



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 Sanitary Microbiology

Course No. (03.02.330)

2022/2023



I. Course Identification and General Information:				
1	Course Title:	Sanitary Microbiology		
2	Course Code & Number:	03.02.330		
3	Credit Hours:	Theory Hours		
		Lecture	Exercise	Practical
		2	0	2
				Credit Hours
				3
4	Study Level/ Semester at which this Course is offered:	4 th year / 1 st Semester		
5	Pre –Requisite (if any):	Systemic bacteriology I&II		
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		
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:	2023		

II. Course Description

This course provides students with knowledge highlights health risks due to lack of safe drinking water, disease transmission due to poor sanitation and hygiene practices, emphasizing interventions for improving water, sanitation and hygiene practices to reduce disease transmission.

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	Name the Microorganisms responsible for water pollution especially Water-borne pathogenic microorganisms and their transmission	A1
a2	Comprehend the various methods to determine the Sanitary quality of water and sewage treatment methods employed in waste water treatment	A4
B. Intellectual Skills: <i>Upon successful completion of the course, students will be able to:</i>		
b1	Perform standard hand washing techniques.	B1
b2	Distinguish between the different microorganisms in different food and water products	B2
C. Professional and Practical Skills: <i>Upon successful completion of the course, students will be able to:</i>		
c1	Analyze the quality of drinking water in microbiology lab.	C1
c2	Utilize laboratory information system standard qualitative and quantitative techniques, for isolation and identification of microbial contaminants of food, as well as to prevent or minimize exposure of the food chain to such agents.	C2
D. Transferable Skills: <i>Upon successful completion of the course, students will be able to:</i>		
d1	Educate the general public and to assist patients through acceptable customer service interactions	D1
d2	Demonstrate oral and written effective communication skills,	D2



d3	Cooperate with other team members in sanitary activities in the community.	D3
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III. 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	Name the Microorganisms responsible for water pollution especially food Water-borne pathogenic microorganisms and their transmission	Lectures Practical	Exam, Practical exams
a2	Comprehend the various methods to determine the Sanitary quality of food and water and sewage treatment methods employed in waste water treatment	Lectures Practical	Exam
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	Perform standard hand washing techniques.	Lectures Practical	Exam
b2	Distinguish between the different microorganisms in different food and water products	Lectures Practical	Practical exams
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	Analyze the quality of food and drinking water in microbiology lab.	Lectures Practical	Exam Practical exams



c2	Utilize laboratory information system standard qualitative and quantitative techniques, for isolation and identification of microbial contaminants of food, as well as to prevent or minimize exposure of the food chain to such agents	Lectures Practical	Exam Practical exams
(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	Lectures Practical	seminars Practical exams
d2	Demonstrate oral and written effective communication skills,	Lectures Practical	seminars Practical exams
d3	Cooperate with other team members in sanitary activities in the community.	Lectures Practical	seminars Practical exams

IV. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List		Number of Weeks	contact hours	Learning Outcomes
1	Food as a substrate for microorganisms I		1	2	a1, a2
2	Food as a substrate for microorganisms II		1	2	a1,b2
3	Microorganism important in food microbiology		1	2	a1,b2
4	General principles underlying spoilage I		1	2	a2,b2
5	General principles underlying spoilage II		1	2	a2,b1
6	Microbiology of milk and milk products		1	2	a2,b2
7	Med tem exam		1	2	a1,b1
8	Microbiology of meat and meat products		1	2	a2,b2
9	Microbiology cereal and cereal product		1	2	a1,b1
10	Food borne diseases		1	2	a2,b2
11	Food borne poisonings and infections		1	2	a2,b1
12	Aquatic microorganisms		1	2	a1,b2
13	Drinking water treatment		1	2	a1,b1
14	Final exam		1	2	a1,b1
Number of Weeks /and Units Per Semester			14	28	



B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	<p>Microbiology of water:</p> <p>Microbiological analysis of water (total count, indicative organism), B.O.D. & C.O.D. - determination and implication.</p> <p>Coliform test - detection of faecal and non-faecal coliform);</p> <p>IMViC test; determination of MPN microbiological treatment of sewage and industrial waste water.</p> <p>Anaerobic Treatment (safety tank).</p>	3	6	c1,d1,d3,c2
2	Enumeration of microbes- Isolation of pure culture from natural sources	1	2	c2,d2
3	Bacteria from soil-by serial dilution and pour-plate/spread plate method. (b) Yeast from rotten banana or apple-by the method same as (a), (c) Molds from infected citrus fruits-by streak-plate method, (d) Microbes from air-by agar-plate exposure method.	2	4	c2,d3
4	<p>1. Water microbiology- i) Microbiological examination of water: (Drinking water, Supply water, Pond water)</p> <p>a) Presumptive test</p> <p>b) Confirmatory test</p>	2	4	c2,d1,c2



	c) Completed test: for coliform ii) IMViC reactions. 2. Milk microbiology Microbiological examination of milk: By Methylene-blue dye reduction test; 3. Phenol coefficient- Determination of Phenol-coefficient (Dettol), Test organism to be used: E. coli.			
5	3. Food Microbiology: (15) Milk as a growth medium of bacteria, Normal microflora in milk, undesirable microbes in milk and normal microflora of meat, poultry, eggs, fruits and vegetable; Fresh food, Fresh milk, canned food and stored grains; Microscopic examination and Culture, phosphatase test of pasteurized milk.	2	4	c2,d1,c1
Number of Weeks /and Units Per Semester		10	20	

V. Teaching Strategies of the Course:

1-	Lectures
2-	Practical session
3-	seminars



VI. Assessment Methods of the Course:

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

VII. Assignments:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Midterm Exam	8	20	20%	a1,a2,b1,c1
2	Practical exam	14	30	30%	a1,a2,b1,c1,d1
3	Final Exam	16	50	50%	a1,a2,b1,c1
	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
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2-	Bailey & Scott's Diagnostic Microbiology 15th Edition Patricia M. Tille- February 4, 2021
3- Electronic Materials and Web Sites etc.	
1-	http://www.asmus.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:



Republic of Yemen
Ministry of Higher Education & Scientific Research
21 SEPTEMBER UMAS
Faculty of Laboratory Medicine
Department of Microbiology & Immunology
Unit of Development & Quality assurance

وزارة التعليم العالي والبحث العلمي
جامعة ٢١ سبتمبر للعلوم الطبية والتطبيقية
كلية الطب المخبري
قسم الأحياء الدقيقة والمناعة
وحدة التطوير وضمان الجودة

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