



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

AP724 Quantitative Genetics And Animal Breeding

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

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

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	Prof. Khaleel Jawasreh
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

Class Schedule & Room
Section 1: Lecture Time: Sun, Tue : 10:30 - 11:30 Room: LAB

Tentative List of Topics Covered		
Weeks	Topic	References
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)	

Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understanding the Basic statistical procedures used in Genetic	25%	
Understanding the Genetic parameters philosophy and the procedures used for estimating them	40%	
The genetic potential of the animal is evaluated and Estimated breeding values will understood	20%	
Genetic diversity and selection process is we optimized	15%	

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

Evaluation

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

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