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**Department of Animal Resources**

**College of Agriculture**

**University of Salahaddin-Erbil**

**Subject: Animal breeding**

**Course Book – (Year 3)**

**Lecturer's name: Haval Ismail Aziz and kanyaw Ismail**

**Academic Year: 2016/2017**

**Course Book**

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| **1. Course name** | **Animal breeding**  |
| **2. Lecturer in charge** | **Mr. Haval Ismail and Mrs. Kanyaw Ismail** |
| **3. Department/ College** | **Animal Resources/Agriculture**  |
| **4. Contact** | **e-mail:haval22@yahoo.com****Tel:0750 4671223****e-mail:Kanyaw.mahmud@su.edu.krd****Tel:07504899373** |
| **5. Time (in hours) per week**  | **Theory: 2 hours****Practical: 3 hours** |
| **6. Office hours** | **42hours**  |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | EDUCATIONMr.Haval Ismail**B.SC :2002 / Animal Resource / Salahaddin University.****M.SC :2009 / Animal breeding / Salahaddin University.** **1-Effect of Breed and Some Environmental Fixed Factors on Milk Yield in Commercial Flocks (2009) ( Msc). Published 2 researches.** Mrs. kanyaw Ismail**B.SC :2007 / Animal Resource / Salahaddin University.****M.SC :2013 / Animal breeding / Dhock University.** **Acomparrative study on growth ,carcass traits and tissue distribution of awassi and hamdani lambs (2013) (Msc).****Published 2 researches.** |
| **9. Keywords** | **A statistic ,genetic , Gene frequency, *Factor effecting gene frequency*, Heritability, In breeding and out breeding, Selection** |
| **10. Course overview: Animal Breeding**  There are two fundamental questions faced by animal breeders. The first asks: **“What is the best animal?”** Is the best Labrador the one with show-winning conformation or the one with exceptional retrieving instinct? Is the best dairy cow the one that gives the most milk; the one with the best feet, legs and udder support; or the one that combines performance in these traits in some optimal way? These are matters of intense debate among breeders, and, in truth, no one has all the answers. The question is an important one, however, because the answers determine the desired direction of genetic change for breeding organizations and people keeping farm or companion animals. The second question asks, “**How do you breed animals so that their descendants will be, if not “best”, at least better than today’s animals?**. In other words, how can we genetically improve animal populations? This question involves genetic principles and animal breeding technology, and is the subject of this course. |
| **11. Course objective:**The course of Animal Breeding1-Robert Bake wella- Like produces like or the likeness of some ancestorb- Inbreeding produces prepotency and refinement.C-Breed the best to the best.2- What is the best animal?3- Breed Associations4-Mendel’s laws of  |
| **12. Student's obligation**The role of students and their obligations throughout the academic year :1-the attendance and completion of all tests, exams from all student2-doing 1 monthly examination3-doing 6 daily examination  |
| **13. Forms of teaching**1-Data show (power point) 2- White board |
| **14. Assessment scheme**Monthly examination %15practical examinationFinal examination %20 practical examination |
| **15. Student learning outcome:**Upon successful completion of this course, students will be able to1. 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 |
| **16. Course Reading List and References‌:**1- Applied Animal Breeding and Gene (2013)2-Lecture notes prepared by(Based on Bijma and van Arendonk, 2004)3-Introduction to Quantitative genetics (Falconer, 1989) |
| **17. The Topics:** | **Lecturer's name** |
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| **18. Practical Topics (If there is any)** | **Lecturer's name** |
| **Course book on animal breeding****statistics and their application in Animal breeding** 1-Probability: The probability of event (A) is the number of way event (A) can occur divided by the total number of possible outcomes.2-Combination 3-correlation 4-regretion **Cell division**There are two types of division:1-Mitosis 2-meiosisMendel's law of inheritance The basic principles of geneticsType of gene action/1-Additive effect 2-Dominant effect 3-Epistatic effectLinkage and crossing over**Gene frequency*** Random mating
* Hardy- weinberg law

***Factor effecting gene frequency***1-mutation 2-migration3- selection4-chance or(random drift)**(Heritability (h2*** 1-heritability in narrow sense
* 2-Heritability in the broad sinse

**Method of estimating heritability*** *1-slection experiment*

2- *likeness of relative****s***Repeatability**The relationship coefficient****Mating system**- In breedingb- Line breedingc- Out breeding**d- Cross-breeding in practice**e- Gradingf- Back crossingg- Hybrid vigor or heterosis**Selection**There are two types of selection1-naturale selection2-arificial selection**Types of selection according to multiple trait** 1-tandem selection 2-independent calling levels3-selection indexSelection index is most important it refers to | **Mr.Haval Ismail 3hours** **19/2/2017****Mr.Haval Ismail 3hours** **26/2/2017****Mr.Haval Ismail**3 hours2/4/2017**Mr.Haval Ismail** 3 hours9/4/2017**Mr.Haval Ismail** 3 hours16/4/2017**Mr.Haval Ismail** 3hours23/4/2017**Mrs. Kanyaw Ismail**3 hours30/5/2016**Mrs. Kanyaw Ismail**3 hours7/5/2017**Mrs. Kanyaw Ismail** 3 hours14/5/2017**Mrs Kanyaw Ismail**3 hours21/5/2017**Mrs. Kanyaw Ismail** 3 hours28/5/2017 |
| 19**. Examinations:****1-Direct - some examples**: Q1/ - Define the following : Out breeding , mutation, Random mating, selection index , Generation length Q2 /Selection index for three traits X1,X2 and X3 if b1=3, b2=1, b3=1.5 We have number of animal A,B,C

|  |  |  |  |
| --- | --- | --- | --- |
| Animal | X1 | X2 | X3 |
| A | 15 | 25 | 18 |
| B | 20 | 10 | 15 |
| C | 12 | 14 | 17 |

Calculate the best choice of the animal by Selection index 2- In direct**- some examples**:  Q1/Explain the type of gene action Q2/list the Types of selection according to the degree of dominance |
| **20. Extra notes:**Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks. |
| **21. Peer reviewپێداچوونه‌وه‌ی هاوه‌ڵ** This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌  |