

American University of Beirut
Faculty of Health Sciences
MEDICAL LABORATORY SCIENCES PROGRAM
Clinical Microbiology
LABM 240 (4 cr.)
Spring 2023-2024

**Course Coordinator &
Lecturer (FHS):**

Nada M. Melhem, PhD
Faculty of Health Sciences
317 Van Dyck

Lecturer (FHS):

Mirna Bou Hamdan, PhD
Faculty of Health Sciences
319 Van Dyck

**Clinical Bacteriology
Training (AUBMC):**

George F. Araj, PhD, D (ABMM), FAAM
Department of Pathology and Laboratory Medicine
AUB-Medical Center (303C, 3rd floor, AUBMC)

**Class Time and Mode of
Delivery:**

M 2:30-5:00 pm (Van Dyck 101)

Clinical Rotation:

M-F 8:00 am- 12:00 pm

Office Hours :

By appointment via email

E-mail :

melhemn@aub.edu.lb; mb154@aub.edu.lb

Course Description and Objectives:

The course will be offered in a series of short didactic refresher lectures, assigned readings and case-studies. Students will be introduced to diagnostic procedures used in bacteriology by organ system. These procedures include up-to-date traditional and automated tools for the identification and diagnosis of bacterial infections. The theoretical part of the course and discussions run simultaneously **over a six-week period with the clinical training**. The latter takes place at the Bacteriology section, Department of Pathology and Laboratory Medicine at the American University of Beirut -Medical Center.

Specific Outcomes:

Following completion of the course, students are expected to be able to

1. **Identify** the suitable biological specimens to be submitted to the bacteriology section
2. **Collect, handle, transport and preserve** these biological specimens
3. **Process** these specimens in the laboratory
4. **Conduct up to date laboratory tests and Implement** the respective correct measures for the **identification of bacteria** causing diseases in different organ systems of the body
5. **Interpret generated laboratory results and understand their relationship to diagnosis of disease**
6. **Communicate** laboratory results to the appropriate users

Course Schedule

Group I	Group II	Topics and Assigned Readings Prior to Class	Recommended Readings	In-Class Case Studies, Assignments and Discussions	Lecturer
01/22/24	03/11/24	Introduction	Refresher	Not applicable	Melhem Bou Hamdan
01/29/24	03/18/24	Urinary Tract Infections https://pubmed.ncbi.nlm.nih.gov/33803202/ Genital Tract Infections https://newjournal.ssmu.kz/upload/iblock/bb8/216_23_4_24_2022.pdf Gastrointestinal Tract Infections	Chapter 72: Infection of the Urinary Tract. Chapter 73: Genital Tract Infections. Chapter 74: Gastrointestinal Tract Infections. MLSP 204: Lectures 14, 15 & 16 and their corresponding lab lectures.	Case Studies and Discussion: UTI and GTI	Bou Hamdan

02/05/24	04/08/24	<p>Normally Sterile Body Fluids including CSF</p> <p>https://pubmed.ncbi.nlm.nih.gov/36472590/</p> <p>https://pubmed.ncbi.nlm.nih.gov/33721818/</p> <p>Blood Stream Infections (BSI)</p> <p>https://pubmed.ncbi.nlm.nih.gov/33121610/</p>	<p>Chapter 70: Meningitis and Other Infections of the Central Nervous Systems.</p> <p>Chapter 67: Bloodstream Infections.</p> <p>MLSP 204: Lectures 19 and 20 and their corresponding lab lectures.</p>	<p>Discussion and assignments: Sterile Body Fluids and BSI</p>	Melhem
02/12/24	04/15/24	<p>Lower and Upper Respiratory Tract Infections</p> <p>https://pubmed.ncbi.nlm.nih.gov/27999274/</p> <p>https://pubmed.ncbi.nlm.nih.gov/29237789/</p> <p>Mycobacteriology</p> <p>https://pubmed.ncbi.nlm.nih.gov/31719625/</p>	<p>Chapter 68: Infections of the Lower Respiratory Tract.</p> <p>Chapter 69: Upper Respiratory Tract Infections and Other Infections of the Oral Cavity and Neck</p> <p>Chapter 71: Infections of the Eyes, Ears, and Sinuses.</p> <p>Chapter 42: Mycobacteria.</p> <p>MLSP 204: Lectures 9, 17, 18 and 21 and their corresponding lab lectures.</p>	<p>Case Studies and Discussion: URT & LRT Infections and Mycobacteriology</p>	Melhem Bou Hamdan

