



**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**

Academic Program and Course Description Guide

2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name:Wasit.....

Faculty/Institute:college of science.....

Scientific Department:Biology.....

Academic or Professional Program Name:

Final Certificate Name:

Academic System:

Description Preparation Date:

File Completion Date:

Signature: dr. Jameel Saad

Head of Department Name:

Date:

Signature: dr. Husain Taqi

Scientific Associate Name:

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:



Approval of the Dean

1. Program Vision

Program vision is written here as stated in the university's catalogue and website.

2. Program Mission

Program mission is written here as stated in the university's catalogue and website.

3. Program Objectives

General statements describing what the program or institution intends to achieve.

4. Program Accreditation

Does the program have program accreditation? And from which agency?

5. Other external influences

Is there a sponsor for the program?

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				
College Requirements				

Department Requirements				
Summer Training				
Other				

* This can include notes whether the course is basic or optional.

7. Program Description				
Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical

8. Expected learning outcomes of the program	
Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learning Outcomes 2	Learning Outcomes Statement 2
Learning Outcomes 3	Learning Outcomes Statement 3
Ethics	
Learning Outcomes 4	Learning Outcomes Statement 4
Learning Outcomes 5	Learning Outcomes Statement 5

9. Teaching and Learning Strategies
Teaching and learning strategies and methods adopted in the implementation of the program in general.

10. Evaluation methods
Implemented at all stages of the program in general.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program

State briefly the sources of information about the program.

14. Program Development Plan

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

Course Description Form

1. Course Name:						
2. Course Code:						
3. Semester / Year:						
4. Description Preparation Date:						
5. Available Attendance Forms:						
6. Number of Credit Hours (Total) / Number of Units (Total)						
7. Course administrator's name (mention all, if more than one name)						
Name:						
Email:						
8. Course Objectives						
Course Objectives				•	
				•	
				•	
9. Teaching and Learning Strategies						
Strategy						
10. Course Structure						
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method	

11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

عدد الوحدات	عدد الساعات الاسبوعية		الدرس باللغة الإنكليزية	الدرس باللغة العربية	ت
	العملي	النظري			
3	2	2	Biochemistry I	الكيمياء الحياتية 1	1
3	2	2	Entomology I	علم الحشرات العام	2
3	2	2	Microbiology I	احياء مجهرية عام 1	3
3	2	2	Plant Anatomy	تشريح نبات	4
3	2	2	Invertebrates	لافقریات	5
2	-	2	English Language2	لغة انكليزية 2	6
1	2	-		حاسبات	7
17	10	12		المجموع (22 ساعة)	

المرحلة الثانية - الفصل الثاني

عدد الوحدات	عدد الساعات الاسبوعية		الدرس باللغة الإنكليزية	الدرس باللغة العربية	ت
	العملي	النظري			
3	2	2	Biochemistry II	الكيمياء الحياتية 2	1
3	2	2	Entomology II	تصنيف حشرات	2
3	2	2	Microbiology II	احياء مجهرية عام 2	3
3	2	2	Plant Taxonomy	تصنيف نبات	4

3	2	2	Parasitology	طفيليات	5
3	2	2	Plant Groups	مجاميع نباتية	6
1	2	-		الحاسبات	7
19	14	12		المجموع (26 ساعة)	

المرحلة الثالثة الفصل الاول (فرع الاحياء المجهرية)

عدد الوحدات	عدد الساعات الاسبوعية		الدرس باللغة الإنكليزية	الدرس باللغة العربية	ت
	العملي	النظري			
3	2	2	Microbial Physiology	فسلجة احياء مجهرية	1
3	2	2	Immunology	علم المناعة	2
3	2	2	Soil microorganism	احياء مجهرية تربة	3
3	2	2	Mycology 1	علم الفطريات 1	4
3	2	2	Molecular Biology 1	1 علم الحياة الجزيئي	5
3	2	2		اختياري	6
2	-	2	English Language 3	لغة انكليزية 3	7
18	12	14		المجموع (26 ساعة)	

المرحلة الثالثة الفصل الثاني (فرع الاحياء المجهرية)

عدد الوحدات	عدد الساعات الاسبوعية		الدرس باللغة الإنكليزية	الدرس باللغة العربية	ت
	العملي	النظري			
3	2	2	Microbial pollution	تلوث مايكروبي	1
3	2	2	hematology	علم الدم	2
3	2	2	Industrial fermentation	تخميرات صناعية	3
3	2	2	Protozoa	ابتدائيات	4
3	2	2	Mycology 2	علم الفطريات 2	5
3	2	2	Molecular Biology 2	2 علم الحياة الجزيئي	6
3	2	2		اختياري	7
21	14	14		المجموع (28 ساعة)	

المرحلة الرابعة - الفصل الاول (فرع الاحياء المجهرية)

عدد الوحدات	عدد الساعات الاسبوعية		الدرس باللغة الإنكليزية	الدرس باللغة العربية	ت
	العملي	النظري			
1	-	1		فلسفة العلم ومنطق البحث العلمي	1
3	2	2	Pathogenic bacteria	بكتريا مرضية	2
3	2	2	Genetic engineering	هندسة وراثية	3
3	2	2	Food microbiology	احياء مجهرية غذائية	4
1	-	-	Research Project 1	مشروع بحث 1	5
3	2	2	Antibiotic	مضادات حيوية	6
3	2	2		اختياري ()	7
2		2	English Language 4	لغة انكليزية 4	8
19	12	13		المجموع	

المرحلة الرابعة - الفصل الثاني (فرع الاحياء المجهرية)

عدد الوحدات	عدد الساعات الاسبوعية		الدرس باللغة الإنكليزية	الدرس باللغة العربية	ت
	العملي	النظري			
3	2	2	Viruses	فيروسات	1
3	2	2	Biotechnology	التقانة الاحيائية	2
3	2	2	Microbial Genetics	وراثة احياء مجهرية	3
3	2	2	Industrial Microorganism	احياء مجهرية صناعية	4
1	-	-	Research Project 2	مشروع بحث 2	5
3	2	2	Microbial Ecology	بيئة احياء مجهرية	6
3	2	2		اختياري	7
19	14	12		المجموع (26 ساعة)	

ثانياً- فرع التقنيات الاحيائية

المفردات الدراسية:

يكون التخصص من المرحلة الثالثة ويدرس الطالب المفردات الدراسية التالية:-

المرحلة الثالثــــــــــــــــة الفصل الاول (فرع التقنيات الاحيائية)

عدد الوحدات	عدد الساعات الاسبوعية		الدرس باللغة الإنكليزية	الدرس باللغة العربية	ت
	العملي	النظري			
3	2	2	Molecular Biology 1	علم الحياة الجزيئي 1	1
3	2	2	Immunology	علم المناعة	2
3	2	2	Histology	علم الانسجة	3
3	2	2	Environmental Biotechnology	التقنيات الحيوية البيئية	4
3	2	2	Plant Biotechnology	التقنيات الحيوية النباتية	5
3	2	2	Genetic	الوراثة العامة	6
3	2	2	Mycology 1	(اختياري (فطريات 1	7
2	-	2	English Language 3	لغة انكليزية 3	8
21	14	14		المجموع (28 ساعة)	

المرحلة الثالثــــــــــــــــة الفصل الثاني (فرع التقنيات الاحيائية)

عدد الوحدات	عدد الساعات الاسبوعية		الدرس باللغة الإنكليزية	الدرس باللغة العربية	ت
	العملي	النظري			
3	2	2	Molecular Biology 2	علم الحياة الجزيئي 2	1
3	2	2	Hematology	علم الدم	2
3	2	2	Environmental pollution	تلوث بيئي	3
3	2	2	Tissue culture	زراعة انسجة	4
3	2	2	Animal physiology	فسلجة حيوان	5
3	2	2	Cytogenetic	الوراثة الخلوية	6
3	2	2		اختياري	7
21	14	14		المجموع (28 ساعة)	

المرحلة الرابعة - الفصل الاول (فرع التقنيات الاحيائية)

عدد الوحدات	عدد الساعات الاسبوعية		الدرس باللغة الإنكليزية	الدرس باللغة العربية	ت
	العملي	النظري			
1	-	1		فلسفة العلم ومنطق البحث العلمي 1	1
3	2	2	Genetic engineering 1	هندسة وراثية 1	2
3	2	2	Genital Biotechnology	تقانة احيائية تناسلية	3
2	2	-	Research Project 1	مشروع بحث 1	4
3	2	2	Microbial physiolog	فسلجة الاحياء المجهرية	5
3	2	2		اختياري	6
2	-	2	English Language 4	لغة انكليزية 4	
15	10	9		المجموع (19 ساعة)	

المرحلة الرابعة - الفصل الثاني (فرع التقنيات الاحيائية)

عدد الوحدات	عدد الساعات الاسبوعية		الدرس باللغة الإنكليزية	الدرس باللغة العربية	ت
	العملي	النظري			
3	2	2	Vaccines and viruses	علم الفايروسات واللقاحات	1
3	2	2	Genetic Engineering 2	هندسة وراثية 2	2
3	2	2	Nano biotechnology	تقانة احيائية نانوية	3
3	2	2	Industrial Microorganism	احياء مجهرية صناعية	4
1	-	-	Research Project 2	مشروع بحث 2	5
3	2	2	Endocrine	غدد صم	6
3	2	2		اختياري	7
19	14	12		المجموع (26 ساعة)	

