هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

Course Specifications

Course Title:	**Medical Microbiology**
Course Code:	**213 NUR-3**
Program:	**Bachelor of Nursing**
Department:	**Nursing**
College:	**College of Nursing**
Institution:	**Jazan University**

Table of Contents

A. Course Identification

1. Credit hours:
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: 5th level / 2nd year.
4. Pre-requisites for this course (if any)**: None.**
5. Co-requisites for this course (if any)**: None.**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	4 hrs	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	20 hrs
2	**Laboratory/Studio**	20 hrs
3	**Tutorial**	10 hrs
4	**Others** (specify)	
	Total	50 hrs

B. Course Objectives and Learning Outcomes

1. Course Description

This course is designed to give the students a general knowledge and an introduction to: Microorganisms (bacteria, fungi and Viruses). It covers various topics in general bacteriology, mycology, virology, and immunology including occurrence, general properties, morphology ultra – structure taxonomy, characterization, genetics, medical and industrial importance. The laboratory section covers basic techniques including isolation, purification, and cultivation, on various types of media, staining of microbial cells, microscopic examination, sterilization and disinfection.

2. Course Main Objective

The course objectives are organized in line with the program outcomes. At the end of the course, the student will be able to:

1. Describe and differentiate among the broad classes of microorganisms that are medically important, Including bacteria, protozoa, fungi, and viruses.
2. Describe the appropriate terminology the structure, function and characteristics of prokaryotes, eukaryotes and viruses.
3. Explain the metabolic processes necessary for microbe survival, focusing on the different methods of energy acquisition.
4. Describe ways microbes can cause infection and pathology in humans and apply this understanding to infection prevention and control in healthcare settings.
5. Describe the human immune response and Types of immunity.
6. Identify strategies employed by antimicrobial drugs and how they specifically target certain pathogens and apply this understanding to antimicrobial treatment, drug resistance and interaction with the host.
7. Demonstrate knowledge and skills in common laboratory procedures.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Describe the knowledge of microorganisms that are medically important and their apparently relevance of infectious diseases.	K1
1.2	Define the principles of microbial taxonomy, structure, physiology, and pathogenesis accurately.	K1
1.3	Identify the principles of prevention and treatment of pathogenic microorganism's infection in humans comprehensively like bacterial, viral, fungal and parasitic infections.	K3
1.4	Illustrate how the human immune system counteracts infection efficiently by specific and nonspecific mechanisms.	K1
2	**Skills :**	
2.1	Demonstrate efficiency the principles of the laboratory tests in diagnosis.	
2.2	Design how to use independently the sources, analyze, evaluate, and criticize topics.	S1
2.3	Integrate Efficiency knowledge of microbiology with other skills accurately to benefit the delivery of health care.	S1
2.4	Determine correctly evidenced- microbiological practices to the clinical care of patients.	S4
3	**Values:**	
3.1	Practice appropriate leadership and management skills.	V2
3.2	Demonstrate a commitment to lifelong learning.	V3

C. Course Content

No	List of Topics (Theory and practical)	Contact Hours
1	**Introduction** •Introduction in microbiology •Isolation of bacteria strains •Purification of bacterial cultures • Identification of tools and equipment used in microbiological lab. Disinfections and sterilizations of tools and cultural media **Bacteria** •Preservation of pure microbial cultures •Characterization of bacterial cultures •Staining of bacterial strains •Staining and examinations of bacterial slides Disinfections and sterilizations of tools and cultural media	**L 02** **P 02**
2	**Bacteria** •Morphology and ultra-structure of bacterial strains •Classification of bacteria •Environmental conditions affecting bacterial growth •The most important bacterial media and their components Characterization of bacterial cultures **Bacteria** •The normal bacterial flora, pathogenic bacteria and the most bacterial diseases •The medical importance of some microbial strains •Bacterial sensitivity against antibiotics •Use of biomedical and serological tests to detect and identify bacterial strains Purification and Isolation of bacteria strains	**L 02** **P 02**
3	**Viruses** •Morphology and structure of viruses • Classification – Lytic cycle- Common viral infection • Virus transmission – Virus cultivation The most important bacterial media and their components	**L 02** **P 02**
4	**Viruses** • Introduction and definitions of immunological scientific terms • Identification of immunology • Natural and acquired immunity •Antigens-Antibodies • Phagocytosis Diagnostic measures of common infectious diseases	**L 02** **P 02**
5	**Fungi** •Morphology and structure of fungi •Classification of fungi •Isolation of fungi from different localities Staining of bacterial strains **Fungi** •Fungi which cause the most common fungal diseases •Microscopic examination and morphological characterization of different types of fungi Environmental conditions affecting bacterial growth	**L 02** **P 02**

