

Ministry of Higher Education and Scientific research



Kurdistan Region-Iraq
Paitaxt Private Technical Institute
Department of Pathological Analytics

Course Book of the
Clinical Microbiology

Second Stage (theory)

Academic Year: 2023/2024

Course Book

1-Course Name	Clinical Microbiology
2-Lecturer in charge	
3-Department/ College	Pathological Analytics/ Paitaxt Institute
4-Contact	
5-Time(In hours) per week	Theory: 2 hours
6-Office Hours	4 Hours
7- Course Code	
8- Teacher's academic profile	During my academic work in which started from 1998 till now that included M.Sc. and Ph.D. studies and many scientific and academic services and activities. The following are some of them: 1. The Ph.D. (2008) and M.Sc. (2002) studies were in the same field of medical microbiology. 2. Member of Establishment of Awat society for infertility Care and treatment and as a head of scientific committee supervising and taking care of about 3000 three thousand infertile couples. 3. One of the members of Establishment of IVF center in Erbil city. 4. Working and teaching at six universities; Al- Mustansiriah, Salahaddin, Cihan, Knowledge, Al-Kitab and Ishik universities. Now working as a teaching staff in Paitaxt Institute. 5. Establisher and head of Natural History Museum in the College of Science- Salahaddin University 6. Visiting many Local and international universities for collaboration and scientific purposes. 7. Membership of Kurdistan Biology Syndicate 8. Membership of Iraqi Biology Society 9. Membership of Iraqi Microbiology Society 10. Head of Pathological Analysis Department. 11. Dean of Science College/ Hayat University (Knowledge now) 12. Organizing and Participating in many scientific Activities, workshops, conferences, seminars, panels, meetings.

	13. Working in many humanitarian and civil organizations such as Awat society, Nature of Iraq, CPP, etc..... 14. Hobbies and Talents: Reading, Mountain Climbing, Travelling.
9- Keywords	Medical, microbiology, pathogenic bacteria, viruses, fungi, parasites.
10- Course Overview: Medical or Clinical microbiology deals with microorganisms such as pathogenic bacteria, viruses, fungi and parasites which are medically important and cause human diseases. Generally, microorganisms can cause a tremendous change on our planet and our life, there is a scientific speech says if “there is no microorganism on our earth there is no life on our planet” otherwise is also true because there are some dangerous and infectious microorganism which cause a dangerous airborne, foodborne and waterborne diseases that some of them are fatal and threaten human life. Evolution in the field of Clinical microbiology and exactly about identification of pathogenic microorganisms and the methods of chemotherapy and prophylaxes has saved the life of millions of peoples on our planet.	
11- Course Objective: 1. To understand the basic principles of Clinical Microbiology. 2. To provide the student with the basic knowledge of microorganisms in general 3. To study the main characteristics of microbes of medical importance and their identification. 4. To teach aseptic techniques. 5. To provide an understanding of antimicrobial agents and infectious diseases. 6. To teach the basic immunological principles and methods for the study of immunological disorders.	
12- Student's obligation Class attendance regularly 85-90% of lectures each week 5 minutes before meantime of lecture is must. The students should also submit homework and assignments, accomplish extra classroom requirements such as preparing scientific reports, presentation and seminars and also be ready for performing quizzes, mid-term and final exams, participate in the laboratory works (practical labs) in order to pass successfully.	
13- Forms of Teaching Lecture notes prepared in Microsoft Word and presented to the students using PowerPoint Data Show and classroom Board or through online(e-learning). The lecture indicates, introduction, explain every slide show for the students. The lecture ends with several sample questions and given and if there is any question	

answers. The notes are usually given to the students on a Disc/USB flash memory stick and by hand-out and a copy to be placed on the college website.

Every sitting exam assigned for the students, question papers corrected, marks rewarded, next lecture discuss and solve the exam questions and place a copy of answers into their notes after giving several ways of answering. The corrected papers are given to the students for reviewing their errors. Exam answer papers are to be saved for future references. The exam paper covers most of the lectures and indicated: Exam instructions, selective answers, definitions, mechanisms, explanations, Drawings, write an essay, diagrams, differences...etc. The exam questions usually clear, direct and obvious. Every student activity is recorded, saved and notes will be taken by the students as well as by the lecturer for all over the academic year.

Class reports

Every student or small grouping students must prepare a report about a subject regarding clinical microbiology. Each report must include the following information: the logo of university or the Institute, the name of college or department, student's name, the title of the report, short description and brief introduction about the subject, aims of the report, short review literature, prospects and overviews and finally the references. Each student or small group is present his/her/there reports as a seminar (presentation) to confirm their capability to speak about a scientific subject in front of gathering in a teaching hall.

