Medical Microbiology

(Course syllabus) Catalogue

2022-2023

College/Institute	Erbil Medical Technical Institute	
Department	Dental Assistant	
Module Name	Oral microbiology	
Module Code	ORM209	
Degree	Technical Diploma	
Semester	2	
ECTS (Credit)	8	
Module type	Prerequisite	
Weekly hours	6	
Weekly hours (Theory)	(2)hr Class	(75)Total weekly hrs (workload)
Weekly hours (Practical)	(4)hr Class	(75)Total weekly hrs (workload)
Lecturer (Theory)	Alia Talaat Abdulrahman	
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Course Book

Course description:

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. 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.

Course objective:

On completion of this course the student will be able to:

- 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 equipments, sterilization methods and stains available in laboratory.
- Demonstrate proficiency and use of the following in the laboratory: streak plate isolation technique; bacterial staining techniques; wet mounts; and proper culture handling.
- Visually recognize and explain the macroscopic and microscopic characteristics of fungi, protozoa, and bacteria. Properly obtain culture, identify, and explain microorganisms in environmental cultures.

Student's obligation:

Attendance Class

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 handouts and turning in any assignments due.

Written Work

students are expected to prepare professional, polished written work. Written materials must be typed in the format required by the instructor.

Laboratory Skills

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.

Requirement Degree of Accesses

At the end of course the student should obtain degree not less than
50% for theory and practice

Required Learning Materials

Theory: lecture halls with computers equipment for lecture presentations, white board, overhead projector, posters

Laboratory practice: Clinical practice: equipment and glasses available in the laboratory.

General: library, computer suite with internet access.

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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:

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 Reading List and References:

Key references:

- Jawetz, Melnick, & Adelberg's Medical Microbiology, 23rd Edition

▪Useful references:

- 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

▪Magazines and review (internet):

- 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 Features and characteristics of bacterial cell structures (Bacterial cell component)- Bacterial Nutrition Bacterial growth and the living nature of bacteria	1	1 -3

Oral microbiology, main organisms that affect teeth and gum.	2	1-4-5
Genus Staphylococcus- Genus Streptococcus-	3	2-4
Genus Neisseria sp. and Moraxella	4	2-4
Genus Mycobacterium- Genus Proteus(Bacteria which responsible for respiratory tract infection	5	2–4
Family Enterobacteraceae Genus Shigella- Genus Escherichia Genus Klebseilla- Genus Salmonella, Pseudomonas	6	2-4
V. cholera spp.	7	2-4
Helicobacter pylori and campylobacter	8	4-5
Main pathogenic oral mycology	9	4-5
Presentations and reports	10	1-2-3-4
Practical Topics	**Week**	**Learning Outcome**
Microscope and lab safety	1	1-5-6-7
Sterilization	2	1-5-6-7
Smear preparation and staining	3	1-5-6-7
Differential staining	4	1-5-6-7
Culture media	5	1-5-6-7
Antibiotic sensitivity	6	1-5-6-7
Throat swab	7	1-5-6-7
Biochemical test for identification of bacteria (part 1)	8	1-5-6-7

Biochemical test for identification of bacteria (part 2)	9	1-5-6-7
Presentations and reports	10	1-2-3-4

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.

External Evaluator

The outcome of course book evaluation is commonly more explicit and follows the principles and rules in general.