



**Jordan University of Science and Technology**  
**Faculty of Agriculture**  
**Animal Production Department**

AP424 Environmental Physiology Of Farm Animals

Second Semester 2021-2022

**Course Catalog**

3 Credit Hours. The course lays out basic understanding with regard to the effects of the ambient environment on farm animal physiological performance. This environment is composed of several micro- and macro-climatic components. Individual and combined changes in these components elicit various physiological reactions to maintain regain homeostasis. Environmental extremes challenge the well-being and performance of farm animals ? primarily kept as food source -, and hence can impact man due to the potential depreciation in animal productivity, and eventually economical outcome from the animal agriculture business sector, which contributes in varying degrees to national and international food security and well-being of the human population.

**Text Book**

<b>Title</b>	Environmental Physiology of Livestock
<b>Author(s)</b>	R. J. Collier and J. L. Collier
<b>Edition</b>	1st Edition
<b>Short Name</b>	Reference #1
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
Reference #2	Stress Physiology in Animals	P. H. Balm.	1st Edition	
Reference #3	Handbook of Physiology: Section 4, Environmental Physiology	M. Fregly and C. Blatteis	2nd Edition	

**Instructor**

Name	<b>Prof. Hosam Al-Tamimi</b>
Office Location	-
Office Hours	

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Class Schedule & Room
Section 1: Lecture Time: Sun : 14:30 - 16:00 Room: C5020  Section 2: Lecture Time: Tue : 14:30 - 16:00 Room: C5020

Prerequisites		
Line Number	Course Name	Prerequisite Type
613212	AP321 Animal Physiology	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Introduction to course, teaching philosophy	
Weeks 1, 2	Stress Physiology: Basic Terminology (Glossary of Terms in Thermal Physiology)	From <b>Reference #1</b> , From <b>Reference #2</b>
Week 2	Heat Exchange between Livestock and Environment. Measurement of Heat Production and Heat Loss	From <b>Reference #1</b> , From <b>Reference #3</b>
Week 3	Heat Production: Mechanisms and Regulation. Heat Loss of Cattle	From <b>Reference #1</b> , From <b>Reference #2</b> , From <b>Reference #3</b>
Week 4	Concepts of Psychrometrics	From <b>Reference #2</b>
Week 4	Environmental Temperature Measurement	From <b>Reference #3</b>
Weeks 4, 5	Absolute/Relative Humidity Analysis	From <b>Reference #1</b> , From <b>Reference #3</b>
Week 5	Realtime Environmental Thermal Datalogging	From <b>Reference #2</b>

Week 5	Vernon Globe and Radiative Heat Analyses	From <b>Reference #2</b> , From <b>Reference #3</b>
Week 6	Critical Temperatures, and Thermal Zones	From <b>Reference #2</b> , From <b>Reference #3</b>
Week 7	Thermoregulatory Behavior	From <b>Reference #1</b> , From <b>Reference #2</b>
Week 8	Lactation and the Thermal Environment	From <b>Reference #1</b> , From <b>Reference #2</b>
Week 9	Endocrine System and Thermal Environment	From <b>Reference #1</b> , From <b>Reference #2</b>
Week 10	Circulatory Adjustments of Heat Stressed Livestock	From <b>Reference #1</b> , From <b>Reference #3</b>
Weeks 10, 11	Respiratory System Responses	From <b>Reference #1</b> , From <b>Reference #2</b> , From <b>Reference #3</b>
Week 12	Effects of the Thermal Environment on Ruminant and Mono-gastric Digestive System	From <b>Reference #1</b> , From <b>Reference #2</b>
Week 13	Body Fluids and Thermal Environment	From <b>Reference #2</b> , From <b>Reference #3</b>
Week 14	Laser-Sighted Infra-Red Thermometry	From <b>Reference #3</b>
Week 15	Physiological Responses and Productivity of Farm Animals during Hot and Cold Environments	From <b>Reference #1</b> , From <b>Reference #2</b>

Week 16	Radiotelemetric and Thermochron Technologies	From <b>Reference #2</b>
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Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Recognize the basic physical cues of the environment that affect animal physiology [1SLO 1, 1SLO 2, 1SLO 3]	25%	
Describe how different physiological systems respond to environmental stressors [1SLO 1, 1SLO 2, 1SLO 3, 1SLO 4]	50%	
Explain the basic concepts of animal physiological adaptation [1SLO 1]	25%	

Relationship to Program Student Outcomes (Out of 100%)			
SLO 1	SLO 2	SLO 3	SLO 4
45.83	20.83	20.83	12.5

Evaluation	
Assessment Tool	Weight
Final Examination	50%
MidTerm Exam	50%

Policy	
Teaching philosophy, course guidelines, and student commitment	Students will be expected to present their comprehension concerns of the course immediately, and to fully appreciate the importance of participating in the classroom discussions. Timed examinations and several unannounced quizzes will be employed as means of student evaluation and survey of knowledge. Attendance is mandatory to fulfill course requirements, with consideration of accurate timing. Exceeding the limit of absences within the class room on time can result in failing the course. The Department of Animal Production places a high degree of trust in the level of student maturity and intellectual curiosity and therefore counts on its student in carrying this responsibility.

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