



Republic of Yemen
Ministry of Higher Education & Scientific Research
21 September University of Medical & Applied Sciences



Faculty of Laboratory Medicine.

Department of Microbiology & Immunology

Course Specification of Medical Bacteriology I

Course No. (03.02.324)

2022/2023

I. Course Identification and General Information:				
1	Course Title:	Medical Bacteriology I		
2	Course Code & Number:	03.02.324		
3	Credit Hours:	Theory Hours		
		Lecture	Exercise	Practical
		2	0	2
				Credit Hours
				3
4	Study Level/ Semester at which this Course is offered:	2nd Level / 2nd Semester		
5	Pre –Requisite (if any):	General bacteriology		
6	Co –Requisite (if any):	None		
7	Program (s) in which the Course is Offered:	Bachelor in laboratory medicine		
8	Language of Teaching the Course:	English		
9	Study System:	semester X2		
10	Mode of Delivery:	Regular		
11	Location of Teaching the Course:	University Campus		
12	Prepared by:	Prof. Dr. Khalid A. AL-Moyed		
13	Date of Approval:	2022-2023		

II.	A. II. Course Description:
	This course covers systemic pathogenic, their pathogenesis, modes of transmission, epidemiology,



methods for isolation and identification. Areas of study include: Gram- positive cocci, Gram- negative cocci, Gram- positive bacilli and acid-fast bacilli, Gram- negative bacilli, *Mycoplasmas*, *Spirochetes*, *Chlamydiae*, *Rickettsiae*, AND Minor Bacterial Pathogens as well as methods of testing their susceptibility to antibacterial agents

III. Alignment Course Intended Learning Outcomes with program outcomes		
III. Course Intended Learning Outcomes (CILOs)	Referenced PILOs	
A. Knowledge and Understanding: <i>Upon successful completion of the course, students will be able to:</i>		
a1	Discuss the classification, morphological features, pathogenicity, virulence factors, and mode of transmission, and identify cultural characters and biochemical reactions of the different common bacterial pathogens as well as different methods for laboratory diagnosis of infections caused by these bacteria.	A2
a2	Describe the different methods of infection control and practices in the laboratory and their role in the hospital infection control program	A4
B. Intellectual Skills: <i>Upon successful completion of the course, students will be able to:</i>		
b1	Diagnose common medical laboratory diagnostic tests for the different suspected human bacterial infections.	B2
C. Professional and Practical Skills: <i>Upon successful completion of the course, students will be able to:</i>		
c1	Interpret correctly the results of the various laboratory bacterial diagnostic tests and evaluate these results in correlation with the clinical condition of the patient	C3
D. Transferable Skills: <i>Upon successful completion of the course, students will be able to:</i>		



d1	Educate the general public and assist patients through acceptable customer service interactions	D1	Educate the general public and to assist patients through acceptable customer service interactions
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IV. Alignment Course Intended Learning Outcomes with Teaching Strategies and Assessment methods:

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1	Discuss the classification, morphological features, pathogenicity, virulence factors, and mode of transmission, identify cultural characters and biochemical reactions of the different common bacterial pathogens as well as different methods for laboratory diagnosis of infections caused by these bacteria	<ul style="list-style-type: none"> Interactive lectures Self-learning Discussion 	<ul style="list-style-type: none"> Written exam (mid and final terms and quizzes)
a2	Describe the different methods of infection control and practices in the laboratory and their role in the hospital infection control program	<ul style="list-style-type: none"> Interactive lectures Self-learning Discussion 	<ul style="list-style-type: none"> Written exam (mid and final terms and quizzes)

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	Diagnose common medical laboratory diagnostic tests for the different suspected human bacterial infections.	<ul style="list-style-type: none"> Interactive lectures Discussion Self-learning 	<ul style="list-style-type: none"> Written exam (mid and final terms and quizzes). Assignment

C Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	Interpret correctly the results of the various laboratory bacterial diagnostic tests and evaluate these results in correlation with the clinical condition of the patient	Practical session	<p>Written exam (mid and final terms and quizzes).</p> <ul style="list-style-type: none"> Final practical exam Assignment:

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and



Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	Educate the general public and to assist patients through acceptable customer service interactions	Seminar	Assignment

