



Program Specification **for MD Degree in: *Medical Microbiology and Immunology***

Program type: *Medical Microbiology and Immunology*

Program code: *MI 906*

Department offering the program: *Medical Microbiology and Immunology*

Total credit points: 292 (M.Sc.172 + 120)

Academic year: 2016/2017

Program Coordinators: *Prof. Abdel Fattah M Attia - Prof. Eman Tolba*

External evaluators: *Prof. Amal Matta* (Microbiology & Immunology Department, Banha University)

I. Program aims

1. Prepare M.D. graduates to engage in advanced research for the prevention and cure of infectious diseases, and autoimmune diseases.
2. Provide graduates with comprehensive understanding of bacteriology, virology, mycology and immunology, with emphasis on mechanisms of human disease caused by pathogens at the cellular and molecular level.
3. Prepare M.D. graduates for consultative, advanced technical and supervisory positions in scientific laboratories in academic, government and the healthcare field.
4. Enable M.D. graduates to actively collaborate with clinical researchers through interactions with the clinical specialties.

II. Intended learning outcomes of program (ILOs)

A. Knowledge and understanding: In addition to ILOs of M.Sc. program, by the end of the M.D. program the candidate should be able to;

1. Critically recognize the nature of bacteria, viruses, and fungi and the criteria used in the classification/taxonomy of these microorganisms.
2. Critically recognize and clarify the pathogen specific growth characteristics if any, distinguishing biochemical tests, immunological or nucleic acid-based tests that are used to identify the pathogen
3. Explain the mechanisms of microbial pathogenesis and the outcomes of infections, including chronic microbial infections.
4. Describe the main principles of methods for analysis of DNA, such as hybridization, restriction analysis and DNA sequencing.
5. Describe and discuss applications of molecular biology, immunology and immunity to infection.
6. Associate diseases with their causative pathogens based on Koch's postulates and their recent serological and molecular adaptations.

7. Compare and contrast the common symptoms of infectious diseases
8. Justify epidemiological risk factors (age/sex/ethnicity/race/immune status /geographic or occupational exposure) that make an individual susceptible to infection/ disease
9. Explain the modes of transmission and the growth cycles of pathogenic microorganisms (chain of infection or infectious disease process).
10. Explain how is the pathogen maintained in nature
11. Explain how is the pathogen could be eliminated; in the environment, from medical equipment and devices, and for providing healthcare
12. Discuss the virulence factors of the pathogen
13. Discuss the genetic makeup of pathogenicity and virulence of the pathogen
14. Explain how does the host defend itself against the pathogen?
15. Explain how the host response contribute to the pathogenesis of the disease
16. Distinguish between and critically assess the classical and modern approaches to the development of therapeutic agents and vaccines for the prevention of human microbial infections/ diseases.
17. Define how infection/disease prevention and control guidelines applied
18. Explain treatment of infection caused by the pathogen

B. Intellectual skills: In addition to ILOs of M.Sc. program, by the end of the program the candidate should be able to;

1. Demonstrate comprehensive understanding of the nature of bacteria, viruses, and fungi and the criteria used in the classification/taxonomy of these microorganisms.
2. Demonstrate comprehensive understanding of the mechanisms of microbial pathogenesis and the outcomes of infections, including chronic microbial infections.
3. Build and interpret phylogenetic trees representing evolutionary relationships among organisms
4. Adopt recent molecular and immunological research developments that have important implications on the pathobiology, clinical management and laboratory diagnosis of microbial infections;
5. Discuss current and future trends in the use of genetic and immune strategies for effective treatment and prevention of microbial diseases, and vaccine development.
6. Analyze the applications of DNA analysis, such as hybridization, restriction analysis and DNA sequencing.
7. Analyze & solve immunological problems
8. Appropriate data handling and analysis
9. Integrate and evaluate information and data from a variety of sources
10. Appraise management skills: decision processes, objective criteria, problem definition, project design and evaluation, risk management, teamwork and coordination
11. Formulate and test hypothesis
12. Be creative in the solution of problems and in the development of hypothesis
13. Plan, conduct and report a program of original research.