Second class

Course Description Form

1. Course Name: biochemistry	
2. Course Code: Bio-215	
3. Semester / Year: semester	
4. Description Preparation Date: 20-3-2024	
5. Available Attendance Forms: weekly	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours (30 theoretical hours + 30 practical hours)	
7. Course administrator's name (mention all, if more than one name)	
Name: ahmed Mahdi Email: aalmyahi @uowasi t.edu.iq	
8. Course Objectives	
Course Objectives 1- He acquired a reasonable level of chemical knowledge commensurate with what is known among the various universities in the world, especially the reputable ones. 2- He must have an understanding of the basic topics in chemistry and their applications in the field of laboratories, with appropriate knowledge of the various chemistry topics. 3- He has good knowledge of the areas of using chemical methods in various fields of knowledge and the ability to diagnose the problems he faces and how to address them in order to be qualified to work in community institutions. 4- Outstanding students are eligible to complete their higher studies inside and outside the country. 5- He acquired a reasonable level of chemical knowledge commensurate with what is known among the various universities in the world, especially the reputable ones. 6- He must have an understanding of the basic topics in chemistry and their applications in the field of laboratories, with appropriate knowledge of the various chemistry topics.
9. Teaching and Learning Strategies	

Strategy	<p>1- Training students on how to identify biochemical compounds by focusing on medically relevant topics.</p> <p>A2 - Providing them with sufficient information to enable them to understand the vital interactions taking place in the human body at the molecular level.</p> <p>A3 - Conducting practical applications of metabolic processes in the human body.</p>
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Molecules and life - models of living cells - properties and functions of cell parts, water and solutions.	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and practical exam
2	4	Carbohydrates	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
3	4	Amino acids - types of amino acids- definition of proteins - functions of proteins - classification of proteins - structural structure of proteins.	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
4	4	Nucleotides and nucleic acids - functions of nucleotides - nitrogenous bases - nucleic acids (RNA & DNA).	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
5	4	Classification of fats - physical properties - chemical reactions - fats and oils - fatty acids - some fatty acids - neutral and phosphorylated fats - steroids and terpenes.	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and

6	4	Enzymes - Classification of enzymes - Enzymes as catalysts and influencing factors - Factors influencing enzyme effectiveness - Enzyme activators - Enzyme inhibitors	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
7	4	Vitamins - Classification of Vitamins - classification of vitamins - water-soluble vitamins - fat-soluble vitamins	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
8	4	Bioenergetics	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
9	4	Energy release and transfer	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
10	4	ATP & ADP, standard free energy	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
11	4	Biological oxidation	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
12	4	Metabolism of carbohydrates	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and

13	4	Metabolism of proteins	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
14	4	Metabolism of carbohydrates	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
15	4	Hormones, classification of hormones	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and

11. Course Evaluation					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)			Biochemistry-Kawla Ahmed Fleih		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Course Description Form

1. Course Name: biochemistry	
2. Course Code: Bio-215	
3. Semester / Year: semester	
4. Description Preparation Date: 20-3-2024	
5. Available Attendance Forms: weekly	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours (30 theoretical hours + 30 practical hours)	
7. Course administrator's name (mention all, if more than one name)	
Name: ahmed Mahdi Email: aalmyahi @uowasi t.edu.iq	
8. Course Objectives	
Course Objectives 1- He acquired a reasonable level of chemical knowledge commensurate with what is known among the various universities in the world, especially the reputable ones. 2- He must have an understanding of the basic topics in chemistry and their applications in the field of laboratories, with appropriate knowledge of the various chemistry topics. 3- He has good knowledge of the areas of using chemical methods in various fields of knowledge and the ability to diagnose the problems he faces and how to address them in order to be qualified to work in community institutions. 4- Outstanding students are eligible to complete their higher studies inside and outside the country. 5- He acquired a reasonable level of chemical knowledge commensurate with what is known among the various universities in the world, especially the reputable ones. 6- He must have an understanding of the basic topics in chemistry and their applications in the field of laboratories, with appropriate knowledge of the various chemistry topics.
9. Teaching and Learning Strategies	

Strategy	<p>1- Training students on how to identify biochemical compounds by focusing on medically relevant topics.</p> <p>A2 - Providing them with sufficient information to enable them to understand the vital interactions taking place in the human body at the molecular level.</p> <p>A3 - Conducting practical applications of metabolic processes in the human body.</p>
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10. Course Structure

WW	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Molecules and life - models of living cells - properties and functions of cell parts, water and solutions.	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and practical exam
2	4	Carbohydrates	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
3	4	Amino acids - types of amino acids- definition of proteins - functions of proteins - classification of proteins - structural structure of proteins.	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
4	4	Nucleotides and nucleic acids - functions of nucleotides - nitrogenous bases - nucleic acids (RNA & DNA).	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
5	4	Classification of fats - physical properties - chemical reactions - fats and oils - fatty acids - some fatty acids - neutral and phosphorylated fats - steroids and terpenes.	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and

6	4	Enzymes - Classification of enzymes - Enzymes as catalysts and influencing factors - Factors influencing enzyme effectiveness - Enzyme activators - Enzyme inhibitors	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
7	4	Vitamins - Classification of Vitamins - classification of vitamins - water-soluble vitamins - fat-soluble vitamins	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
8	4	Bioenergetics	Biochemistry 1	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
9	4	Energy release and transfer	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
10	4	ATP & ADP, standard free energy	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
11	4	Biological oxidation	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
12	4	Metabolism of carbohydrates	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and

13	4	Metabolism of proteins	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
14	4	Metabolism of carbohydrates	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and
15	4	Hormones, classification of hormones	Biochemistry 11	Whiteboard + Data Show	1- Oral exams 2- monthly theoretical and

11. Course Evaluation					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)			Biochemistry-Kawla Ahmed Fleih		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Course Description Form

1. Course Name: Insect	
2. Course Code: 1,2	
3. Semester / Year: basic 2023–2024	
4. Description Preparation Date: 2024/4/ 10	
5. Available Attendance Forms: Attending theoretical lectures and practical laboratories	
6.	
7. Number of Credit Hours (Total) / Number of Units (Total)	
Four hours a week	
8. Course administrator's name (mention all, if more than one name)	
Name: Jameal saad mtani	
Email: jmnati@uowasit.edu.iq	
9. Course Objectives	
Course Objectives	Insects are a group of invertebrate animals in the arthropod phylum. They are considered the most widespread and widespread insects in the arthropod phylum.
10. Teaching and Learning Strategies	
Strategy	We use theoretical lectures, illustrations, and models of insect types to enhance the explanation of the material.

1. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
12 weeks during the second trimester	4 hours a week			Use of display devices data	Daily exam Theoretical and practical presence
2. Course Evaluation					
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, monthly tests, and reports					
3. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			1-Insect structure & function R.F.Chapman 2009 2-Principle of entomology snodgrass. 2002		
Main references (sources)			A book on the structure and classification of insects, written by Prof. Dr. Emad Ahmed - Mahmoud Dr. Hossam El-Din Abdullah Field crop pests book. Written by Prof. Dr. Imad Ahmed Mahmoud And Kamel Salman Jabr		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

1. Program Vision

Wasit University seeks to achieve excellence in the field of university education and scientific research by building a comprehensive quality management system for its colleges, administrative, technical and scientific departments and research centers in an environment open to innovation in which a solid infrastructure is available capable of supporting communication and academic interaction. The university aims to provide the requirements of initial university education. And postgraduate studies, to prepare qualified citizens who are qualified to perform their duty, advance their country, and do positive work in the field of scientific research, as well as those programs related to economic growth and development in various fields of science to contribute to serving the local community, investing its resources, strengthening its cultural identity, and preserving its moral values. and social.

2. Program Mission

its mission is to provide the student with the foundations of modern knowledge and advanced scientific research methods, and to develop his personality in a way that makes him capable of innovation, challenge, leadership, continuous self-learning, teamwork, and objective competition at the local, regional, and international levels, and to develop and update curricula in light of contemporary global trends, and subject them to evaluation.

3. Program Objectives

Preparing students to know the basic idea of classifying Parasitology

4. Program Accreditation

Does the program have program accreditation? And from which agency?

5. Other external influences

Is there a sponsor for the program?

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	one	5		
College Requirements				

Department Requirements				
Summer Training				
Other				

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
2023-2024	Bio-223	Parasitology	theoretical	practical
* This can include notes whether the course is basic or optional.			2	3

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learn and understand the basic division of Parasitology	Learning Outcomes Statement 2
2 - Developing the skill of self-evaluation through what the visit to the Parasitology laboratory provides him with	Learning Outcomes Statement 3
	Learning Outcomes Statement 4
	Learning Outcomes Statement 5
Ethics	
- Cognitive goals	
1- Identify groups of Parasitology	
2- To know the ways and means of living.	

<p>3- Know the difference between vertebrates and Parasitology</p> <p>4- To identify coexistence and coexistence between groups of Parasitology</p> <p>5- Understanding the environmental conditions surrounding this group of organisms</p>	

9. Teaching and Learning Strategies

Method of presentation and live discussion

-Including teaching methods using educational technology (data show for face-to-face education and linking lectures with explanatory videos supporting the subject)

- Encouraging students to self-learning

10. Evaluation methods

Assignments , Quizzes, Projects / Lab.

