

**In the Name of God**

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

**Human Genetics**  
**Degree: Master of Science (MSc)**

### **Total Course Credits**

- Core: 18
- Non-core (Electives): 6
- Thesis: 8

### **Program Description**

The field of Human Genetics is a branch of bio-medical sciences which investigates the chromosome and gene structure of cells. The field includes a number of orientations such as Genetic Engineering, Immunogenetics, Population Genetics, Cancer Genetics, Behavioral Genetics and Biochemical Genetics. The graduates with a master's degree in this field will be able to perform genetic analysis of human cells and detect certain chromosomal and gene disorders.

The Human Genetics, at master's level, will offers both taught courses and research programs, helping students to develop their theoretical, communication and practical skills on the broad discipline of Human and Medical Genetics with a special emphasis upon the molecular aspects of the subjects. The program is intended to develop student skills in appreciating and applying the techniques of molecular genetics and cytogenetics to target the existing problems in education and research and to apply their genetic knowledge to offer effective services in laboratory fields.

The students are assisted in developing their analytical and presentational skills and are encouraged to integrate their course modules and research, and publish their research findings in scientific journals on Human Genetics.

### **Admission Requirements**

- Holding a bachelor of science degree (BSc) in one of the fields of biological sciences (all branches); Genetics, Biochemistry, Immunology, Microbiology, Nutrition, Laboratory Sciences, Midwifery or a general doctorate in one of the fields of medicine, dentistry, veterinary medicine, and pharmacy, or a professional doctorate in the Laboratory Sciences (approved by the Medical Branch of the Supreme Council of Planning), awarded by one of the home or foreign universities and approved by the Ministry of Health, Treatment and Medical Education.
- Being eligible for entering the course according to the MS educational rules and regulations.

\*Important note: These general conditions do not necessarily exclude specific conditions of each 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:

- Being competent in student seminars, lectures, and lecture handouts,
- Becoming familiar with laboratory practicals,
- Developing team-working skills,
- Evaluating the data generated, and interpreting the related data,
- Producing laboratory reports.

### Educational Strategies, Methods and Techniques\*

#### Student Assessment (Methods and Types)

- a) Methods of assessment**  
Written, verbal, and practical assessment
- b) Types of the assessment**  
Formative  
Summative  
Comprehensive exam

### Ethical Considerations\*

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

## Tables of the Courses

**Table 1. Compensatory Courses \***

Code of the course	Title of the course	credits			Hours			Prerequisite or concurrent courses
		Theoretical	Practical	Total	Theoretical	Practical	Total	
01	Computer Basis, Internet and their Applications in Bioscience	2	-	2	34	-	34	-
02	Electronic Microscope	1	1	2	17	34	51	-
03	Application of Radioisotopes	1	1	2	17	34	51	-
04	Molecular Biology	2	-	2	34	-	34	-
05	Elements of Epidemiology							-
06	**Medical Informative Systems	0.5	0.5	1	9	17	26	-

\*Students should earn all or some of compensatory course credits (Table 1) as specified by the Department of Education and approved by the Postgraduate Education Council.

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


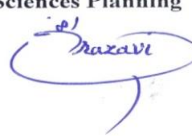
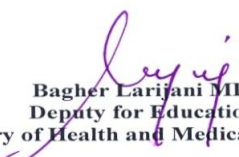
**Table 2. Core Courses**

Code of the course	Title of the course	credits			Hours			Prerequisite or concurrent courses
		Theoretical	Practical	Total	Theoretical	Practical	Total	
07	Human Genetics	2	-	2	34	-	34	-
08	Cytogenetics	2	-	2	34	-	34	-
09	Genetic Engineering	2	-	2	34	-	34	-
10	Immunogenetics	2	-	2	34	-	34	-
11	Population Genetics	2	-	2	34	-	34	-
12	Molecular Genetics	2	-	2	34	-	34	09
13	Cancer Genetics	2	-	2	34	-	34	09, 12
14	New Aspects of Human Genetics	2	-	2	34	-	34	07, 08, 11, 13
15	Seminar 1 & 2 (in 2 semesters)	-	-	2	-	-	-	-
16	Thesis	-	-	8	-	-	-	-
<b>Total</b>					<b>26</b>			

**Table 3. Non- Core Courses (Electives)\***

Code of the course	Title of the course	credits			Hours			Prerequisite or concurrent courses
		Theoretical	Practical	Total	Theoretical	Practical	Total	
17	Genetics of Microorganisms	2	-	2	34	-	34	-
18	Behavioral Genetics	2	-	2	34	-	34	-
19	Human Biochemical Genetics	2	-	2	34	-	34	-
20	Biochemistry of Chromatin	2	-	2	34	-	34	-
21	Cell and Tissue Culture	1	2	3	17	34	51	-
22	Somatic and Cytoplasmic Genetics	2	-	2	34	-	34	-
23	Ethics and Bio-immunology	2	-	2	34	-	34	-
24	Practical Aspects of Cytogenetics	1	-	1	-	17	17	-
25	Practical Aspects of Molecular Genetics and Genetic Engineering	1	-	1	-	17	17	-
26	Special English Language	2	1	3	34	17	51	-
27	Molecular Medicine	1	-	1	17	-	17	-
<b>Total</b>		<b>21</b>						

\*Students should choose 6 credits as specified by their affiliate department.

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 <p><b>Bagher Larijani MD</b>                  Deputy for Education                  Ministry of Health and Medical Education</p>	