Course Description Form

Course Name:
Molecular biology
Course Code:
MOBI435
Semester / Year:
First semester (fall semester) 2023-2024
Description Preparation Date:
1/9/2024
Available Attendance Forms:
Attendance
Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical hours + 3 practical hours (75 hours) / 3.5 units
Course administrator's name (mention all, if more than one name)
Name: Dr. Hala Abdalhadi Salih
Course Objectives

Course Objectives	he structure of the present core course on Molecular Biology has been magnificently designed with the perspective to achieve following key objectives: To provide comprehensive background of Salient features of Nucleic Acids and DNA model to the course learners. To impart detailed understanding of key events of molecular biology comprising of mechanism of DNA Replication, Transcription and Translation in Prokaryotes and Eukaryotes. To provide adequate knowledge about Post Transcriptional Modifications and

	Processing of Eukaryotic RNA to the course learners. To give detailed explanation of Transcriptional Regulation with examples of lac operon and tryptophan operon in prokaryotic as well as eukaryotic organisms along with key concept of Gene Silencing to the course learners.
Teaching and Learning Strategies	
Strategy	Theoretical - Interactive lecture - Brainstorming - Dialogue and discussion - Assigning reports -Conducting monthly and daily examinations Practical Interactive lecture -Discussion, dialogue, brainstorming -Conducting laboratory experiments -Assigning reports -Conducting daily and monthly examinations

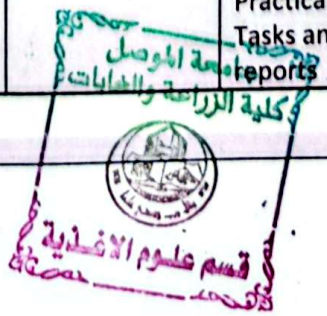
Course Structure

Week	Hours	Learning Outcomes	Unit/Topic	Teaching Method	Evaluation Method
1	Theory: 2	Theory: a1 - Understand molecular biology, genetic	Introduction to Molecular	Theory: Audio	Quizzes, Assignments,

	Practical: 3	material, replication, transcription, mutations. Practical: b1 - Identify methods for detecting genetic material and its forms.	Biology (Theory & Practical)	methods, board writing, direct discussion Practical: Tasks and reports	Discussions	
2	Theory: 2 Practical: 3	Theory: a1 - Understand molecular biology, genetic material, replication, transcription, mutations. Practical: b1 - Identify methods for detecting genetic material and its forms.	Structure and Properties of Nucleic Acids (Theory) DNA Extraction (Practical)	Theory: Audio methods, board writing, direct discussion Practical: Tasks and reports	Quizzes, Assignments, Discussions	
3	Theory: 2 Practical: 3	Theory: a1 - Understand molecular biology, genetic material, replication, transcription, mutations. Practical: b1 - Identify methods for detecting genetic material and its forms.	Nucleic Acid Loading (Theory) DNA Extraction (Practical)	Theory: Audio methods, board writing, direct discussion Practical: Tasks and reports	Quizzes, Assignments, Discussions	
4	Theory: 2 Practical: 3	Theory: a1 - Understand molecular biology and genetic material, replication, transcription. Practical: b1 - Identify methods for detecting genetic material and its forms.	Central Dogma of Molecular Biology (Theory) DNA Extraction using Kit (Practical)	Theory: Audio methods, board writing, direct discussion Practical: Tasks and reports	Quizzes, Assignments, Discussions	
5	Theory: 2 Practical: 3	Field Visit: d1 - Ability to connect theoretical knowledge with practical applications through observation of operations/devices/methods at a site or institution. Students observe tools, procedures, behaviors, or practical attitudes and are allowed to participate or ask questions.	Scientific Visit	Writing a report	Report	
6	Theory:	Theory: a1 - Understand	DNA	Theory:	Quizzes,	