11. Faculty						
Faculty Members						
Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer

Professional Development
Mentoring new faculty members
Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.
Professional development of faculty members
Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. Acceptance Criterion
(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program
General Parasitology text book, General Microbiology, https://www.sciencedirect.com/science/article/pii/S0960982216305358 https://www.esajournals.onlinelibrary.wiley.com/doi/full/10.1890/0012-9623%282008%2989%5B407%3AAHOTES%5D2.0.CO%3B2

14. Program Development Plan

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
2024\4	Bio-223	Parasitology		\				\					\		

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

Course Description Form

1. Course Name: Parasitology	
2. Course Code: bio-223	
3. Semester / Year: four	
4. Description Preparation Date: 20\3\2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total) 5 hours \ 3units	
7. Course administrator's name (mention all, if more than one name)	
Name: Abdukareem Aakool Rabeea Email: altamemy1959@gmail.com	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none">•••
9. Teaching and Learning Strategies	
Strategy	Method of presentation and live discussion -Including teaching methods using educational technology (data show for face-to-face education and linking lectures with explanatory videos supporting the subject) - Encouraging students to self-learning

10. Course Structure					
Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation
		Outcomes			method
Week 1	2	Referred to in the previous axis, each according to the content	Introduction to Parasitology	Deliverance - discussion	Written tests
Week 2	2	=	Introduction to Protozoa	Deliverance - discussion	Written tests
Week 3	2	=	Samples of Protozoa	Deliverance - discussion	Written tests
Week 4	2	=	Samples of intestinal Protozoa	Deliverance - discussion	Written tests
Week 5	2	=	Haemoflagellates Protozoa	Deliverance - discussion	Written tests
Week 6	2	=	Blood and tissue protozoa	Deliverance - discussion	Written tests

Week 7	2	=	Platyhelminthes, Trematods	Deliverance - discussion	Written tests
Week 8	2		First examination		
Week 9	2	=	Platyhelminthes, Cestode, fish Tapeworm and <i>Hymenolepis nana</i>	Deliverance - discussion	Written tests
Week 10	2	=	Canis Tapeworm	Deliverance - discussion	Written tests
Week 11	2	=	Nematode Thread worms	Deliverance - discussion	Written tests
Week 12	2	=	Filarial Nematode	Deliverance - discussion	Written tests
Week 13	2	=	Enteric Nematodes of Lower Animals Transmitted to Humans: Zoonoses	Deliverance - discussion	Written tests

Week 14	2	=	Visceral and Ocular Larva Migrans	Deliverance - discussion	Written tests
Week 15	2	=	Cutaneous Larva Migrans	Deliverance - discussion	Written tests
Week 16			Second examination		

12. Learning and teaching resources

Required Texts	General Parasitology text book
Recommended Texts	General Microbiology
Websites	https://www.sciencedirect.com/science/article/pii/S0960982216305358 https://www.esajournals.onlinelibrary.wiley.com/doi/full/10.1890/0012-9623%282008%2989%5B407%3AAHOTES%5D2.0.CO%3B2

11. Course Evaluation					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

1. Program Vision

Wasit University seeks to achieve excellence in the field of university education and scientific research by building a comprehensive quality management system for its colleges, administrative, technical and scientific departments and research centers in an environment open to innovation in which a solid infrastructure is available capable of supporting communication and academic interaction. The university aims to provide the requirements of initial university education. And postgraduate studies, to prepare qualified citizens who are qualified to perform their duty, advance their country, and do positive work in the field of scientific research, as well as those programs related to economic growth and development in various fields of science to contribute to serving the local community, investing its resources, strengthening its cultural identity, and preserving its moral values. and social.

2. Program Mission

its mission is to provide the student with the foundations of modern knowledge and advanced scientific research methods, and to develop his personality in a way that makes him capable of innovation, challenge, leadership, continuous self-learning, teamwork, and objective competition at the local, regional, and international levels, and to develop and update curricula in light of contemporary global trends, and subject them to evaluation.

3. Program Objectives

Preparing students to know the basic idea of classifying invertebrates

4. Program Accreditation

Does the program have program accreditation? And from which agency?

5. Other external influences

Is there a sponsor for the program?

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	one	5		
College Requirements				

Department Requirements				
Summer Training				
Other				

7. Program Description				
Year/Level	Course Code	Course Name	Credit Hours	
2024\3	Bio-213	invertebrate	theoretical	practical
			2	3

* This can include notes whether the course is basic or optional.

8. Expected learning outcomes of the program	
Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learn and understand the basic division of invertebrates	
2 - Developing the skill of self-evaluation through what the visit to the invertebrates laboratory provides him with	Learning Outcomes Statement 2 Learning Outcomes Statement 3 Learning Outcomes Statement 4 Learning Outcomes Statement 5
Ethics	
- Cognitive goals 1- Identify groups of invertebrates 2- To know the ways and means of living.	

<p>3- Know the difference between vertebrates and invertebrates</p> <p>4- To identify coexistence and coexistence between groups of invertebrates</p> <p>5- Understanding the environmental conditions surrounding this group of organisms</p>	

9. Teaching and Learning Strategies

Method of presentation and live discussion

-Including teaching methods using educational technology (data show for face-to-face education and linking lectures with explanatory videos supporting the subject)

- Encouraging students to self-learning

10. Evaluation methods

Assignments , Quizzes, Projects / Lab.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program

General invertebrates text book, General Microbiology,
<https://www.sciencedirect.com/science/article/pii/S0960982216305358>
<https://www.esajournals.onlinelibrary.wiley.com/doi/full/10.1890/0012-9623%282008%2989%5B407%3AAHOTES%5D2.0.CO%3B2>

14. Program Development Plan

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
2024\3	Bio-213	invertebrate		\				\					\		

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

Course Description Form

1. Course Name: invertebrate	
2. Course Code: bio-213	
3. Semester / Year: Three	
4. Description Preparation Date: 20\3\2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total) 5 hours \ 3units	
7. Course administrator's name (mention all, if more than one name)	
Name: Abdukareem Aakool Rabeea Email: altamemy1959@gmail.com	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none">•••
9. Teaching and Learning Strategies	
Strategy	Method of presentation and live discussion -Including teaching methods using educational technology (data show for face-to-face education and linking lectures with explanatory videos supporting the subject) - Encouraging students to self-learning

10. Course Structure					
Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation
		Outcomes			method
Week 1	2	Referred to in the previous axis, each according to the content	An introduction to invertebrate science and a glimpse of the principles of classification	Deliverance - discussion	Written tests
Week 2	2	=	Classification and importance of invertebrates	Deliverance - discussion	Written tests
Week 3	2	=	Division of Protozoa and their general characteristics and importance	Deliverance - discussion	Written tests
Week 4	2	=	Models of Protozoa with an indication of its importance	Deliverance - discussion	Written tests
Week 5	2	=	The Porifera division, with an indication of its general features and importance	Deliverance - discussion	Written tests
Week 6	2	=	Models of Porifera	Deliverance - discussion	Written tests

Week 7	2	=	Cnidaria division with a statement of its general features and importance	Deliverance - discussion	Written tests
Week 8	2		First examination		
Week 9	2	=	Hydra classification and importance	Deliverance - discussion	Written tests
Week 10	2	=	Division of flatworms with an indication of their general features and importance	Deliverance - discussion	Written tests
Week 11	2	=	Division of Aschelminthes with an indication of their general features and importance	Deliverance - discussion	Written tests
Week 12	2	=	Models of Aschelminthes	Deliverance - discussion	Written tests
Week 13	2	=	Annelids with an indication of their general features and importance	Deliverance - discussion	Written tests

Week 14	2	=	Division of Arthropods with an indication of their general features and importance	Deliverance - discussion	Written tests
Week 15	2	=	Mollusc Division with an indication of its general features and importance	Deliverance - discussion	Written tests
Week 16			Second examination		

12. Learning and teaching resources

Required Texts	General invertebrates text book
Recommended Texts	General Microbiology
Websites	https://www.sciencedirect.com/science/article/pii/S0960982216305358 https://www.esajournals.onlinelibrary.wiley.com/doi/full/10.1890/0012-9623%282008%2989%5B407%3AAHOTES%5D2.0.CO%3B2

11. Course Evaluation					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

1. Program Vision

department works to train students to achieve academic excellence through modern curricula, experiential education and extracurricular activities. The department works to provide an intellectual climate where university students interact with the faculty. Students will acquire the knowledge necessary to continue graduate studies or work in the educational field .

2. Program Mission

Specialized in teaching students the principles of biological sciences, improving their level of experimental studies, and applying some modern technologies in order to understand living organisms and their surrounding environment.

3. Program Objectives

Developing students' skills in the English language with regard to English grammar, communication skills, reading and writing research and scientific theses in the future

4. Program Accreditation

Did not receive accreditation

5. Other external influences

nothing

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*

Department Requirements		2		Basic
Summer Training				
Other				

* This can include notes whether the course is basic or optional.

