

Course Description Form

1. Course Name:	
Genetic Engineering	
2. Course Code:	
GEEN371	
3. Semester / Year:	
Second semester (Spring) / 2023-2024	
4. Description Preparation Date:	
1/2/2024	
5. Available Attendance Forms:	
Presence	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical hours + 3 practical hours (75 hours) / 3.5 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Tariq Zaid Ibrahim	
8. Course Objectives	
Theoretical <ul style="list-style-type: none"> - Enabling the student to understand and understand what is related to genetic engineering and its relationship to the food industry - Enabling the student to learn about the most important applications of genetic engineering in the field of food science - Making the student familiar with the most important methods of cloning the desired genetic genes - Making the student familiar with the most important vectors of genetic engineering - Enabling the student to understand and realize enzymes related to genetic engineering - Making the student familiarize himself with the most important classifications of restriction enzymes and their uses in the field of genetic engineering 	Practical <ul style="list-style-type: none"> - Enabling the student to work collaboratively to discover leadership skills - Enabling the student to identify the most important methods of preparing samples for DNA isolation - To familiarize the student with the most important methods of DNA isolation - To familiarize the student with the most important methods of separating cellular DNA - The student should know the mechanism for determining sequences on the DNA strand
9. Teaching and Learning Strategies	
Theoretical <ul style="list-style-type: none"> - Interactive lecture - Brainstorming - Dialogue and discussion - Assigning reports - Conducting monthly and daily examinations 	Practical <ul style="list-style-type: none"> - Assigning group work to reveal leadership skills - Assigning tasks and reporting for each experiment

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 3Practical	THEORETICAL a1: The student learns about the concept of genetic engineering and its areas of interest PRACTICAL b3 The student examines different samples to extract DNA	THEORETICAL The concept of genetic engineering and its areas of interest PRACTICAL Preparing samples to extract DNA from more than one sample	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
2	2Theoretical 3Practical	THEORETICAL c1 The student explains the concept of reproduction and translation PRACTICAL b4 The student discovers which methods are appropriate for extracting DNA from cell suspensions	THEORETICAL A general review of the topics of reproduction and translation PRACTICAL DNA extraction and methods for eliminating RNA and protein	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
3	2Theoretical 3Practical	THEORETICAL a2The student is familiar with the process of gene expression and ways to control it PRACTICAL a10The student identifies DNA separation factors using electrophoresis	THEORETICAL Gene expression and ways to control it PRACTICAL DNA separation by electrophoresis	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
4	2Theoretical 3Practical	THEORETICAL b1 The student judges the enzymes and their uses PRACTICAL a11The student determines DNA	THEORETICAL Restriction enzymes PRACTICAL Electrophoresis in a pulsed field	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks	Shortexams, assignments, discussions

		separation factors using pulsed field electrophoresis		and reports	
5	2Theoretical 3Practical	THEORETICAL c2The student masters the methods of drawing a constraint map PRACTICAL a12The student determines the factors for separating DNA using the gradient scanning electrophoresis method	theoretical Draw a constraint map PRACTICAL Gradient scanning electrophoresis	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
6	2Theoretical 3Practical	THEORETICAL a3 The student learns about the most important genetic engineering vectors (plasmids) PRACTICAL b5 The student distinguishes methods for detecting DNA fragments marked with radioactive materials	THEORETICAL Genetic engineering vectors (plasmids) PRACTICAL Detection of DNA fragments marked with radioactive materials	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
7	2Theoretical 3Practical	THEORETICAL a4The student learns about the most important genetic engineering vectors (viruses, cosmids, and vismids) PRACTICAL b6The student distinguishes methods for isolating plasmid DNA	THEORETICAL Other genetic engineering vectors (viruses, cosmids, and vismids) PRACTICAL Plasmid DNA isolation	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
8	2Theoretical 3Practical	THEORETICAL c3 The student explains the most	THEORETICAL Gene expression vectors	THEORETICAL audio methods, Writing on the	Shortexams, assignments, discussions

		important gene expression vectors and their products PRACTICAL b7 The student reveals the most important methods of purifying plasmid DNA	PRACTICAL Plasmid DNA purification	board Direct dialogue style PRACTICAL Assigning tasks and reports	
9	2Theoretical 3Practical	THEORETICAL a5 The student will be familiar with the most important ways to benefit from the gene library PRACTICAL b8The student distinguishes the details of the polymerase chain reaction method	THEORETICAL Gene library and selecting the desired gene PRACTICAL PCR technology	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
10	2Theoretical 3Practical	THEORETICAL a6 The student is familiar with the most important ways to benefit from the gene library PRACTICAL b9 The student discovers the most important applications of polymerase chain reaction	THEORETICAL Gene library and selecting the desired gene PRACTICAL PCR applications	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
11	2Theoretical 3Practical	THEORETICAL a7 The student learns about methods of transferring DNA to recipient cells PRACTICAL c4The student tests methods for determining sequences of nitrogenous bases	THEORETICAL Transfer of cloned DNA to recipient cells PRACTICAL Determine the sequences of nitrogenous bases	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
12	2Theoretical 3Practical	THEORETICAL b2The student	THEORETICAL Detection of	THEORETICAL audio methods,	Shortexams, assignments,

