. Assessment Methods:**

- Written exam
- Practical exam
- Oral exam
- Quizzes
- Report assignments
- Discussion.

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No.	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Participation, quizzes and assignments	2-14	10	10%
2	Mid-Term Exam	8	10	10%
3	Mid-Term Practical Exam	8	10	10%
4	Final Practical Exam	13	10	10%
5	Oral Exam	13	5	5%
6	Final Exam	16	55	55%
<b>Total</b>			<b>100</b>	<b>100%</b>

II. Learning Resources:	
<b>1- Required Textbook(s) (maximum two).</b>	
	<ul style="list-style-type: none"> <li>Richard W. Hill, Gordon A. Wyse, Anderson M, (2016). Animal Physiology. 4th Edition, USA.</li> <li>Aspinall V, Cappello M, (2019). Introduction to Animal and Veterinary Anatomy and Physiology, 4th Edition, USA.</li> </ul>
<b>2- Essential References.</b>	
	<ul style="list-style-type: none"> <li>Richard W. Hill, Gordon A. Wyse, Anderson M., (2012). Animal Physiology, 3rd Edition, U</li> <li>Edward M. Barrows, (2011). Animal Behavior Desk Reference, A Dictionary of Animal Behavior, Ecology, and Evolution, Third Edition.</li> </ul>
<b>3- Electronic Materials and Web Sites etc.</b>	
	<p>Journal of Veterinary Internal Medicine (<a href="http://www.wiley.com/bw/journal.asp">http://www.wiley.com/bw/journal.asp</a>)</p> <ul style="list-style-type: none"> <li>- <a href="#">American College of Veterinary Internal Medicine</a></li> <li>- <a href="http://www.criticalcarevets.com">Internal Medicine www.criticalcarevets.com</a></li> <li>- <a href="http://www.animal-emergency.com">Internal Medicine www.animal-emergency.com</a></li> <li>- <a href="#">Central Texas Veterinary Specialty Hospital - Internal Medicine</a></li> </ul>

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	<ul style="list-style-type: none"> <li>- <a href="#">IVIS Bookstore: Ruminant Medicine - International Veterinary</a></li> <li>- <a href="#">Alberta Agriculture, Food and Rural Development</a></li> <li>- <a href="https://www.oie.int/scientific-expertise/veterinary-products/diagnostic-tests/">https://www.oie.int/scientific-expertise/veterinary-products/diagnostic-tests/</a></li> <li>- <a href="https://www.routledge.com/search?kw=Animal+Physiology">https://www.routledge.com/search?kw=Animal+Physiology</a></li> <li>- <a href="https://vetbooks.ir/">https://vetbooks.ir/</a></li> </ul>
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X. Course Policies:	
1	<b>Class Attendance:</b> MANDATORY TO ATTEND ALL COURSE LECTURES
2	<b>Tardy:</b> Not allowed at all. Students must be in class 10 minutes prior to the beginning of lectures.
3	<b>Exam Attendance/Punctuality:</b> Attendance is mandatory; absence is accepted with valid excuse.
4	<b>Assignments &amp; Projects:</b> All assignments and projects are to be submitted on their due date. Any assignment turned in after the due date will not be accepted without valid and reasonable excuse.
5	<b>Cheating:</b> Not tolerated and may lead to EXPELLING the student from the program
6	<b>Plagiarism:</b> Not tolerated AT ALL and may lead to EXPELLING the student from the program
7	<b>Other policies:</b> <ol style="list-style-type: none"> <li>5. All devices must be on silent or at least on vibration during lectures/labs.</li> <li>6. Before any exam (written, practical, oral) student's identity will be checked (student's card, ID, passport). Without any of these documents, the student will not be allowed in the exam room.</li> <li>7. Any of type/ form of cheating is not allowed no matter what.</li> <li>8. Maintain silence during lectures and disturbance is not allowed.</li> </ol>

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