7. Program Description				
Year/Level	Course Code	Course Name	Credit Hours	
Second		English language	theoretical	practical
			√	

8. Expected learning outcomes of the program	
Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learning Outcomes 2	Learning Outcomes Statement 2
Ethics	
Learning Outcomes 3	Learning Outcomes Statement 3
Learning Outcomes 4	Learning Outcomes Statement 4
Learning Outcomes 5	Learning Outcomes Statement 5

9. Teaching and Learning Strategies
Teaching and learning strategies and methods adopted in implementing the program in general. Style of thinking and discussion Practical tests used in laboratories Teaching through exploratory lecture Lecture, use of the blackboard, and delivery. Illustrative presentations(using diagrams, pictures and educational films) - Interactive discussion - Self-education)

10. Evaluation methods
exam degree Research, reports and tests .

11. Faculty						
Faculty Members						
Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Lecture	Biology	Biology			staff	

Professional Development
Mentoring new faculty members
Briefly describes the process used to orient new, visiting, full-time, and part-time faculty at the institution and department levels. Courses, workshops and lectures .
Professional development of faculty members
Briefly describe the academic and professional development plan and arrangements for faculty members such as teaching and learning strategies, assessment of learning outcomes, professional development, etc. Courses in teaching methods and courses in the safety of the Arabic language.

12. Acceptance Criterion
Central student admission, special expenses, and evening study .

13. The most important sources of information about the program

14. Program Development Plan

Seminar by students

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Second		English language	Basic	ability to Use information in a way practical in place appropriate	The ability to put information together to form a conclusion the information	Students can differentiate between two Scientists	The student can distinguish linguistic betw the type Thin king	Reception request And accept it For the material Scientific	Developing the learner's ability to think Scientific	Analyze problems and information to formulate solutions and their use	Testing a group of information retrieval al techniques and use	student participates in explaining the material Scientific	student should be careful to Presence Subject lectures Scientific	To desire Student in study Subject Scientific	

- Please tick the boxes corresponding to the individual program learning out comes under evaluation.

Course Description Form

1. Course Name: English Language					
2. Course Code:					
3. Semester/Year: semester					
4. Description Preparation Date: 2024					
5. Available Attendance Forms: (theoretical)					
6. Number of Credit Hours (Total)/Number of Units (Total) 2					
7. Course administrator's name (mention all, if more than one name)					
Name: Lecture (Jawad Kadhim Isa).					
8. Course Objectives					
Course Objectives • Developing students' skills in the English language with regard to English grammar, communication skills, reading and writing research and scientific theses in the future					
9. Teaching and Learning Strategies					
Strategy		Theoretical lectures and group discussions for the purpose of developing students' skills in the English language			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	2 hours	Structure Using be	improvement of Skills in the English language of students	Data show	Quizzes and monthly exam
2	2 hours	Reading and writing	=	Data show	Quizzes and monthly exam.
3	2 hours	Structure Using be and have	=	Data show	Quizzes and monthly exam.
4	2 hours	Reading and writing	=	Data show	Quizzes and monthly exam.
5	2 hours	Structure Using my your,his, her, our, their	=	Data show	Quizzes and monthly exam.
6	2 hours	Reading and writing	=	Data show	Quizzes and monthly exam.
7	2 hours	Structure The simple present	=	Data show	Quizzes and monthly exam.
8	2 hours	Reading and writing	=	Data show	Quizzes and monthly exam.
9	2 hours	Structure Using frequency adverb	=	Data show	Quizzes and monthly exam.
10	2 hours	Reading and writing	=	Data show	Quizzes and monthly exam.

11	2 hours	Structure Irregular singular verb has, does , goes	=	Data show	Quizzes and monthly exam.
12	2 hours	Reading and writing	=	Data show	Quizzes and monthly exam.
13	2 hours	Structure The present progressive verb	=	Data show	Quizzes and monthly exam.
14	2 hours	Structure The past tense	=	Data show	Quizzes and monthly exam.
15	2 hours	Exam	=	Data show	Quizzes and monthly exam.

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11. Course Evaluation
 Distributing the score out of 100 according to the tasks assign to the student such as daily preparation ,daily oral ,monthly ,or written e Reputable scientific journals related to hematology xams, reports.....etc.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

15. Program Vision

The College of Science seeks to prepare graduates in the field of life sciences to work in government departments and benefit from specialization in the practical and applied field

16. Program Mission

Working to prepare and graduate leading scientific and leadership competencies in the field of life sciences and to develop the balance of knowledge in the field of scientific research in the field of life sciences in order to serve the local, regional and international community, as well as training and refining the minds of students scientifically and cognitively, and emphasizing social and cultural values and responding to the requirements of the local market. .

17. Program Objectives

- 1- Understanding and knowing the basics of life sciences and biotechnology and their importance in the scientific field.
- 2- Diagnosing and treating diseases.
- 3- Understanding the ways and methods that lead to applying this field and developing it in research in society.

18. Program Accreditation

none

19. Other external influences

none

20. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	90	90		Basic course
College Requirements	yes			
Department Requirements	yes			
Summer Training	none			
Other				

* This can include notes whether the course is basic or optional.

21. Program Description

Year/Level	Course Code	Course Name	Credit Hours
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/ 2024-2023fourth			theoretical	practical

22. Expected learning outcomes of the program

Knowledge

- 1-Keeping pace with the development of modern medical science
- 2- Communicate with everything new or useful and adapt it

Skills

- 1.The ability to understand and apply them practically.
- 2- Dealing with health problems by applying new technologies
- 3- Laboratory training for students on new technologies, if any

Ethics

Developing students' abilities in laboratory research work

23. Teaching and Learning Strategies

- 1.Explaining the scientific material to students in detail.
- 2- Students participate in laboratory work in the form of groups
- 3- Discussion and dialogue about vocabulary related to the topic

24. Evaluation methods

Weekly, monthly, daily exams and the end-of-semester exam

25. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant professor	biotechnology	biotechnology			staff	

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

26. Acceptance Criterion

The student's average in the preparatory stage, in addition to the student's desire, as well as the geographical area of the student's residence, in line with the admission policy in Iraqi universities, colleges, and institutes.

27. The most important sources of information about the program

David-P.-Clark-BA -Bristol-(England) applying the genetic revolution

Molecular Biology and Biotechnology, Helen Kreuzer and Adrienne Massey

28. Program Development Plan

1- Using the latest technologies in the field of biotechnology and the latest laboratory equipment

2- Developing students in practical and laboratory application through the use of modern equipment for the purpose of diagnosing and treating a medical or scientific problem

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
2024/2023	Bio-424	biotechnology	basic	/				/				/			

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

Course Description Form

13. Course Name:	
biotechnology	
14. Course Code:	
Bio-424	
15. Semester / Year:	
semester	
16. Description Preparation Date:	
2024-4-5	
17. Available Attendance Forms:	
existence	
18. Number of Credit Hours (Total) / Number of Units (Total)	
60 hrs practical and theroretical 2hrs ,2hrs	
19. Course administrator's name (mention all, if more than one name)	
Name: Hiba Taqi Email: hibataqi211986@gmail.com	
20. Course Objectives	
<p>Course Objectives</p>	<ul style="list-style-type: none"> • 1. Informing students about the latest technologies. 2- Explaining the most important biological dilemmas and methods of diagnosing and treating them. 3- Opening new horizons for developing and equipping the most important required devices. • • •

21. Teaching and Learning Strategies

Strategy

- 1- Educational strategy, collaborative concept planning.
- 2- Brainstorming education strategy.
- 3- Education Strategy Notes Series

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	2	Referred to in the previous axis, each according to the content	Biotechnology / Introduction	Deliverance - discussion	Questions, answers, assignments, written tests
Week2	2	Referred to in the previous axis, each according to the content	Historical development of biotechnology	Deliverance - discussion	Questions, answers, assignments, written tests
Week3	2	Referred to in the previous axis, each according to the content	Gene cloning	Deliverance - discussion	Questions, answers, assignments, written tests

Week 4	2	Referred to in the previous axis, each according to the content	Gene cloning application	Deliverance - discussion	Questions, answers, assignments, written tests
Week 5	2	Referred to in the previous axis, each according to the content	Inserting foreign DNA into cloning vectors	Deliverance - discussion	Questions, answers, assignments, written tests
Week 6	2	Referred to in the previous axis, each according to the content	Restriction enzyme	Deliverance - discussion	Questions, answers, assignments, written tests
Week 7	2	Referred to in the previous axis, each			

Week 8		according to the content	Restriction enzyme application	Deliverance - discussion	Questions, answers, assignments, written tests
Week 9	2	/	Gene therapy	/	/
Week 10	/	/	Gene therapy application	/	/
Week 11	/	/	Fermentor	/	/
Week 12	/	/	Fermentor developed	/	/
Week 13	/	/	Crisper	/	/
Week 14	/	/	Crisper development	/	/
		/			

Week 15	/	/	Various lectures within the subject specific to students, prepared and delivered by students Exam	/	/
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23. Course Evaluation

The distribution is as follows: 40 marks for the monthly and daily practical and theoretical exams, and a final practical and theoretical exam out of 60

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)

/

Main references (sources)

/

Recommended books and references (scientific journals, reports...)

