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**Department of Animal resource**

**College of Agriculture**

**Salahhadin University-Erbil**

**Subject: Animal Biotechnology practical**

**Course Book: 2**

**Lecturer's name: MSc. Mohsin Ali Ahmad**

 **MSc. Hemin H. Ali**

**Academic Year: 2018/2019**

**Course Book**

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| **Course name** | **Year Course**  |
| **Lecturer in charge** | **Mohsin Ali Ahmad** |
| **Department/ College** | **Department of Animal Resources College of Agriculture** |
| **Contact** | **e-mail:** agronomist80@gmail.com**Tel: 07504935099** |
| **Time (in hours) per week** | **Practical: 3**  |
| **Office hours** | **2 hours** |
| **Course Description:** This syllabus is for 4th stage of Animal Resources Dept. which include: the Practical of biotechnology, Introduction to Practical of molecular genetics Applications ; solution Buffers, glass and plastic ware, DNA extraction, Polymerase Chain Reaction(PCR), restriction site and restriction enzyme, sequencing, Types of chromatography, How detection of Genetically Modify Organisms (GMO) and types of Enzyme Linked Immune Sorbent Assay (ELISA) All lecture will be accumulated in 8 parts and each part is full explanation with diagram and practice for better understanding of student during of study.  |
| **Course objective:**Upon completion of this course, the student will be able to describe:1. Somewhat Biotech tools and Buffer solutions preparation
2. They will be understood DNA extortion in animal tissues
3. They will be took information about Gel electrophoresis
4. Understanding of Genotyping
5. Understanding of Chromatography and its types
6. The students will be understanding of GMO
7. They will be took information about types of ELISA
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| **Student's obligation**. The students should be obligated attendance and completion of all tests, exams, quizzes, assignments. |
| **Forms of teaching**This subject somewhat new and complex for our students, we try make our students full understanding by using of power point Data show, white board, video even practice testing. |
| **Assessment scheme**له‌م وانه‌يه‌ جۆره‌ها پێوه‌ر هه‌ن بۆ دياريكردني ئاستي قوتابيان و هه‌ڵسه‌نگاندنيان، كه‌ يه‌كێكيان تاقيكردنه‌وه‌ي مانگانه‌يه‌ كه‌ له‌لايه‌ن قوتابيه‌كانه‌وه‌ ئه‌نجامده‌درێت كه‌ بو وانةى براكتيكى وة بو وانةى تيورى 25 10 ده‌ره‌جه‌ي له‌ كۆششي ساڵانه‌ بۆ هه‌ژمارده‌كرێت، وه‌ ئه‌وه‌ي ئه‌مێنێته‌وه‌ كه‌ 3 ده‌ره‌جه‌ي كۆششي ساڵانه‌يه‌ هه‌ژمارده‌كرێت له‌سه‌ر كويزاتي حه‌فتانه‌ و ڕاپۆرتي زانستي پێشكه‌شكراوه‌، به‌مه‌ش كۆي گشتي كۆششي ساڵانه‌ ده‌بێته‌ 35 ده‌ره‌جه‌ وه‌ك و بابه‌تێكي پڕاكتيكي تيؤرى .‌ |
| **Student learning outcome:**له‌ماوه‌ي ئه‌م كۆڕسه‌دا قوتابيان له‌ڕێگه‌ي فێربوني ئه‌م بابه‌ته‌ ئاشنا ده‌بن به‌ ناسيني ئةو ئاميرانةى كة لة كاتى براكتيكى بةكار ديت و هةروةها زانيارى ئةوتؤ دةدريت بة قوتابيان كةوا ثشت بة خويان ببةستن كاري نمونةيى بة شيوةيةكى هةندسى و زانستى  |
| **Course Reading List and References‌:**1. Internet.
2. Biotechnology, Vama, Jan 1, 2011 – Practical part, Newdelhi  - 536 pages
3. Biochemistry of molecular biology, Kumar A. D, Sara publication(2010), Newdelhi - 464 pages
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| **Practical Topics**  | **Lecturer's name** |
| **1** | Lab Equipment, tools and preparation of Buffer Solutions | MSc. Hemin H. Ali |
| **2** | DNA Extraction  | MSc. Hemin H. Ali |
| **3** | Gel electrophoresis | MSc. Hemin H. Ali |
| **4** | Restriction site and Restriction Enzymes | MSc. Hemin H. Ali |
| **5** | Examination | MSc. Hemin H. Ali |
| **6** | Polymerase Chain Reaction (PCR) | MSc. Mohsin Ali Ahmad |
| **7** | Types of ELISA | MSc. Mohsin Ali Ahmad |
| **8** | HPLC Chromatography | MSc. Mohsin Ali Ahmad |
| **9** | Detection of GMO | MSc. Mohsin Ali Ahmad |
| **10** | Examination | MSc. Mohsin Ali Ahmad |
| **Examinations:**Definitions : example : Define the following terms?  Diagrams Draw the following diagrams? DNA amplifying Curve steps, HPLC device  Functions: Write the functions of following items? Micropipette, Thermocycles, master mixTypes and explain Write down all types of ELISA and Explain only two of them? |
| **Peer review: پێداچوونه‌وه‌ی 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* |