6	**Common infectious diseases:** •Describe the common infectious diseases: • Respiratory: Rheumatic fever-Scarlet fever-Typical pneumonia-Epidemic meningitis-Tuberculosis). •Gastrointestinal :Toxic food poisoning-non toxic food poisoning-Botulism Traveler's diarrhea-Enteric fever-Bacillary dysentery-Cholera diseases-Malta fever). Laboratory diagnosis of pathogenic	**L 02** **P 02**
7	**Sexually transmitted diseases:** •Sexually transmitted diseases: Syphilis-Gonorhoea- HIV •Identify natural habitat, source of infection and mode of transmission of infectious diseases •Routes of infection and some important clinical conditions and vaccines in common Laboratory diagnosis of pathogenic	**L 02** **P 02**
8	**Parasitology:** •Parasitism and its types, hosts and its types •Introduction to protozoan parasites metazoan parasites and amoeba •Study some types of parasites Laboratory diagnosis of pathogenic	**L 02** **P 02**
9	**Sexually transmitted diseases:** Syphilis-Gonorhoea- HIV Identify natural habitat, source of infection and mode of transmission of infectious diseases Routes of infection and some important clinical conditions and vaccines in common Microscopic examination of parasites.	**L 02** **P 02**
10	**Protozoan parasites** •Entamoeba sp. Plasmodium sp, Lieshmania sp. •Metazoan parasites, Schistosoma sp. Faschiola sp., Taenia sp. Ascaris sp. Trichomonas vaginalis, Hymenolepis nana Microscopic examination of parasites.	**L 02** **P 02**
11	Practical Final exam	
12	Theory exam	
Total		**40**

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	Describe the knowledge of microorganisms that are medically important and their apparently relevance of infectious diseases.	-Lectures in classrooms in order to introduce the basic information -Small group discussion to determine the natural relationships between bacteria and human diseases.	- Written exam. -Assignment evaluation - Lab reports
1.2	Define the principles of microbial taxonomy, structure, physiology, and pathogenesis accurately.		
1.3	Identify the principles of prevention and treatment of pathogenic		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	microorganism's infection in humans comprehensively like bacterial, viral, fungal and parasitic infections.		
1.4	Illustrate how the human immune system counteracts infection efficiently by specific and nonspecific mechanisms.		
2.0	**Skills**		
2.1	Demonstrate efficiency the principles of the laboratory tests in diagnosis.	-Tutorial & practical to investigate the main aspects of bacterial strains.	- Practical exam. -Assignment evaluation - Lab reports
2.2	Design how to use independently the sources, analyze, evaluate, and criticize topics.		
2.3	Integrate Efficiency knowledge of microbiology with other skills accurately to benefit the delivery of health care.		
2.4	Determine correctly evidenced-microbiological practices to the clinical care of patients.		
3.0	**Values**		
3.1	Practice appropriate leadership and management skills.	-working in groups during lab experiments	-Continuous assessment during lab session
3.2	Demonstrate a commitment to lifelong learning.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Attendance / participation	Weekly	5%
2	Practical Assessment (assignment /seminars / assignments / presentations……. (Individual).	Weekly	5%
3	Midterm theory Examination.	5 th	15%
4	Continuous assessment & course work (Individual)	Weekly	5%
5	Short assessment (quiz, oral evaluation, group project, group presentation, …etc.)	3 th	10%
6	Final Practical Examination.	11 th	10%
7	Final theory examination.	12 th	50%
8	Total		100

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Scheduled office hours arranged for individual consultation for students of academic advice each week. Each group of students is assigned to a faculty member who will be available for academic guidance at specific times during office hours.

