



Bacterial Pathogenicity Course Teaching Portfolio Dr. Raghad sharqi luaibi



**Southern Technical University
Basra Medical Technical Institute
Department of Medical Laboratory techniques
Academic Year 2024–2025**

Course Information

Course Name: Bacterial Pathogenicity

Stage: Second Year

Language: English

Theoretical Hours: 2 hours/week

Practical Hours: 4 hours/week

Target group

Medical Technical Institute students, Medical Laboratory Techniques Department , Second Stage

1- Course Description

This course provides a comprehensive study of medically important pathogenic bacteria and their role in human diseases. It covers the morphology, classification, physiology, virulence factors, pathogenesis, laboratory diagnosis, treatment, prevention, and control of bacterial infections. The course also introduces students to host immune responses, antimicrobial susceptibility testing, sterilization, disinfection, and infection control principles. Practical laboratory aspects such as staining techniques, culture methods, biochemical identification tests, and antibiotic sensitivity testing are included to enhance students' diagnostic and analytical skills in bacterial pathogenicity.

2- Course Objectives

- Describe the morphology, classification, and general characteristics of pathogenic bacteria.
- Identify medically important bacterial pathogens associated with human diseases.
- Explain the mechanisms of bacterial pathogenicity and host immune responses.
- Demonstrate knowledge of laboratory diagnostic methods used in bacteriology, including staining, culture, and biochemical tests.
- Interpret antimicrobial susceptibility testing and understand the principles of antibiotic therapy.
- Recognize the epidemiology, transmission, prevention, and control of bacterial infections.
- Apply biosafety, sterilization, and disinfection principles in microbiology laboratories.
- Develop practical laboratory skills for isolation and identification of pathogenic bacteria.
- Correlate clinical manifestations of bacterial diseases with laboratory finding.
- Enhance critical thinking and problem-solving skills in clinical microbiology and infectious diseases.

3- Learning Outcomes

- Acquire theoretical knowledge in Bacterial pathogenicity.
- Develop laboratory diagnostic skills.
- Apply biosafety and laboratory ethics.

4. Weekly Course Schedule

Week	Theoretical Topic	Practical Session
1	Systemic bacteriology, Genus Staphylococcus, General characters, toxin production, enzyme, immunity, Sensitivity test.	Genus Staphylococcus General characters, Lab. diagnosis, coagulase test, catalase test.
2	Genus Streptococcus General characters. Bio chemical test, Antigenic characters, M protein Streptococcus group A, diseases, toxin, and immunity.	Streptococcus General characters, Lab. diagnosis, sensitivity to bastracin. Treatment.
3	Streptococcus group B, C, D. Biochemical reaction, immunity, diseases. Streptococcus pneumonia and Streptococcus variance disease, antigenic structure.	Genus Pneumococcus General characters, Lab. diagnosis, Optochin.
4	Gram positive bacilli - Corynebacterium diphtheria. Shape of bacteria, virulence, toxin, immunity, shick test. Antitoxin, skin test.	Corynebacterium: General characters, Lab. diagnosis, Eleck test.
5	Genus Mycobacterium, general characters, Classification of bacteria, growth, antigenic structure, Disease, immunity.	Mycobacterium: General characters, Lab. diagnosis, Z.N. stain, petroffs method.
6	Genus Bacillus, Bacillus anthracis. General characters, biochemical reaction, antigenic structure, toxin, immunity.	Genus Bacillus General characters, spore forming, aerobic. Lab. diagnosis.
7	Anaerobic bacteria – Clostridium, general characters. Clostridium perfringens, general characters. Antigen structure, biochemical reaction, virulence, toxin. Clostridium tetani, disease, immunity, antigenic structure	Clostridium: General characters, spore forming, anaerobic. Lab. diagnosis, macintosh jar.
8	Genus Neisseria, general characters, biochemical reaction. Neisseria gonorrhea, antigenic structure, virulence. Neisseria meningitidis, immunity, sensitivity test. Antigenic structure, virulence, immunity	Neisseriae: General characters, oxidase test, Lab. diagnosis, growth requirements.
9	Genus Haemophilus, general characters, growth factors, Virulence, immunity. Genus Bordetella, general characters, disease.	Haemophilus: General characters, X and V factors, Lab. diagnosis, satellitism phenomena.
10 - 11	Family Enterobacteriaceae, General characters, classification, biochemical Antigenic reaction, characters, sugar fermentation, sensitivity Genus Escherichia test. coli, Klebsiella, diseases, virulence, Immunity.	Family Enterobacteriaceae Types of culture media. E.coli General characters, lactose fermenter. Lab. diagnosis.
12	Genus Vibrio, history of disease, general characters, Antigenic structure, virulence, immunity, treatment. Classical Vibrio EL-TOR biotype. Vibrio parahaemolyticus. Campylobacter jejuni.	Klebsiella General characters. Lab. diagnosis, lactose fermenter, Imvic test.
13	Genus Brucella, general characters, diseases, species, 14 Yersinia pestis, general characters, virulence, diseases	Proteus General characters. Lab. diagnosis, non-lactose fermenter Classification of species.
14	Francisella, general characters, transmission diseases, Virulence, syphilis, VDRL. 15 Nocardia, general characters, stain-direct smear. Mycoplasma, general characters.	Salmonella and Shigella General characters. Lab. diagnosis.

5- Teaching Methods

- Lectures
- Laboratory practice
- Group discussion
- PowerPoint presentations

6- Assessment Methods and Grading

Component	Weight
Theoretical Midterm Exam	20%
Practical Midterm Exam	20%
Lab Reports / Activities	5%
Attendance & Participation	5%
Final Theoretical Exam	40%
Final Practical Exam	10%
Total	100%

7- Required Textbooks and References

- **Jawetz, Melnick and Adelberg's Medical Microbiology**
- **Bailey & Scott's Diagnostic Microbiology.**
- **Medical Microbiology.**
- **Prescott's Microbiology.**
- **Koneman's Color Atlas and Textbook of Diagnostic Microbiology.**
- **Additional recent journal articles and WHO guidelines as provided during lectures**

8- Policies

- **Attendance: Minimum 75% attendance required.**
- **Punctuality: Students must arrive on time to both theoretical and practical sessions.**
- **Academic Integrity: Cheating or plagiarism will result in disciplinary actions.**
- **Lab Safety: Strict adherence to safety protocols is mandatory.**

9- Appendices (Optional)

- **Lecture slides**
- **Practical lab manuals**
- **Previous exam samples**
- **Student feedback form**
- **Evaluation rubric**