14- Assessment scheme

Final exam: 50 marks

Two Course exams: 25 marks for each including:

Theory: 10 marks practical: 10 marks attendance and activity: 2 marks
quizzes and seminars: 3 marks

15- Student Learning Outcome:

By the end of the course, the students are being able to:

- 1- Develop advanced academic knowledge about the concepts and principles of Medical Microbiology.**
- 2- Cover the importance of Microbiology and the history background of this subject.**
- 3- Detail knowledge about the Medical Microbiology and its applications.**
- 4- Having knowledge about the up-to-date advancing and development in this field of subject**
- 5- They could be familiar with the modest instruments in the medical labs like PCR and ELISA.**
- 6- In addition to learning practically the technique of examining, using, how to collect the different type of speciemns and how to prepare it for examinations and be familiar with the results and writing reports.**

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16- Course Reading list and References: .2

1. Forbes, A., Sahm, F., and *et al* (2007) Baily & Scotts Diagnostic Microbiology (12th edition) International edition Mosby Inc., an affiliate of Elsevier Inc., Philadelphia, USA.
2. Jawetz, Melink and Adelbergs. Medical Microbiology, Appleton & Lange A Simon Co. (Last edition)
3. Nester, E.W., Anderson, D.G., *et al* (2001) Microbiology a human perspective, 3rd ed., the McGraw-Hill companies, Inc. ; Chicago, USA.
4. Madigan, M. T and Martinko, J.M (2006). Biology of Microorganisms 11th ed. (International Eid.) Pearson Education, Inc., London.
5. Warinner, P. Q (1998). Clinical Microbiology Preview, 2nd ed., Wysteria, USA.
6. For further information, students can be searching from websites of internet using key words given in the lectures.

17- The Topics

No	Lecture's titles (Theory)
1	Introduction to Clinical Microbiology- Terminology- Classification of Microbes
2	Microorganisms reviews; brief knowledge about bacteria- fungi- protozoa- viruses-prions and algae
3	Human-Microorganisms Interactions
4	Infection and infectious process; modes of Disease Transmission and Routes of Infection
5	Normal Microbial flora of the Human body (Microbiota)
6	Microbial Virulence Factors and mechanism of Pathogenicity
7	Antimicrobial Agents- mode of actions- Chemotherapy and Antibiotic Resistance -Vaccines &Toxoids
8	-Gram Positive cocci - <i>Staphylococci</i> - <i>Streptococci</i>
9	Enteric Gram Negative rods (<i>Enterobacteriaceae</i>)

10	<i>Pseudomonads and Acinetobacters</i>		
11	<i>Vibrios and Helicobacter</i>		
12	<i>Brucella and Mycobacteria</i>		
13	Medically Important Viruses		
14	Medical Mycology		
15	Medical parasitology		
16	Immunology		

19- Examinations:

Question Styles in Medical Microbiology

Q1. Define the following terms giving examples?

1. Exotoxin 2. Pathogenicity 3. Pandemic 4. P 5. LD⁵⁰

Q2. Give scientific reasons to the following giving examples?

1. Why Oxygen is considered toxic for Obligate Anaerobic bacteria?
2. Why most of human pathogenic bacteria are mesophiles?
3. Why Carbon element is considered as a backbone for bacterial growth?
4. Why the agar is added to Culture media?
5. What are the purposes behind isolating pure cultures of bacteria?

Q3. List the main criteria , factors, Characteristics of ?

1. Bacterial Cytoplasmic membrane
2. Gram Negative Bacteria
3. Plasmids
4. Endospores of bacteria
5. Mesosomes
6. Pili
7. Why studying Microbiology

Q4. True and False questions

Q5. Briefly explain on the following questions?

1. Explain Microbial Interaction with human?

2. Bacterial Endospores resist harsh, unfavourable conditions

3. Some bacteria resist antibiotics

4. Virulence factors

Q6. Give the functions of the following?

Q7. Draw diagrams, figures schematic diagrams & tables?

Signature

Dr. Honer O. Ismail

Good Luck

20- Extra notes:

To make sure that the students highly benefit from the study course, the Instructor should emphasize the following:

- Using whiteboard, PowerPoint Presentations, scientific visits and video shows.**
- Review the lecture information about the subject and prepare notes prior to class entering.**
- Up-to-date the given lectures information periodically.**
- Listening for any ideas, questions and opinions offered by students.**
- Group and panel discussing inside lecturing hall and solving exercises.**

- The lecture includes diagrams figures and further illustration methods.**

21-Peer Review

This Coursebook of Clinical Microbiology prepared by myself, its contents seen by Assist. Prof. Dr. Abdul-Wahab A. Al-Khayat and Assistant. Prof. Dr. Naufal Al –Dabbagh and we are agreeing with the above syllabus and a whole coursebook to be thought for 2st stage Pathological Analytics students.