

MSc Medical Microbiology – Course details

1. Course description

The MSc in Medical Microbiology is the post-graduate degree of microbiology, focusing on education, research, clinical diagnosis, and services regarding the microbes.

2. Admission requirements*

- Students must have obtained a bachelor's degree from an accredited university in the following programs: medical laboratory sciences, microbiology, cellular and molecular biology (microbiology, genetics, cellular molecular), biology (general, microbiology, and genetics, cellular molecular), biochemistry, parasitology, medical virology, medical immunology, veterinary laboratory sciences, and doctor of medicine, doctor of dentistry, and doctor of pharmacy
- Taking the entrance exam

* Any changes regarding the admission requirements could be found in Medical MSc Guidebook which publishes for each coming academic year.

3. Career and professional perspective

Graduates may start their career at:

- Medical laboratories
- Universities and institutes for teaching theoretical courses for the undergraduate and practical courses for all degrees.
- Research centers (as research assistant)
- Knowledge-based companies
- Reference medical laboratories
- Relevant industries (food, drug, and cosmetics)
- Blood transfusion laboratories
- Centers for manufacturing diagnostic kits

4. Expected competencies

General competencies

- Intra-sectoral communication and interaction
- Teaching and training

- research
- Critical thinking and problem solving
- Research and writing scientific papers
- Evidence-based decision making
- Long-life learning and
- Relevant consultation

Special competencies

- Communication/interaction skills
- Management
- Education/consultation
- Production
- Laboratory/diagnosis services
- Research
- prevention

5. Teaching and Learning

Educational strategies

- Task-based education
- Problem-based education
- Lab-based education
- Blended education
- Community-oriented education
- Hospital-based education
- Subject-based education
- Evidence-based education

Educational methods

- Workshop, focus group, journal club, and case presentation
- Seminars and conferences in local, interdisciplinary, and intra-university context
- Morning report, professional and educational rounds, outpatient and operation room education
- Tele-education and simulation
- Self-education and self-study
- Participation in undergraduate education
- Other methods based on educational aims and needs

6. Student assessment (formative and summative)

- Oral and written exams
- OSCE, OSLE, OSFE, DOPS
- Portfolio (logbook, certificates of completion, quizzes, and published papers)

7. Course details*

core credits: 21

Non-core credits: 4

Thesis: 7

* Students may have to pass compensatory courses due to department recommendation and university post-graduate board confirmation.

Table 1. Compensatory courses*

Course code	Course title	Count of credits			Teaching hours			Courses of prerequisite /concurrent
		total	theoretical	practical	total	theoretical	practical	
01	Anatomy	2	1	1	51	17	34	
02	Human physiology	1	1	-	17	17	-	
03	Microorganism biochemistry	2	1.5	0.5	34	34	-	
04	Animal models and methods of housing and management	2	2	-	43	17	26	
05	Research methodology**	2	2	-	34	34	-	
06	Information Technology**	2	1	1	51	17	34	
07	Biostatistics software	2	-	2	68	-	68	
08	Effect of physical and chemical factors on microorganisms	1	0.5	0.5	26	9	17	
09	Safety and quality control in laboratory	2	1	1	51	17	34	
Total		16						

*The student must pass maximum 14 credits of the above courses based on thesis title and supervisor and department confirmation.

** these courses are mandatory for all students.

Table 2. Core credits

Course code	Course title	Count of credits			Teaching hours			Courses of prerequisite/ concurrent
		total	theoretical	practical	total	theoretical	practical	
10	Medical parasitology	1	0.5	0.5	26	9	17	-
11	Medical mycology	1	0.5	0.5	26	9	17	
12	Structure and physiology of microorganisms	2	2	-	34	34	-	
13	Genetics of microorganisms	1	1	-	17	17	-	
14	Antimicrobial agents, their mechanism and drug resistance	2	1.5	0.5	43	17	26	12,13
15	Microorganism and host relationship	1	1	-	17	17	-	
16	Clinical microbiology (1)	2	2	-	34	34	-	12
17	Clinical microbiology (2)	1	1	-	17	17	-	12
18	Diagnostic molecular microbiology	2	-	2	68	-	68	13
19	Diagnostic microbiology (1)	1	-	1	34	-	34	16
20	Diagnostic microbiology (2)	1	-	1	34	-	34	17
21	Medical virology	2	1.5	0.5	43	26	17	
22	Seminar*	1	1	-	17	17	-	
23	Internship	2	-	2	102	-	102	16, 17, 19, 20
24	Thesis	7						
Total		28						

* Subject and title of seminar must be different of that in Thesis.

Table 3. Non-core credits

Course code	Course title	Count of credits			Teaching hours			Courses of prerequisite/ concurrent
		total	theoretical	practical	total	theoretical	practical	
10	Pathology and an introduction to pathology methods	2	1	1	51	17	34	-
11	Hematology	2	1	1	51	17	34	-
12	Electronic microscope	1	0.5	0.5	26	9	17	-
13	Cellular and molecular biology of eukaryotes and prokaryotes	2	2	-	34	34	-	-
14	Immunology of infectious diseases	2	1.5	0.5	43	17	26	-
15	Basic bioinformatics	2	1	1	51	17	34	-
Total		11						

* The student must pass 4 credits of the above courses based on thesis title and supervisor and department confirmation.

8. Workshops related to the program

Obligatory workshops

- Scientific writing (16 hours)
- Novel molecular diagnostic methods (8 hours)

Optional workshops

- Entrepreneurship and industry
- Quality control of experimental outcomes