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***University of Raparin***

***Department of Animal Resource***

***Stage: Fourth***

**Course Book of**

**Poultry Breeding**

**Quality assurance of animal recourse**

**2018 - 2019**

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| **First Semester** | | | | | Course Name |
| **Mr. Mohsin Ali Ahmad** | | | | | Lecturer Name |
| ×🞎 | **Practice:** | ×🞎 | | **Theory:** | Type of Course |
| **2** | | | **Theory:** | | Unit |
| **1** | | | **Practice:** | |
| **2018/10/01- 2018/12/30** | | | | | Duration of course |
| **2 hours for theory 3 h practical GA 3 h practical GB** | | | | | No of hours /week |
| **Weekly Assignments(quiz), activity at classroom, mid-term and final exam** | | | | | Course assessment |
| **Phone No. +964 7504935099** | | | | | Contact to Lecturer |
| **E-mail: agronomist80@gmail.com** | | | | |
| **Nihayat Ibrahim** | | | | | Quality assurance coordinator name |
| **Phone No.** | | | | | Contact to Quality assurance coordinator |
| **E-mail: ar.qualityassurance@raparinuni.org** | | | | |

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| **Course overview** |
| 1. Couse overview:   The Poultry Breeding knowledge is source of increasing of egg and broiler production naturally , today selection better chicken and crossing with local chicken to improvement of chicken meat and egg number to need study poultry breeding theory and practically to how genetically characterization of genotypes of character and how to make these character convert to mathematic numbers information is Essential for proving our research and understanding of biology absolutely , animal and plant productivity, genetic diseases, molecular science and so, the poultry breeding is Conjunction installment for modern Science which includes: genetic engineering, molecular biology and molecular genetics and their techniques . |

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| **Course Reading List and references** |
| **Key references** |
| * Meyyan, R.P. 2011. Genetics population. Fifth edition, SARAS publication, India. * Singh, B.D. 2010. Genetics. Second Edition, Times printographic, New Delhi-India. * Verma, P.S.2009.Cell Biolgy, Genetics, Molecular Biology, Evolution and Eclogy. S. Chand & company LTD., New Delhi-India. * Griffiths, Anthony J.F. 2005. Introduction to Poultry Genetic Analysis. Eighth Edition, W.H. Freeman and company, New York-USA.   Klug, William S. 2002. Essential of Poultry Genetics Breeding. Fifth Edition, Pearson Prentic Hall, UK. |

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| **Course contents of Lectures** | |
| **Weeks** | **The topics** |
| Week 1 | **Theory of Origen of the fowl and domestication**  **Chromosome Morphology**  **Gametogenesis** |
| Week 2 | **Gene interaction; allelic gen interaction and non allelic gene intraction** |
| Week 3 | **Sex chromosome**  **Sex Determination**  **Sex-linked inheritance** |
| Week 4 | **The lethal genes:**  **Obligate lethal genes**  **Facultative lethal genes** |
| Week 5 | **Inheritance of skin and coloration and plumage characteristics**  **Inheritance the color of eggs**  **Plumage characteristics**  **Variation in the structure of feathers** |
| Week 6 | **Inheritance of comb shape and feet distortions**  **Abnormalities of Sprs** |
| Week 7 | **Gene frequency** |
| Week 8 | **Hardy –Wenberg law, test the equilibrium** |
| Week 9 | **Factor affecting gene frequency**  **Mutation and migration** |
| Week 10 | **Selection , chance(random drift)**  **Multiple alleles**  **Average gene effect.** |
| Week 11 | **The variance components**  **Relationship between relatives** |
| Week 12 | **Estimation of heritability :**   1. **Selection experiment** 2. **Likeness of relatives** 3. **Half sibs** 4. **Parent-offspring means** |
| Week 13 | **Regression analysis** |
| Week 14 | **Repeatability and genetic parameter** |
| Week15 | **Mating system** |

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| **Course Contents of Practical Parts** | |
| **Weeks** | **Lab. Title** |
| Week 1 | Ancestors of the chicken, Mendlian lows and Examples trainings |
| Week 2 | Types of epistasis and example training |
| Week 3 | Gene frequency Training |
| Week 4 | Relation shape |
| Week 5 | Hardey-Weinberg Law training |
| Week 6 | The variance components.  Relationship between relatives |
| Week 7 | Type of dominance. |
| Week 8 | Sex chromosome.  Sex determination.  Sex linked inheritance |
| Week 9 | Selection |
| Week 10 | Estimation of heritability:   1. Selection experiments. 2. Likeness of relatives. 3. Half sibs.   Full sibs |
| Week 11 | The variance components.  Relationship between relatives |
| Week 12 | Selection  Chance (random drift) |
| Week 13 | Multiple alleles.  Average gene effect |
| Week 14 | Regression Analysis:  Intra-sire regression of offspring on dam. |
| Week15 | Parent-offspring means.  Genetic parameters |

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| **Question and answer example**  **Sample of questions in Poultry Breeding – Animal Resources Department**  **Q1. Define: Melanin, Albinism, Silky plumage, Non-recurrent mutation, Pencilling feather, Double Spur, Heritability, Heterosis, and Average effect of gene?**  **Q2. Fill in the blank with the suitable word:**  **a. The origin of recent domestic fowl is ………… ………… .**  **Q3. Answer the following:**   1. **Draw chart to explain fertilization?**   **b. There are two theories to have different breeds, what are they? Explain one of them?**  **Q4. a. Classify the fowl around the world according to their class? List the breeds of each class?**  **b. Explain the economic useful of Barred plumage trait with showing the mating to produce F1 and F2?**  **Q5. What will be the results of F1 and F2 from mating fowls with Pea and Rose comb?Q6. List the properties of Normal Distribution?**  **Q6. What do you know about?**  **a. The economic useful of silver and gold plumage?**  **Q7. Calculate the heritability (h2) from the following data recorded on sires and their progenies weighted at 8-weeks of age:**  **Q8. In a trial using nested design, the results of Analysis of Variance and Covariance of body weight of chicks at 4 and 8 weeks of age were:**  **Source of Variation Mean Squares and Mean Cross Products**  **Body weight at 4-weeks Body weight at**  **4 \* 8 weeks Body weight at 8-weeks**  **Sires 302.1 109.15 616.0**  **Dams 209.36 83.26 481.3**  **Progeny 118.00 47.48 350.6**  **K1=K2=13, K3=20**  **Calculate h2 for each trait, and genetic (rg), Phenotypic (rp), and environmental correlations (rE) between the two traits?**  **Q9. If you have a flock of local strain produced 18 eggs as a monthly average and crossed with exotic strain produce 24 eggs, their progeny produce 23 eggs. Calculate the heterosis, what is the type of heterosis?**  **Q10. Calculate RAB, RCD, RCG, REG, FC, FD and FE from the following chart:**  **A C**  **G E**  **B D** |