REPUBLIC OF YEMEN

Ministry of Higher Education & Scientific Research

SANA'A UNIVERSITY

Course Specification of Physiology (1)

I. Course Identification and General Information:							
1	Course Title:	Physiology (1)					
2	Course Number & Code:	PH242					
3	Credit hours:	C.H				Total	
		Theoretical	Practical	Training	Seminar		
		3		1		4	
4	Study level/ semester at which this course is offered:	Second Year/ First semester					
5	Pre –requisite (if any):	FR112					
6	Co –requisite (if any):	None					
7	Program (s) in which the course is offered:	Bachelor of Veterinary Medicine					
8	Language of teaching the course:	English language					
9	Location of teaching the course:	Faculty of Veterinary Medicine Building					
10	Prepared by:	Dr. kamal Alsamawi					
11	Date of approval:						

II. Course description:

This course provides students with basic information to understand fundamental principles of systemic physiology and associated biochemistry through a survey of major organ systems including cell function, water and the major electrolytes, transport processes between excitable tissues, neurobiology, endocrine physiology, muscular physiology,

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cardiovascular physiology. This course is considered to be an important that enables the student to understand other related sciences and to explain many phenomena related to these sciences such as 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:**	
A1-	Demonstrate a sound knowledge and understanding of concepts and principles of general culture, basic science, and that support veterinary medicine.	**a1-**	Demonstrate the proper knowledge and understanding of concepts and principles of cell function, water and the major electrolytes, transport processes between excitable tissues and major organ systemic function.
A2-	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.	**a2-**	Clarification basic concepts, principles, and theories of cell function, the major electrolytes, transport processes between excitable tissues 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:

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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. - 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
a1-	Demonstrate the proper knowledge and understanding of concepts and principles of cell function, water and the major electrolytes, transport processes between excitable tissues and major organ systemic function.		
a2-	Clarification basic concepts, principles, and theories of cell function, the major electrolytes, transport processes between excitable tissues and major organ systemic function and related to animal production, animal health and nutrition, behavior management, breeding, and care.		

(B) Intellectual Skills:

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

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Program Intended Learning Outcomes (Sub- PILOs) in Intellectual skills		Course Intended Learning Outcomes (CILOs) of Inte Skills	
After completing this program, students will be able to:		**After completing this course, students will be able to:**	
B1-	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.	**b1-**	Competently practices analytical and critical skills in studying and assessing health proble the proper knowledge and understanding of and principles of cell function, water and th electrolytes, transport processes between tissues and major organ systemic function.
B2-	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.	**b2-**	Analyzes hematological results and endoc hormones results and compared them with values.

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 asse
After completing this course, students will be able to:		-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)	- Written exam - Practical exam - Oral exam - Quizzes - Report assignme - Discussion
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 cell function, water and the major electrolytes, transport processes between excitable tissues and major organ systemic function.		
b2-	Analyzes and interpret hematological results and endocrinology hormones results and compared them with normal values.		

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		(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:**	
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.	**c1-**	Collect appropriate samples and perform suitable hematological diagnostic tests and hormonal diagnostic tests for clinical cases.
C3-	Reads the results of laboratory investigations and diagnostic scans and writes reports and prescriptions for all common cases in a proper way.	**c2-**	Reads the hematological results and hormonal results of laboratory investigations.

Teaching And Assessment Methods For Achieving Learning Outcomes:

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

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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:		-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
c1-	Collect appropriate samples and perform suitable hematological diagnostic tests and hormonal diagnostic tests for clinical cases.		
c2-	Reads the hematological results and hormonal results of laboratory investigations.		

(D) General / Transferable Skills:

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

Program Intended Learning Outcomes (PILOs) in General / Transferable skills		Course Intended Learning Outcomes (CILOs) in Transferable skills	
After completing this program, students will be able to:		**After completing this course, students will be able to**	
D2-	Develops his scientific, professional and research capabilities and follow what is emerging in his field	**d1-**	Develops scientific and professional perfo the field of veterinary physiology and relate

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	of specialization and using computer applications and information and communication technology.		and monitors scientific developments in t through use electronic libraries and Interne
D3-	Practices problem-solving, negotiation, supervision and veterinary medical management skills and writing research reports efficiently and professionally.	**d2-**	Continue to self-learn and transcribe highlighted or solve problematic situations a report on specific scientific-related subj course.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of General and Transferable skills to Teaching and Assessment Meth

Course Intended Learning Outcomes (CILOs) in General and Transferable Skills		**Teaching strategies/methods to be used**	**Methods of as**
After completing this course, students will be able to:		-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 assignm - Discussion
d1-	Develops scientific and professional performance in the field of veterinary physiology and related sciences, and monitors scientific developments in these fields through use electronic libraries and Internet.		
d2-	Continue to self-learn and transcribe data to highlighted or solve problematic situations and write a report on specific scientific-related subjects to the course.		

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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	**Basic cell**	a1,a2,b1,b2,c1 ,c2d1,d2	- Cell organelles. - Cell organelles function. - Cell membrane function.	1	3
2	**Acid-base physiology**	a1,a2,b1,b2,c1 ,c2d1,d2	- Water and the major electrolytes	1	3
3	**Body fluid compartments**	a1,a2,b1,b2,c1 ,c2d1,d2	- Transport processes between excitable tissues	1	3
4	**Neurophysiology**	a1,a2,b1,b2,c1 ,c2d1,d2	- Neurophysiology identification. - Nervous System. - The Neuron, Types of neurons, Forms of neurons. - Central nerves system. - Peripheral nerves system. - The Reflex Arc. - Resting potential. - Initiation of nerve impulse in the Axon. - Nerve impulse across the Synapses.	2	6
5	**Muscular physiology**	a1,a2,b1,b2,c1 ,c2d1,d2	- Muscle tissue, muscles. - Types of muscles.	2	6

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			- The chemical composition of the muscle. - The physical structure of the muscle. - Mechanism of muscle contraction.		
6	**Endocrine physiology**	a1,a2,b1,b2,c1 ,c2d1,d2	- Endocrinology. - Mechanisms of hormone action. - The hypothalamus. - Pituitary gland. - The endocrine pancreas. - Calcium regulating hormone. - The thyroid gland. - The adrenal gland. - Gastrointestinal hormone. - The pineal gland. - Growth regulation. - Non-Classical hormones.	4	12
7	**Cardiovascular physiology**	a1,a2,b1,b2,c1 ,c2d1,d2	- Functional anatomy of the heart, structure anatomy of the heart. - Physiological properties of the cardiac muscle. - Cardiac Cycle – Anatomy and Physiology. - Vascular physiology. - Physiology of blood and lymph. - Coagulation. - Blood groups.	3	9
Number of Weeks /and Units Per Semester				**14**	**42**

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b- Training Aspect:

Order	Training Tasks	CILOs (symbols)	Number of weeks	Contact hours
1	Introduction to the Physiology Laboratory	a1/a2	1	1
2	Cell components	a1/a2/b1/d1 /d2/d3/d4	1	1
3	Water and the major electrolytes test	a1,a2,b1,b2,c1,c2d1,d2	1	1
4	Practical application to Transport processes between excitable tissues	a1,a2,b1,b2,c1,c2d1,d2	2	2
5	Practical application to The Reflex Arc and Resting potential	a1,a2,b1,b2,c1,c2d1,d2	2	2
6	Test of the chemical composition of the muscle. Test of the physical structure of the muscle.	a1,a2,b1,b2,c1,c2d1,d2	2	2
7	Perform suitable hormonal diagnostic tests for clinical cases.	a1,a2,b1,b2,c1,c2d1,d2	2	2
8	Method of collect appropriate blood samples. Perform suitable hematologic diagnostic tests. Blood group test. Methods for measuring pulse rate. ECG practical.	a1,a2,b1,b2,c1,c2d1,d2	3	3
Number of Weeks /and Units Per Semester			**14**	**14**

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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)

3-Assessment Methods:

-Written exam

-Practical exam

-Oral exam

-Quizzes

- Report assignments

- Discussion

Grading Scale:

Grades are awarded on a scale from A to F, where A is the best grade (90-100) and F is a fail (<50).