IV. Course Content:					
A – Theoretical Aspect:					
NO.	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	Gram's- positive Cocci	-Classification of Bacteria -Identification of Bacteria -Morphology of Bacteria -Mechanisms of Bacterial Pathogenesis -Diagnosis of Bacterial Infections -Treatment of Bacterial Infections -Prevention of Bacterial Diseases\	1	2	a1,a2, b1
2	2. <i>Streptococcus</i> (classification)	Classification of Bacteria -Identification of Bacteria -Morphology of Bacteria -Mechanisms of Bacterial Pathogenesis -Diagnosis of Bacterial Infections -Treatment of Bacterial Infections -Prevention of Bacterial Diseases	1	2	a1, a2, b1
3	Gram's- negative Cocci: 3. <i>Neisseria</i> : A- <i>Neisseria meningitides</i> B- <i>Neisseria gonorrhoeae</i> and infection	-Classification of Bacteria -Identification of Bacteria -Morphology of Bacteria -Mechanisms of Bacterial Pathogenesis -Diagnosis of Bacterial Infections -Treatment of Bacterial Infections	1	2	a1, a2, b1



		-Prevention of Bacterial Diseases			
4	Gram-positive rods (None spore forming), Aerobic <i>Bacillus anthracis</i> <i>Bacillus cereus</i> <i>Listeria monocytogenes</i> <i>Corynebacterium diphtheriae</i>	-Classification of Bacteria -Identification of Bacteria -Morphology of Bacteria -Mechanisms of Bacterial Pathogenesis -Diagnosis of Bacterial Infections -Treatment of Bacterial Infections -Prevention of Bacterial Diseases	1	2	a1, a2, b1
5	<i>Actinomycetes, norcardiosis and actinomycetoma</i>	-Classification of Bacteria -Identification of Bacteria -Morphology of Bacteria -Mechanisms of Bacterial Pathogenesis -Diagnosis of Bacterial Infections -Treatment of Bacterial Infections -Prevention of Bacterial Diseases	1	2	a1, a2, b1
6	Gram-positive rods (Spore forming, anaerobes), 1. Overview: Clostridia, spore forming a) The main biological characteristics of Clostridia (<i>C. tetani</i> , <i>C. botulinum</i> and <i>C. perfringens</i>). b) Infection and Pathogenesis of Clostridia (tetanospasmin, and Botulinum toxin, toxin of <i>C.perfringens</i>) and immunity c) Diagnostic laboratory tests for the diseases caused by Clostridia d) Treatment and prevention of Clostridia diseases	-Classification of Bacteria -Identification of Bacteria -Morphology of Bacteria -Mechanisms of Bacterial Pathogenesis -Diagnosis of Bacterial Infections -Treatment of Bacterial Infections -Prevention of Bacterial Diseases	1	2	a1, b1



7	<p>Gram-Negative Rods Related to the Enteric Tract Enterobacteriaceae</p> <p>pathogens both within & outside the enteric tract Escherichia Salmonella</p> <p>pathogens primarily within the enteric tract Shigella Vibrio Campylobacter Helicobacter</p> <p>pathogens outside the enteric tract Klebsiella–Enterobacter–Serratia Group Proteus–Providencia–Morganella Group Pseudomonas Bacteroides & Prevotella Fusobacterium</p>	<p>-Classification of Bacteria -Identification of Bacteria -Morphology of Bacteria -Mechanisms of Bacterial Pathogenesis -Diagnosis of Bacterial Infections -Treatment of Bacterial Infections -Prevention of Bacterial Diseases</p>	1	2	a2, b1
8	<p>Minor gram-positive rods Pathogens Bacteria of Minor Medical Importance Abiotrophia Achromobacter Actinobacillus (Aggregatibacter) Aeromonas Alcaligenes Arachnia Arcanobacterium Arizona Bartonella quintana & Bartonella bacilliformis Bifidobacterium Bradyrhizobium Branhamella Burkholderia pseudomallei Calymmatobacterium Capnocytophaga Cardiobacterium Chromobacterium</p>	<p>-Classification of Bacteria -Identification of Bacteria -Morphology of Bacteria -Mechanisms of Bacterial Pathogenesis -Diagnosis of Bacterial Infections -Treatment of Bacterial Infections -Prevention of Bacterial Diseases</p>	1	2	a2, b1



	<p>Chryseobacterium Citrobacter Corynebacterium jeikeium Corynebacterium minutissimum Edwardsiella Eikenella Erwinia Erysipelothrix Eubacterium HACEK Group Haemophilus aegyptius Haemophilus ducreyi Hafnia Kingella Lactobacillus Micrococcus Mobiluncus Moraxella Peptococcus Peptostreptococcus Plesiomonas Porphyromonas Propionibacterium Rhodococcus Sarcina Spirillum Streptobacillus Streptococcus suis Tropheryma Veillonella Wolbachia Yersinia enterocolitica & Yersinia pseudotuberculosis</p>				
9	Med term		1	2	a1, b1
10	<p>Gram-Negative Rods Related to the Respiratory Tract Introduction Haemophilus Bordetella Legionella Acinetobacter</p>	<p>-Classification of Bacteria -Identification of Bacteria -Morphology of Bacteria -Mechanisms of Bacterial Pathogenesis -Diagnosis of Bacterial Infections -Treatment of Bacterial Infections -Prevention of Bacterial</p>	1	2	a1, a2,b1



		Diseases			
11	Gram-Negative Rods Related to Animal Sources (Zoonotic Organisms) Introduction Brucella Francisella Yersinia Pasteurella Bartonella	-Classification of Bacteria -Identification of Bacteria -Morphology of Bacteria -Mechanisms of Bacterial Pathogenesis -Diagnosis of Bacterial Infections -Treatment of Bacterial Infections -Prevention of Bacterial Diseases			a2, b1
12	Spirochetes Introduction Treponema 1. Treponema pallidum 2. Nonvenereal treponematoses Borrelia 1. Borrelia burgdorferi 2. Borrelia recurrentis & Borrelia hermsii 3. Borrelia miyamotoi Leptospira Other Spirochetes	-Classification of Bacteria -Identification of Bacteria -Morphology of Bacteria -Mechanisms of Bacterial Pathogenesis -Diagnosis of Bacterial Infections -Treatment of Bacterial Infections -Prevention of Bacterial Diseases			a1, a2
13	Final Theoretical Exam				
Tot.	Number of Weeks /and Units Per Semester		13	26	

V. Teaching Strategies of the Course:

1-	• Lectures
2-	• Practical session
3-	• Seminars



4	• Self-learning
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VI. Assessment Methods of the Course:

No	Assignment
1	• Written Exams (Short Essays) and Quizzes
2	• Multiple Choice Questions (MCQ)
3	• Practical Exams (PE)
4	• Assignment

VII. Assignments:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
	Assignment		5	5%	d1
1	Midterm Exam	8	15	15%	a1,a2,b1
2	Practical exam	12	30	30%	c1
3	Final Exam	16	50	50%	a1,a2,b1,d1
	Total	100		100%	

IX. Learning Resources:

· Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).

1- Required Textbook(s).



1-	Warren Levinson, Peter Chin-Honh, Elizabeth A. Joyce, Jesse Nussbaum and Brian Schwartz, Review of Medical Microbiology and Immunology, 2018, 15th edition, McGraw-Hill, ISBN: 978-1-259- 64449-8
2-	Jawetz, Melnick, & Adelberg's Medical Microbiology, 28e Riedel, Stefan Published by McGraw-Hill Education, 2019 ISBN 10: 1260012026 ISBN 13: 9781260012026
2- Essential References.	
1-	Warren Levinson, Peter Chin-Honh, Elizabeth A. Joyce, Jesse Nussbaum and Brian Schwartz, Review of Medical Microbiology and Immunology, 2018, 15th edition, McGraw-Hill, ISBN: 978-1-259- 64449-8
2-	Bailey & Scott's Diagnostic Microbiology 15th Edition Patricia M. Tille- February 4, 2021
3- Electronic Materials and Web Sites etc.	
1-	http://www.asmtusa.org
2-	http://www.phage.org/black09.htm
3-	http://www.microbe.org/microbes/virus_or_bacterium.asp
4-	http://www.microbelibrary.org
	http://www.bact.wisc.edu/Bact330/330Lecturetopics

XI. Course Policies:

1	Class Attendance: Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	Tardiness: -If the student dose not attend for more than 6 times, the student will be obligated to withdrew from the course



3	Exam Attendance/Punctuality: No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.
4	Assignments & Projects: Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	Cheating: Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	Forgery and Impersonation: Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
7	Other policies: The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration