



Medical microbiology (Course Syllabus) Catalogue 2023-2024

College/ Institute	Erbil Medical Technical Institute		
Department	Anaesthesia		
Module Name	Medical microbiology		
Module Code	MEM204		
Degree	Technical Diploma	<input checked="" type="checkbox"/>	Bachler <input type="checkbox"/>
	High Diploma	<input type="checkbox"/>	Master <input type="checkbox"/> PhD <input type="checkbox"/>
Semester	Second		
Qualification	MSc Medical Microbiology		
Scientific Title	Lecturer		
ECTS (Credits)	6		
Module type	Prerequisite	<input checked="" type="checkbox"/>	Core <input type="checkbox"/> Assist. <input type="checkbox"/>
Weekly hours			
Weekly hours (Theory)	(2)hr Class	(75)Total hrs Workload	
Weekly hours (Practical)	(2)hr Class	(75)Total hrs Workload	
Number of Weeks	12		
Lecturer (Theory)	Nabaz F. shaker		
E-Mail & Mobile NO.	Nabaz.shakir@epu.edu.iq-07504459543		
Lecturer (Practical)	Aliya Talat Abdulraman		
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Websites			

Course Book

Course Description	<p>In this course the student will have the basic information about common genes of bacteria which cause common eye diseases, and how to recognize it in the laboratory. At the end of the course the student know all Instruments and methods used for sterilization.</p> <p>Laboratory exercises develop fundamental skills in aseptic technique, microscopy, pure culture study, and the isolation and identification of pathogenic microorganisms. Students working "hands-on" in the labs develop an understanding of the microbiological elements necessary for the diagnosis of infectious diseases. The students participate in an active, small-group learning experience, recalling concepts and information. Addressing questions related to disease, epidemiology, pathogenesis, and prevention.</p>
Course objectives	<p>On completion of this course the student will be able to:</p> <ul style="list-style-type: none"> • Identify all important pathogenic bacteria; determine the relationship between them and the manner during working inside laboratory. • Determine bacterial characteristics determine infection and how it's done, distinguish important bacteria which causes keratitis and conjunctivitis • Determine the differences between the bacteria and fungi, what are important equipment's, sterilization methods and stains available in laboratory. • Demonstrate proficiency and use of the following in the

	<p>laboratory: streak plate isolation technique; bacterial staining techniques; wet mounts; and proper culture handling.</p> <ul style="list-style-type: none"> • Visually recognize and explain the macroscopic and microscopic characteristics of fungi, protozoa, and bacteria. <p>Properly obtain culture, identify, and explain microorganisms in environmental cultures.</p>
<p>Student's obligation</p>	<p><u>Attendance Class</u> Attendance is an important component of learning. Students are expected to attend all classes and to arrive by the beginning of and remain for the entire class period. If a student misses a class, he or she is responsible for making up the work by obtaining a classmate's notes and hand-outs and turning in any assignments due.</p> <p><u>Written Work</u> Students are expected to prepare professional, polished written work. Written materials must be typed in the format required by the instructor.</p> <p><u>Laboratory Skills:</u> The students should master the following laboratory skills: aseptic and pure culture techniques, preparation of and viewing samples for microscopy, use appropriate methods to identify microorganisms, estimate the number of microorganisms in a sample, and use common lab equipment. They should practice safe microbiology, using appropriate protective and emergency procedures.</p> <p><u>Requirement Degree of Accesses</u> At the end of course the student should obtain degree not less than 50% for theory and practices.</p>
<p>Required Learning Materials</p>	<p>Theory: lecture halls with computers equipment for lecture presentations, white board, overhead projector, posters</p> <p>Laboratory practice:</p> <p>Clinical practice: equipment and glasses available in the laboratory.</p>

	General: library, computer suite with internet access.				
Evaluation	Task	Weight (Marks)	Due Week	Relevant Learning Outcome	
	Paper Review	4%	4	1-4	
	Assignments	Homework	10%	10	1-2-3
		Class Activity	2%	4	1-2-3-4
		Report	4%	4	2-4
		Seminar	10%	2	1-2
		Essay			
		Project			
	Quiz	4%	8	1-2-4	
	Lab.	10%	10	4-6-7	
	Midterm Exam	16%	1		
	Final Exam	40%	2		
	Total	100%			
Specific learning outcome:	<p>Student will be able to</p> <ol style="list-style-type: none"> 1. Describe diversity of microorganisms, bacterial cell structure and function, microbial growth and metabolism, and the ways to control their growth by physical and chemical means. 2. Compare and contrast the characteristics for various microbes with regards to infections, treatment, and control from human body systems (Especially eye view of microbiology. (This includes medically relevant agents from prions, viruses, bacteria, fungi, protozoans, and multicellular parasites.) 3. Have Knowledge about cell division, mitosis and meiosis in unicellular and multicellular organisms. 4. Explain examples of how microorganisms cause disease. 5. Identify ways microorganism's play an integral role in disease, and microbial and immunological methodologies are used in disease treatment and prevention. 6. Describe and use new and existing methods and technologies in and out of the laboratory setting. 7. Demonstrate practical skills in fundamental microbiological techniques. 				

