#### Course Title: Animal Genetic Improvement

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| **University** | **Benha** |
| **Faculty** | **Faculty of Agriculture** |
| **COURSE SPECIFICATIONS:** | |
| Program of which the course is given | Agricultural Biotechnology |
| Major or Minor element of Program |  |
| Departments offering the Program | Animal Production |
| Department offering the course | Animal Production |
| Academic year / Level | 2014-2015 |
| Date of specification approval |  |

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| **A- BASIC INFORMATION** | |
| Title | Animal Genetic Improvement |
| Code | AP0307 |
| Credit Hours | 4 Hours / week |
| Lecture | 2 Hours / week |
| Practical | 2 Hours / week |
| Total: | 56 Hours / semester |

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| **B- PROFESSIONAL INFORMATION** |
| **1 – OVERALL AIMS OF COURSE** |
| * To know the different methods and approaches used in the breeding programs in farm animals. * To know the different mating systems used in animal and poultry populations. * To define ways of selection in animals and poultry. |

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| **2 – Intended Learning Outcomes of Course (ILOs)** |
| **A. Knowledge and Understanding:** |
| ***By the end of the course, students should:***   * Understanding the different methods to estimate the breeding values of animals and using them in the selection process. * Understanding the difference between sire and animal models. * Knowing the different approaches of crossbreeding in animals and poultry. |

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| B. Intellectual Skills: |
| ***Successful completion of this course will allow students to:***   * Inversing matrices with different dimensions 2×2 and 3×3. * Estimating the genetic merit of the animals to select parents of the next generation. * Understanding the different ways to synthetize new lines of animals and poultry. |

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| C. Professional and Practical Skills: |
| * Analysis of experimental data from the faculty farm using the new computer software’s. * Design genetic improvement program and its application in animals and poultry. |

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| D. General and Transferable Skills: |
| * Working within teamwork. * Using new computer applications. |

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| 3. CONTENTS | | | |
| **Topic** | **No. of hours** | **Lectures** | **Practical** |
| Inverse of additive relationship matrix. | 8 | 2 | 2 |
| Genetic evaluation of farm animals. | 4 | 1 | 1 |
| Estimation of breeding value from animal’s records or relatives information. | 8 | 2 | 2 |
| Estimation of Best Linear Unbiased Prediction (BLUP). | 8 | 2 | 2 |
| Sire models and Animal models. | 8 | 2 | 2 |
| Selection programs. | 8 | 2 | 2 |
| Crossbreeding programs in farm animals. | 8 | 2 | 2 |
| Synthesizing new breeds and lines. | 4 | 1 | 1 |

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| 4. TEACHING AND LEARNING METHODS |
| 1. The main subject areas are covered in the lectures (see syllabus Plan). 2. Several student seminar sessions give the opportunity for students to bring questions or discuss any aspects of the course with the tutor. 3. Students are given a topic to research in small groups which they report as an oral presentation. Collective feedback on the strengths and weaknesses of the presentations are provided. |

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| 5. STUDENT ASSESSMENT METHODS |
| ***Students will be evaluated by attendance, fulfillment and effort in exercises and presentations, and examination grades:***  1) Laboratory work: to assess the ability of students to understand and perform small laboratory experiments. |

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| 6. ASSESSMENT SCHEDULE | | |
| No | Assessment | **Week No.** |
| 1 | Periodical exam | 4, 8, 12 |
| 2 | Practical exam | 13 |
| 3 | Oral exam | 13 |
| 4 | Final exam | 14 |

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| 7. WEIGHTING OF ASSESSMENT | | |
| No | Assessment | **%** |
| 1 | Periodical exam | 15% |
| 2 | Practical exam | 15% |
| 3 | Oral exam | 10 % |
| 4 | Final exam | 60 % |
| TOTAL | | 100 % |

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| 8. LIST OF REFERENCES |
| Je Nichols 2006. Livestock Improvement. Read Books, pp 224 pages.  Khalil, M.H. 2007. A refereed book titles “Principles of Animal Genetics and Breeding” published by Qassim University, Saudi Arabia, 546 pages.  Jay L. Lush 2008. Animal Breeding Plans. Orchard Press, pp 444 pages. |

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| 9. FACILITIES REQUIRED FOR TEACHING AND LEARNING |
| 1. Teaching aids/ materials: e.g. boards – overhead projector – data-show projector – stationary.. etc. 2. Teaching room/hall. 3. Computers. 4. Facilities for site visits etc., which are necessary for teaching the course. |

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| **Course Coordinators:** | **Prof. Dr. Maher Khalil** |
| **Date: / / 2015** | |