David-P.-Clark-BA -Brsitol-
(England) applying the genetic
revolution
Molecular Biology and -
Biotechnology, Helen Kreuzer
and Adrienne Massey

introduction of -
biotechnology

gene cloning and restriction -

Electronic References, Websites	- Various communication sites, social networking sites, and the comprehensive electronic library.
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Description Form

1. Course Name
Genetic Engineering 2
2. Course Code
3. Semester / Year
2 nd Semester (2023-2024)
4. Description Preparation Date:
1/2/2024
5. Available Attendance Forms
In person
6. Number of Credit Hours (Total) / Number of Units (Total)
(2 Hours Class) and (2 hours Lab)
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Ahmed Edan Dhamad Email: adhamad@uowasit.edu.iq
8. Course Objectives

Course Objectives	This class is designed to genetic engineering, the field of biotechnology that involves manipulating the genetic material of organisms, typically DNA, to alter their characteristics in a desired way. This can involve inserting, deleting, or modifying genes to achieve specific traits or functions
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9. Teaching and Learning Strategies

Strategy	<p>Teaching genetic engineering requires a combination of theoretical understanding, practical laboratory skills, and critical thinking about ethical and societal implications. Here are some teaching and learning strategies commonly used in genetic engineering education:</p> <ul style="list-style-type: none"> • Lectures and Presentations: Begin with foundational knowledge through lectures and presentations covering basic principles of genetics, molecular biology, and genetic engineering techniques. • Hands-on Laboratory Work: Provide opportunities for students to gain practical experience in a laboratory setting. This can include techniques such as PCR (Polymerase Chain Reaction), gel electrophoresis, DNA cloning, and gene editing using CRISPR-Cas9. Hands-on experience enhances understanding and helps students develop essential laboratory skills. • Case Studies and Problem-Based Learning: Use case studies to engage students in real-world applications of genetic engineering. Presenting ethical dilemmas, such as the use of GMOs in agriculture or the ethics of human gene editing, encourages critical thinking and debate. • Interactive Simulations and Virtual Labs: Incorporate interactive simulations and virtual laboratory exercises to supplement hands-on experiments. These tools provide opportunities for students to practice techniques and explore concepts in a virtual environment. • Integration of Multidisciplinary Topics: Emphasize the interdisciplinary nature of genetic engineering by integrating topics from biology, chemistry, bioinformatics, ethics, and environmental science. This helps students understand the broader context and implications of genetic engineering. • Assessment and Feedback: Use a variety of assessment methods, including exams, quizzes, laboratory reports, and presentations, to evaluate students' understanding and skills. Provide constructive feedback to help students improve their learning outcomes. • Current Research and Literature Review: Encourage students to explore current research articles and literature in genetic engineering. Assign literature reviews or journal club discussions to promote critical analysis of scientific literature and keep students informed about the latest developments in the field. • Ethical and Societal Discussions: Dedicate time to discussing ethical, legal, and societal implications of genetic engineering. Encourage students to consider diverse perspectives and engage in respectful dialogue about controversial topics.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name / Theoretical	Learning method / practical	Evaluation method
1	4	Gene cloning techniques are essential tools in molecular biology for copying, manipulating, and	Techniques for gene cloning	Polymerase Chain Reaction (PCR) Restriction Enzyme Digestion	Quizzes and homework

		studying specific genes or DNA fragments		DNA Ligation Transformation	
2	4	=	=	Restriction Enzyme Digestion	Quizzes and homework
3	4	=	=	DNA Ligation Transformation	Quizzes and homework
4	4	Gene expression systems are fundamental tools in molecular biology and biotechnology for studying gene function, producing recombinant proteins, and developing gene therapies. These systems enable the controlled transcription and translation of genes of interest in host cells, allowing researchers to manipulate gene expression levels and study the resulting phenotypic effects	Gene expression systems 1. Prokaryotic Expression Systems	Bacteria such as Escherichia coli (E. coli) are commonly used for heterologous protein expression Using Bacteriophages like T7 and λ	Quizzes and homework
5	4	=	Gene expression systems 2. Eukaryotic Expression Systems:	Yeast Expression Systems Mammalian Expression Systems Insect Cell Expression Systems	=
6	4		Exam 1		
7	4	Protein purification is a crucial step in biochemistry and molecular biology to isolate and obtain pure proteins from complex mixtures	Protein purification methods	Protein Precipitation	Quizzes and homework
8	4	=	=	Chromatography Ion Exchange Chromatography	=
9	4	=		Affinity Chromatography	=

			=		
10	4	=	=	Size Exclusion Chromatography (SEC)	=
11	4	=	=	Hydrophobic Interaction Chromatography (HIC)	=
12	4	=	=	Reversed-phase Chromatography	=
13	4	=	=	Gel Electrophoresis	=
14	4	=	=	Ultrafiltration Crystallization	=
15	4	=	=	Ultra-centrifugation Magnetic Bead-based Purification	=
16			Final Exam		=

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Course	Class			Lab			Final -Exam
	1 st Exam.	2 nd Exam.	Quizzes	First Exam.	2 nd Exam.	Quizzes	
1 st	12	12	4	4	4	4	60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Abe and Genetic Engineering, James S Reiley, 2022; Koiman Roehm, 2ed Edition; Genetic Engineering and Gene Therapy, A E.Hurt, 2022 Molecular Biology of the Gene by James D. Watson et al (or another appropriate textbook) Wilson and Walker's Principles and Techniques of Biochemistry and Molecular Biology 8th Edition
Main references (sources)	Biotechnology and Genetic Engineering, 3 rd Edition; Molecular cell biology, 7 th Edition; Gene cloning and DNA analysis 7th Edition.
Electronic References, Websites	The National Center for Biotechnology Information is part of United States National Library of Medicine (NCBI) Rev published paper in google scholar and web of science; Official

on legitimate websites like The United States Food and Administration (FDA) and The Centers for Disease Control and Prevention is the national public health agency of the United States (CDC)

Course Description Form

13. Course Name	
Genetic Engineering 2	
14. Course Code	
15. Semester / Year	
1st Semester (2023-2024)	
16. Description Preparation Date:	
1/2/2024	
17. Available Attendance Forms	
In person	
18. Number of Credit Hours (Total) / Number of Units (Total)	
(2 Hours Class)and (2 hours Lab)	
19. Course administrator's name (mention all, if more than one name)	
Name: Assistant Prof. Ahmed Edan Dhamad	
Email: adhamad@uowasit.edu.iq	
20. Course Objectives	
Course Objectives	This class is designed to genetic engineering, the field of biotechnology that involves manipulating the genetic material of organisms, typically DNA, to alter their characteristics in a desired way. This can involve inserting, deleting, or modifying genes to achieve specific traits or functions
21. Teaching and Learning Strategies	
Strategy	<p>Teaching genetic engineering requires a combination of theoretical understanding, practical laboratory skills, and critical thinking about ethical and societal implications. Here are some teaching and learning strategies commonly used in genetic engineering education:</p> <ul style="list-style-type: none"> • Lectures and Presentations: Begin with foundational knowledge through lectures and presentations covering basic principles of genetics, molecular biology, and genetic engineering techniques. • Hands-on Laboratory Work: Provide opportunities for students to gain practical experience in a laboratory setting. This can include techniques such as PCR (Polymerase Chain Reaction), gel electrophoresis, DNA cloning, and gene editing using CRISPR-Cas9. Hands-on experience enhances understanding and helps students develop essential laboratory skills. • Case Studies and Problem-Based Learning: Use case studies to engage students in real-world applications of genetic engineering. Presenting ethical dilemmas, such as the use of GMOs in agriculture or the ethics of human gene editing, encourages critical thinking and debate. • Interactive Simulations and Virtual Labs: Incorporate interactive simulations and virtual laboratory exercises to supplement hands-on experiments. These tools provide opportunities for students to practice techniques and explore concepts in a virtual environment. • Integration of Multidisciplinary Topics: Emphasize the interdisciplinary nature of genetic engineering by integrating topics from biology, chemistry, bioinformatics, ethics, and

environmental science. This helps students understand the broader context and implications of genetic engineering.

- **Assessment and Feedback:** Use a variety of assessment methods, including exams, quizzes, laboratory reports, and presentations, to evaluate students' understanding and skills. Provide constructive feedback to help students improve their learning outcomes.
- **Current Research and Literature Review:** Encourage students to explore current research articles and literature in genetic engineering. Assign literature reviews or journal club discussions to promote critical analysis of scientific literature and keep students informed about the latest developments in the field.
- **Ethical and Societal Discussions:** Dedicate time to discussing ethical, legal, and societal implications of genetic engineering. Encourage students to consider diverse perspectives and engage in respectful dialogue about controversial topics.

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name / Theoretical	Learning method / practical	Evaluation method
1	4	Gene cloning techniques are essential tools in molecular biology for copying, manipulating, and studying specific genes or DNA fragments	Techniques for gene cloning	Polymerase Chain Reaction (PCR) Restriction Enzyme Digestion DNA Ligation Transformation	Quizzes and homework
2	4	=	=	Restriction Enzyme Digestion	Quizzes and homework
3	4	=	=	DNA Ligation Transformation	Quizzes and homework
4	4	Gene expression systems are fundamental tools in molecular biology and biotechnology for studying gene function, producing recombinant proteins, and developing gene therapies. These systems enable the controlled transcription and translation of genes of interest in host cells, allowing researchers to manipulate gene expression levels and	Gene expression systems 2. Prokaryotic Expression Systems	Bacteria such as Escherichia coli (E. coli) are commonly used for heterologous protein expression Using Bacteriophages like T7 and λ	Quizzes and homework

		study the resulting phenotypic effects			
5	4	=	Gene expression systems 2. Eukaryotic Expression Systems:	Yeast Expression Systems Mammalian Expression Systems Insect Cell Expression Systems	=
6	4		Exam 1		
7	4	Protein purification is crucial step in biochemistry and molecular biology to isolate and obtain pure proteins from complex mixtures	Protein purification methods	Protein Precipitation	Quizzes and homework
8	4	=	=	Chromatography Ion Exchange Chromatography	=
9	4	=	=	Affinity Chromatography	=
10	4	=	=	Size Exclusion Chromatography (SEC)	=
11	4	=	=	Hydrophobic Interaction Chromatography (HIC)	=
12	4	=	=	Reversed-phase Chromatography	=
13	4	=	=	Gel Electrophoresis	=
14	4	=	=	Ultrafiltration Crystallization	=
15	4	=	=	Ultra-centrifugation Magnetic Bead-based Purification	=
16			Final Exam		=

23. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Course	Class			Lab			Final -Exam
	1 st Exam.	2 nd Exam.	Quizzes	First Exam.	2 nd Exam.	Quizzes	
1 st	12	12	4	4	4	4	60

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Abe and Genetic Engineering, James S Reiley, 2022; Koiman Roehm, 2ed Edition; Genetic Engineering and Gene Therapy, A E.Hurt, 2022 Molecular Biology of the Gene by James D. Watson et al (or another appropriate textbook) Wilson and Walker's Principles and Techniques of Biochemistry and Molecular Biology 8th Edition
Main references (sources)	Biotechnology and Genetic Engineering, 3 rd Edition; Molecular cell biology, 7 th Edition; Gene cloning and DNA analysis 7th Edition.
Electronic References, Websites	The National Center for Biotechnology Information is part of United States National Library of Medicine (NCBI) Rev published paper in google scholar and web of science; Official on legitimate websites like The United States Food and Administration (FDA) and The Centers for Disease Control Prevention is the national public health agency of the United (CDC)

Course Description Form

1. Course Name	English
2. Course Code	
3. Semester / Year	1st Semester (2023-2024)
4. Description Preparation Date:	1/2/2024
5. Available Attendance Forms	In person
6. Number of Credit Hours (Total) / Number of Units (Total)	(2 Hours Class)
7. Course administrator's name (mention all, if more than one name)	Name: Lecturer Ahmed Edan Dhamad Email: adhamad@uowasit.edu.iq
8. Course Objectives	

Course Objectives	This class is designed to improve students' proficiency in the English language. This includes developing skills in speaking, listening, reading, and writing.
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9. Teaching and Learning Strategies

Strategy	<p>English classes often employ a variety of learning strategies to effectively teach language skills and language acquisition. Here are some common learning strategies used in English classes:</p> <p>Communicative Approach Task-Based Learning Content-Based Instruction</p> <p>enhance students learning using multimedia materials, interactive activities, games, and hands-on experiences to engage students and reinforce language concepts.</p> <p>Peer Collaboration Use of Technology such as online resources, language learning apps, educational software, multimedia materials, and digital communication tools.</p>
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name / Theoretical	Learning method / practical	Evaluation method
1	4	To introduce English as a foreign language	Introduction	In class practice Group sessions	Quizzes and homework
2	4		Talking individually and in groups	=	Quizzes and homework
3	4	How to take notes while listening	How to be a good listener	Using audio and video in class	Quizzes and homework
4	4	=	Listening strategies	=	Quizzes and homework
5	4	Students will learn how to use simple present, past and future tenses.	Simple tenses	In class practice using exercise from books.	Quizzes and homework
6	4		Exam 1		
7	4	How to ask for help a polite way. What terminologies should students use.	Polite request and offers	=	=
8	4	Learning writing skills.	How to write a short paragraph	Practicing writing in class.	=
9	4	When, where, and how to use active voice.	Active Voice	=	=
10	4	When, where, and how to use passive voice.	Passive Voice	=	=
11	4	Types of paired conjunctions.	Paired conjunctions	=	=
12	4	Students will learn how to use the	Subject-Verb Agreement	=	=

		suitable verbs with specific subjects.			
13	4	Students will differentiate Between countable and uncountable nouns.	Countable nouns		=
14	4	=	Uncountable nouns	=	=
15	4		Exam 2		
16			Final Exam		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Course	Class			Final Exam		
	1 st Exam.	2 nd Exam.	Quizzes and homeworks			
1 st	15	15	10			60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	New Head way Plus : John and Liz Soars For Third year class; Understanding English 5th edition. Betty
Main references (sources)	New Head Way
Electronic References, Websites	Reviewed published paper in google scholar and web of science Official news on legitimate channels like BBC and CNN; YouTube in English

Course Description Form

25. Course Name	Molecular Biology2
26. Course Code	
27. Semester / Year	2nd Semester (2023-2024)
28. Description Preparation Date:	1/2/2024
29. Available Attendance Forms	In person
30. Number of Credit Hours (Total) / Number of Units (Total)	(2 Hours Class)and (2 hours Lab)

31. Course administrator's name (mention all, if more than one name)

Name: Lecturer Muna Abdal Rahim Abdal Rhida
Email: mrhida@uowasit.edu.iq

32. Course Objectives

Course Objectives

This class is designed to determine and explain the fundamental core ideas of molecular biology by exploring the principles behind biomolecule interactions in different cell compartments, with a strong emphasis on DNA replication, transcription, and translation. This course will involve a thorough examination of different aspects of molecular biology, with students showcasing their comprehension of techniques like molecular cloning, macromolecule blotting, and polymerase chain reaction, commonly utilized in research.

33. Teaching and Learning Strategies

Strategy

Teaching molecular biology effectively often involves a combination of theoretical knowledge, practical application, and critical thinking. Here are some effective teaching strategies for molecular biology:

- **Interactive Lectures:** Instead of just lecturing, engage students with interactive sessions. Use multimedia presentations, demonstrations, and real-life examples to make abstract concepts more tangible.
- **Hands-on Laboratory Work:** Molecular biology is inherently practical. Provide students with opportunities to perform experiments, manipulate DNA, run gels, and use molecular biology techniques. Hands-on experience enhances understanding and retention.
- **Case Studies:** Integrate case studies into your teaching. Presenting real-world scenarios where molecular biology concepts are applied can help students connect theory to practice and understand the relevance of their learning.
- **Visual Aids and Models:** Utilize visual aids such as diagrams, charts, and 3D models to illustrate complex molecular structures and processes. Visual representations can improve comprehension and retention of abstract concepts.
- **Group Projects:** Assign group projects where students work together to solve molecular biology problems or conduct research. Collaborative learning fosters teamwork, communication skills, and a deeper understanding of the subject matter.
- **Active Learning Techniques:** Incorporate active learning techniques such as think-pair-share, peer teaching, and concept mapping. Encourage students to actively participate in discussions, ask questions, and solve problems during class.
- **Online Resources:** Supplement traditional teaching methods with online resources such as virtual labs, interactive simulations, and educational websites. These resources provide additional opportunities for practice and reinforcement.

- **Assessment Variety:** Assess student understanding through a variety of methods including quizzes, exams, lab reports, presentations, and projects. Tailor assessments to measure both theoretical knowledge and practical skills.
- **Feedback and Reflection:** Provide timely feedback on student performance and encourage self-reflection. Constructive feedback helps students identify areas for improvement and reinforces learning outcomes.

By employing these teaching strategies, instructors can create an engaging and effective learning environment for molecular biology students, fostering a deeper understanding of the subject and its applications.

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name / Theoretical	Learning method / practical	Evaluation method
1	4	The genetic code is the set of rules by which information encoded within DNA and RNA is translated into proteins	Genetic Code and Protein Synthesis	RNA Extraction	Quizzes and homework
2	4	DNA cloning is a molecular biology technique used to make multiple copies of a specific DNA sequence	DNA cloning	Isolation of DNA	Quizzes and homework
3	4	=	=	Preparation of Vector	Quizzes and homework
4	4	=	=	Insertion of DNA Fragment.	Quizzes and homework
5	4	=	=	Transformation	Quizzes and homework
6	4	=	=	Selection and Screening	Laboratory report
7	4	=	=	Verification by PCR or Sequencing	Preparing and calculating master mix solution for PCR reaction
8	4		Exam1		
9	4	Protein folding, modification, and targeting are crucial processes that occur after a protein is synthesized to ensure its proper structure, function, and	Protein folding, modification, and targeting	X-ray Crystallography	Quizzes and homework

		localization within cell.			
10	4	=	=	Nuclear Magnetic Resonance (NMR) Spectroscopy	=
11	4	=	=	Fluorescence Spectroscopy	=
12	4	=	=	Mass Spectrometry	=
13	4	Students will learn how DNA sequence altered that can lead changes in the genet information carried b an organism	Molecular Genetics Mutations: types, causes, and consequences.	Site-directed mutagenesis	=
14	4	=	=	Using mutagens	=
15	4		Exam 2		
16			Final Exam		

35. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Course	Class			Lab			Final -Exam
	1 st Exam.	2 nd Exam.	Quizzes	First Exam.	2 nd Exam.	Quizzes	
1 st	12	12	4	4	4	4	60

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Molecular Biology of the Gene by James D. Watson et al (or another appropriate textbook)
Main references (sources)	Wilson and Walker's Principles and Techniques of Biochemistry and Molecular Biology 8th Edition
Electronic References, Websites	The National Center for Biotechnology Information is part of the United States National Library of Medicine (NCBI); Reviewed published paper in google scholar and web of science; Official news on legitimate websites like The United States Food and Drug Administration (FDA) and The Centers for Disease Control and Prevention is the national public health agency of the United States (CDC)

Course Description Form

37. Course Name

Molecular Biology1	
38. Course Code	
39. Semester / Year	
1st Semester (2023-2024)	
40. Description Preparation Date:	
1/2/2024	
41. Available Attendance Forms	
In person	
42. Number of Credit Hours (Total) / Number of Units (Total)	
(2 Hours Class)and (2 hours Lab)	
43. Course administrator's name (mention all, if more than one name)	
Name: Lecturer Muna Abdal Rahim Abdal Rhida	
Email: mrhida@uowasit.edu.iq	
44. Course Objectives	
Course Objectives	This class is designed to determine and explain the fundamental core ideas of molecular biology by exploring the principles behind biomolecule interactions in different cell compartments, with a strong emphasis on DNA replication, transcription, and translation. This course will involve a thorough examination of different aspects of molecular biology, with students showcasing their comprehension of techniques like molecular cloning, macromolecule blotting, and polymerase chain reaction, commonly utilized in research.
45. Teaching and Learning Strategies	
Strategy	<p>Teaching molecular biology effectively often involves a combination of theoretical knowledge, practical application, and critical thinking. Here are some effective teaching strategies for molecular biology:</p> <ul style="list-style-type: none"> • Interactive Lectures: Instead of just lecturing, engage students with interactive sessions. Use multimedia presentations, demonstrations, and real-life examples to make abstract concepts more tangible. • Hands-on Laboratory Work: Molecular biology is inherently practical. Provide students with opportunities to perform experiments, manipulate DNA, run gels, and use molecular biology techniques. Hands-on experience enhances understanding and retention. • Case Studies: Integrate case studies into your teaching. Presenting real-world scenarios where molecular biology concepts are applied can help students connect theory to practice and understand the relevance of their learning. • Visual Aids and Models: Utilize visual aids such as diagrams, charts, and 3D models to illustrate complex molecular structures and processes. Visual representations can improve comprehension and retention of abstract concepts. • Group Projects: Assign group projects where students work together to solve molecular biology problems or conduct research. Collaborative learning fosters teamwork, communication skills, and a deeper understanding of the subject matter.

- **Active Learning Techniques:** Incorporate active learning techniques such as think-pair-share, peer teaching, and concept mapping. Encourage students to actively participate in discussions, ask questions, and solve problems during class.
- **Online Resources:** Supplement traditional teaching methods with online resources such as virtual labs, interactive simulations, and educational websites. These resources provide additional opportunities for practice and reinforcement.
- **Assessment Variety:** Assess student understanding through a variety of methods including quizzes, exams, lab reports, presentations, and projects. Tailor assessments to measure both theoretical knowledge and practical skills.
- **Feedback and Reflection:** Provide timely feedback on student performance and encourage self-reflection. Constructive feedback helps students identify areas for improvement and reinforces learning outcomes.

By employing these teaching strategies, instructors can create an engaging and effective learning environment for molecular biology students, fostering a deeper understanding of the subject and its applications.

46. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name / Theoretical	Learning method / practical	Evaluation method
1	4	To teach students how DNA carries genetic information in most organisms.	DNA Structure	DNA extraction	Quizzes and homework
2	4		Eukaryotic DNA vs Prokaryotic DNA		Quizzes and homework
3	4		Mitosis		Quizzes and homework
4	4		Mitochondrial DNA		Quizzes and homework
5	4		Plasmid DNA		Quizzes and homework
6	4		Exam 1		
7	4	The process of duplicating DNA molecules to ensure genetic continuity during cell division	DNA Replication in Prokaryotes	Polymerase Chain Reaction (PCR): A technique used to amplify specific segments of DNA, allowing for the study of genes and genetic variation. Gel Electrophoresis: A	Preparing and calculating master mix solution for PCR reaction

				method for separating DNA, RNA, or proteins based on size and charge using an electric field.	
8	4	The process of duplicating DNA molecules to ensure genetic continuity during cell division	DNA Replication in Eukaryotes.	<p>Polymerase Chain Reaction (PCR): A technique used to amplify specific segments of DNA, allowing for the study of genes and genetic variation.</p> <p>Gel Electrophoresis: A method for separating DNA, RNA, or proteins based on size and charge using an electric field.</p> <p>DNA Sequencing: The process of determining the precise order of nucleotides in a DNA molecule, crucial for understanding genetic information and identifying genetic variations.</p>	Preparing and calculating master mix solution for PCR reaction
9	4	The process by which the genetic information encoded in DNA is copied into RNA molecules.	Transcription in Prokaryotes	Real-time PCR relies on the detection of fluorescence emitted by fluorescent dyes or probes that bind specifically to the DNA of interest	<p>CT Calculation: The CT value is determined as the PCR cycle number at which the fluorescence signal exceeds the threshold.</p> <p>The delta-delta Ct method, also known as the $2^{-\Delta\Delta C_t}$ method, is a simple formula used in order to calculate the relative fold gene</p>

					expression of samples when performing real-time polymerase chain reaction
10	4	The process by which the genetic information encoded in DNA is copied into RNA molecules.	Transcription in Eukaryotes	=	Quizzes and Homework
11	4	=	Post-Transcriptional modification	=	Quizzes and Homework
12	4	=	Alternative Splicing	=	=
13	4	The process by which information encoded in a gene is used to synthesize a functional gene product, typically a protein or a functional RNA molecule	Gene Expression	Quantitative PCR (qPCR), also known as real-time PCR, is a powerful molecular biology technique used to quantitatively measure the amount of a specific DNA target present in a sample	=
14	4	The process by which genetic information stored in DNA is converted into proteins.	Translation		
15	4		Exam 2		=
16			Final Exam		=

47. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Course	Class			Lab			Final -Exam
	1 st Exam.	2 nd Exam.	Quizzes	First Exam.	2 nd Exam.	Quizzes	
1 st	12	12	4	4	4	4	60

48. Learning and Teaching Resources

Required textbooks (curricular books, if any) 1-

Main references (sources)	2. Wilson and Walker's Principles and Techniques of Biochemistry and Molecular Biology 8th Edition
Electronic References, Websites	https://www.khanacademy.org/

Course Description Form

49. Course Name	
English	
50. Course Code	
51. Semester / Year	
1st Semester (2023-2024)	
52. Description Preparation Date:	
1/2/2024	
53. Available Attendance Forms	
In person	
54. Number of Credit Hours (Total) / Number of Units (Total)	
(2 Hours Class)	
55. Course administrator's name (mention all, if more than one name)	
Name: Muna Abdal Rahim Abdal Rhida	
Email: mrhida@uowasit.edu.iq	
56. Course Objectives	
Course Objectives	This class is setting a goal to improve students' proficiency in the English language. This includes developing skills in speaking, listening, reading, and writing.
57. Teaching and Learning Strategies	
Strategy	<p>English classes often employ a variety of learning strategies to effectively teach language skills and language acquisition. Here are some common learning strategies used in English classes:</p> <ul style="list-style-type: none"> • Enhance understanding and usage of grammar rules and expand vocabulary Task-Learning • Develop the ability to understand and analyze various types of texts, ranging from fiction non-fiction, and from short articles to longer passages. • Improve writing skills, including organization, coherence, clarity, and style, across different genres such as essays, reports, and creative writing. • Foster critical thinking skills by encouraging students to analyze and evaluate arguments, and ideas presented in English. • Enhance oral communication skills, including pronunciation, fluency, and confidence speaking English. • Gain insights into English-speaking cultures and societies through the study of literature, media, and other cultural artifacts. • Prepare students for standardized English proficiency tests such as TOEFL, IELTS, or Cambridge exams if applicable. • Develop skills in using digital resources and technology for language learning, research, and communication. • Encourage students to reflect on their language learning progress, identify areas for improvement, and set personal language learning goals.
58. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name / Theoretical	Learning method / practical	Evaluation method
1	4	Writing a good paragraph involves several key elements that contribute to clarity, coherence, and effectiveness in conveying your message.	How to write a good paragraph	In class writing practice.	homework (writing on different topics)
2	4	How to use the correct preposition in a suitable place and situation.	Grammar/Prepositions	=	Quizzes and homework
3	4	Students will learn how to differentiate between using infinitive and gerund	Grammar/Infinitive and Gerund	In class activity and practice	Quizzes and homework
4	4	How to take notes while listening.	Listening strategies	Using audio and video in class to practice listening.	Quizzes and homework
5	4	Students will learn how to use present, past and future, progressive and perfect tenses.	tenses	In class practice using exercise from books.	Quizzes and homework
6	4		Exam 1		
7	4	Teach the students how to restate someone else's ideas in their own words while retaining the original meaning.	Paraphrasing	Using paraphrasing tricks in class to practice generating different versions of the same paragraph. Such as restructuring sentences, using synonyms, or changing sentence structures while maintaining the integrity of the original source.	=
8	4	Preparing students to write their graduation research.	Guidelines for writing a research paper.	In class practice on writing the abstract	=
9	4		=	In class practice on writing the introduction	=

