

Study Plan: Master, Higher Diploma, High specialization		Form Number				EXC-01-03-04A
		Issue Number and Date				2/3/24/2022/2963 2022/12/05
		Number and Date of Revision or Modification				
		Deans Council Approval Decision Number				2/3/24/2023
		The Date of the Deans Council Approval Decision				2023/01/23
		Number of Pages				6
1	School	Agriculture				
2	Department	Animal Production				
3	Program title (Arabic)	ماجستير في الانتاج الحيواني				
4	Program title (English)	MSc. in Animal Production				
5	Track	Thesis Track				
	Specialization #	Degree	Dep #	Faculty #	Year	Track
Plan Number	02	7	02	06	2024	Thesis Track

**First: General Rules & Conditions:**

1. This plan conforms to the valid regulations of the programs of graduate studies.

**2. Specialties of Admission:**

- The First Priority: Bachelor's in Animal production, Poultry Production, and Aquaculture.
- The Second Priority: Bachelor's in Agricultural Sciences,
- The Third Priority: Bachelor's in Basic Sciences, Health Sciences, and Veterinary Medicine.

**Second: Special Conditions:** None.

**Third: Study Plan: Studying (33) Credit Hours as following:**

**1. Obligatory Courses (15) Credit Hours:**

Course Number	Course Name	Credit Hours	Theory	Practice	Pre-requisite
0601730	Experimental Design and Data Analysis	3	3	-	-
0603701	Research Methodology and Scientific Writing	3	3	-	-
0602713	Environment and Farm Animals Productivity	3	3	-	-
0632782	Ruminant Nutrition	3	3	-	-
0632786	Poultry Nutrition	3	3	-	-

**2. Elective Courses: Studying (9) Credit hours from the following:**

Course Number	Course Name	Credit Hours	Theory	Practice	Pre-requisite
0632735	Diseases of Farm Animals	3	3	-	-
0602702	Range Animal Nutrition	3	3	-	-
0602703	Advanced Reproductive Physiology	3	3	-	-
0602705	Physiology of the Mammary Gland and Lactation	3	3	-	-
0602756	Farm Animals Behaviour	3	3	-	-
0602761	Quantitative and Population Genetics	3	3	-	-
0602789	Production Systems of Small Ruminants	3	3	-	-
0632792	Minerals and Vitamins in Animal Nutrition	3	3	-	-
0602793	Biotechnology in Animal Production	3	3	-	-
0602706	Selected Topics in Animal Production	3	3	-	-

**3. Thesis: 9 Credit hours (0602799)**

\*notes

### Course Description

<b>Course Number</b>	<b>0601730</b>	<b>Course Name:</b>	<b>Experimental Design and Data Analysis</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
This course covers linear and multiple regression and correlation, analysis of variance, and basic experimental designs and analyses. Mean separation procedures include pairwise comparison and linear combination methods. Analysis of covariance. This course also introduces students to computer applications in statistical analysis.					
<b>Course Number</b>	<b>0603701</b>	<b>Course Name:</b>	<b>Research Methodology &amp; Scientific Writing</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
This course is module-based approach on the basics of scientific research; understanding how to identify a research problem; formulate its hypothesis; sampling methods, data collection and statistical interpretation; applying qualitative and quantitative scientific research; knowing different types of research designs including experimental and analytical methods; understanding fundamentals in scientific writing methods and applying scientific research ethics. Active learning will be applied through preparation of a research proposal. The paper is to be on a specialization-related topic to the student. For the paper, the student should use reference material to discuss the following: Research Problem; significance of the study; literature review; methods and References. The topic will be presented to the class as scheduled.					
<b>Course Number</b>	<b>0602713</b>	<b>Course Name:</b>	<b>Environment and Farm Animals Productivity</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
Students will learn about the effects of environmental factors on farm animal production parameters: management, nutrition, reproduction, growth and animal products (milk, meat, eggs and wool); animal housing in relation to environmental factors. Active learning methodology will be applied.					
<b>Course Number</b>	<b>0632782</b>	<b>Course Name:</b>	<b>Ruminant Nutrition</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
Students will learn the advanced concepts in the relationship of ruminant animals including rumen ecology and rumen microbiota, metabolism of the main nutrients (carbohydrate, protein, and fat), manipulation of rumen environment, control of intake in ruminants, evaluating and processing feed resources, feed additives and applications, and finally nutritional and metabolic disorders including prevention and treatment practices. Active learning methodology will be applied.					