C. Professional and practical skills: In addition to ILOs of M.Sc. program, by the end of the program the candidates should be able to;

1. Perform the isolation and characterization of specific microbes in clinical specimens
2. Identify the pathogen by its specific growth characteristics if any, distinguishing biochemical tests, its morphological and/or staining characteristics, immunological or nucleic acid-based tests
3. Adhere to relevant precautions and safety procedures in a medical microbiology laboratory
4. Carry out a range of advanced skills and laboratory techniques, including the purification of isolated microbial pathogens, study of microbial growth cycles and analyses of their proteins and nucleic acids for downstream applications such as assay development and gene cloning and sequencing studies
5. Demonstrate research skills, including designing experiments, analyzing results and trouble-shooting, critically assessing the scientific literature and/or carrying out a literature search.
6. Use bioinformatics and genomics in applications of molecular biology, immunology and immunity to infections.
7. Plan and execute safely a series of experiments.
8. Use laboratory and field-based methods to generate data.
9. Analyze experimental results and determine their strength and validity.
10. Prepare technical reports.
11. Give technical presentations.
12. Use the scientific literature effectively.
13. Use computational tools and packages.

D. General and transferable skills: In addition to ILOs of M.Sc. program, by the end of the program the candidates should be able to;

1. Communicate effectively through oral presentations, computer processing and presentations, written reports.
2. Apply statistical skills
3. Work independently and as part of a team
4. Integrate and evaluate information from a variety of sources.
5. Transfer techniques and solutions from one discipline to another.
6. Use information and communications technology.
7. Manage resources and time.
8. Learn independently with open-minded and critical enquiry.
9. Learn effectively for the purpose of continuing professional development.

III. Academic standards.

1. Academic reference standers: The academic standers of medical microbiology and immunology program is adopted and accredited by the departmental council

2. External References for Standards:

(Bench mark: name university or institute offering similar program)

1. Department of Microbiology and Immunology, New York Medical College, Valhalla, NY 10595, Telephone: 914 594-4175, Fax: 914 594-4176
2. **London School of Hygiene & Tropical Medicine, University of London,** <http://www.lshtm.ac.uk/courses/>
3. UNIV OF WISCONSIN MADISON, Medical School

IV. Program structure and contents.

Program admission requirements

According to the bylaws of the faculty of medicine Cairo University applicants should have MBCh or equivalent degree and the Master degree in Medical Microbiology and Immunology. According to Cairo University requirements, all applicants for postgraduate studies should fulfill preliminary courses on the following subjects; Medical statistics I – English language (Toefl or equivalent degree) – Computer skills (ICDL). Admission to the program is open during July. Training prior to registration may be accredited according to departmental evaluation. Admission for the program is open during July.

Program duration: at least two years.

Program structure: Total Credit points 292 (M. Sc 172 + M.D. 120)

Medical Microbiology and Immunology M.D. Program

Official Requirements	Course	Code	Cr. p	Total
Mandatory "core" curriculum	Medical Microbiology and Immunology	MI 906 MI	16	36 "core"
	Practical training program	MI 906 P	15	
	Scientific activities	-	5	
Mandatory "core" curriculum completed BEFORE submit to MD exam	M. D. Thesis	-	80	80 "core"
Total mandatory items	-	-	-	116
Elective courses (choose ONE only) "elective" curriculum	Advanced Bacteriology	MI 906 BAC	4	4 "elective" credit
	Advanced Immunology	MI 906I MM	4	
	Advanced Mycology	MI 906 ML	4	
	Advanced Virology	MI 906 VIR	4	
Total	(M. Sc 172 + M.D. 120)			292

MD Thesis

All MD students should prepare a thesis in Medical Microbiology and Immunology. The department and the ethical committees must approve the protocol of the research. The thesis (should / may) include a review part and a research part. The thesis is supervised by one or more senior staff members and may include other specialties according to the nature of the

research. The thesis should be evaluated and approved by a committee of three professors including one or two of the supervisors and an external professor.

Scientific Activities:

The students should participate in the scientific activities of the departments such as:

- Journal club (presenting scientific articles) once every 1-2 weeks.
- Seminars (including recent topics and controversial issues) once weekly. Students are expected to participate in the discussions.
- Scientific meetings arranged by the department
- Attendance of Thesis discussions
- Others e.g., conferences,etc

Each activity will be monitored and given credit points registered in the candidate logbook. The student should collect the required points before being allowed to sit for final exam.

