Course Description Form

1. Course Name:
Biotechnology 1
2. Course Code:
BITE467
3. Semester / Year:
First semester (fall) / 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 Nowaf Khalil and Enas Mounir Abdel Majeed
8. Course Objectives

Theoretical	Practical
- Enabling the student to know the definition of l technologies and industrial microbiology - Introducing the student to methods of developir and preserving industrial microorganisms - Introducing the student to methods of gene engineering and methods of increasing productive capacity of organisms	- Enabling the student to isolate microorganis from their sources, preserve them, and test th production capacity
9. Teaching and Learning Strategies	
Theoretical - Interactive lecture - Brainstorming - Dialogue and discussion - Assigning reports -Conducting monthly and daily examinations	Practical Interactive lecture -Discussion, dialogue, brainstorming -Conducting laboratory experiments -Assigning reports -Conducting daily and monthly examinations

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 3Practical	Theoretical:a1 The student learns the meaning of biotechnology And sources of biolo	THEORETICAL Definition of biotechnology Cell types and sourc of microorganisms	THEORETICAL audio methods, Writing on the board Direct dialogue style	Shortexams, assignments, discussions

		practical a1 The student gets know Biotechnology scien And its importance i life Industrial microscopyit	practical biotechnology And microbiology	PRACTICAL Assigning tasks and reports	
2	2Theoretical 3Practical	Theoretical:c1 The student learns abou the type of nutrients needed for the grow of microorganisms a the environment, su as temperature and pH. practical : c1 The student will be able to prepare the vital vaccine	THEORETICAL Nutritional and environmental requirements for th growth of microorganisms PRACTICAL Biovaccine	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
3	2Theoretical 3Practical	THEORETICAL: c2 The student learns about the necessary metabolic pathways that microorganism take to produce ene Practical : c2 The student gets to know Methods of preservation and th benefits of each Of which	THEORETICAL Metabolic pathways microorganisms practical Different methods o preservation	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 learns about the fermentation device its parts, and ways t work with it Practical : c3 The student was not able to run Lyophilization devi and learning to preserve samples w it	Theoretical: fermen practical Preservation lyophilization	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions

5	2Theoretical 3Practical	Theoretical: c3 The student learns abou development metho and methods, such a the continuous method, meals, and nutrition Practical : c4 The student is able t identify mutation events Using UV rays	Theoretical: Development metho used in biotechnolog practical Creating mutatio using ultravio radiation	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
6	2Theoretical 3Practical	Theoretical: d1 The student learns abou methods of genetic engineering for industrial microorganisms, cutting and plasmid enzymes, and plasmids. Practical : b1 The student is able t operate the ferment and become familiar with it On its parts	Theoretical: Genetic engineering of microorganisms practical Fermenter device	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
7	2Theoretical 3Practical	Theoretical: b2The student learns abou hybridization, mutation, and protoplast fusion Practical : b2 The student will able to manufactu ethanol in laboratory	Theoretical: Genetic improvement of artificial microorganisms practical Manufacture of ethanolic alcohol Laboratory	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
8	2Theoretical 3Practical	Theoretical: a2 The student learns abou the types of artificia microbial vaccines a methods of producir and activating them Practical : b3 The student will able to manufactu	Theoretical: Industr microbial vaccine production practical Manufacture of ethanolic alcohol Laboratory	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions

		ethanol in laboratory			
9	2Theoretical 3Practical	Theoretical: d2 The student learns abou the mechanism of dealing with compounds and methods of chemica and physical separation Practical : c5 Preparing reports a discussing previc experiences	Theoretical: methods for separating biotechnology products practical discussion	**THEORETICAL** audio methods, Writing on the board Direct dialogue style **PRACTICAL** Assigning tasks and reports	Shortexams, assignments, discussions
10	2Theoretical 3Practical	Theoretical: a3 The student learns abou methods of preservi artificial microorganisms and the duration of their preservation, such a freezing, cooling, lyophilization, etc. Practical : e1 The student will able to prepare manufacturing proc for yeast	Theoretical: Methods of preserving artific microorganisms practical Laboratory manufacturing bread yeast	**THEORETICAL** audio methods, Writing on the board Direct dialogue style **PRACTICAL** Assigning tasks and reports	Shortexams, assignments, discussions
11	2Theoretical 3Practical	Theoretical: a4 The student learns abou the type of protein, how microorganism reproduce to be use as food materials for humans and animals and ways to develop them. Practical : e2 The student will able to prepare manufacturing proc for yeast	Theoretical: Single-c protein production practical The student will able to prepare manufacturing proc for yeast	**THEORETICAL** audio methods, Writing on the board Direct dialogue style **PRACTICAL** Assigning tasks and reports	Shortexams, assignments, discussions

12	2Theoretical 3Practical	Theoretical: d3 T student learns ab methods of prot separation a purification using g cycadics, a precipitation w solvents Practical : a2 Scientific visit	Theoretical: single-c protein separation practical Scientific visit	**THEORETICAL** audio methods, Writing on the board Direct dialogue style **PRACTICAL** Assigning tasks and reports	Shortexams, assignments, discussions
13	2Theoretical 3Practical	Theoretical: d4 The student learns abou the microorganisms that produce toxins and the type of toxin Practical : c6 The student is able separate bread yeas	Theoretical: Production of mycotoxins practical Separating a purifying bread yeas	**THEORETICAL** audio methods, Writing on the board Direct dialogue style **PRACTICAL** Assigning tasks and reports	Shortexams, assignments, discussions
14	2Theoretical 3Practical	Theoretical: b3 A comprehensive and quick review of all previous lectures is done Practical : c7 The student is able separate bread yeas	Theoretical: a comprehensive revi practical Separating a purifying bread yeas	**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 week)	Grade	Relative 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)	Biotechnology book (Dr. Fayez Al-Ani),

	Biotechnology book Dr. Khafaji flower
Main references (sources)	(Sources) Biotechnology Book (Dr. Fayez Al-Ani)
Recommended books and references (scientific journals, reports…)	references (scientific journals, reports....)
Electronic References, Websites	Electronic references, Internet sites, Research gat

Instructor of theoritical part	Instructor of practical part
Dr. Tariq Nawaf Khalil	Enas Mounir Abdel Majeed

Chairman of the scientific committee	Head of the department of Food science
Prof. Dr. Moafak mahmood ahmed	Prof. Dr. Sumaya khalaf badawi