Department of Biology

College of Education

Salahaddin University

Subject: Practical Pathogenic bacteria

Course Book – (Year:4)

Lecturer's name: Dr. Suhayla Hamad Shareef

Academic Year: 2024

Course Book

1. Course name	**Practical pathogenic bacteria**
2. Lecturer in charge	**Suhayla Hamad Shareef**
3. Department/ College	**Biology Dept./ College of Education**
4. Contact	**e-mail: suhayla.shareef@su.edu.krd**
5. Time (in hours) per week	**Practical: 6hrs**
6. Office hours	**Approximately 12 Hours per week**
7. Course code	EdB0404
8. Teacher's academic profile	I teach practical immunology at the Biology Department/ College of Education. I have got Master of Science in Medical Microbiology/Clinical-Immunology at Hawler Medical University in 2012. I finished my Bachelor's degree in biology at the Biology Department/ College of Education in 1996. Since 18/1/1997, I started working with my department. I have 22 years of experience with my job.
9. Keywords	

10. Course overview:

Welcome to Bacteriology/Pathogenic Bacteria! The overarching goals for the laboratory portion of this course are to teach how to identify these organisms, and bacteriological techniques and to show students the impact of microbes on our daily lives. During the semester, we will discuss essential laboratory techniques and practical skills that will allow us to how take specimens, how to isolate bacterial pathogens from these specimens, and identify the pathogen depending on the structure and physiology of these bacteria.

11. Course objective:

The objectives over the course of the semester are to...

- Become proficient at laboratory skills and safety procedures.
- Learn to follow experimental procedures.
- Develop skills to formulate answerable questions/hypotheses, and predict expected results.
- Learn how to make careful observations, collect and analyze data, and draw appropriate conclusions.
- Utilize active learning opportunities in the laboratories.
- Demonstrate good lab citizenry and the ability to work with others.
- Practical skills for the detection and isolation of bacteria from various sources (specimens), the ability to identify bacteria based on biochemical testing and growth characteristics.
- Knowledge of factors most affecting bacterial growth.

12. Student's obligation

The students should do their homework every week by preparing for quizzes and doing their lab. Procedures every week by themselves. Assessment of their homework or procedure will be the standard for their evaluation in Labs.

13. Forms of teaching

Different forms of teaching will be used to reach the objectives of the course includes; power point presentations for the head titles and topics or by hand writing, giving illustration about the principles of pathogenic bacteria, besides worksheet will be designed to let the chance for practicing on several aspects of the course in the classroom. The classroom discussion is asset to give the lecture more vitality and also to reach enough background and information to the students.

To get the best of the course, it is suggested that you attend classes as much as possible, read the required lectures, teacher's notes and ready for weekly quiz. Try as much as possible to participate in classroom discussions, preparing the assignments given in the course.

14. Assessment scheme

Breakdown of overall assessment and examination
The students are required to do two or three practical exams (theory/ practical or practical/practical) at different periods of the semester. Final examination has 35 marks. So that the final grade will be based upon the following criteria:

Course grade

The grade will be determined by the following assignments: Quizzes, activities, and participation in lab work, daily questions, and examinations during the semester.

No.	Exam (Evaluation)	Marks
1.	Quizzes and daily activities	10
2.	1st Practical Exam	10
3.	2nd Practical Exam	10

4.	**Attendance of students**	**5**
6.	**Total Scores**	**35/2=17.5**

15. Student learning outcome:

In practical immunology, the students should have knowledge about all types of pathogens that they will try to invade our bodies and make us ill. Avoiding the area which contains certain types of pathogens, saving our bodies from bad foods and drinks, assessment of our body immune performance by different types of immunological tests in laboratory. After finishing this course the students will be able to do several immunology tests in public and private sectors of healthcare units. Our course is all about the diseases that is very common and may everyone will get it during daily life.