Course References:	<p>Key references:</p> <ul style="list-style-type: none"> • Jawetz, Melnick, & Adelberg's Medical Microbiology, 23rd Edition <p>▪ Useful references:</p> <ul style="list-style-type: none"> • Neal R. Chamberlain. MEDICAL MICROBIOLOGY ,2009 ,The McGraw-Hill Companies • Stephen H. Gillespie, Peter M. Hawkey, Principles and Practice of Clinical Bacteriology, 2nd Edition, 2006, John Wiley & Sons Ltd, England <p>▪ Magazines and review (internet):</p> <ul style="list-style-type: none"> • Medical Microbiology/ https://en.wikipedia.org/wiki/Medical_microbiology • International Journal of Medical Microbiology/ http://www.journals.elsevier.com/international-journal-of-medical-microbiology/3

Course topics (Theory)	Week	Learning Outcome
Introduction to microbiology with brief history of development - Features and characteristics of bacterial cell structures (Bacterial cell component)- Bacterial Nutrition- Bacterial growth and the living nature of bacteria	1	1-3
Sterilization methods with differences some bacteria which are responsible to surgical theaters contamination- Infection and separation methods- NCL(Nosocomial Infection) and SSI(Surgical site infection)- Antibodies- Pathogenesis and Epidemiology	2	1-4-5
Genus Staphylococcus- Genus Streptococcus- Genus Neisseria	3	2-4
Family Enterobacteraceae - Genus Escherichia- Genus Klebsiella-, Pseudomonas	4	2-4
Family Enterobacteraceae True pathogenic Genus Shigella, Genus Salmonella, Genus Proteus- Family Vibrionaceae- Genus Vibrio -	5	2-4

Genus Corynebacterium- Genus Mycobacterium- Genus Bordetella Bacteria which responsible for respiratory tract infection	6	2-4
Gram positive bacilli(- Family Brucellaceae Genus Brucella- Genus Clostridium- Genus Bacillus	7	2-4
Pathogenic Fungi & Introduction of Viruses	8	4-5
Intracellular parasite Chlamydia	9	4-5
Presentations and reports	10	1-2-3-4
Presentations and reports	11	1-2-3-4
Presentations and reports	12	1-2-3-4
Practical Topics	Week	Learning Outcome
Lab safety and microscope	1	1-5-6-7
Sterilization and Disinfection	2	1-5-6-7
Smear preparation and staining (simple stain)	3	1-5-6-7
Differential stain (Gram stain)	4	1-5-6-7
Presentations and reports	5	1-5-6-7
Culture media	6	1-5-6-7
Cultivation and isolation methods	7	1-5-6-7
Antibiotic sensitivity test	8	1-5-6-7
Biochemical test of bacteria (Catalase, Oxidase, Urease, Suger fermentation)	9	1-5-6-7
Biochemical test of bacteria (KIA, TSIA, IMViC test)	10	1-3-6-7
Bacterial motility	11	2-4-7-8
Questions Example Design		
1. Compositional:		
-Define the followings: Microbiology, Bacteria, Pathology, Normal flora		
-The main reasons of nosocomial infection (NCI) are the followings: 1 - 2- 3-		

-What are the differences between flagella and pili?
- Inner layer of bacterial cell wall is multilayer structure composed of-----
In this type of exam the questions usually starts with Explain how, What are the reasons for...?, Why...?, How....?
With their typical answers
Examples should be provided

2. True or false type of exams:

Put letter F (false) or letter T (true) in front of the statement:

() Algae are non-cellular entities that are parasites of cells.

In this type of exam a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence. Examples should be provided

3. Multiple choices:

Is the time elapsed between exposure to pathogenic microbes and first appearance of clinical symptoms.

a-Illness stage b- Prodromal stage c-Incubation period d- Convalescence

In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. Examples should be provided.

Extra notes:

External Evaluator