

University of Miskolc, Faculty of Earth Science and Engineering

MSc in Environmental Engineering

Programme title: **Environmental Engineering master program (MSc)**

Degree awarded: **Environmental Engineer**

Number of semesters: 4; number of contact hours: 1081 / 1065 depending on specialisation;

Specialisations: Remediation and environmental geotechnics; Waste management

Required number of credits to be completed: 120

Field practice: Minimum 4 weeks internship at a company, research institute or competent authority.

Programme overview

Basic courses in natural sciences - NS; Economic and human courses - EH; Basic professional courses - PC

Sem.	course	type	Course code	lect	pract	ECTS	Assign	Course leader	Required base
1	Mineralogy - geochemistry	NS	MFFAT710001A	2	1	4	e	Dr. Sándor Szakáll	
1	Environmental geology	NS	MFFTT710008	2	1	4	e	Dr. Viktor Mádai	
1	Basics of environmental processing	NS	MFEET710005	1	1	2	p	Dr. József Faitli	
1	Ecology and nature protection	NS	MFKHT710009	1	2	3	p	Dr. Teofil Fülöp	
1	Soil chemistry	NS	AKKEM6007M	1	2	3	e	Dr. János Lakatos	
1	Computer science for engineers	NS	GEMAK713M	0	2	2	p	Dr. Gabriella Mészáros	
1	Numerical methods and optimization	NS	GEMAK712M	1	1	2	e	Dr. Gabriella Mészáros	
1	Environmental and waste management law	EH	AJAMU04MF1N	2	0	2	e	Dr. Ede János Szilágyi	
1	Basics of waste management	PC	MFETT710010	2	1	3	e	Dr. Gábor Mucsi	
2	Applied physical chemistry	NS	AKKEM6008M	2	1	3	e	Dr. Béla Viskolcz	
2	Water chemistry	NS	AKKEM6005	1	1	2	p	Dr. János Lakatos	
2	Environmental economics	EH		2	0	2	e	Dr. Klára Tóthné Szita	
2	Waste disposal, landfill operation and reclamation	PC	MFKHT720040	2	1	4	e	Dr. Tamás Madarász	
2	Environmental and engineering geophysics	PC	MFGFT720018	2	2	5	e	Dr. Krisztián Baracza	
2	Water quality protection	PC	MFKHT720023	1	1	3	e	Dr. Péter Szűcs	
3	Methods of environmental assessment	EH	MFKHT730013	0	2	2	p	Dr. Balázs Zákányi	
3	Quality management	EH	GTVVE7002MA	2	0	2	e	Dr. László Berényi	
3	Waste incineration and air quality protection	PS	MFKHT730018	2	1	4	e	Dr. András Kállay	
3	Water and wastewater treatment	PC	MFEET730001A	1	1	2	e	Dr. Sándor Nagy	
3	Elective course 1	EL		2	1	3	e		
3	Thesis work 1		MFKHT730045 MFEET730045	0	0	6	a		
4	Occupational health and safety	EH		2	0	2	e	Dr. Zákányiné Dr Renáta Mészáros	
4	Elective course 2	EL		2	1	3	p		
4	Thesis work 2		MFKHT740035 MFEET740035	0	0	24			

Remediation and environmental geotechnics specialisation (Differentiated professional unit - DP)									
1	Hydrogeology	DP	MFKHT710017	2	2	5	e	Dr. Péter Szűcs	
2	Groundwater flow and contaminant transport modelling	DP	MFKHT7200061	2	2	5	e	Dr. Balázs Kovács	
2	Geotechnical engineering	DP	MFKHT720025	2	1	4	e	Dr. Tamás Madarász	
2	Contaminated site remediation	DP	MFKHT720030	2	1	4	e	Dr. Tamás Madarász	
3	Environmental geotechnics	DP	MFKHT730030	1	1	2	e	Dr. Andrea Tóth Kolencsikné	
3	Chemical technologies in environmental protection	DP	MFEET730016	1	1	2	p	Dr. Ljudmilla Bokányi	
3	Environmental risk assessment and remediation	DP	MFKHT730026	2	0	3	e	Dr. Tamás Madarász	
3	Geographical information system	DP	MFKFT730012	2	1	2	e	Dr. János Vágó	

Waste management specialisation (Differentiated professional unit - DP)									
1	Handling of processing and biodegradable wastes	DP	MFEET710006	2	1	3	e	Dr. Ljudmilla Bokányi	
2	Mechanical, - and biological treatment of municipal solid waste	DP	MFEET720015	1	2	4	e	Dr. Ljudmilla Bokányi	
2	Sampling and qualification of waste	DP	MFEET720016	1	1	2	p	Dr. József Fajtli	
2	Treatment and processing of construction, industrial- and glass wastes	DP	MFEET720017	1	1	3	e	Dr. Gábor Mucsi	
2	Design fundamentals of waste preparation technological processes	DP	MFEET720018	2	2	5	e	Dr. József Fajtli	
3	Recycling of metallic and rubber wastes	DP	MFEET730018	0	2	3	p	Dr. Sándor Nagy	
3	Recycling of plastic and paper wastes	DP	MFEET730019	0	2	3	p	Dr. Imre Gombkötő	
3	Waste processing machines and their operation	DP	MFEET730020	2	2	5	e	Dr. Ádám Rácz	

Graduation requirements:

- Students must have completed all the core, specialization and elective course requirements.
- Students must have achieved a minimum of 120 credits.
- Students will have successfully completed the mandatory internship.
- Students will have submitted a Thesis Work.
- Students will have fulfilled all administrative and financial requirements towards the university.

Graduation comprises two parts: the defend of the Thesis Work and passing final exams. The final exam is an oral exam, discussing the following topics:

On the '**Remediation and environmental geotechnics**' specialisation:

Topic 1	Waste management, waste incineration
Topic 2	Remediation of contamination (Water chemistry, Soil treatment, Remediation, Risk assessment)

On the '**Waste management**' specialisation:

Topic 1	Waste management, waste incineration
Topic 2	Environmental processing: Process engineering, Design of waste processing technologies

The overall result of the final examination (ZV) is calculated as:

$$ZV = (A1 + A2 + 2 \times D) / 6$$

where:

- D = the final grade of the Thesis work, defined by the examination board,
- A1, A2 = grades of the three exams.
- Grades are integer numbers and given on a scale from 5 (the highest grade) to 1 the lowest grade). The lowest passing grade is 2.