Consultations: 2hrs/ week and academic advice: 2hrs/ week.

F. Learning Resources and Facilities

1 .Learning Resources

Required Textbooks	1. Cowan, M. K. (2017). *Microbiology: a Systems Approach*, 5th. Ed., New York, NY: McGraw-Hill Higher Education. 2. Greenwood, D., Slack, R., Peutherer, J. and Barer, M. (2011). *Medical Microbiology*. 7th ed., Churchill Livingstone Elsevier. 3. Gillespie, S. and Bamford, K. (2012). *Medical Microbiology and Infection at a glance.* 4th ed., Wiley-Blackwell. 4. Madigan, M.T., Martinko, T.M., Bender, K.S., Buckley, D.H. and Stahl, D.A. (2015). *Brock Biology of Microorganisms.* 14ed., Pearson Education Inc: United states. 5. Harvey, R. R., Cornelissen, C. N. and Fisher, B. D. (2013). *Lippincott's Illustrated Reviews 'Microbiology'*, 3rd ed. Philadelphia: Lippincott Williams & Wilkins. Michael R. B.(2018).*Medical Microbiology: A Guide to Microbial Infections: Pathogenesis, Immunity, Laboratory Investigation and Control*, 19th ed., Churchill Livingstone Elsevier.
Essential References Materials	1. BIOS Instant Notes In Medical Microbiology. William Irving, Tim Boswell, Dlawer AlaAldeen. Published by Taylor & Francis Books India Pvt. Ltd., 2006. 2. Gardner, J.F . and Peel , M.M 1991, Introduction to sterilization , disinfection and infection control, 2nd edition , Churchill Livingstone, London 3. Inglis , T.J. J 1996, Microbiology and infection , Churchill Livingstone New York 4. David Greenwood etal., Medical Microbiology, ChurchHill Living stone Publication, 15th edition, 2000. 5. John P. Harley. Microbiology Lab Manual. McGraw Hill Medical Publication division, 7th edition, 2007. 6. Topley & Wilson's. Principles of Bacteriology, Virology and Immunity. Edward Arnold, London, 8th edition, 1990. 7. Warren Levinson and Ernst Jawetz. Medical Microbiology and Immunology, Examination and Broad review. Lange Publication, 17th edition, 2002. Actor, J.K. 8. Elsevier's Integrated Immunology and Microbiology (1st Ed.),Mosby/Elsevier, Philadelphia, 2007 9. The Short Textbook of Medical Microbiology for Nurses. Gupte Satish. Published by Jaypee Digital, 2011.
Electronic Materials	Saudi Digital Library (SDL)
Other Learning Materials	Saudi Digital Library (SDL)

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• Lecture rooms (for 30 students). • Microbiology Laboratory (for 30 students).
Technology Resources (AV, data show, Smart Board, software, etc.)	• Smart Board with ICT software and internet connection in the classrooms • Audio speakers for voice amplification and audio streaming • Lapel and handheld microphones for teacher and students. • Computer laboratories for groups of 30 students.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Lab equipment like (Electronic pipettes, beakers, flasks ……etc.)

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of course learning outcome	Faculty	Direct
Effectiveness of teaching and assessment	Students	Indirect
Course content assessment	Students	Indirect
Quality of learning resources	Students	Indirect
Instructor assessment	Students	Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

PREPARED BY COURSE COORDINATOR/ **DR. RANIA AHMED**