02/26/24	04/22/24	Antimicrobial Susceptibility Testing https://www.nature.com/articles/s41579-020-0327-x	Chapter 10: Principles of Antimicrobial Action & Resistance. Chapter 11: Laboratory Methods and Strategies for Antimicrobial Susceptibility Testing. MLSP 204: Lecture 12 and its corresponding lab lectures.	Discussion and assignments: AST, reading/interpreting scientific manuscripts, and presentation guidelines	Melhem
03/11/24	03/11/24	Reading and Interpreting Scientific Manuscripts and PowerPoint Presentation Guidelines*	Reading and Interpreting Scientific Manuscripts and PowerPoint Presentation Guidelines Handouts posted on Moodle	Discussion: reading/interpreting scientific manuscripts, and presentation guidelines	Melhem
TBD	TBD	Students' Presentations*	Reading and Interpreting Scientific Manuscripts and PowerPoint Presentation Guidelines Handouts posted on Moodle Assigned Scientific Manuscripts	Discussion and assignments: PowerPoint Presentations	Melhem Bou Hamdan

*These sessions are common for both groups.

Assignments, Class Discussions and Presentations

Students will be guided towards reading assignments for in-class discussions. The assignments will be used to coordinate the knowledge and skills acquired in general microbiology and systematic bacteriology with protocols and tools implemented in the diagnostic laboratory. The students will learn through the process to understand and critically analyse the entire spectrum of bacteriological diagnostics. The latter includes: choice of samples, transport and processing of samples, identification (traditional and automated), antimicrobial susceptibility testing, and special procedures.

At the end of the course, students will present data of scientific manuscripts on different and current diagnostic tools related to the discipline. Students will work in groups and will be guided by the coordinator of the course throughout the semester.

Text Book

The materials, including case studies and handouts, will be posted on MOODLE. The following book is recommended: *Diagnostic Microbiology by Bailey & Scott, 15th edition (2021)*. More details about protocols can be found in *Clinical Microbiology Procedures Handbook, Fifth edition (2023)*.

Student Evaluation		Meets Objectives
Practical Evaluation (AUBMC)	35 %	1-6
Participation in Class, Assignments & Presentations	15%	1-6
Written Exam (Melhem, Bou Hamdan)	25%	1-5
Written Exam (Araj)	25%	1-5

Course Requirements

1. **Attendance:** Attendance will be taken during each session. In case of absence, you will be responsible for the material missed and for any work or announcement made. Students who miss more than one-fifth of class sessions and/or training without justification can be dropped from the course (AUB catalogue; page 56).
2. **Exams:** You are urged to take exams on the assigned time. Make up exams will be given **only** in case of emergencies or major illness (authorized medical report is required). The final exam will follow AUB scheduling.
3. **Cheating and Plagiarism:** Cheating and plagiarism will not be tolerated. Review the Student Code of Conduct in your handbook and familiarize yourself with definitions and penalties. If you're in doubt about what constitutes plagiarism, ask your instructor because it is your responsibility to know. The American University of Beirut has a strict anti-cheating policy. Penalties include failing marks on the assignment in question, suspension or expulsion from University and a permanent mention of the disciplinary action in the student's records.
4. **Students with Disabilities:** "AUB strives to make learning experiences as accessible as possible. If you anticipate or experience academic barriers due to a disability (including mental health, chronic or temporary medical conditions), please inform me immediately so that we can privately discuss options. In order to help establish reasonable accommodations and facilitate a smooth accommodations process, you are encouraged to contact the Accessible Education Office: accessibility@aub.edu.lb; +961-1-350000, ext 3246; West Hall, 314".
5. **Non-Discrimination – Title IX – AUB:** In line with its commitment to the principle of equal opportunity in education and employment, AUB policies protect you from discrimination on the basis of protected characteristics, including discriminatory harassment and sexual harassment. The University's non-discrimination policy applies to, and protects, all students, faculty, and staff. If you think you have experienced discrimination, discriminatory harassment, or sexual harassment, we encourage you to inform the Equity/Title IX Coordinator, Ms. Mitra Tauk at 01-350000 ext. 2514, titleix@aub.edu.lb, report to a Title IX deputy at your faculty or at any other faculty (www.aub.edu.lb/titleix), or report online (www.aub.ethicspoint.com). Reports may be submitted anonymously or not.