		judges the transformed cells and their acquisition of new genetic characteristics PRACTICAL c5 The student tests methods for determining sequences of nitrogenous bases	transformed cells PRACTICAL Determine the sequences of nitrogenous bases	Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	discussions
13	2Theoretical 3Practical	THEORETICAL a8 The student learns about methods of genetically engineering plants PRACTICAL c6 The student experiences the use of Bioinformatics	THEORETICAL Genetically engineering plants PRACTICAL Bioinformatics	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
14	2Theoretical 3Practical	THEORETICAL a9 The student learns about methods of genetically engineering bacteria PRACTICAL c7 The student experiences the use of Bioinformatics	THEORETICAL Genetically engineering bacteria PRACTICAL Bioinformatics and genetic engineering applications	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
15	2Theoretical 3Practical	THEORETICAL e1 The student appreciates the ethics of genetic manipulation PRACTICAL c8 The student tries to use the gene bank to determine lineages	THEORETICAL Gene manipulation and the controversy surrounding genetic engineering PRACTICAL Use of gene bank	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions

11. Course Evaluation

t	Evaluation methods	Evaluation date (one	Grade	Relative
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		week)		weight %
1	Final theoretical report + theoretical practical reports	Theoretical 15 weeks Practical 1-15 weeks	7theoretical + 6 practical	13%
2	Short test 1 Quiz	3 weeks	4theoretical + 2practical	6%
3	Midterm exam (theoretical and practical)	9 weeks	10theoretical + 5 practical	15%
4	Short test 2 Quiz	12 weeks	4 theoretical + 2 practical	6%
5	Final practical test	practical exams week	20	20%
6	Final theoretical exam	theoretical exams week	40	40%
			100	100

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Genetic engineering written by Dr. Hamza Ghaleb Al-Bakri - University of Baghdad
Main references (sources)	Genetic engineering written by Dr. Abdul Hussein Al-Faisal
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Gene Bank



Instructor of theoretical part

Dr. Tariq Zaid Ibrahim

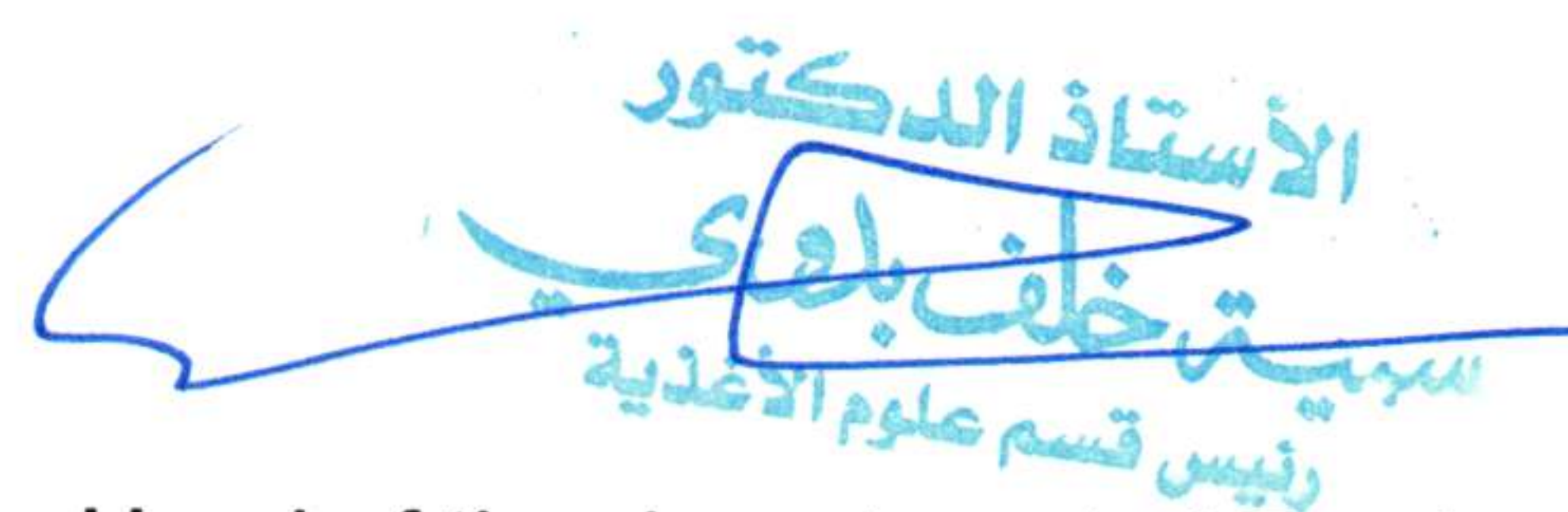


Instructor of practical part



Chairman of the scientific committee

Prof. Dr. Moafak mahmood ahmed



الأستاذ الدكتور
سوميا خلف بلوي
رئيس قسم علوم الأغذية

Head of the department of Food science

Prof. Dr. Sumyia kalaf badawi