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 Engineering
(Air Quality Management)

Total Courses Credits

- Core: 21 credits

- None-core: 6 credits

- Dissertation: 5 credits

- Compensatory: 16 credits

Program Description

Air quality management is a branch of environmental health engineering that can be defined as the integration of sciences and engineering principles to manage outdoor and indoor air quality, control air pollution sources, investigate the health, economic, environmental and social impacts. The admission requirements in the aforementioned major, expected general and specific competencies at the end of the program, educational strategies, methods and techniques, student assessment, ethical considerations during the program, and finally, table of the courses (core, non-core and compensatory) are addressed in detail in the following sections.

Admission Requirements

- Passing the entrance exam to get into the university according to the regulations of Ministry of Health and Medical Education
- Having a Bachelor's degree in environmental health engineering, chemistry majors, chemical engineering, mechanical engineering, occupational health, occupational health engineering, physics majors.

Expected Competencies at the End of the Program

General Expected Competencies

- Communicative skill
- Educational skill
- Research and scientific Writing
- Critical thinking and problem solving skill
- Application of air pollution-related software
- Evidence-based managerial skills (policy-making, planning, organizing, monitoring, supervising and controlling) specially intersectoral management
- Team working skills
- Preparation and presentation of technical reports

Specific Expected Competencies

- Identification of air pollution sources
- Risk assessment and management (air pollutants)
- Air pollution modeling
- Application of equipment and devices for sampling, identification, measurement, management and control of air pollutants
- Planning for sampling, analysis and monitoring of air pollutants

Table 1. Expected Procedural Skills at the End of the Program

Skill	Minimum number of times required to do the activity to achieve mastery of the skill			
	Observation	cooperation	Done Independently	Total
Working with computer, software and internet	-	-	*	20 hours
Preparation of proposal for a research project	-	-	*	Once
Running editing software	-	-	*	Once for each software
Running data entry software	-	-	*	Once for each software
Remote sensing of pollutants	-	-	*	20 hours
Applying epidemiological methods for health impacts estimation	-	-	*	20 hours
Modeling of pollutants emission	-	-	*	Once for each software
Presenting papers related to air pollution	-	-	*	Twice
Sampling methods from air	*	-	*	Once

Educational Strategies:

This program is based on the following strategies:

- Task-based education

- A combination of student- and teacher-based education

- Problem-oriented education

- Community-oriented education

- Subject-directed education

- Evidence-oriented education

- Systematic education

- Compulsory and in few case, elective education

Educational Methods and Techniques:

In this course, various educational methods and techniques are used:

- Classroom

- Inter-disciplinary and -Universities conferences and seminars

- Discussion in small groups, workshops, journal clubs and case presentation

- Applying distance education

- Self-education, self-study

- Internship

- Project application

- Methodology and techniques of lab-based education in accordance with the objectives and requirements

Student Assessment (Methods and Types)

1. **Methods of assessment:**
   - Written, oral, and practical exams
   - Interactive computer exam
   - Objective structured laboratory examination (OSLE)
   - Direct observation of procedural skills (DOPS)
   - Other examinations based on the course objectives or supervisor's/department's decision
   - Portfolio assessment including Log book evaluation, results of the completed exams, certificates, etc.

2. **Types of assessments:**

Quizzes, midterm and final exa

Ethical Considerations

Applicants are expected to:

1. Strictly adhere to the patient bill of rights.

2. Make provisions for the biosafety of the patients, staff and workplace.

3. Strictly comply with the dress code.

4. Carefully follow the ethical code with respect to working with animals.

5. Protect resources and equipment used under any circumstances.

6. Be respectful towards the faculty, staff, peers and other learners engaging in creating a sincere and respectful atmosphere in the workplace.

7. Have considerations for the social and professional ethics in making criticism against others.

8. Follow the code of ethics in research.

9. Follow the occupational and professional ethics, in addition to professionalism.

* For items 1, 2, 3 and 4, the related document(s) can be found at http://hcmep.behdasht.gov.ir/.

Table of the Courses

The students who have not passed the compensatory courses in their previous degrees (Associate and Bachelor's degrees) should also take all or some the compensatory courses (16 credits) as determined by Department of Environmental Health Engineering and approved by Postgraduate Education Council.

Table 2. Compensatory Courses

Course code	Course	Credits			Hours			Prerequisite courses
		Theoretical	Practical	Total	Theoretical	Practical	Total	

01	Air Pollution*	2	1	3	34	34	68	-
02	Environmental chemistry	1	1	2	17	34	51	-
03	Environmental microbiology	1	1	2	17	34	51	-
04	Industrial and municipal solid waste management	2	1	3	34	34	68	-
05	Fluid mechanics*	2	-	2	34	-	34	-
06	Health information systems*	0.5	0.5	1	9	17	26	-
07	Basic engineering mathematics*	2	-	2	34	-	34	-
08	Radiation protection and health	1	1	2	17	34	51	-
09	English for the students of environmental health engineering-Air quality management	1.5	0.5	2	26	17	43	-
10	Environmental ecology	1	-	1	17	-	17	-
11	Research methodology in health sciences	2	-	2	34	-	34	-
12	Environmental impact assessment*	2	-	2	17	-	17	-
13	Energy and environment	1	-	1	17	-	17	-
14	Principles of toxicology	2	-	2	34	-	34	-

*These courses are obligatory for all the MSc students who have not taken them previously.

Table 3. Core Courses

Course code	Course	Credits			Hours			Prerequisite courses
		Theoretical	Practical	Total	Theoretical	Practical	Total	
15	Atmospheric chemistry and physics	2	-	2	34	-	34	01
16	Air pollutants measurement methods/ techniques	1	1	2	17	34	51	-

17	Air pollution control engineering	2	-	2	34	-	34	01
18	Meteorology	2	-	2	34	-	34	15
19	Identification and management of air pollution sources	2	-	2	34	-	34	-
20	Noise pollution	0.5	0.5	1	9	17	26	-
21	Health and economic impacts of air pollution	1	1	2	17	34	51	01
22	Indoor air quality	1	-	1	17	-	17	01
23	Health impact assessment	1.5	0.5	2	26	17	43	12
24	Global impacts of air pollution	1	-	1	17	-	17	01
25	Air pollution modeling	1	1	2	17	34	51	-
26	Project	-	1	1	-	34	34	-
27	Internship	-	2	2	-	102	102	-

Table 4. None-Core Courses

Course code	Course	Credits			Hours			Prerequisite courses
		Theoretical	Practical	Total	Theoretical	Practical	Total	
28	Environmental epidemiology in air pollution	1.5	0.5	2	26	17	43	-
29	Innovative technologies of air pollution control	2	-	2	34	-	34	-
30	Industrial ventilation	1.5	0.5	2	26	17	43	-
31	Indoor air pollution control Equipment/Devices	1	-	1	17	-	17	-
32	Application of statistical methods in environmental health engineering	1.5	0.5	2	26	17	43	-
33	Monitoring and control of sand and dust	2	-	2	34	-	34	01

	storm						
34	Environmental epidemiology	2	-	2	34	-	34	
35	Crisis management in air pollution events	1	-	1	17	-	17	01, 17, 18, 19
36	Air pollution economics	1	-	1	17	-	17	-
37	Clean energies	1	-	1	17	-	17	-