

## IN THE NAME OF GOD

**Islamic Republic of Iran**  
**Ministry of Health and Medical Education**  
**Deputy Ministry for Education**

**Medical Bacteriology**  
**Doctor of Philosophy (PhD)**

### Total Course Credits

- Core: 23
- Non-core (Electives): 6
- Dissertation: 20

### Program Description

The field of Medical Bacteriology is a branch of medical Microbiology whose Ph.D. graduates learn about physiology, pathogenesis, histopathology, immunology and biology of fungi and diseases caused by them; and help in diagnosis, treatment and preventing these diseases. Graduates help in propagating theoretical and practical aspects of the field, advancing the frontiers of knowledge by preparing research literature as well as innovations and promoting public health by providing laboratory diagnostic and consultative services at the highest level. Graduates are expected to be able to:

- Teach medical bacteriology at all educational levels.
- Work in research institutions as principal or collaborate investigators.
- Work in diagnostic laboratories as technical managers.

The Ph.D. in Medical bacteriology degree belongs to medical basic sciences and serves the national research schemes and academic educational programs. The main mission of the course is training committed, knowledgeable and competent people in medical bacteriology. Hopefully, this (with other medical basic sciences courses) will upgrade the individual skills of the food microbiology graduates who are employed in food industries, quality control laboratories, research centers and inspection units. Graduates in this course will be able to take educational responsibilities, conduct research and provide expert and consulting services related to Bacteriology. In educational terms, graduates will contribute to teaching bacteriology to students of various fields according to the university's needs. In research designing, they will implement and evaluate basic and applied research in various contexts of related fields. Furthermore, graduates will provide expert services for the laboratory diagnoses of bacteriology using standard and ingenious methods. In addition, they will provide consulting services with cooperation and consultation on controlling hospital infections.

### Admission Requirements

- Having a master degree (M.Sc.) in one of the fields of medical microbiology, medical mycology, bacteriology, medical parasitology, medical virology, pathobiology, molecular and cellular biology, general doctorate in one of the fields of medicine, dentistry and Pharmacy or professional doctorate in laboratory sciences, awarded by one of national or foreign universities approved by the Ministry of Health and Medical Education
- Succeeding in entrance examination
- Participating in the interview
- Offering a resume
- Presenting Recommendation letters
- Meeting admission criteria based on the regulations of universities

\*Important Note: These general conditions do not necessarily exclude specific conditions of each specific institute or university.

## **Expected Competencies at the End of the Program**

### **General Competencies\***

#### **Specific Competencies and Skills:**

At the end of the program, learners will be competent in the following skills:

- Keeping the physical, psychological, and occupational environment healthy
- Developing skills in molecular biology
- Working with high-tech specialized equipment
- Acting professionally in microbial diagnostic
- Interpreting test results
- Conducting research at national and international levels
- Keeping up-to-date by self-education

### **Educational Strategies, Methods and Techniques\***

#### **Student Assessment (Methods and Types)**

- Formative (quizzes and midterm exam)
- Summative (final exam)
- Comprehensive exam
- Methods of assessment: oral, written, observation, clinical competence assessments
- Portfolio assessment: Log book, test results, reports, articles, certificates, promotions, etc.

### **Ethical Considerations\***

Note: The related document(s) can be found at <http://hcmeq.behdasht.gov.ir/>

## Table of the Courses

**Table 1. Compensatory Courses**

Code of the Course	Title of the Course	Credits			Teaching Hours			Prerequisite or concurrent courses
		Theoretical	Practical	Total	Theoretical	Practical	Total	
01	Information Technology Systems in Medicine*	1	1	2	17	34	51	
02	Biostatistics	3	-	3	51	-	51	
03	Research Methods in Health Sciences	2	-	2	34	-	34	
04	Haematology	1	1	2	17	34	51	
05	Care and Use of Laboratory Animals	1	1	2	17	34	51	
06	Applied Biochemistry	1	2	3	17	68	85	
07	Molecular and Cellular Biology (Prokaryotes & Eukaryotes)	2	-	2	34	-	34	
08	Structure and Physiology of Microorganisms	2	-	2	34	-	34	
09	Microbial genetics	1	-	1	17	-	17	
10	Host – Microorganisms Relation	1	-	1	17	-	17	
11	Practical Bacteriology	-	2	2	-	68	68	
12	Molecular Diagnosis of Bacteria	-	2	2	-	68	68	
13	Medical Virology	3	1	4	51	34	85	
14	Immunology of Infectious Diseases	2	1	3	34	34	68	
	Total	20	11	31	340	374	714	

\* Completing this course is obligatory for those who have not completed it before.

Students should earn up to 16 compensatory course credits (Table 1) as specified by the Department of Education and approved by post-graduate committee of the university.



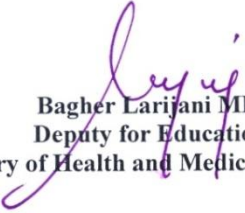
**Table 2. Core Courses**

Code of the Course	Title of the Course	Credits			Teaching Hours			Prerequisite or concurrent courses
		Theoretical	Practical	Total	Theoretical	Practical	Total	
15	Advanced Systematic Bacteriology (1)	3	-	3	51	-	51	
16	Advanced Systematic Bacteriology (2)	3	-	3	51	-	51	
17	Basic Bacterial Pathogenesis	2	-	2	34	-	34	
18	Advances Bacterial Genetics	1	2	3	17	68	85	09
19	Laboratory Diagnosis of Fastidious and Anaerobic Bacteria	-	2	2	-	68	68	11,15, 16
20	Oral Microbiology	1	-	1	17	-	17	
21	Bacterial Toxins	-	2	2	-	68	68	06
22	Bioinformatics	1	1	2	17	34	51	01
23	Internship	-	3	3	-	204	204	19
24	Seminar (1)	1	-	1	17	-	17	
25	Seminar (2)	1	-	1	17	-	17	
	Total	13	10	23	221	442	663	

**Table 3. Non-Core Courses**

Code	Course Title	Credits			Hours			Prerequisite or concurrent courses
		Theoretical	Practical	Total	Theoretical	Practical	Total	
26	Molecular Epidemiology	2	-	2	34		34	
27	In Introduction to Nanotechnology in Medicine	2	-	2	34		34	
28	Food Bacteriology	2	1	3	34	34	68	
29	Application of Electronic Microscope	0.5	0.5	1	9	17	26	
30	Antimicrobial Agents and Mechanisms Generating Drug Resistance	1	1	2	17	34	51	15 and 16
31	Practical Virology	-	2	2	-	68	68	
32	Advanced Immunology of Pathogenic Bacteria	1.5	0.5	2	26	17	43	14
33	Defensive Preparation against new threats (Microbial Passive Defensive Threats)	2	-	2	34	-	34	
34	Ethics and Biosafety	2	-	2	34	-	-	
<b>Total</b>		13	5	18	222	170	358	

Students should pass six credits from table 3 above, depending on the subject of their dissertation, the supervisor's suggestion and approval of the university's Council for Graduate Education.

<p><b>Jamshid Hajati PhD</b>  <b>Secretariat of the Council for</b>  <b>Education of Health and Basic</b>  <b>Medical Sciences (Undergraduate</b>  <b>and Postgraduate)</b></p> 		<p><b>Seyed Mansour Razavi MD</b>  <b>Secretary of the Supreme</b>  <b>Council for Medical</b>  <b>Sciences Planning</b></p> 
<p>  <b>Bagher Larijani MD</b>  <b>Deputy for Education</b>  <b>Ministry of Health and Medical Education</b></p>		