هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission
اعتماد
NCAAA
2024
TP-153

Course Specification
(Bachelor)

Course Title:	BACTRIOLOGY
Course Code:	BIOL-332
Program:	Biology
Department:	Biology
College:	College of Science
Institution:	Majmaah University
Version:	3rd
Last Revision Date:	1/3/1444

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3 (2 + 2) hours					
Equivalent to 4.5 ECTS credits					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (5/ third Year)					
4. Course general Description:					
This course deals with the occurrence of bacteria in the environment, Bacterial cell structure, classification bacterial groups based on morphological, physiological and genetic characterization. Study key characteristics, sources, and biology of many commonly encountered and/or taxonomically interesting bacterial groups					
5. Pre-requirements for this course (if any)**:**					
BIOL-231 General Microbiology					
6. Co-requirements for this course (if any)**:**					
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7. Course Main Objective(s):					
The bacteriology course aims to provide a comprehensive understanding of bacterial structure, physiology, taxonomy, and classification methods. It also emphasizes bacterial roles in human health and disease, reproduction, nutrition, growth dynamics, staining techniques, and distinguishes gram-positive from gram-negative groups in practical and clinical contexts.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning	NIL	NIL
3	Hybrid • Traditional classroom • E-learning	NIL	NIL
4	Distance learning	NIL	NIL

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	-
4.	Tutorial	-
5.	Others (specify)	-
Total Contact hours		60

Workload (based on the academic semester)

No	Activity	Work Load /Hours
1.	Contact hours	60
2.	Self-study (Assignments, quizzes, reports, Discussions, Library, research)	60
	Total Workload	120
Equivalent to **ECTS credit points**		**4.5**

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.2	List the roles of bacteria in the life and in different applications, Describe the general characteristics of bacteria, Understand the principles and keys of bacterial taxonomy , Understand the positive and negative roles of bacterial in the life , Define basic	K2	Introductory PowerPoint lectures, Theory, and practical lessons	Paper and pen exam Oral exam and midterm exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	structures and shapes of different bacterial genera. , Describe the fine structure of bacterial cell. , Differentiate between the different genera of bacteria. , Illustrate the bacterial growth curve. , Write the different methods for bacterial staining , Summarize the factors effect on bacterial growth , summarize the nutritional requirements of bacteria , Describe the reproduction in bacteria, List the different animal and human diseases caused by some bacteria			
2.0	**Skills**			
2.2	Describe the general characteristics of bacteria and Understand the principles and keys of bacterial taxonomy , Understand the positive and negative roles of	S2	Practical sessions to gain practical skills	Examinations Quizzes competition Homework

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	bacterial in the life and Describe the fine structure of bacterial cell and able to Differentiate between the different genera of bacteria, summarize the factors effect on bacterial growth · summarize the nutritional requirements of bacteria , Describe the reproduction in bacteria , Discuss the different between gram positive and negative bacteria. , Describe the role of bacteria in genetic engineering and its applications in different fields.			
2.4	Perform the laboratory experiments precisely, operate all devices in lab, Diagram growth curve of bacteria, Assemble and collect important bacterial isolates,	S4	Discussion sessions And Practical sessions to gain practical skills	Practical examination

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	prepare different media, Cultivate the bacterial isolates, Carry out bacterial identification techniques			
3.0	**Values, autonomy, and responsibility**			
3.1	work constructively in a group, cooperating with their leaders and seniors and with other students, thus initiating the value of teamwork and compliance to work through systems; Build a friendly relationship between instructor and themselves so that students can understand more the subject matter. Use computers and other updated materials in their mode of teachings, e.g., using CD, information items and accessories in their presentations (audio visuals).	V1	(a) work and Solving problems in small and large groups during tutorial to Increase and enforce Interpersonal Skills (b) Use computer technology to get access to the course material.	Oral examination Observation of student behavior. Marks for student's presentation using power point.

C. Course Content

No	List of Topics	Contact Hours
1.	**Introduction: -** ▪ **An overview about the role of bacteria in the environment and their applications in different fields** ▪ **Distribution of bacteria in the environment** ▪ **Different between the prokaryotes and Eukaryotes**	**2**
2.	Growth of bacteria ▪ Culture and Pure Culture ▪ Media and growth conditions for diverse bacteria	**2**
3.	Bacterial taxonomy ▪ Bergey's Manual of determinative Bacteriology ▪ Bergey's Manual of Systematic Bacteriology ▪ Nomenclature of bacteria ▪ Identification ▪ Classification ▪ Morphological characteristics	**4**
4.	Bacterial motility ▪ Swimming by flagella ▪ Gliding movement ▪ Rotary movement	**2**
5.	Bacterial staining Simple Stains:(positive stain and negative stain) Compound or differential stains: Gram stain Spore stain Acid fast stain	**2**
6.	Bacterial cell structure and their functions ▪ Cell wall - Protoplast - Cytoplasmic membrane - Cytoplasmic contents: -Bacterial genome and plasmids - Stored materials - Gas Vacuoles -Spores (in some cases), Sporulation in bacteria	**4**
7.	Bacterial reproduction ▪ Reproduction methods in bacteria ▪ Bacterial growth curve ▪ Factors affect the growth curve of bacteria ▪ Generation time	**2**
8.	Bacterial Nutrition ▪ Energy resources for bacteria ▪ Heterotrophic bacteria ▪ Autotrophic bacteria ▪ Oxygen, light, elements, vitamins requirements	2
9.	▪ Culture techniques ▪ Culture of bacteria ▪ Cultural characteristics of bacteria	2

	▪ Maintenance of bacterial culture	
10.	▪	2
11	▪	2
12	▪	2
13	▪	2
14	▪	**2**
15	Short Description for: ▪ Microorganisms in Soil ▪ Microorganisms in Food and dairy ▪ Microorganisms in water	**4**
Total		**30**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Home work/Group project	every week	10
2.	Quiz, Oral Presentations	5th & 9th	10
3.	Mid exam I	7th & 8th	15
4.	Mid exam II	11th & 12th	15
٥.	E. Exam	14th Week	10
6.	Final Exam	18 Weeks	40
			100

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Prescott, L., Harley, J. and Klien, D. (2005). Microbiology, MacGraw 2- Larry McKane & Judy Kandel (1996) Microbiology–Essential and Applications, International Edition
Supportive References	• -Book note prepared by associate prof. Dr. Khaled El Banna - Brock Biology of Microorganisms, Twelfth edition by Madigan, Martinko, Dunlap and Clark; Publisher: Pearson Prentice-Hall, ISBN: 0132324601 (2008). -Benson, H.J. (2002). Microbiological Applications. Laboratory Manual in General Microbiology, eighth edition
Electronic Materials	http://www.bacteriamuseum.org/niches/wabacteria/bacteriology.shtml

Other Learning Materials	Electronic materials of Lecture notes and PowerPoints available in 'Black board' database

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom and fully equipped laboratory facilities are available
Technology equipment (projector, smart board, software)	E-podium and smart board facilities are available
Other equipment (depending on the nature of the specialty)	Nil

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct assessment
Effectiveness of Students assessment	Program Leader	Direct assessment
Quality of learning resources	Students	Indirect assessment
The extent to which CLOs have been achieved	Faculty	Direct assessment
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	BIOLOGY DEPARTMENT COUNCIL
REFERENCE NO.	**7**
DATE	**4/4/1446 [07/10/2024]**