UNIVERSITY OF PETROȘANI
FACULTY OF MINES

CURRICULUM

(valid starting with the academic year **2026-2027**)

Field: **Environmental Engineering**

Study programme**: Environmental Management and Protection**

Duration of studies: **4 semesters**

Form of education: **full-time (IF)**

I. Requirements for obtaining the diploma

120 credits, of which:

- credits for compulsory subjects: **106**
- credits for optional subjects: **14**

II. Course of studies (in number of weeks)

Year	Teaching activities		Exam sessions			Holiday		
	Sem. I	Sem. II	I	V	R	Winter	Inter-semester	Summer
Year I	14	14	3	3	3	3	1	12
Year II	14	14	3	3	3	3	1	-

III. Number of hours per week

	Sem. I	Sem. II
Year I	20	20
Year II	20	14

IV. Dissertation examination

Period for the dissertation examination: June-July session, September session

Content of the dissertation examination:

- Presentation and defence of the dissertation - **10 credits**

V. Method of choosing the optional subjects

One subject is chosen from the package of optional subjects for each semester

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ENVIRONMENTAL MANAGEMENT AND PROTECTION

Mission of the study programme *ENVIRONMENTAL MANAGEMENT AND PROTECTION*

The mission of the master's programme is to provide an in-depth, thorough and stimulating education in the field of environmental management and protection for various socio-economic aspects (industry, water and soil management, atmospheric protection, infrastructure, environmental impact assessment, ecological rehabilitation, biodiversity conservation, etc.). The study programme for the Environmental Management and Protection qualification is aimed at graduates of the Environmental Engineering and Protection specialisation, as well as specialists from other technical fields in various sectors of the national economy, ensuring the acquisition of knowledge in a dynamic field with well-defined particularities.

Objectives of the study programme *ENVIRONMENTAL MANAGEMENT AND PROTECTION*

General objective

Training graduates able to contribute competently and responsibly to the control, assessment and monitoring of environmental quality, through the integrated application of specialist knowledge, professional skills and the principles of responsibility and autonomy, within public institutions, economic operators and organisations involved in environmental protection.

Specific objectives

The specific objectives of the programme concern providing an integrated study programme solution, in order to prepare graduates to engage in planning and managing the environmental issues associated with each of the main stages of various projects, and the opportunity to pursue special aspects related to environmental protection through individual research work, with a view to producing a dissertation on topical subjects.

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CURRICULUM

No. crt.	YEAR I Subject	Subject code	Subj. type	Semester 1				Semester 2				Credit points		Ei, Ci, Vi		No. of teaching hours per subject			Total study hours individual	Total hours code
				C	S	L	P	C	S	L	P	Sem.1	Sem.2	Sem.1	Sem.2	Lect.*	Appl.**	Total		
1	Global Climate Change	UPFMGPM101	DF	1	1							5		C1		14	14	28	97	125
2	Environmental Hygiene	UPFMGPM102	DF	2		2						6		E1		28	28	56	94	150
3	Modern Methods for Preventing Industrial Pollution	UPFMGPM103	DS	2		2	1					7		E1		28	42	70	105	175
4	Methods and Techniques for Environmental Impact Assessment	UPFMGPM104	DS	2	2		1					7		E1		28	42	70	105	175
5	Optional subject DOP11	UPFMGPM105	DS	2	2							5		E1		28	28	56	69	125
6	Ecotoxicology	UPFMGPM106	DF					2	2				5		C2	28	28	56	69	125
7	Soil Quality Assessment and Protection	UPFMGPM107	DS					2		2			5		E2	28	28	56	69	125
8	Water Resources Management	UPFMGPM108	DF					2	2				5		E2	28	28	56	69	125
9	Conservation of Bio- and Geodiversity	UPFMGPM109	DF					2	2				5		E2	28	28	56	69	125
10	Optional subject DOP12	UPFMGPM110	DS					2		2			5		E2	28	28	56	69	125
11	Professional internship (3 wks. X 40 hrs/wk.)	UPFMGPM111	DS							120			5		C2	0	120	120	5	125
TOTAL YEAR I				9	5	4	2	10	6	4	0	30	30	8E + 3C		266	414	680	820	1500
												60								
12	Development of Environmental Policies (elective)	UPFMGPM112	DFA	1	1							4			C1	14	14	28	72	100