	2 Practical: 3	molecular biology, genetic material, replication, transcription, mutations. Practical: b1 - Identify methods for detecting genetic material and its forms.	Replication (Theory) DNA Concentration Estimation (Practical)	Audio methods, board writing, direct discussion Practical: Tasks and reports	Assignments, Discussions	
7	Theory: 2 Practical: 3	Theory: a1 - Understand molecular biology, genetic material, replication, transcription, mutations. Practical: c1 - Test laboratory techniques related to genetic material.	DNA Transcription (Theory) DNA Purity Estimation (Practical)	Theory: Audio methods, board writing, direct discussion Practical: Tasks and reports	Quizzes, Assignments, Discussions	
8	Theory: 2 Practical: 3	Theory: a1 - Understand molecular biology, genetic material, replication, transcription, mutations. Practical: c1 - Test laboratory techniques related to genetic material.	Ribosome Structure in Prokaryotes and Eukaryotes (Theory) DNA Concentration and Purity Estimation (Practical)	Theory: Audio methods, board writing, direct discussion Practical: Tasks and reports	Quizzes, Assignments, Discussions	
9	Theory: 2 Practical: 3	Theory: a1 - Understand molecular biology, genetic material, replication, transcription, mutations.	DNA Translation (Theory) Gel Electrophoresis (Practical)	Theory: Audio methods, board writing, direct discussion Practical: Tasks and reports	Quizzes, Assignments, Discussions	
10	Theory: 2 Practical: 3	Theory: a1 - Understand molecular biology, genetic material, replication, transcription, mutations. Practical: c1 - Test laboratory techniques related to genetic material.	Genetic Mutation (Theory) Gel Electrophoresis (Practical)	Theory: Audio methods, board writing, direct discussion Practical: Tasks and reports	Quizzes, Assignments, Discussions	
11	Theory: 2	Theory: a1 - Understand molecular biology, genetic	Genetic Mutation	Theory: Audio	Quizzes, Assignments,	

	Practical: 3	material, replication, transcription, mutations. Practical: c1 - Test laboratory techniques related to genetic material.	(Theory) Cloning Vectors (Practical)	methods, board writing, direct discussion Practical: Tasks and reports	Discussions	
12	Theory: 2 Practical: 3	Theory: a1 - Understand molecular biology, genetic material, replication, transcription, mutations. Practical: c1 - Test laboratory techniques related to genetic material.	Polymerase Chain Reaction (PCR) (Practical only)	Theory: Audio methods, board writing, direct discussion Practical: Tasks and reports	Quizzes, Assignments, Discussions	
13	Theory: 2 Practical: 3	Theory: a1 - Understand molecular biology, genetic material, replication, transcription, mutations. Practical: c1 - Test laboratory techniques related to genetic material.	Types of Genetic Mutations (Theory) PCR (Practical)	Theory: Audio methods, board writing, direct discussion Practical: Tasks and reports	Quizzes, Assignments, Discussions	
14	Theory: 2 Practical: 3	Theory: a1 - Understand molecular biology, genetic material, replication, transcription, mutations. Practical: c1 - Test laboratory techniques related to genetic material.	Types of Genetic Mutations (Theory) RFLP Technique (Practical)	Theory: Audio methods, board writing, direct discussion Practical: Tasks and reports	Quizzes, Assignments, Discussions	
15	Theory: 2 Practical: 3	Theory: a1 - Understand molecular biology, genetic material, replication, transcription, mutations. Practical: c1 - Test laboratory techniques related to genetic material.	Types of Genetic Mutations (Theory) RFLP Technique (Practical)	Theory: Audio methods, board writing, direct discussion Practical: Tasks and reports	Quizzes, Assignments, Discussions	
Course Evaluation						



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

Learning and Teaching Resources	
Required textbooks (curricular books, if any)	no
Main references (sources)	Principles of molecular geneticist / Dr. mohammed baker
Recommended books and references (scientific journals, reports...)	Elviser journal Nature journal
Electronic References, Websites	/https://www.scientificamerican.com/chemistry

Course Instructor: Dr. Hala Abdulhadi

Teaching Assistant: Asst. Lect. Tamadur Turki

Head of the Scientific Committee: Asst. Prof. Dr. Taha Mohammed Taqi Mohammed

Head of the Department of Food Science: Prof. Dr. Somaya Khalaf Badawi

الاستاذ المساعد الدكتور
طه محمد تقي محمد

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قسم علوم الاغذية