Module(Course Syllabus)Catalogue

2023-2024

College/ Institute	**KoyaTechnical Institute**	
Department	**Medical Laboratory Technology**	
Module Name	**Medical Microbiology**	
Module Code	**MEM305**	
Degree	**Technical Diploma** ☐ **Bachelor** ☐ **High Dip na** **Master** ☐ **PhD** ☐	
Semester	**3**	
Qualification	**Master**	
Scientific Title	**Assistant lecture**	
ECTS (Credits)	**7**	
Module type	**Prerequisite** ☐ **Core** **Assist.** ☐	
Weekly hours	**4**	
Weekly hours (Theory)	**(2)hr Class**	**(3)Total hrs Workload**
Weekly hours (Practical)	**(2)hr Class**	**(1)Total hrs Workload**
Number of Weeks		
Lecturer (Theory)	**Shno Abdalqadir Sofi**	
E-Mail& Mobile NO.	**Shno.sofi@epu.edu.iq**	
Lecturer (Practical)	**Shno Abdalqadir Sof** **Sara Sherzad Ali**	
E-Mail & Mobile NO.	**sara.ali@el.epu.edu.iq**	
Websites		

Course Book

Course Description	❖ Microbiology is a broad discipline that involves the study of the biology of bacteria, viruses, protozoa and fungi. ❖ To give an overview of the history of Microbiology ❖ To introduce the following: ● The extent of the microbial world ● Microscopy theory Study of bacterial infections with emphasis on mechanisms of pathogenesis of the following groups: Streptococcus,Staphylococcus, *Niesseria*, Pseudomonas, *Corynebacterium*, *Bordetella*, *Vibrio* ,*Enterobacteraceae*, *Clostridium*, *Bacillus*, *Campylobacter*, and *Helicobacter*, *Mycobacterium*, Actinomycetes/ *Nocardia*, *Chlamydia* and *Mycoplasma*. This course gives an overview of contemporary microbiology with emphasis on the impact of pathogenic microorganisms on the environment and the public. The focus will be on the role of the discipline of This course will introduce students to the microbial species that cause human disease.
Course objectives	The aims of this course are The important developments in Microbiology ▪ Comparative characteristics of microbial organisms ▪ General bacteriology and microbial techniques ▪ Pathogen city, virulence, and epidemiology Disease transmission and control of nosocomal infections ▪ Describe basic and specialised microscopy techniques and their applications ▪ The extent of the microbial world ▪ Describe basic and specialized techniques for quantifying microbial growth

	Summarize the process of bacterial and viral reproduction and describe the dynamics of a bacterial growth curve and the plaque assay
Student's obligation	The students should be attendance and participate in class activity. The lectures have showed by them through presentations and practical activity and required to do the all exams and quizzes. The ideas that develop the course are the students make circle in class to discuss the subjects of the day and use materials for practical skills.
Required Learning Materials	Lecture halls with data show equipment for lecture presentations, white board, overhead projector, posters.

Evaluation

	Task	Weight (Marks)	Due Week	Relevant Learning Outcome
	Paper Review			
Assignments	Homework	5%		
	Class Activity	2%		
	Report	5%		
	Seminar	5%		
	Essay			
	Project			
	Quiz	8%		
	Lab.report	10%		
	Midterm Exam	25%		
	Final Exam	40%		
	Total	100% (100 Marks)		

Specific learning outcome:

- **Specific learning outcome:**

Different forms of teaching will be used to reach the objectives of the academic year:

	1-Power point presentation. 2-Worksheets will be designed to let the chance for practicing on several aspects of the course in the class room. 3-Student will be asked to prepare research papers on selective topics and summaries articles content. 4-There will be classroom discussions, solve, analyze and evaluate problem sets, and different issues discussed throughout the year. 5-Lecture notes are fore supporting the reading material including the hands-out.
Course References:	

Course topics (Theory)	**Week**	**Learning Outcome**
Introduction to microbiology, Branches of microbiology	1	Definition of the microbiology and giving knowledge about its branches.
Typical Bacteria cell structures.	2	Definition of cell structure and importance with function.
Microbial Reproduction and Growth	3	Information types of bacteria. Bacterial growth stages and cellular changes.
Factors affecting bacterial growth like: O_2, Ph, temperature, moisture-Growth curve.	4	Defining the factors required by the microbe to grow
5 -Student seminars.	5	Describe more topics by student seminars
6- Classification of bacteria	6	
7 -Pathogenesis of bacterial infection	7	Be able to know disease and infection. Sources and general types of infection

8-Beneficial bacteria	8	Give information about normal flora.
9-Gram positive bacteria? *Staphylococcusspecies*.	9	General characteristic of Gram bacteria, classification, pathogenicity, diseases, prevention and treatment.
10- Streptococcus	10	Characteristics, classification, pathogenicity, diseases, prevention and treatment.
11- Mycobacterium	11	Characteristics, classification, pathogenicity, diseases, prevention and treatment.
12- Neisseria	12	Characteristics, classification, pathogenicity, diseases, prevention and treatment
Course topics (practical)	**Week**	**Learning Outcome**
General Introduction to Practical Microbiology, Sterilization and Disinfection Methods.	1	
Bacterial Smear and Types of Stains used in Microbiological Laboratories.	2	
Motility Test and Types of Flagella.	3	
Microbiological Culture Media, Types and their Preparation	4	
Methods of Culturing Microorganisms and Measuring Microbial Growth	5	
Colony characteristics of microbes on and in different medium	6	

Anaerobic Growth Media and Methods.	7	
Selective and Differential Media.	8	
General Urine Examination (GUE). Specimen collection and preservation, Physical examination of urine	9	
Microscopic Examination of Urine.	10	
Biochemical Test; Catalase and Coagulase Tests	11	
Urease and Kliglar Tests.	12	
Oxidase test, Indole and Citrate Tests.	13	

Questions Example Design

Q1 Fill the following blanks

1. The process by which bacterial cell divide to reproduce themselves is known ……...
2. There are several shapes of bacterial cell that supported by the cell wall, these are ----------, ----------, ---------- and ----------.
3. ……., ……., ……. , ……. Are phases of bacterial growth.

An./ 1. Binary diffusion

2- Cocci, Bacilli. Vibrio, and spirilli.

1- Lag phase, log phase, stationary phase, and death phase

Q2/ Enumerate the followings?

A-Antigens produced by Streptococci

Cell wall antigens (group specified):

1. M-proteins: hair like structure
2. M-like proteins
3. T-antigen: they have no correlations with pathogenicity.
4. P-substance
5. Lipotechoic acid which bind to epithelial tissue
6. F- protein

Q3/ Define the following words.1-Disinfection 2- Chemoheterotrophes
3- Zoonosis Q4/ Answer the followings?

A/ Draw the bacterial growth curve and mention what occur to cell in all stages

Q6/ Draw the structure of bacterial cell structure?
Q7/ chose the correct answer?

1. 1 Is favourable condition factor at which the bacterial grow best?
   A. Optimum growth temperature.
   B. Minimum growth temperature.
   C. Maximum growth temperature
   D. Optimum growth factor.

Q8/ match the column A with column B?

Questions (A)	Answers (B)

Q9/ with diagram describe the process or chain of infections?

Q10/ Write (True) for true sentences and (False) for the false sentences and correct the falses?

Extra notes: