



**Department of Biology**

**College of Education**

**Salahaddin University**

**Subject: Microbiology**

**Course Book – (Year: Third Class )**

**Lecturer's name: prof. Dr. Payman A.Hamaseed**

**Academic Year: 2022-2023**

# Course Book

<b>1. Course name</b>	<b>Microbiology</b>
<b>2. Lecturer in charge</b>	
<b>3. Department/ College</b>	<b>Biology / Education college</b>
<b>4. Contact</b>	<b>e-mail: payman.hamasaeed.edu.su.krd</b>
<b>5. Time (in hours) per week</b>	<b>2 hours</b>
<b>6. Office hours</b>	
<b>7. Course code</b>	
<b>8. Teacher's academic profile</b>	<p>Date of birth: 1/7/1971</p> <p>Marital status: Married</p> <p>Nationality: Iraqi</p> <p>2. Academic qualifications</p> <p>Ph.D. / Mosul University, College of Science Biology Department, (2014)</p> <p>M.Sc. / Salahaddin University, College of Science, Biology Department, (1995)</p> <p>B.Sc. / Salahaddin University, College of Sciences, Biology Department, (1993)</p> <p>3. Degree requirements</p> <p><input type="checkbox"/> Ph.D. thesis: Ph. D. title: Assessment of Some Microbiological and Immunological Factors in Leukemia Patients</p> <p><input type="checkbox"/> M.Sc. thesis: Alternation in mammalian blood parameters induced by magnetic field .</p> <p>Assistant Lecturer in the Microbiology Department, College of Education, Salahaddin University: giving the talk of the practical sessions of Microbiology to fourth year College students then supervision of the practical application by students. (1996-2000)</p> <p><input type="checkbox"/> Lecturer in the biology Department, College of Education, Salahaddin University: giving lectures to fourth year students in Microbiology in addition to the supervision of the practical sessions. (2000-2010)</p> <p><input type="checkbox"/> Assistant professor In the biology Department, College of Education, Salahaddin University: giving lectures to fourth year students in Microbiology and supervision of the practical microbiology laboratories sessions. (2010-2020 )</p>

□ professor In the biology Department, College of Education, Salahaddin University:  
giving lectures to Third stage students in biology . (2019 ).

**9. Keywords**      **Microbiology , Bacteria- Virus -Fungus**

**10. 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, including carbon, nitrogen, sulfur, hydrogen, and oxygen; more photosynthesis is carried out by microorganisms than by green plants. This course will introduce students to the microbial species that cause human disease. We will cover bacteria, fungi, viruses, and protozoa, and discuss current topics including antibiotic resistance, public health threats, and global health. Humans also have an intimate relationship with microorganisms; more than 90% of the cells in our bodies are microbes. The bacteria present in the average human gut weigh about 1 kg, and a human adult will excrete his or her own weight in fecal bacteria each year.

**11. Course objective:**

The primary goal is to enhance communication between the community, teachers, students and parents. The Medical Microbiology courses will provide opportunities for students to develop and communicate an understanding of microorganism such as bacteria , viruses, fungus and other prokaryotic organisms. Concepts covered in this course include introduction to science of microbiology, classification, identification, pathogenesis, immunity and protection, the important medical microbes , soil microbes , natural water , sewage and atmosphere microbes, food and dairy products microbes, and industrial microbiology.

**12. Student's obligation**

The purpose of this course is to establish the student pharmacist's foundation in the principles of medical microbiology, immunology and virology that will build upon the knowledge and skills gained in the Pathophysiology and Patient Assessment course sequence. In order to successfully manage a patient with an infectious disease, the student

pharmacist must first understand the role of the host's immunologic response and the burden of disease caused by clinically important pathogens. The content in this course will lay the foundation for the subsequent patient care series where the pharmacology and medicinal chemistry of anti-infective agents and pharmacotherapy of infectious diseases will be learned and applied to optimize the care of a patient

### **13. Forms of teaching**

Different forms of teaching will be used to reach the objectives of the academic year. Power point presentation for the head titles, definitions, classification of materials and any other illustrations. Worksheets will be designed to let the chance for practicing on several aspects of the course in the class room. Further more student will be asked to prepare research papers on selective topics and summaries articles content.

There will be classroom discussions, solve, analyze and evaluate problem sets, and different issues discussed throughout the year. To get the best of the course, it is suggested that the student attend classes as much as possible.

The student will advised to read the required lectures, teacher notes regularly as all of them are foundation for the course. Lecture notes are fore supporting and not for submitting the reading material including the hands-out.

The students are directed to participate in class room discussions as much as possible, preparing the assignment given in the course.

### **14. Assessment scheme**

**The course grade will be determined as follows:**

**Course marks 50% (Theoretical, + Practical) Midterm , Quiz , Assessment**

**Final Exam 50% (Theoretical)**

### **15. Student learning outcome:**

The purpose of this course is to establish the student pharmacist's foundation in the principles of medical microbiology, immunology and virology that will build upon the knowledge and skills gained in the Pathophysiology and Patient Assessment course sequence. In order to successfully manage a patient with an infectious disease, the student pharmacist must first understand the role of the host's immunologic response and the burden of disease caused by clinically important pathogens. The content in this course will lay the foundation for the subsequent patient care series where the pharmacology and medicinal chemistry of anti-infective agents and pharmacotherapy of infectious diseases will be learned and applied to optimize the care of a patient

## 16. Course Reading List and References

Foundations in Microbiology by Talaro, K.P. 2008

- Klein`s Microbiology by Willey , J., and Woolverton , C. 2007
- Medical Microbiology and immunology (2012) waren levinson.
- Microbiology (2009),Robert Bauman
- Medical Microbiology (2012),jawetz Kavanagh, K. (2005). Fungi Biology and Applications. John Wiley & Sons Ltd, th
- Brooks, G. F.; Carroll, K. C.; Butel, J. S. and Morse, S.A. (2007). Jawetz, Melnick; and Adelberg`s Medical Microbiolo
- Webster, J. and Weber R. W. S. ( 2007). Introduction to Fungi. 3ed ed. Published in the United States of America by Ca
- Hospenthal, D. R.and. Rinaldi, M. G. (2008). Diagnosis and Treatment of Human Mycoses. Humana Press Inc, USA.
- Rogres,K. (2011). Fungi , Algae, and Protists. Britannica Educational Publishing (a trademark of Encyclopadia Britanni

## 17. The Topics

1- A Brief Introduction to Microbiology

2-Viruses - fungi–Bacteria

3- Microbial Interaction

4- Taxonomy (classifications of microorganism)

5-The Classification and Identification of Bacteria:

Bacterial shapes

-Bacterial cell walls

-Properties associated with bacterial cell walls the genetic makeup of bacteria

6-The Human Normal Flora in Health and Disease.

7-Microorganisms in Health and Disease.

8-The Growth, Survival, and Death of Microorganisms and Microbial Nutrition-Cultivation of Microorganisms

9-Antimicrobial Drugs----- Antiviral and anti-parasitic drugs

10-pathogenesis of Bacterial Infection

11-The Fungi And The Algae

12-Seasonal Examination.

13-Physical and Chemical Agents for Microbial Control

- 14-The viruses: major groups of viruses. Structure, replication, infection of host cell, outcome of viral infection, viral patho
- 15-Sterility testing of all pharmaceutical products.
- 16-Microbial assays of antibiotics, vitamins & amino acids.
- 17-Immunity, primary and secondary, defensive mechanisms of body, microbial Resistance, interferon
- 18-Impact of infectious diseases, Koch's postulates, Host Response: Innate immunity , Host Response: Acquired Immunity
- 19-Serum and vaccines
- 20-Microbiology of the water and sewage-- Microbiology of the Soil an Environmental and Applied Microbiology-
- 21-Microbiology of the atmosphere. A Industrial Microbiology-Microbiology of the food and dairy products
- 22-Microbial Toxins-
- 23-Enteric Pathogens –Cholera -Enteric pathogens – Salmonella, Shigella, E. coli
- 23-Extracellular pathogens –Staphylococcus, Streptococcus
- 24-Facultative intracellular pathogens –Mycobacterium
- Obligate intracellular pathogens –Chlamydia, Rickettsia
- 25-Accidental pathogens – Pseudomonas,-Chronic pathogens – Helicobacter pylori
- 26-Sexually transmitted diseases –Gonorrhea, Syphilis
- Zoonoses – Borrelia burgdorferi-Bioterrorism – Anthrax
- 27-Viruses transmitted
- via air: Influenza, Rhinovirus, Viral diseases of childhood: Measles, Mumps-Viruses transmitted via food or water: Rotavi
- Oncogenic viruses: Human
- Papillomavirus, KSHV, HTLV Latent viruses: HSV
- 28-Fungal pathogens - -

## 19. Examinations:

Seasonal Examination & Final Examination