16. Course Reading List and References:

1. Brooks, G.F.; Carroll, K.C.; Butel, J.S.; Morse, S.A. and Mietzner T.A. (2013). Jawetz, Melnick, & Adelberg's Medical Microbiology, 26th ed. McGraw-Hill Companies.

2. Harley, John P and Prescott, LM. (2005). Laboratory Exercise in Microbiology by. 5th ed. The Mc. Graw-Hill Company. Boston.

3. Betty A. Forbes, Daniel F. Sahm and Alice S. Weissfild. (2007). Diagnostic Microbiology 12th ed.

4. Vandepitte, J.; Verhaegen, J.; Engbaek, K.; Rohner, P.; Piot P. and Heuck, C. (2003). Basic Laboratory Procedure in Clinical Bacteriology. 2nd ed. World Health Organization.

5. Atlas, R. M. (2004). Handbook of Microbiological Media, 3rd ed. CRC Press.

6. Gillespie, Stephen H and Hawkey, Peter M. (2006). Principles and Practice of Clinical Bacteriology, 2nd ed. John Wiley & Sons Ltd.

17. The Topics:	Lecturer's name
18. Practical Topics (If there is any)	
Course Weekly Outline **Week Topics Covered** **1. Lab I &III** **What Are Pathogenic Bacteria?** □ Definition □ Categories of Bacterial Pathogens □ Normal Flora □ Specimen Selection, Collection, and Processing □ Principle of Identification of Human Pathogenic Bacteria: □ 1. Direct Examination □ 2. Cultural Identification □ -Microbiological Media Which Used in the Differentiation of Pathogenic Bacteria ϒ 3. Biochemical Identification	Lecturer's name Suhayla Hamad Shareef ex: (6 hrs)

2.Lab III:	**Gram-Positive Cocci** **Genus: *Staphylococcus*** □ Characteristics □ Laboratory Diagnosis o Microscopical Examination o Culture Characteristics o Biochemical Tests	
3. Lab IV:	**Gram-Positive Cocci** □ **Genus: *Streptococcus*** □ Characteristics □ Classification: Streptococci Can Be Classified According to **a.** Serology (Lancefield Classification). **b.** Biochemical Reactions **c.** Hemolysis on Blood Agar □ Differentiation between α-Hemolytic Streptococci □ Differentiation between β-Hemolytic Streptococci **Gram-Negative Rods** □ Enterobacteriaceae □ General Characteristics of Enterobacteriaceae □ Natural Habitat: □ Coliform Group □ Medical Importance of the Family □ Identification of Enterobacteriaceae: □ **Genus: *Escherichia*** □ Characteristics □ Cultural Characteristics □ Biochemical Tests: □ Diseases □ **Genus: *Klebsiella*** □ Characteristics □ Culture Characteristics □ Biochemical Tests □ Diseases □ Biochemical Reactions of *E. coli* and *Klebsiella* species	
	2. Lab VI: Enterobacteriaceae	

Genus: *Salmonella* Characteristics Diseases Laboratory diagnosis of typhoid A- Direct diagnosis: 1- Specimen: Blood, urine and stool. 2- Isolation of microorganism: 3- Cultural characteristics: 4- Biochemical identification of *Salmonella*: B- The indirect diagnosis or Serological diagnosis: **Genus: *Shigella*** Four species Laboratory diagnosis -Specimen -Cultural characteristics: -Biochemical reactions: **Genus: *Proteus*** Characteristics Major pathogens of This Genus Laboratory diagnosis Specimen: Urine or Stool. Cultural characteristics Biochemical reactions **3. Lab VII: Genus: *Pseudomonas*** Characteristics Laboratory Diagnosis **1-** Specimen **2-** Isolation of Microorganism **3-** Identification: a. Microscopical Examination b. Culture c. Biochemical Tests **4. Practical Exam of Pathogenic Bacteria.**	
20. Extra notes:	
21. Peer review ڕێداچوونەوەی هاوەڵ	