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

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning

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					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,c2d1,d2
3	Mid-Term Practical Exam	8	10	10%	a1/a2/b1/b2
4	Final Practical Exam	13	10	10%	a1,a2,b1,b2,c1,c2d1,d2
5	Oral Exam	13	5	5%	a1,a2,b1,b2,c1,c2d1,d2
	Final Exam	16	55	55%	a1,a2,b1,b2,c1,c2d1,d2
	Total		100	100%	

VII. Students' Support:

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

VIII. Learning Resource (MLA style or APA style)S:

Required Textbook(s) (maximum two)

- Richard W. Hill, Gordon A. Wyse, Anderson M, (2016). Animal Physiology. 4th Edition, USA.
- Aspinall V, Cappello M, (2019). Introduction to Animal and Veterinary Anatomy and Physiology, 4th Edition, USA.

Recommended Readings and Reference Materials

- Campbell A.M, Paradise C.J, 2016. Animal Physiology.
- Zdenek Deyl, (1988). Methods In Animal Physiology.

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	Essential References
	• Richard W. Hill, Gordon A. Wyse, Anderson M., (2012). Animal Physiology, 3rd Editio USA. • Edward M. Barrows, (2011). Animal Behavior Desk Reference, A Dictionary of Anima Behavior, Ecology, and Evolution, Third Edition.
	Electronic Materials and Web Sites *etc.*
	Journal of Veterinary Internal Medicine (http://www.wiley.com/bw/journal.asp) - American College of Veterinary Internal Medicine - Internal Medicine www.criticalcarevets.com - Internal Medicine www.animal-emergency.com - Central Texas Veterinary Specialty Hospital - Internal Medicine - IVIS Bookstore: Ruminant Medicine - International Veterinary - Alberta Agriculture, Food and Rural Development - https://www.oie.int/scientific-expertise/veterinary-products/diagnostic-tests/ - https://www.routledge.com/search?kw=Animal+Physiology - https://vetbooks.ir/
	Other Learning Material:
	- https://www.oie.int/scientific-expertise/veterinary-products/diagnostic-tests/

X. Course Policies:

1	**Class Attendance:** MANDATORY TO ATTEND ALL COURSE LECTURES
2	**Tardy:** Not allowed at all. Students must be in class 10 minutes prior to the beginning of lectures.
3	**Exam Attendance/Punctuality:** Attendance is mandatory; absence is accepted with valid excuse.
4	**Assignments & Projects:**

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	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	**Cheating:** Not tolerated and may lead to EXPELLING the student from the program
6	**Plagiarism:** Not tolerated AT ALL and may lead to EXPELLING the student from the program
7	**Other policies:** 1. All devices must be on silent or at least on vibration during lectures/labs. 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. 3. Any of type/ form of cheating is not allowed no matter what. 4. Maintain silence during lectures and disturbance is not allowed.

Course Plan of Physiology (1)

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							

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XI. Course Identification and General Information:						
1	**Course Title:**	Physiology (1)				
2	**Course Number & Code:**	PH242				
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/ First semester				
5	**Pre –requisite (if any):**	FR112				
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				

II. Course Description:

This course provides students with basic information to understand fundamental principles of systemic physiology and associated biochemistry through a survey of major organ systems including cell function, water and the major electrolytes, transport processes between excitable tissues, neurobiology, endocrine physiology, muscular physiology, cardiovascular physiology. This course is considered to be an important that enables the student to understand other related sciences and to explain many phenomena related to

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these sciences such as 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 cell function, water and the major electrolytes, transport processes between excitable tissues and major organ systemic function.

a2- Clarification basic concepts, principles, and theories of cell function, the major electrolytes, transport processes between excitable tissues 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 cell function, water and the major electrolytes, transport processes between excitable tissues and major organ systemic function.

b2- Analyzes and interpret hematological results and endocrinology hormones results and compared them with normal values.

c1- Collect appropriate samples and perform suitable hematological diagnostic tests and hormonal diagnostic tests for clinical cases.

c2- Reads the hematological results and hormonal results of laboratory investigations.

d1- Develops scientific and professional performance in the field of veterinary physiology and related sciences, and monitors scientific developments in these fields through use electronic libraries and Internet.

d2- Continue to self-learn and transcribe data to highlighted or solve problematic situations and write a report on specific scientific-related subjects to the course.

