Course Title: Animal Biotechnology

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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 | 2015-2016  |
| Date of specification approval |  |

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| **A- BASIC INFORMATION**  |
| Title  | Animal Biotechnology |
| Code | AP0305 |
| 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** |
| 1. To know biotechnology and advances in animal breeding, health and nutrition.
2. To covers organ-transplanting which used in animal reproduction.
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| **2 – Intended Learning Outcomes of Course (ILOs)** |
| **A. Knowledge and Understanding:** |
| ***By the end of the course, students should:***1. Understanding the different techniques and approaches of molecular genetics.
2. Understanding the inclusion of the new biotechnology tools in animal breeding programs.
3. Knowing the different advances in animal reproduction and Genetic Engineering.
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| B. Intellectual Skills: |
| ***Successful completion of this course will allow students to:***1. How to collect semen from animals and poultry.
2. Knowing the different methods to evaluate the semen and ova quality.
3. How to isolate and DNA and RNA from different animal’s tissues.
4. Knowing the different ways to synchronize the estrous in animals.
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| C. Professional and Practical Skills: |
| 1. Collection of the semen from males of animals and poultry.
2. Using the Artificial Insemination (AI).
3. Using the Multiple Ovulation and Embryo Transfer (MOET) in dairy cattle, sheep and goats.
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| D. General and Transferable Skills: |
| 1. Working within teamwork.
2. Using new computer applications.
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| 3. CONTENTS |
| **Topic** | **No. of hours** | **Lectures** | **Practical** |
| Introduction to immune system, type of immunity. | 4 | 1 | 1 |
| Cells, tissues and organs of immune system. | 8 | 2 | 2 |
| Immunoglobulin.  | 4 | 1 | 1 |
| Genetic markers, gene mutation, genetic maps. | 8 | 2 | 2 |
| Gene cloning, transfer and expression of induced genes.  | 8 | 2 | 2 |
| Introduction to transgenic-animal techniques. | 4 | 1 | 1 |
| Artificial Insemination. | 4 | 1 | 1 |
| Embryo transfer. | 4 | 1 | 1 |
| Semen Sexing. | 4 | 1 | 1 |
| Cloning. | 4 | 1 | 1 |
| Genetic Engineering.  | 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 |
| Hafez, E.S.E. and Hafez, B. 2000. Reproduction in farm animals, Edition, Lea and Febiger, Philadelphia, USA, pp 509 pages.Houdebine, L. 2003. Animal trans-genesis and cloning. John W. Sons Inc., NY, USA. Pp 220 pages.Mair W. M. and Aggrey, S.E. 2003. Poultry Genetics, Breeding and Biotechnology. CABI Publishing Home, Wallingford, UK.Srivastava 2005. Animal Biotechnology.Oxford & IBH Publishing Company Pvt.Limited, pp 457 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** |