

**In the Name of God
Islamic Republic of Iran
Ministry of Health and Medical Education
Deputy Ministry of Education**

**Master of Science in Environmental Health
(Radiation Health)**

Total Course Credits

- Core: 22 credits
- None-Core: 4 credits
- Thesis: 6 credits
- Compensatory: 0

Program Description:

Radiation Health is one of the applied sciences of environmental health which Its graduates will be able to study and analyze issues related to natural ionizing and non-ionizing radiation in the environment and human societies, and provide appropriate solutions to maintain the health of humans and their living environment.

Admission Requirements:

1. Passing the entrance exam in accordance with the rules and regulations of the Ministry of Health and Medical Education.
2. Having a bachelor's degree in one of these fields:
 - Environmental health engineering
 - All branches of physics
 - Radiation technology
 - Nuclear medicine technology
 - Radiotherapy technology
 - Industrial safety
 - All branches of chemistry

Table 1. Materials of the entrance exam

Materials of the entrance exam	Weight
Principles of radiation health	3
Environmental chemistry	1
Environmental pollutants	2
Biophysics	1
Analytical chemistry	1
General English language	2

Expected Competencies at the End of Program

General Competencies:

- Communication skills
- Application of statistics in research studies, including: sample size calculation, sampling, mean calculation, median, mode, analysis of variance, one-way and two-way ANOVA, correlation analysis, regression analysis, use of common statistical tests
- ICDL skills
- Application of statistical software, such as SPSS, EPI, GIS and etc.
- Design of research questionnaire
- Writing and reviewing of scientific papers
- Reviewing related laws and regulations to radiation
- Management skills such as policy making, planning, organizing, coordinating, monitoring and controlling and evaluating

Specific Competencies and Skills

- Radiation decontamination
- Detection of environmental radiation pollution
- Detection and analysis of radionuclides
- Radioactive sampling from water, soil, ash, sediments, solid waste, and foodstuffs
- Working with spectrophotometer, film photometer, atomic absorption, liquid and mass chromatography, ICP and radiotherapy diagnostic devices, and their calibration
- Radiation dosimetry (individual or group)
- Sanitary management of critical environment
- Health assessment of radiological diagnostic, nuclear medicine radiation and radiation therapy centers

- Control and reduce the effects of ionizing radiation
- Radiation protection management in hospitals and medical diagnostic centers
- Measurement of the radiation concentration in the samples and its interpretation
- Measurement of rays in the environment and their interpretation
- Design of protection programs and requirements
- Physical and mental enhancement of workplace

Educational Strategies, Methods, and Techniques:

The strategies are as follows:

- Task-based learning
- Problem based learning
- Subject directed learning
- Evidence based learning
- Student - teacher integration
- Community oriented learning
- Systematic learning

Student assessment (methods and types)

- Written test
- Computer interaction test
- Oral test
- 360-degree test
- Assessment of portfolio

Ethical consideration

Applicants are expected to:

- Strictly adhere to the Patient Bill of Rights.
- Make provisions for the biosafety of the patients, staff and workplace.
- Strictly comply with the dress code.

- Carefully follow the ethical code with respect to working with animals.
- Protect resources and equipment used under any circumstances.
- Be respectful towards the faculty, staff, peers and other learners engaging in creating a sincere and respectful atmosphere in the workplace.
- Have considerations for the social and professional ethics in making criticism against others.
- Follow the code of ethics in research.

Tables of the Courses

Table 2. Compensatory Courses

Course code	Course Title	Credits			Teaching Hours		
		Theory	Practical	Total	Theory	Practical	Total
1	Environmental health management in emergency conditions			1	17	-	17
2	Principles of environmental toxicology			2	34	-	34
3	Groundwater and surface water hydrology			2	34	-	34
4	Water quality management			2	34	-	34
5	Air pollution			3	34	34	68
6	Environmental epidemiology			2	34	-	34
7	Application of statistical methods in environmental health			2	17	34	51
8	Water treatment			2	34	-	34
9	Industrial wastewater treatment			2	34	-	34
10	Medical information systems*			1	9	17	34
11	Hazardous and industrial waste			1	17	-	17
Total		20					

* Passing this course is mandatory for all students as a compensatory course.

Table 3. Core Courses

Course code	Course Title	Credits			Teaching Hours				
		Theory	Practical	Total	Theory	Practical	workshop	Internship	Total
12	Application of radiation sources in medicine, industry, and researches	0	0	2	17	0	51	0	68
13	Radiation protection management	0	0	2	34	0	0	0	34
14	Radionuclides behavior in environment	0	0	2	34	0	0	0	34
15	Environmental dosimetry	0	0	2	17	34	0	0	51
16	Radioactive solid waste management	0	0	2	34	0	0	0	34
17	Environmental impact assessment (focusing on radioactive facilities and industries)	0	0	2	34	0	0	0	34
18	Health impact assessment	0	0	2	34	0	0	0	34
19	Project	0	0	2	0	68	0	0	68
20	Emergency management at nuclear facilities	0	0	2	34	0	0	0	34
21	English for the students of environmental health engineering- Radiation health	0	0	2	34	0	0	0	34
22	Internship			2	-	-	-	102	102
Total		22							

Table 4. Non-Core Courses

Course code	Course Title	Credits			Teaching Hours		
		Theory	Practical	Total	Theory	Practical	Total
23	Environmental ecology	0	0	1	17	0	17
24	Environmental radiochemistry	0	0	2	17	34	51
25	Laws and regulation of radiation	0	0	1	17	0	17
26	Analysis of chemical pollutants in the environment	0	0	2	17	0	51
27	Assessment and risk management	0	0	2	34	0	34
28	Radiation physics	0	0	2	34	0	34
29	Radioactive natural sources and control	0	0	2	34	0	34
30	Radiation impact on human health	0	0	1	17	0	17
Total		13					

* Students must pass 4 credits based on their thesis topics and approval of their advisor and postgraduate education council.