مركز الاعتماد وضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER

Course Syllabus

1	**Course title**	Animal Production in Hot Regions	
2	**Course number**	602488	
3	**Credit hours**	3	3
	Contact hours (theory, practical)	(3,0)	
4	**Prerequisites/corequisites**	Principles of Animal Production (602101)	
5	**Program title**	B.Sc. Animal Production	
6	**Program code**		
7	**Awarding institution**	University of Jordan	
8	**School**	**Agriculture**	
9	**Department**	**Animal Production**	
10	**Course level**	**Fourth year**	
11	**Year of study and semester (s)**	**First semester 2021/2022**	
١٢	**Other department (s) involved in teaching the course**		
١٣	**Main teaching language**	**None**	
١٤	**Delivery method**	Face to face learning X Blended ☐Fully online	
١٥	**Online platforms(s)**	X Moodle ☐Microsoft Teams ☐Skype ☐Zoom ☐Others……	
١٦	**Issuing/Revision Date**	12/10/2021	

١٧ **Course Coordinator:**

Name: Dr. Mohannad Abuajamieh	Contact hours:
Office number: 22443	Phone number:
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١٨ Other instructors:

Name: Office number: Phone number: Email: Contact hours: Name: Office number: Phone number: Email: Contact hours:

١٩ Course Description:

The aim of the course is to study and establish an understanding of status of animal production (monogastrics and ruminants) in hot climates and factors affecting it. Types of stress, thermo-neutral zone and global warming. Effects of heat stress on monogastrics and ruminants productive and reproductive performance, health, immunity, and welfare as well as signs and responses of heat stress. In addition to the management strategies used to alleviate heat stress, including physical modifications, genetic development, and nutritional strategies.

٢٠ Course aims and outcomes:

A- Aims:

1. To understand the biological mechanisms by which heat stress negatively affects performance of farm animals in order to develop approached to reduce or stop these negative effects
2. To help students develop an insight into the problems and constraints facing animal production in hot climates
3. To introduce students to the different rearing systems in hot regions
4. Provide students with sufficient basic scientific information about factors limit animal production under heat stress
5. To become familiar with modern management technologies under hot climate conditions

B- Students Learning Outcomes (SLOs):

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

SLOs / SLOs of the course	SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	SLO7	SLO8
1. Know the impacts of hot climate on poultry and livestock performance, health, and welfare	X							
2. Understand the health constraints face livestock and poultry production in hot climates	X							
3. Gain competences in livestock and poultry production, management, and skills in written and oral scientific communication				X		X		
4. Know the thermos-neutral zone for various classes and breeds of poultry and livestock	X							
5. Understand and apply the management strategies used during heat stress.		X						

The graduate of the Animal Production program is expected to be able to (SLOs):

ILO (1): Demonstrate a deep understanding of the basic principles in the various areas of livestock production; including nutrition, physiology, genetics, health and management.
ILO (2): Apply the acquired knowledge in various areas of livestock production.
ILO (3): Utilize critical thinking and logical reasoning in addressing issues related to livestock production.
ILO (4): Communicate effectively with a wide range of related stakeholders and provide appropriate extension services.
ILO (5): Apply the principles of public safety and environmental protection.
ILO (6): Acquire and apply practical skills along with keeping up with recent advances in livestock production.
ILO (7): Identify basic principles of research methodology and evidence-based decision making.
ILO (8): Abide by the professional, ethical and legal considerations relevant to the livestock production.

٢١. Topic Outline and Schedule:

Week	Lecture	Topic	Intended Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Evaluation Methods	Resources
1	1.1	Status of animal production in hot regions	A.2, A.4, B.1, C.1, C.3, D.1, D.2	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015
	1.2	Factors affecting animal production in hot climates					
	1.3	Terminology (glossary of terms)					
2	2.1	Heat stress and thermos-neutral zone	A.1, A.4, C.2, D.5	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015
	2.2	Heat stress and thermos-neutral zone					
	2.3	Heat stress and thermos-neutral zone					
3	3.1	Economic losses	A.2, B.1, C.1, C.3, D.1, D.2, D.4	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015
	3.2	Economic losses					
	3.3	Discussion					

			activity 1						
	4	4.1	Signs and symptoms of heat stress in monogastrics and ruminants	A.1, A.2, B.1, C.1, D.2	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	
		4.2	Signs and symptoms of heat stress in monogastrics and ruminants						
		4.3	Discussion activity 1 (Deadline)						
	5	5.1	Pathophysiology and morphological effects of heat stress	A.2, B.2, C.3, D.2	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	
		5.2	Pathophysiology and morphological effects of heat stress						
		5.3	Discussion activity 2						
	6	6.1	Immunological responses to heat stress	B.1, C.1, C.3, D.2	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	
		6.2	Immunological responses to heat stress						
		6.3	Discussion activity 2 (Deadline)						
	7	7.1	Nutrient metabolism and	B.1, D.2	Blended	Moodle	Assignments, quizzes, discussion,	Leon, 2015, Sejian et	

			partitioning in heat stress				and reports	al, 2012, 2015	
		7.2	Nutrient metabolism and partitioning in heat stress						
		7.3	Discussion activity 3						
	8	8.1	Broilers management in hot climates	A.3, B.1, B.2, B.3, C.3, C.4, D.1, D.3	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	
		8.2	Layers and breeders management in hot climates						
		8.3	Discussion activity 3 (Deadline)						
	9	9.1	Heat stress and its effects in dairy cows	A.2, C.1, C.2	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	
		9.2	Heat stress and its effects in dairy cows						
		9.3	Discussion activity 4						
	10	10.1	Management strategies to alleviate heat stress in dairy cows	A.1, A.3, B.1, B.2, B.3, C.3, C.4, D.1, D.3	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	
		10.2	Management strategies to alleviate heat stress in						

			dairy cows						
		10.3	Discussion activity 4 (Deadline)						
	11	11.1	Management strategies to alleviate heat stress in dairy cows	A.1, A.3, B.1, B.2, B.3, C.3, C.4, D.1, D.3	Blended	Moodle	Assignments, quizzes, discussion and reports	Leon, 2015, Sejian et al, 2012, 2015	
		11.2	Management strategies to alleviate heat stress in dairy cows				Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	
		11.3	Discussion activity 5				Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	
	12	12.1	Biosecurity and health in hot climates	A.2, C.1, D.1	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	
		12.2	Biosecurity and health in hot climates						
		12.3	Discussion activity 5 (Deadline)						
	13	13.1	Impacts of climate change and global warming on animal production	A.1, A.2, C.1, D.5	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	
		13.2							
		13.3							
	14	14.1	Impacts of climate change and global warming on animal	A.1, A.2, C.1, D.5	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	
		14.2							
		14.3							

			production						
	15	15.1 15.2 15.3	Impacts of climate change and global warming on animal production	A.1, A.2, C.1, D.5	Blended	Moodle	Assignments, quizzes, discussion, and reports	Leon, 2015, Sejian et al, 2012, 2015	

٢٢ Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Mid-Exam	30	Mid-material		28/11/2021 (Sunday)	In-class
Discussion Activities	30		A.2, B.1, C.1, C.3, D.1, D.2, D.4	4	Moodle
			A.2, B.2, C.3, D.2	6	Moodle
			B.1, D.2	8	Moodle
			A.2, C.1, C.2	10	Moodle
			A.1, A.3, B.1, B.2, B.3, C.3, C.4, D.1, D.3	12	Moodle
Final exam	40	All material		To be determined	In-class

٢٣ Course Requirements

(e.g: students should have a computer, internet connection, webcam, account on a specific software/platform…etc):

٢٤ Course Policies:

A- Attendance policies:

Each student is expected to take their own notes (part from the exam) and to attend class. Absence from lectures shall not exceed 15%. Students are expected to attend all lectures but if a student is absent from class, it is their responsibility to get the material that was missed. You must get any handouts or notes from your classmates.

B- Absences from exams and submitting assignments on time:

Exams will consist of **multiple choices, true/false, matching, fill-in-the-blank**, **critical thinking questions.** Exams will cover all material presented for each section. Make-up exams will only be provided for students with an excused absence AND supporting documentation. The questions and/or format of any make-up exam may differ from that of the original exam. Scheduling of a make-up exam will vary depending upon available dates/times but **MUST** occur before the next-scheduled exam date.

C- Health and safety procedures:

Students should follow the Jordanian government guide.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

Academic dishonesty will NOT be tolerated. This includes cheating, fabrication or falsification, plagiarism, abuse of academic materials, complicity in academic dishonesty, falsifying grade reports, and misrepresentation to avoid academic work. For this course, evidence of any form of academic dishonesty will result in all involved students receiving zero points for any associated exam, or assignment

E- Grading policy:

Other duties	30% (Participation, discussion, assignments, reports)
Mid-exam	30%
Final Exam	40%
Total Points	100%

F- Available university services that support achievement in the course:

Students account on E-learning, and Microsoft teams

٢٥ References:

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A- Required book(s), assigned reading and audio-visuals:

- Anjali, A., and R. Upadhyay. 2012. Heat Stress and Animal Productivity. Springer India
- Collier, R. J., and J. L. Collier. 2012. Environmental Physiology of Livestock. Wiley-Blackwell. USA
- Leon, L. R. 2015. Pathophysiology of Heat Stroke. Morgan & Claypool Publishers. USA
- Sejian, V. J., Gaughan, L. Baumgard, and C. Prasad. 2015. Climate Change Impact on Livestock: Adaptation and Mitigation. Springer India. India
- Sejian, V., S. M. K. Naqvi, T. Ezeji, J. Lakritz, and R. Lal. 2012. Environmental Stress and Amelioration in Livestock Production. Springer-Verlag Berlin Heidelberg. Germany

B- Recommended books, materials, and media:

- Given scientific papers, announced seminars and presentations
- Videos given at e-learning or Microsoft Teams

٢٦ Additional information:

Name of Course Coordinator: Dr. Mohannad Abuajamieh Signature: ---------- Date: 12/10/2021
Head of Curriculum Committee/Department: ---------- Signature: ----------
Head of Department: ---------- Signature: ----------
Head of Curriculum Committee/Faculty: ---------- Signature: ----------
Dean: ---------- Signature: ----------