



Vice Chancellor for Education, Ahvaz University of Medical Sciences

Educational development center (Thematic plan)

Course ID and Course Unit Schedule

Course Title: Medical **Practical Bacteriology** for International Medical students

Level of Study: 4rd Semester

Faculty: Ahvaz Jundishapur University of Medical Sciences, Faculty of Medicine.

Course Code: 3021059

Academic Year: 1404-1405 (Year 2025-2026)

Prerequisite: Biochemistry, Anatomy, physiology

Number of Units: 0.6

Units Academic Semester: First Half Year 1404-1405

Amount of Units Separately: 0.12 Units

Group of Instructors: Dr. Effat Abbasi Montazeri, Dr. Morteza Saki, Dr. Mania Arshadi, Dr. Zahra Farshadzadeh, Dr. Nabi Jomehzadeh

Day and Time of Course: Wednesday 10-12, Department of Microbiology.

Professor in Charge: Dr. Effat Abbasi Montazeri

Email: ea1347@yahoo.com

Office Hours: Saturday to Wednesday from 8 AM to 4 PM

Goals: At the end of this course, students are expected to acquire the necessary skills to correctly and safely perform basic and advanced microbiology experiments, including working with culture media, staining, isolation techniques, laboratory identification of clinically important bacteria, and interpretation of laboratory results. The student should also have the ability to identify, culture, isolate, and perform antibiogram while adhering to biosafety principles and laboratory standards.

Specific Objectives:

A) General Laboratory Skills

- Implement biosafety principles and waste management.
- Proper preparation, sterilization, and maintenance of culture media.
- Work with laboratory equipment including autoclaves, microscopes, incubators, and bath water baths.

B) Basic and specialized techniques

- Performing Gram, spore, capsule and specific staining.
- Performing urine, and various clinical sample cultures.
- Interpreting colonies based on macroscopic and microscopic characteristics.
- Performing differential biochemical tests (catalase, oxidase, IMViC, OF, TSI, etc.).
- Performing antibiogram using the standard Kirby-Bauer method and interpreting results according to CLSI.

c) Identification of medically important bacteria

- Identification of staphylococci and streptococci.
- Identification of spore-forming bacilli (Bacillus and Clostridium)
- Identification of enterobacteriaceae and non-fermentative bacteria.
- Identification of corynebacterium.

**Course Description:**

This course is designed to be practical and skill-oriented and familiarizes students with standard and professional techniques of clinical microbiology. During the sessions, learners will be familiar with the principles of laboratory work, sterilization methods, and preparation of culture media, bacterial staining, culture and isolation techniques, and methods for identifying bacteria from clinical specimens. The student will also learn how to perform and interpret antibiograms and laboratory diagnosis of medically important bacteria. At the end of the course, the student will be able to perform the complete stages of laboratory diagnosis from sample receipt to result reporting in accordance with clinical microbiology standards.

session	Outline (Expected concepts to be taught)	Student activity	Teaching method	Teacher name
1	Understanding the safety principles, sterilization methods, and culture media preparation in a microbiology laboratory	Observe and participate in preparing the culture media	Demonstrative-practical	Dr. Jomehzadeh
2	Bacterial culture and staining	Gram staining application	Demonstrative-practical	Dr. Saki
3	Laboratory identification of Gram-positive cocci (staphylococci)	Performing differential tests	Demonstrative	Dr. Abbasi Montazeri
4	Laboratory identification of Gram-positive cocci (streptococci)	Performing differential tests	Demonstrative	Dr. Abbasi Montazeri
5	Laboratory identification of aerobic spore-forming bacteria (bacilli)	Observation of spore specific staining	Demonstrative	Dr. Arshadi
6	Laboratory identification of anaerobic spore-forming bacilli (Clostridiums)	Microscopic evaluation of Clostridiums	Demonstrative	Dr. Arshadi
7	Laboratory identification of Gram-negative intestinal bacteria (Enterobacteriaceae)	Biochemical tests	Demonstrative	Dr. Farshadzadeh
8	Laboratory identification of non-fermentative bacteria	Biochemical tests	Demonstrative	Dr. Farshadzadeh
9	Urine culture and antibiogram	Performing the test and reading the results	Demonstrative	Dr. Saki
10	Laboratory identification of <i>Corynebacterium</i> and <i>Mycobacterium</i>	Specific staining and	Demonstrative	Dr. Jomehzadeh



دانشگاه علوم پزشکی و خدمات بهداشتی، درمانی چندی شاپور اهواز

معاونت آموزشی دانشگاه علوم پزشکی اهواز

مرکز مطالعات و توسعه آموزش علوم پزشکی

		practical work		
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Student assignments:

Course unit evaluation method:

Final exam: 100 percent

Main sources of lessons and approved by the Ministry:

Bailey & Scott's Diagnostic Microbiology 2024