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V. Course Content:

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	**Basic cell:** - Cell organelles. - Cell organelles function. - Cell membrane function.	1	3
2	**Acid-base physiology:** - Water and the major electrolytes	2	3
3	**Body fluid compartments** - Transport processes between excitable tissues	3	3
4	**Neurophysiology:** - Neurophysiology identification. - Nervous System. - The Neuron, Types of neurons, Forms of neurons. - Central nerves system. - Peripheral nerves system. - The Reflex Arc. - Resting potential. - Initiation of nerve impulse in the Axon. - Nerve impulse across the Synapses.	4,5	6
5	**Muscular physiology:** - Muscle tissue, muscles. - Types of muscles. - The chemical composition of the muscle. - The physical structure of the muscle. - Mechanism of muscle contraction.	6,7	6
8	**Mid-Term Exam**	8	3
9	**Endocrine physiology:** - Endocrinology.	9,12	12

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	- Mechanisms of hormone action. - The hypothalamus. - Pituitary gland. - The endocrine pancreas. - Calcium regulating hormone. - The thyroid gland. - The adrenal gland. - Gastrointestinal hormone. - The pineal gland. - Growth regulation. Non-Classical hormones.		
10	**Cardiovascular physiology:** - Functional anatomy of the heart, structure anatomy of the heart. - Physiological properties of the cardiac muscle. - Cardiac Cycle – Anatomy and Physiology. - Vascular physiology. - Physiology of blood and lymph. - Coagulation. - Blood groups.	13,15	9
16	**Final Exam**	16	3
Number of Weeks /and Units Per Semester		**16**	**48**

b- Training Aspect:

Order	Training Tasks	Week Due	Contact hours
1	Introduction to the Physiology Laboratory	1	1
2	Cell components	2	1
3	Water and the major electrolytes test	3	1
4	Practical application to Transport processes between excitable tissues	4,5	2

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	Practical application to The Reflex Arc and Resting potential	6,7	2
8	**Mid-Term Exam**	8	1
9	Test of the chemical composition of the muscle. Test of the physical structure of the muscle.	9,10	2
10	Perform suitable hormonal diagnostic tests for clinical cases.	11,12	2
11	Method of collect appropriate blood samples. Perform suitable hematologic diagnostic tests. Blood group test. Methods for measuring pulse rate. ECG practical.	13,15	3
12	**Final Exam**	16	1
Number of Weeks /and Units Per Semester		**16**	**16**

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)

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VI. Assessment Methods:

-Written exam

-Practical exam

-Oral exam

-Quizzes

- Report assignments

- Discussion.

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%
	Total		100	100%

II. Learning Resources:

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1- Required Textbook(s) (maximum two).	
	• Richard W. Hill, Gordon A. Wyse, Anderson M, (2016). Animal Physiology. 4th Edition, USA. • Aspinall V, Cappello M, (2019). Introduction to Animal and Veterinary Anatomy and Physiology, 4th Edition, USA.
2- Essential References.	
	• Richard W. Hill, Gordon A. Wyse, Anderson M., (2012). Animal Physiology, 3r Edition, USA. • Edward M. Barrows, (2011). Animal Behavior Desk Reference, A Dictionary of Animal Behavior, Ecology, and Evolution, Third Edition.
3- Electronic Materials and Web Sites *etc*.	
	Journal of Veterinary Internal Medicine (http://www.wiley.com/bw/journal.asp) - American College of Veterinary Internal Medicine - Internal Medicine www.criticalcarevets.com - Internal Medicine www.animal-emergency.com - Central Texas Veterinary Specialty Hospital - Internal Medicine - IVIS Bookstore: Ruminant Medicine - International Veterinary - Alberta Agriculture, Food and Rural Development - https://www.oie.int/scientific-expertise/veterinary-products/diagnostic-tests - https://www.routledge.com/search?kw=Animal+Physiology - https://vetbooks.ir/

X. Course Policies:	
1	**Class Attendance:** MANDATORY TO ATTEND ALL COURSE LECTURES
2	**Tardy:**

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	Not allowed at all. Students must be in class 10 minutes prior to the beginning of lectures.
3	**Exam Attendance/Punctuality:** Attendance is mandatory; absence is accepted with valid excuse.
4	**Assignments & Projects:** 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	**Cheating:** Not tolerated and may lead to EXPELLING the student from the program
6	**Plagiarism:** Not tolerated AT ALL and may lead to EXPELLING the student from the program
7	**Other policies:** 1. All devices must be on silent or at least on vibration during lectures/labs. 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. 3. Any of type/ form of cheating is not allowed no matter what. 4. Maintain silence during lectures and disturbance is not allowed.

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