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

Medical Virology
Doctor of Philosophy (Ph.D.)

Total Course Credits

- Core: 19
- Non-core (Elective): 6
- Pre-requisite (Compensatory): up to 16
- Thesis: 24

Program Description

Medical virology is a branch of basic medical sciences in which PhD students acquire the necessary information about the characteristics of viruses during their training course, such as the structure, nature and method of replication, infectivity, epidemiology, diagnosis, identification, as well as help in the control, prevention and treatment of viral diseases and explaining their role in cellular and molecular biology, in order to acquire the ability to carry out educational, research, diagnostic and related services.

Graduates of this field have the necessary characteristics and skills, such as theoretical and practical knowledge and skills, and social maturity in performing professional duties in this field, so that they can use the latest information and achievements of medical sciences and advanced technology in Iran and the world to train students to diagnose diseases and help maintain and improve the health of patients.

Program Objective

The general goal of the program is to train independent researchers in this discipline. Students must conduct an original research project, learn to present their research findings at scientific conferences and publish them in peer-reviewed journals, be able to develop an original research hypothesis, and explain the methods used to experimentally validate the hypothesis. Students must have the required technical skills for a career as a researcher and must develop excellent critical thinking skills to interpret their results. At the end of the program, students should be able to compete for research grants in the field of virology.

Program Duration:

- Three semesters for theory and practical courses;
- One semester for preparation of proposal and the comprehensive exam;
- Five (at least) semesters for thesis.
- If the applicant needs pre-requisite or compensatory courses (Table 1), up to 3 semesters will be added to the whole duration of the program. the department decides on this based on his/her scientific background and scores).

Admission Requirements

1. Candidates for entry into this field must have a master's degree in one of the following fields: Virology, Pathobiology, Microbiology, Bacteriology, Veterinary laboratory sciences, Immunology, Cellular and Molecular Biology, or a general doctorate in Medicine, Dentistry, and Pharmacy, or a professional doctorate in Laboratory Sciences and Veterinary Medicine.
2. Applicants other than MSc Virology graduates need to pass at least one year prerequisite courses (Table 1) before entering the PhD program.
3. The mean of the applicant in his/her BSc and Msc program needs to be at least 85/100.
4. In addition to assessing the CV of the applicant, the department holds an online one hour English interview with the applicant.

Expected Competencies during and at the End of the Program

General Competencies*

The general competencies expected of graduates of this level are:

- Communication skills
- Interdepartmental interaction
- Education and teaching
- Research and writing of scientific articles
- Critical thinking
- Problem solving skills
- Management skills and evidence-based decision-making
- Professionalism
- Lifelong self-improvement

Specific capabilities expected of graduates of this level include:

- Conducting experiments and attempting to provide correct responses (Quality control of experiments)
- Skills in working with laboratory animals
- Physical and psychological health of the workplace
- Correct use of laboratory equipment and tools
- Following the principles of biosafety
- Common measurements and instrument calibration
- Writing one original article focused on the subject of his/her thesis, along with at least two review articles related to the thesis topic or the department's ongoing projects. These works will be supervised by one of the department's professors, and all articles must be written in English.

Educational Strategies, Methods and Techniques*

This program is based on the following strategies:

- Task-based education
- Subject-directed education
- Student- and teacher-centered education
- Community-oriented
- Hospital-based education
- Systematic education
- Disciplinary with subject integration if needed

Educational Methods and Techniques

The following educational methods and techniques will be mainly used in this course:

- Various intra-departmental, inter-hospital, inter-disciplinary and inter-university conferences and seminars.
- Discussion in small groups, Educational workshops, Journal club and book reading.
- Self-education, self-study.
- Other educational methods and techniques according to the needs and educational goals.

Student Assessment (Types and Methods)

- Students will be evaluated using the following methods:
- Oral
- Evaluation includes log book evaluation, test results, essays, encouragements, mentions, certificates of completion, etc.

Assessment Frequency

- Periodic

Ethical Considerations

Learners are expected to:

- Strictly observe the Patient Rights Charter.
- Strictly observe the regulations related to the protection and safety of patients, staff and the work environment. These regulations are developed by the educational group and made available to students.
- Observe the regulations related to the Dress Code.
- Strictly observe the relevant ethical regulations when working with animals.
- Protect the resources and equipment they work with under all circumstances.
- Respect professors, staff, fellow students and other learners and contribute to creating a friendly and respectful atmosphere in the work environment.
- Observe social and professional ethics when reviewing programs.
- Observe the points of research ethics when conducting research related to the field.

*Note: The related document(s) can be found at http://hcmep.behdasht.gov.ir/

Table of the Courses

Table 1. Compensatory Courses*

Code	Title	Theoretical		Practical		Total		Prerequisite or Concurrent Courses
		Credit	Teaching hours	Credit	Teaching hours	Credit	Teaching hours	
01	Biostatistics	2	34	-	-	2	34	-
02	Principles of epidemiology	2	34	-	-	2	34	-
03	Laboratory animals and their maintenance	1	17	-	-	1	17	-
04	Modern methods in biochemistry	2	34	-	-	2	34	-
05	Research methods	1	17	-	-	1	17	-
06	Teaching methods	1	17	-	-	1	17	-
07	Medical ethics	1	17	-	-	1	17	-
08	General virology	3	51	-	-	3	51	-
09	Systematic virology 1	3	51	-	-	3	51	08
10	Systematic virology 2	3	51	-	-	3	51	08
11	Medical information systems**	0.5	9	0.5	17	1	26	-

* **The student is required to take all or some of the deficiency or compensatory courses (Table 1) as determined by the relevant educational department and approved by the University's Graduate Education Council.**
* **Taking these courses is mandatory for all students who have not previously taken them.**
* **The department decides whether or not the student must participate in practical classes of the MSc students, if he/she has not passed any paractical virology courses.**

Table 2. Core Courses

Code	Title	Theoretical		Practical		Total		Prerequisite or Concurrent Courses
		Credit	Teaching hours	Credit	Teaching hours	Credit	Teaching hours	
12	Modern General Virology	4	68	-	-	4	68	08
13	Cellular and Molecular Biology	2	34	-	-	2	34	-
14	Practical Virology 1	-	-	2	68	2	68	-
15	Advanced Virology I (DNA Viruses and Retroviruses)	3	51	-	-	3	51	09, 12
16	Advanced Virology II: RNA Viruses	3	51	-	-	3	51	10,12
17	Practical Virology 2	-	-	3	102	3	102	14
18	Seminar	2	34	-	-	2	34	-
19	Thesis	24						

Note : Health in disasters is also a mandatory course which must be taken with the relevant department.

Table 3. Optional/Elective Courses*

Code	Title	Theoretical		Practical		Total		Prerequisite or Concurrent Courses
		Credit	Teaching hours	Credit	Teaching hours	Credit	Teaching hours	
20	Special Topics in Virology	2	34	-	-	2	34	-
21	Electron Microscopy	1	17	1	34	2	51	-
22	Clinical Virology	1	17	2	68	3	85	-
23	Bioinformatics	1	17	1	34	2	51	-
24	Scientific Article Writing Methods	0.5	9	0.5	17	1	26	-
25	Immunology of Viruses	1	17	1	34	2	51	-

***The student must take 6 credits from the courses in the table above, appropriate to the topic of the thesis, after approval from the supervisor.**

Workshops:

According to the training group's schedule, they will be held to complete the training programs, and students who have not passed these workshops are required to present a certificate of participation in these workshops to participate in the comprehensive exam.

- Passive Defense
- Biosafety