<b>Course Number</b>	<b>0632786</b>	<b>Course Name:</b>	<b>Poultry Nutrition</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
Students will gain the knowledge about poultry feed manufacturing in Jordan; sources of energy: carbohydrates, fats, and proteins; requirements for chickens of: energy, protein, amino acids, vitamins and essential inorganic elements; balanced and least cost ration formulation. Active learning methodology will be applied.					
<b>Course Number</b>	<b>0632735</b>	<b>Course Name:</b>	<b>Diseases of Farm Animals</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
Students will learn about the most important epidemic farm animal diseases associated with bacteria, viruses, fungi and parasites that may cause economic losses, diseases of new born animals, sterility; zoonotic diseases. Active learning methodology will be applied.					
<b>Course Number</b>	<b>0602702</b>	<b>Course Name:</b>	<b>Range Animal Nutrition</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
Students will gain the knowledge of comparative nutrition of farm and range animals, factors affecting productive performance of range animals, methodology for nutritional assessment, determinants of selectivity: animal, plant and environment factors, methods for determination of voluntary forage intake, grazing behavior, studying the interactive relationship between range productivity and range animal performance. Active learning methodology will be applied.					
<b>Course Number</b>	<b>0602703</b>	<b>Course Name:</b>	<b>Advanced Reproductive Physiology</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
Students will learn the anatomy and physiology of female reproductive system; endocrine glands and hormones of reproduction; estrous cycle and ovigenesis; insemination; fertilization; pregnancy; parturition; Factors affecting on fertility and infertility in farm animals. Active learning methodology will be applied					
<b>Course Number</b>	<b>0602705</b>	<b>Course Name:</b>	<b>Physiology of the Mammary Gland and Lactation</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
Students will learn about the development, growth and anatomy of the mammary glands; synthesis of milk components; hormonal and neural control of lactation; milk production and milk synthesis and secretion; physiological and environmental factors affecting on milk synthesis and lactation. Active learning methodology will be applied.					
<b>Course Number</b>	<b>0602756</b>	<b>Course Name:</b>	<b>Farm Animals Behaviour</b>	<b>Credit hours:</b>	<b>3</b>

<b>Prerequisite:-</b>					
Students will learn about the involuntary movements and behaviour; categories of behaviour; hormones and behaviour; examples of behaviour for different animals: sexual behaviour, social behaviour, learning behaviour, maternal behaviour, aggressive behaviour; adaptation; heat regulation and behaviour; role of behaviour in management of farm animals. Active learning methodology will be applied.					
<b>Course Number</b>	<b>0602761</b>	<b>Course Name:</b>	<b>Quantitative and Population Genetics</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
Students will learn about the principles and applications of population and quantitative genetics; factors affecting genetic and genotypic frequencies; methods of estimating genetic and non-genetic variances; heritability and breeding values; the role of mating systems and selection procedures in producing superior genetic populations.					
<b>Course Number</b>	<b>0602789</b>	<b>Course Name:</b>	<b>Production Systems of Small Ruminants</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
Students will learn about the objectives of mapping small ruminant production systems, peculiarities of small ruminants, historic classification of production systems, factors shaping production systems and basis of classification, components of production systems: inputs, processes and outputs, common production systems of small ruminants in Middle East, methodology for studying the small ruminant production systems, employing of study results for policy uptake and improving plans to enhance production systems. Active learning methodology will be applied.					
<b>Course Number</b>	<b>0632792</b>	<b>Course Name:</b>	<b>Minerals and Vitamins in Animal Nutrition</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
Students will learn about vitamins, quasi-vitamins and their chemical composition, functions, deficiency, absorption, and role in metabolism in both poultry and ruminants. Course covers mineral requirements of farm animals of macro- and micro minerals, mineral toxicity, mineral functions and deficiency, heavy metals, methods for determination of mineral content in organs, animal tissues, and animal products. Active learning methodology will be applied.					
<b>Course Number</b>	<b>0602793</b>	<b>Course Name:</b>	<b>Biotechnology in Animal Production</b>	<b>Credit hours:</b>	<b>3</b>
<b>Prerequisite:-</b>					
Students will learn about the scientific and technical understanding of animal production biotechnology; application and impact of biotechnological techniques on animal production; advances in biotechnology applications and their development in: feeds and rumen microbiology, lactation and reproduction, immunology and health, growth and performance; animal products; advantages and threats of biotechnology; ethical and safety aspects of biotechnology. Active learning methodology will be applied.					

Course Number		Course Name:	Selected Topics in Animal Production	Credit hours:	3
<b>Prerequisite:-</b>					
Students will discuss recent information in animal production that has not been discussed in other courses. Students will learn about the development and presentation of a seminar, in addition to oral reports and discussion of research and studies of interest. Active learning methodology will be applied					