



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

AP724 Quantitative Genetics And Animal Breeding - JNQF Level: 9

Second Semester 2023-2024

**Course Catalog**

3 Credit Hours. The course will concentrate on Quantitative genetics, Statistical Genetics and their relationship with molecular genetics, The student will have an idea about the variables especially those of Quantitative manner, then the variances (Phenotypic and Genetic) as affected by the fixed and random effects will be discussed, thereafter the genetic parameters (heritability, Repeatability and genetic and phenotypic correlations) estimation methods will be detailed and will be incorporated within many Genetic models including BLUPs, GBLUPs and Selection index methodology. Selection methods and the calculation of the genetic gain will be explained .

**Teaching Method:** Blended

**Text Book**

<b>Title</b>	Introduction to quantitative genetics ? Walter A. Becker. Manual of quantitative genetics
<b>Author(s)</b>	Falconer and Mackay
<b>Edition</b>	4th Edition
<b>Short Name</b>	Quantitative genetics
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
Genetics	Genetics. Second edition	Winter P. C., G. I. Hickey and H. L. Fletcher	2nd Edition	2002. Prented by Biddles Ltd, Guildford , UK
Statistical Genetics	The principals and practice of Statistics in Biology Research.	Robert R. Sokal and F. James Rohlf. Biometry.	3rd Edition	1981. W. H. Freedom and Company, New York.
Selection index	Selection index & Prediction of Genetic Merit in Animal Breeding.	N. D. Cameron.	1st Edition	

**Instructor**

Name	<b>Prof. Khaleel Jawasreh</b>
Office Location	-
Office Hours	Sun : 08:30 - 09:30 Sun : 11:30 - 12:30 Mon : 08:30 - 09:30 Tue : 08:30 - 09:30 Thu : 08:30 - 09:30 Thu : 10:30 - 11:30
Email	kijawasreh@just.edu.jo

<b>Class Schedule &amp; Room</b>
Section 1: Lecture Time: Sun, Tue : 10:30 - 11:30 Room: LAB

<b>Tentative List of Topics Covered</b>		
<b>Weeks</b>	<b>Topic</b>	<b>References</b>
Weeks 1, 2	Introduction and some statistical genetics Procedures	
Weeks 3, 4, 5	Estimation of Genetic parameters	
Week 6	Principals of Matrix Algebra	
Weeks 7, 8, 9, 10	Regression analysis using matrices procedures Constructing the selection index using Matrices BLUP and BLUE	
Weeks 12, 13	Molecular biodiversity, Marker assisted selection (MAS) and Quantitative trait Loci (QTL)	

<b>Mapping of Course Outcomes to Program Outcomes and NQF Outcomes</b>	<b>Course Outcome Weight (Out of 100%)</b>	<b>Assessment method</b>
Understanding the Basic statistical procedures used in Genetic [1M.PLO1, 1M.PLO2] [1L9K1]	25%	
Understanding the Genetic parameters philosophy and the procedures used for estimating them [1M.PLO2, 1M.PLO3] [1L9K1, 1L9K2, 1L9S1, 1L9S2, 1L9C6]	40%	
The genetic potential of the animal is evaluated and Estimated breeding values will understood [1M.PLO3, 1M.PLO4] [1L9K1, 1L9K2, 1L9K3, 1L9C1, 1L9S3, 1L9C6]	20%	
Genetic diversity and selection process is optimized [1M.PLO4, 1M.PLO5] [1L9K1, 1L9K3, 1L9S1, 1L9S2, 1L9S3, 1L9C6]	15%	

Relationship to Program Student Outcomes (Out of 100%)								
SLO 1	SLO 2	SLO 3	SLO 4	M.PLO1	M.PLO2	M.PLO3	M.PLO4	M.PLO5
				12.5	32.5	30	17.5	7.5

Relationship to NQF Outcomes (Out of 100%)							
L9K1	L9K2	L9K3	L9S1	L9S2	L9C1	L9S3	L9C6
38.83	11.33	5.83	10.5	10.5	3.33	5.83	13.83

Evaluation	
Assessment Tool	Weight
First exam	25%
Second	25%
Final exam	50%

Policy	
Attendance	Student attendance is mandatory unless a convincing excuse is provided.
software's	The necessity of working on statistical programs and self-development in addition to the explanation provided through the lectures
Exams	The need to reach convincing solutions in exams or assignments related to the subject, dealing with somewhat huge data, so preparing for the accuracy and efficiency of the work is required

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