MEDICAL MICROBIOLOGY AND IMMUNOLOGY MD DEGREE PROGRAM MATRIX

Courses		A. Knowledge and understanding																	
Code	Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
MI 906	Medical Microb/ Immun	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
MI 906 BAC	Adv. BAC	√	√	√	√		√	√	√	√	√		√	√		√	√		√
MI 906 IMM	Adv. Immun.					√									√	√	√		
MI 906 ML	Adv. MYC	√	√	√	√		√	√	√	√	√		√	√		√	√		√
MI 906 VIR	Adv. VIR	√	√	√	√		√	√	√	√	√		√	√		√	√		√
	Scient. activities																		
MI 906P	Practical training program																		

Courses		B. Intellectual skills																						
Code	Name	1	2	3	4	5	6	7	8	9	10	11	12	13										
MI 906	Medical Microb/ Immun	√	√	√	√	√	√	√	√	√		√	√											
MI 906 BAC	Adv. BAC	√	√	√	√	√	√		√	√		√	√											
MI 906 IMM	Adv. Immun				√	√	√	√	√	√		√	√											
MI 906 ML	Adv. MYC	√	√	√	√	√	√		√	√		√	√											
MI 906 VIR	Adv. VIR	√	√	√	√	√	√		√	√		√	√											
	Scient. activities								√	√	√	√	√	√										
MI 906P	Practical training program																							
Courses		C. Professional skills											D. General/Transferable skills											
Code	Name	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6	7	8	9	
MI 906	Medical Microb/ Immun														√			√	√	√	√	√	√	√
MI 906 BAC	Adv. BAC														√			√	√	√	√	√	√	√
MI 906 IMM	Adv. Immun														√			√	√	√	√	√	√	√
MI 906 ML	Adv. MYC														√			√	√	√	√	√	√	√
MI 906 VIR	Adv. VIR														√			√	√	√	√	√	√	√
	Scient. activities														√	√	√	√	√	√	√	√	√	√
MI 906P	Practical training program	√	√	√	√	√	√	√	√	√	√	√	√	√										

V. Regulations for progression and program completion

The student submits a protocol for MD thesis during the course. Before submitting to the final exam, the student should finish the thesis and get approval, complete practical training program, and collect the required credit points. In case the student pass the written examination by attaining a minimum of 60% of the total written exam marks, he/she will be allowed to proceed in the practical, oral and cases exams. In case the student fails to pass the written examination, he/she will NOT be allowed to proceed in the practical, oral and cases exams. In case the student fails to pass the practical, oral and cases examination, he/she may proceed in the next practical, oral and cases exams and NOT required to reenter the written

examination. The candidate will receive his degree after passing the final examination. MD degree should be obtained within a maximum of 6 years after registration date.

VI. Evaluation

According to the bylaws of the faculty, professors carry continuous assessment during the program. A candidate program logbook will be kept for each student to document all his/her procedural activities as well as his/her participation in different scientific activities. The head of the department should allow the students to undergo the final examination when they complete their practical program and collect the credit points needed and attain thesis approval.

Examination Description: Final Exam

Subject	Exam type	Marks					
		Written I	Written II	Cases & MCQ	Oral	Practical	Total
Medical Microbiology and Immunology	Two written exams; on two separate days, paper I on first day and paper II on second day (short essay questions) + Cases & Multiple choice questions in 3 hours duration exam + Oral exam + Practical exam. (4 days)	150	150	150	100	250	800
Elective (choose <u>ONE</u> only)	One written exam; in 2 hours duration + Cases and MCQ in 2 hours duration exam + Oral exam	80		80	40	-	200

VII. Evaluation of program intended learning outcomes:

Example

Evaluator	Tool	Sample
1. Senior Students	Questionnaire at the end of the program	All the PG students
2. Alumni	The faculty is currently developing an Alumni office for postgraduates	Not yet determined
3. Stakeholders	A meeting will be arranged during the annual conference of the department	Available representatives from: Army hospitals Medical syndicate Ministry of health
4. External Evaluators	Review the program and courses Attending the final exam.	Once before implementation Bi-annual report
5. College Quality Assurance committee	Annual program review	

Date of approval by department council: / / 2017

Signatures

Program Coordinator

Head of Department