10	4	When, where, and how to use active voice.	Passive Voice	In class practice on writing the material and methods using Passive Voice.	=
11	4	Students will learn how write the result section.	Writing the results	In class practice on using tables and figures legends in the research paper.	=
12	4	Students will learn how write the discussion section.	Writing the discussion section	In class practice	=
13	4	Students will learn how write the conclusion	Writing the conclusion and acknowledgement	=	=
14	4	How to organize the references using software.	Organizing the references	Using Mendeley to organize the references	=
15	4		2 nd Exam		
16			Final Exam		

59. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Course	Class						Final-Exam
	1 st Exam.	2 nd Exam.	Quizzes and homeworks				
1 st	15	15	10				60

60. Learning and Teaching Resources

Required textbooks (curricular books, if any)	New Head way Understanding English 5th edition. Betty
Main references (sources)	New Head Way
Electronic References, Websites	Reviewed published paper in google scholar and web of science Official news on legitimate channels like BBC and CNN; YouTube in English

Course Description Form

61. Course Name

Molecular Biology 2

62. Course Code

63.Semester / Year

Second Semester (2023-2024)

64.Description Preparation Date:

1/2/2024

65.Available Attendance Forms

Actual Attendance

66.Number of Credit Hours (Total) / Number of Units (Total)

(2 Hours Theory)and (2 hours practical)

67.Course administrator's name (mention all, if more than one name)

Name: Dr.Alyaa Abdulhadi Salih

Email: Alyaasaleh@uowasit.edu.iq

68.Course Objectives

Course Objectives

- (1)Caring for students and developing their abilities.
- (2) Attracting and retaining distinguished faculty members.
- (3) Developing education and providing an attractive learning environment.
- (4) Continuous development and enhancement of quality applications.
- (5) Serving graduates and interacting with the labor market.
- (6) Completing the establishment of the infrastructure for postgraduate studies and scientific research.
- (7) Completing the establishment of the university's infrastructure.
- (8) Building an effective partnership locally and globally.
- (9) Developing the university's financial resources.
- (10) Develop a supportive administrative system.

69.Teaching and Learning Strategies

Strategy

- **Group discussions and assignments**
- **Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods**
- **Research projects**
- **Interdisciplinary discussion circles**
- **Incorporating teaching methods that utilize educational technology**
- **Encouraging students for self-directed learning.**

70. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name / Theoretical	Learning method / practical	Evaluation method
1	4	Referred to in the previous axis and each according to the content	Introduction and protein structure	protein extraction	Daily preparation and oral examination and Discussion
2	4	=	Type of protein	Lab2 : Extraction of protein from plant tissue	Daily preparation and oral examination and Discussion
3	4	=	Mitochondrial DNA	Lab3: Protein Extraction From Bacteria	Daily preparation and oral examination and Discussion

4	4	=	Telomerase and Cellular Senescence	Lab4: Protein purification techniques	Daily preparation and oral exam and Discussion
5	4	=	DNA Mutation	Lab5 : Gel filtration chromatography	Daily preparation and oral exam and Discussion
6	4	=	Common Gene Mutation in Cancerous Cells	Lab6:Protein Detection Methods	Daily preparation and oral exam and Discussion
7	4	=	DNA Repair	Lab 7: Western blot	Exam.
8	4	=	First Exam	First Exam	Daily preparation and oral exam and Discussion
9	4	=	Chromosome Aberrations	Lab8: Immunohistochemistry (IHC)	Daily preparation and oral exam and Discussion
10	4	=	Horizontal gene transfer	Practical sera vaccine	Daily preparation and oral exam and Discussion
11	4	=	Transduction	Immune complex disease	Daily preparation and oral exam and Discussion
12	4	=	Basics of DNA Cloning	Nuclie acid hybridization	Daily preparation and oral exam and Discussion
13	4	=	Type of vectors	DNA probes	Daily preparation and oral exam and Discussion
14	4	=	Cloning Applications	Protein extraction	Daily preparation and oral exam and Discussion
15	4	=	Second exam	Second exam	Exam.

71.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation and oral, monthly, or written exams, reports etc

Course	THEORETICAL			PRACTICAL			Final -Exam
	First Exam.	First Exam.	Quizzes	First Exam.	First Exam.	Quizzes	
1nd	12	12	4	4	4	4	60

72.Learning and Teaching Resources

Required textbooks (curricular books, if any)	David Clark, Nanette Pazdernik, Michelle McGehee.2011 Molecular Biology 3rd Edition - November 2
-----------------------------------------------	-----------------------------------------------------------------------------------------------------

Main references (sources)	Sue Carson, Heather Miller, Melissa Srougi, D. Scott Witherow .2019. Molecular Biology Techniques A Classroom Laboratory Manual 4th Edition - March 2019
Recommended books and references (scientific journals, reports...)	Textbook of Biotechnology, Kara and Ghosh Dalai British biotechnology journal
Electronic References, Websites	Biology: Cell Structure - YouTube

Course Description Form

73.Course Name	
Molecular Biology 1	
74.Course Code	
75.Semester / Year	
Second Semester (2023-2024)	
76.Description Preparation Date:	
1/2/2024	
77.Available Attendance Forms	
Actual Attendance	
78.Number of Credit Hours (Total) / Number of Units (Total)	
(2 Hours Theory)and (2 hours practical)	
79.Course administrator's name (mention all, if more than one name)	
Name: Dr.Alyaa Abdulhadi Salih	
Email: Alyaasaleh@uowasit.edu.iq	
80.Course Objectives	
Course Objectives	<ul style="list-style-type: none"> (1)Caring for students and developing their abilities. (2) Attracting and retaining distinguished faculty members. (3) Developing education and providing an attractive learning environment. (4) Continuous development and enhancement of quality applications. (5) Serving graduates and interacting with the labor market. (6) Completing the establishment of the infrastructure for postgraduate studies and scientific research. (7) Completing the establishment of the university's infrastructure. (8) Building an effective partnership locally and globally. (9) Developing the university's financial resources. (10) Develop a supportive administrative system.
81.Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> - Group discussions and assignments - Creating a competitive atmosphere among students and addressing individual differences - using appropriate educational methods - Research projects - Interdisciplinary discussion circles - Incorporating teaching methods that utilize educational technology

- Encouraging students for self-directed learning.

82. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name / Theoretical	Learning method / practical	Evaluation method
1	4	Referred to in the previous axis and each according to the content	Introduction and a brief history	Lab1/Equipment of biology laboratory	Daily preparation and oral examination and Discussion
2	4	=	DNA basic structure	Lab2/Chromosomal DNA Extraction from Bacteria	Daily preparation and oral examination and Discussion
3	4	=	RNA basic structure	Lab3/ DNA Extraction	Daily preparation and oral examination and Discussion
4	4	=	Organization of DNA	Lab 4/Chromosomal DNA extraction from bacteria	Daily preparation and oral examination and Discussion
5	4	=	Prokaryotic and Eukaryotic Chromosome	Lab5/ DNA Extraction From Plant Cells	Daily preparation and oral examination and Discussion
6	4	=	Types of RNA	Lab6/The polymerase chain reaction (PCR)	Daily preparation and oral examination and Discussion
7	4	=	DNA replication	Type of PCR	Exam.
8	4	=	First Exam		Daily preparation and oral examination and Discussion
9	4	=	DNA transcription	Lab 7 /Gel Electrophoresis: What is Gel Electrophoresis	Daily preparation and oral examination and Discussion
10	4	=	Post-transcriptional events	Lab 8/Plasmids Isolation and Extraction	Daily preparation and oral examination and Discussion
11	4	=	Translation	Lab 9/ RNA extraction	Daily preparation and oral examination and Discussion
12	4	=	Post translation events	Lab 10/ Chromosome Extraction From mouse Bone Marrow Cells	Daily preparation and oral examination and Discussion
13	4	=	Epigenetics Definition	Lab 11/ Micronucleus test	Daily preparation and oral examination and Discussion
14	4	=	DNA methylation	Second exam	Daily preparation and oral examination and Discussion
15	4	=	Second exam		Exam.

83.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Course	THEORETICAL			PRACTICAL			Final -Exam
	First Exam.	First Exam.	Quizzes	First Exam.	First Exam.	Quizzes	
1nd	12	12	4	4	4	4	60

84. Learning and Teaching Resources

Required textbooks (curricular books, if any)	David Clark, Nanette Pazdernik, Michelle McGehee. 2019. Molecular Biology 3rd Edition - November 2
Main references (sources)	Sue Carson, Heather Miller, Melissa Srougi, D. Scott Witherow .2019. Molecular Biology Techniques A Classroom Laboratory Manual 4th Edition - March 7, 2019
Recommended books and references (scientific journals, reports...)	Textbook of Biotechnology, Kara and Ghosh Dalai British biotechnology journal
Electronic References, Websites	Biology: Cell Structure - YouTube