Republic of Iraq

The Ministry Of Higher Education

& Scientific Research

بسم الله الرحمن الرحيم

University: Diyala
College: Agriculture
Department: Field crops
Stage: 4st
Lecturer name: Nazar S. Ali
Qualification: PhD.
Place of work: Coll. Of Agriculture

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Course Instructor	**Nazar S. Ali** Gufran ali Hussien				
E-mail	nazaralzUhairy@uodiyala.edu.iq ghuffranali@uodiyala.edu.iq				
Title	Molecular genetics				
Course Coordinator	First Course				
Course Objective	Teaching students the basic concepts of molecular genetics and the most important means of applying them and their fields.				
Course Description	1- Molecular genetics examines how to provide genetic technology and use laboratory technology to protect genetic resources, as well as adopting and exploiting this technology in providing animal products as a tool for selecting productively distinguished animals. 2-Study the structure, expression and design of genes 3- Introducing the student to the concept of molecular genetics techniques 4- The student's ability to use genes and their engineering as a selection tool to suit society's need for food.				
Textbook	• Molecular Genetics, written by Dr. Abdul Hussein Al-Faisal, 1999, first Arabic edition - first edition. Ammaan Jordan. • Principles of genetic engineering, written by Dr. Ghaleb Al-Bakri, 1991, Ministry of Higher Education and Scientific Research - University of Basra.				
Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
	(20%)	(15%)	(5%)		(60%)

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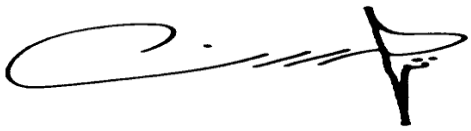
Course weekly Outline

week	Date	Topics Covered	Practical Part
1	1 st week	DNA synthesis	Identify the materials used in genetic studies and laboratory equipment used in genetic experiments.
2	2 nd week	DNA replication process	Presentation on the structure of genetic material
3	3 rd week	Genetic mutations and their types	Mechanism for creating artificial mutations
4	4 th week	DNA repair systems	Presentation on genetic material repair systems
5	5 th week	Gene expression	Methods for measuring gene expression
6	6 th week	Effective regulation of gene expression	Methods for measuring gene expression
7	7 th week	Principles of genetic engineering	Genetic engineering applications
8	8 th week	Enzymes that cut and join DNA molecules	Types of enzymes used in genetic engineering
9	9 th week	Types of vectors for DNA molecules	Study of the most important vectors used in genetic studies
10	10 th week	PCR technology	Identify the problem of the PCR device
11	11 th week	Cochlear reactions outside living systems	Mechanism of action and components of the PCR reaction
12	12 th week	Types of catarrhal reactions	Types of PCR reactions and their applications in the laboratory
13	13 th week	Basics of cationic reactions	Fundamentals of PCR reaction
14	14 th week	How to migrate a recombinant DNA sample	Electrical relay and its types
15	1 st week	Analyze the gel images and read the results	Mechanism for photographing and reading electrophoresis results



Instructor Signature
Ass. Prof. Nazar S. Ali
15/1/2025

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Prof.Dr. Raaed Ibrahim Khalil
15/1/2025