

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

Course Information	
Course Title	Animal Breeding and Improvement
Course Number	AP 418
Prerequisites	Bio 341, PP 313
Course Website	
Instructor	Dr. Kamel Z. Mahmoud
Office Location	M1L3
Office Phone	720-1000 Ext. 22212
Office Hours	10:45 – 12:00 (Sun. & Tus.) or by appointment
E-mail	kmahmoud@just.edu.jo
Teaching Assistant	
Course Description	

Text Book	
Title	Understanding Animal Breeding
Author(s)	Richard M. Bourdon
Publisher	
Year	2000
Edition	Second Edition
Book Website	
References	<ol style="list-style-type: none"> 1. Introduction of quantitative genetics. Fourth edition by Falconer and Mackay, 1996. 2. Essential statistics. Second edition by D. G. Rees, 1989. 3. Selection indices and prediction of genetic merit in animal breeding. By N. D. Cameron, 1997. 4. Genetic of Livestock Improvement. J. K. Lasley, 1987. 5. Breeding and Improvement of Farm Animals. J. E. Legates and E. J. Warwick, 1990.

Assessment Policy		
Assessment Type	Expected Due Date	Weight
First Exam		25
Second Exam		25
Final Exam		40

Assignments		10
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Course Objectives	Weights
This course provides a general introduction to the application of animal breeding concepts in the improvement of livestock	

Teaching & Learning Methods

Learning Outcomes: Upon successful completion of this course, students will be able to
1. To understand concepts of genetic constitution of a population and the forces behind the changes in gene frequencies.
2. To differentiate between gene and genotype frequencies.
3. To understand the types of gene action.
4. To understand that selection and animal improvement stems from genetic variation between individuals.
5. To be able to breakdown the phenotypic variation to its genetic and environmental components as well as their interaction.

Useful Resources

Course Content		
Week	Topics	Chapter in Text (handouts)
1-2	Part I Animal Breeding from Top Down Introduction to Animal Breeding Traits, Phenotypes and Genotypes How Animal Populations Improved	
3-5	Part II Animal Breeding From Bottom Up Mendelian Inheritance Genetic Constitution of A population Types of Gene Action	

Inbreeding and Inbreeding Coefficient	
6-13	Part III Selection of Simply Inherited Traits The Genetic Model for Quantitative Traits Statistics and Their Application to Quantitative Traits Heritability and Repeatability Factors Affecting the Rate of Genetic Change Genetic Prediction Multiple-Trait Selection
14-16	Part IV Mating Systems Random Mating Assortative Mating Inbreeding Outbreeding Crossbreeding Linebreeding

Additional Notes	
Assignments	Out of class assistance is available by contacting me in my office. I encourage any student to contact me if he/she experiences difficulty with the material or if additional information is desired. I am usually available during regular office hours.
Exams	No makeup test will be given for unexcused absence.
Cheating	
Attendance	Attendance is required and highly encouraged
Workload	
Graded Exams	
Participation	
Laboratory	
Projects	

Animal breeders analyze the data to estimate the breeding values of individual animals in a population using statistical linear models. Animals are ranked on the basis of the estimated breeding values (EBV), and the better animals are mated together, and the rest are culled (i.e. not allowed to mate).^Â Breeding strategies require an understanding of the biology of the species or the production system. These include. ^{â€¢} Age at first breeding (for males and females) This textbook contains teaching material on animal breeding and genetics for BSc students. The text book started as an initiative of the Dutch Universities for Applied (Agricultural) Sciences. The textbook is made available by the Animal Breeding and Genomics Centre (ABGC) of Wageningen UR (University and Research Centre) . It is written by two animal