* - Delivery mode: 50% Face to face (FF) and 50% Synchronous online (OS)
** - Delivery mode: 65% Face to face (FF) and 35% Synchronous online (OS)

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CURRICULUM

No. crt.	**YEAR II** Subject	Subject code	Subj. type	Semester 3				Semester 4				Credit points		Ei, Ci, Vi		No. of teaching hours per subject			Total study hours individual	Total hours code
				C	S	L	P	C	S	L	P	Sem.1	Sem.2	Sem.1	Sem. 2	Lect.*	Appl.**	Total		
13	Life Cycle Assessment	UPFMGPM113	DS	2	2							5		E3		28	28	56	69	125
14	Ecological Reconstruction of Degraded Land	UPFMGPM114	DS	2	2		1					7		E3		28	42	70	105	175
15	Environmental Risk Management	UPFMGPM115	DS	1		2						5		E3		14	28	42	83	125
16	Advanced Waste Management Techniques	UPFMGPM116	DS	2		2						5		E3		28	28	56	69	125
17	Ethics and Academic Integrity	UPFMGPM117	DC	1	1							4		C3		14	14	28	72	100
18	Optional subject DOP21	UPFMGPM118	DF	1	1							4		C3		14	14	28	72	100
19	Internship for dissertation preparation	UPFMGPM119	DS							8			10		C4	0	112	112	138	250
20	Preparation of the dissertation thesis	UPFMGPM120	DS								14		20		C4	0	196	196	304	500
TOTAL YEAR II				9	6	4	1	0	0	0	14	30	30	4E + 4C		126	462	588	912	1500
												60								
21	Academic Communication and Writing Techniques	UPFMGPM121	DFA	1	1							4		C3		14	14	28	72	100

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DISTRIBUTION OF HOURS BY SUBJECT GROUPS					
Total lecture hours:				**392**	
Total application hours:				**644**	
Total internship hours:				**232**	
Total hours :				**1268**	
Total lecture hours / Total hours (%) :	392	/	1268	x 100	30.91
Total application hours / Total hours (%)	644	/	1268	x 100	50.79
Total application hours / Total lecture hours	644	/	392		1.64
Total individual study hours / Total teaching hours	1732	/	1268		1.37
SUBJECT GROUPS				No. hours	No. hours/Total hours (%)
Fundamental subjects DF				**280**	**22.08**
Specialisation subjects DS				**960**	**75.71**
Complementary subjects DC				**28**	**2.21**
Compulsory subjects DOB				**1128**	**88.96**
Optional subjects DOP				**140**	**11.04**
Elective subjects DFA				**56**	**4.42**

REMARKS : For one credit point, 25 teaching and individual study hours are allocated

LEGEND : DF - fundamental subject; DS - specialisation subject; DC - complementary subject DOB – compulsory subject; DOP – optional subject; DFA - elective subject
C - lecture, S - seminar, L - laboratory, P - project, Appl. - application hours
Ei, Ci, Vi - exam, colloquium, verification respectively in semester i, i =1 ÷ 4

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OPTIONAL SUBJECTS				
No.	Subject code	Year of study	Subject names	
5	DOP 11	I	Analysis, Assessment and Protection of the Biotic Environment	International Legal Instruments for Environmental Protection
10	DOP 12	I	Methods and Software for Assessing Pollutant Dispersion	Environmental Quality Monitoring Methods
18	DOP 21	II	Regional Planning and Local Development	Energy resources management

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ESCO competences from basic groups 2143 - Environmental protection engineers
Target occupations from the representative COR/ESCO basic group

COR code 214305 - environmental protection process engineer
COR code 214306 environmental pollution control engineer
COR code 214307 engineer in integrated municipal/industrial waste management

Competences for the study programme ENVIRONMENTAL MANAGEMENT AND PROTECTION

Professional competences

CP1. Assesses environmental impact
CP2. Reports pollution incidents
CP3. Carries out environmental studies
CP4. Measures pollution levels
CP5. Investigates pollution
CP6. Advises on pollution prevention
CP7. Develops remediation strategies for contaminated sites
CP8. Collects samples for analysis
CP 9. Analyses environmental protection data
CP 10. Advises on the remediation of contaminated sites

CP 11. Conducts environmental surveys
CP 12. Designs wastewater collection and treatment systems
CP 13. Performs scientific research
CP 14. Develops waste management procedures
CP 15. Communicates on the environmental impact of mining
CP 16. Manages environmental impact
CP 17. Inspects recycling procedures and technologies
CP 18. Ensures compliance with legislative regulations in the waste sector
CP 19. Provides staff training on recycling programmes

CP 20. Develops environmental policy
CP 21. Ensures compliance with environmental legislation
CP 22. Approves engineering designs
CP 23. Prepares scientific reports
CP 24. Communicates on the environmental impact of mining
CP 25. Approaches problems critically
CP 26. Obtains the appropriate licences
CP 27. Updates licences

Transversal competences

CT1. Thinks analytically
CT2. Applies scientific, technological and engineering knowledge
CT3. Works in teams
CT4. Complies with regulations
CT5. Complies with workplace safety rules

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Learning outcomes for the study programme

KNOWLEDGE

C1. The graduate can **identify** the fundamental concepts in the field of environmental protection.
C2. The graduate can **identify** the relevant theories used in the analysis and assessment of environmental quality.
C3. The graduate can **identify** the models used in the control and monitoring of environmental quality.
C4. The graduate can **identify** the methods used in assessing environmental factors.
C5. The graduate can **identify** the national and European regulations applicable in the field of environmental protection.
C6. The graduate can **explain** the role of public institutions in monitoring environmental quality.
C7. The graduate can **explain** the role of economic operators in applying environmental regulations.
C8. The graduate can **describe** the modern technologies used in environmental monitoring.
C9. The graduate can **know** the principles of environmental impact assessment.
C10. The graduate can **know** the communication methods used in the field of environmental protection.
C11. The graduate can **know** the negotiation techniques applicable in solving environmental problems.
C12. The graduate can **describe** the methods for solving environmental problems at organisational level.
C13. The graduate can **explain** the importance of data-driven decisions in the field of environmental protection.
C14. The graduate can **explain** the interdependence between environmental factors, the economy and society.

SKILLS

A1. The graduate is able to **apply** modern technologies in environmental quality monitoring.
A2. The graduate is able to **apply** environmental regulations in real professional contexts.
A3. The graduate is able to **design** strategies for measuring environmental factors.
A4. The graduate is able to **design** environmental quality monitoring strategies.
A5. The graduate is able to **design** environmental quality assessment strategies.
A6. The graduate is able to **analyse** the quality parameters of the environment.
A7. The graduate is able to **analyse** environmental data in correlation with the existing legislative framework.
A8. The graduate is able to **analyse** environmental data in relation to public opinion.
A9. The graduate is able to **substantiate** the adoption of effective decisions in the field of environmental protection.
A10. The graduate is able to **develop** solutions to the environmental problems identified.
A11. The graduate is able to **carry out** environmental studies.
A12. The graduate is able to **carry out** research in the field of environmental protection.
A13. The graduate is able to **disseminate** the results of scientific knowledge in the environmental field.
A14. The graduate is able to **use** modern communication and negotiation methods in environmental issues.

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RESPONSIBILITY AND AUTONOMY

RA1. The graduate can **apply** the rules and values of professional ethics in decision-making.
RA2. The graduate can **perform** complex tasks specific to the environmental field independently or in a group.
RA3. The graduate can **organise** environmental quality monitoring activities at organisational level.
RA4. The graduate can **manage** professional activities responsibly, taking ownership of their results.
RA5. The graduate can **acknowledge** the need for continuous training for professional progress.
RA6. The graduate can **adapt** his/her professional competences to the dynamics of the economic environment.
RA7. The graduate can **adapt** his/her managerial competences to organisational and legislative changes.

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