



**(Module Name) Course Catalogue**

**2023-2024**

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| **College/ Institute** | **Medical Technical Institute** | |
| **Department** | **Medical Laboratory Technology** | |
| **Module Name** | **Medical Microbiology** | |
| **Module Code** | **MEM 305** | |
| **Semester** | **3** | |
| **Credit** |  | |
| **Module type** | **Core** | |
| **Weekly hours** | **4** |  |
| **Weekly hours (Theory)** | **( 2 )hr Class** | **( 3 )hr Workload** |
| **Weekly hours (Practical)** | **( 2 )hr Class** | **( 1 )hr Workload** |
| **Lecturer (Theory)** | **Dr. Fouad Hussein Kamel** | |
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**Course Book**

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| **Course overview:** Medical microbiology is both a branch of medicine and microbiology which deals with the study of microorganisms including bacteria, viruses, fungi and parasites which are of medical importance and can cause diseases in human beings. It includes the study of microbial pathogenesis and epidemiology and is related to the study of disease pathology and immunology. Microorganisms have a tremendous impact on all life and the physical and chemical makeup of our planet. They are responsible for cycling the chemical elements essential for life. This course will introduce students to the microbial species that cause human disease. | | |
| **Course objective:** Clinical microbiology laboratory plays an important role in patient care by providing the cause of infection and antimicrobial susceptibility data to physicians. Rapid diagnosis of pathogens is important for initiating effective antibiotic administration and improving the outcomes of treatment. Microbiologists aim to answer many important global questions by understanding microbes. They work in many places, from labs in universities, research institutes and industrial companies, to investigating microbes in fieldwork. However, knowledge of microbiology is not just important for these careers. | | |
| * **- 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. | | |
| * **Forms of teaching**   lecture halls with data show equipment for lecture presentations, white board, overhead projector, posters | | |
| * **Assessment scheme**   ‌6% Mid. Theory exam  10% Mid. practical exam  4% Quiz  40% Activity  25% final practical  15% final theory | | |
| * **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 Reading List and References‌:** | | |
| * **Course topics (Theory)** | **Week** | **Learning Outcome** |
| 1-Definition of Microbiology?  History and contribution.  Classification system. | 1 | Identifying information about the types of microorganisms, evolution and bacterial discoveries |
| 2-Typical Bacteria Cell Structure? | 2 | Definition of cell structure and importance with function. |
| 3- Morphology of bacteria.  - Microbial Reproduction and Growth | 3 | Information types of bacteria. Bacterial growth stages and cellular changes. |
| 4- - Factors affecting bacterial growth | 4 | Chemical and physical factor act on cell growth. |
| 5 -The Normal Flora.  -Pathogenic bacteria. | 5 | Definition of natural neigh normal flora and their importance for humans. The definition of pathogens, their properties and pathogenic efficacy |
| 6- Host-Parasite Relationship.   * Virulence factors. | 6 | Types of relationships between creatures and knowledge of the virulence factors of pathological organisms |
| 7-Antibiotics.  -Mechanism of action of anti-microbial drugs.  - Mechanism of bacterial resistance to anti- microbial. | 7 | Definition and division of antimicrobials, antibiotic sources and their effectiveness on microorganisms and methods of resistance |
| 8 -Hemedigestion activity and types | 8 | Enzymatic activity of pathogenic bacteria on patent blood. |
| 9-Gram positive bacteria?  *Staphylococcus species*. | 9 | General characteristic of Gram bacteria , important pathogenic species and their harms on human. |
| 10-Gram positive bacteria?  *Streptococcus species*. | 10 | General characteristic of Gram bacteria, important pathogenic species and their harms on human. |
| Mycobacterium (definition, characteristic, diseases, identification........et). | 11 | General characteristic of Gram bacteria, important pathogenic species and their harms on human. |
| 11, 12-Genus Neisseria and its species (characteristic, morphology, diseases, identification.........et) | 12 | General characteristic of Gram bacteria, important pathogenic species and their harms on human. |
| 13 - Enterobacteriaceae*, E.coli.*  -Visit of students to diagnostic laboratories in the hospitals of the Ministry of Health | 13 | General characteristic of Gram bacteria , important pathogenic species and their harms on human.  -See the practical reality and how to apply health examination with different techniques |
| 14- Enterobacteriaceae, Klebsiella | 14 | General characteristic of Gram bacteria , important pathogenic species and their harms on human. |
| Daily examine | 15 | Student’s Activity |
| Review Unit 6 | 16 | Review |
| Mid Tem .Final Exam. | 17 |  |
| **\*Examinations (question design):**  **Theory Questions:**  **Practical Question:**   |  |  | | --- | --- | | **Multiple choice** | 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 | | **Definition** | Define the followings: Microbiology, Bacteria, Pathology, Normal flora | | **True and false** | Put letter F (false) or letter T (true) in front of the statement:  ( ) Algae are non-cellular entities that are parasites of cells. | | **Enumerating** | The main reasons of nosocomial infection (NCI) are the followings: 1 - 2- 3- | | **Explain shortly** | What are the differences between flagella and pili? | | **Filling blanks** | Inner layer of bacterial cell wall is multilayer structure composed of------------------------------. | | | |
| * **Extra notes:** | | |
| * **External Evaluator**   **The outcome of course book evaluation is commonly more explicit and follows the principles and rules in general.** | | |