



“VALAHIA” UNIVERSITY OF TÂRGOVIȘTE

Faculty of MATERIALS ENGINEERING AND MECHANICS

Field of Study: MATERIALS ENGINEERING

Master's Degree: ENGINEERING OF SUSTAINABLE MATERIALS

Duration of Studies: 4 semesters (2 years)

Mode of Study: Full-time

Unique Identification Code: FIMM-MSM

CURRICULUM CYCLE II – MASTER'S DEGREE

I. Mission

The mission of the Engineering of Sustainable Materials master's programme is to train engineers capable of using industrial technologies for manufacturing products made from materials with a reduced environmental impact, by providing them with practical competencies through English-taught studies adapted to the current needs of the business environment.

II. Objectives

- Development of competencies in sustainable materials;
- Study of the processing, characterization, and performance of sustainable materials using computer-aided engineering;
- Integration of sustainability principles in materials design and selection;
- Application of functionalization strategies and supramolecular engineering;
- Development of interdisciplinary research skills and project management abilities.

III. Requirements for Completing the Study Programme

Credits for compulsory and elective courses, of which: 120 ECTS

- Credits for professional internship activities: 40 ECTS
- Credits for internship related to the preparation of the master's dissertation: 10 ECTS
- Credits for the preparation of the master's dissertation: 10 ECTS

IV. Structure of the academic year (in weeks)

Year of Study	Teaching Activities		Examination Sessions			Internship activities	Holidays		
	1st Semester	2nd Semester	Winter	Summer	Credit recovery		Winter	Spring	Summer
1st	14	14	3	3	2	14**+14**	2+1*	1	12
2nd	14	14	3	3	1	14**+14**	2+1*	1	-

* one week of holiday after the winter examination session

** hours included within the 14 weeks of each semester

V. Number of hours per week

Year of Study	1st Semester	2nd Semester	Other provisions
1st	14	14	112 hours professional internship activities
2nd	14	14	112 hours professional internship activities + 196 hours of internship related to the preparation of the master's dissertation



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This provision applies to the first year of study, beginning with the 2026–2027 academic year.

VI. Method for Selecting Optional Courses – Conditions

The choice of an optional course is subject to the following conditions:

- the minimum number of students required to form study groups, in accordance with the legal provisions and the ARACIS standards in force;
- the faculty's ability to organize student groups in such a way as to ensure minimal financial effort, as required by the available material resources and the allocation of teaching staff.

For an optional course or an optional module, the number of enrolled students may not exceed the maximum number established by the Faculty Council.

If the number of applications exceeds the maximum number established, the allocation to optional courses and modules shall be carried out based on the grade point average of the previous year of study.

VII. Enrolment Conditions for the Next Year of Study

Students may be enrolled in the next year of study without having accumulated all the required credit points, in accordance with the provisions of the Regulations on Students' Academic Activity adopted by Valahia University of Târgoviște.

VIII. Competences and Occupations

Professional Competences:

- CP1. Analyses production processes in order to improve them
- CP2. Adjusts product designs
- CP3. Develops advanced materials
- CP4. Integrates new products into the production process
- CP5. Develops material testing procedures
- CP6. Assesses environmental impact
- CP7. Leads process optimization activities

Transversal Competences:

- CT1. Solves problems
- CT2. Assumes responsibility
- CT3. Works in teams

Possible Occupations:

<i>Code COR/ESCO</i>	<i>COR/ESCO occupation title</i>
2149.11	Materials Technology Engineer
2141.4.2	Production Engineer



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IX. Curriculum by semesters

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Field of Study: MATERIALS ENGINEERING

Master's Degree Program: ENGINEERING OF SUSTAINABLE MATERIALS

1st YEAR

1st SEMESTER

No.	Code	Subject	Number of credits	Estimated Student Workload (hours)	Individual study (hours)	Assignments (hours)						Form of assessment*
						C	S	L	P	Professional internship	Total	
0	1	2	3	4	5	6	7	8	9	10	11	12
1.	MSM1BF01	Nanomaterials and nanotechnologies	4	100	58	2	-	1	-	-	42	E1
2.	MSM1BC02	Ethics and academic integrity	4	100	72	1	1	-	-	-	28	C1
3.	MSM1BF03	Sustainable composites materials	4	100	58	1	-	2	-	-	42	E1
4.	MSM1BS04	Bio-based and synthetic materials	4	100	58	2	-	1	-	-	42	E1
5.	MSM1BF05	Properties and selection of sustainable materials	4	100	58	2	-	1	-	-	42	C1
6.	MSM1BS06	Professional internship activities 1	10	250	194	-	-	-	-	4	56	C1
Total compulsory subjects			30	750	498	8	1	5	-	4	252	3E,3C
Optional compulsorys related to the study program												
7.	MSM1BO07	Volunteering 1	3	75	15	60				-	60	A/R
Total compulsory optional			3	75	15	60				-	60	A/R

*Compulsory subject with additional credits

Grade: E – exam, C – colloquium, A/R – Pass/Fail



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1st YEAR

2nd SEMESTER

2nd SEMESTER

No.	Code	Subject	Number of credits	Estimated Student Workload (hours)	Individual study (hours)	Assignments (hours)						Form of assessment*
						C	S	L	P	Professional internship	Total	
0	1	2	3	4	5	6	7	8	9	10	11	12
7.	MSM1BF07	Processing of polymeric materials and circularity	4	100	58	2	-	1	-	-	42	E2
8.	MSM1BS08	Modelling and simulation methods in materials green industry	4	100	58	1	-	2	-	-	42	E2
9.	MSM1BS09	Degradation of polymer materials	4	100	58	1	-	2	-	-	42	E2
10.	MSM1BF10	Thin film technology for green transition in industry	4	100	58	2	-	1	-	-	42	E2
11.	MSM1BC11	Advanced financial accounting	4	100	72	1	1	-	-	-	28	C2
12.	MSM1BS12	Professional internship activities 2	10	250	194	-	-	-	-	4	56	C2
Total compulsory subjects			30	750	498	7	1	6	-	4	252	4E, 2C
						18						
Optional compulsorys related to the study program												
13.	MSM1BO13	Volunteering 2	3	75	15	60				-	60	A/R
Total compulsory optional			3	75	15	60				-	60	A/R

*Compulsory subject with additional credits

Grade: E – exam., C – colloquium, A/R – Pass/Fail



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2nd YEAR

3rd SEMESTER

No.	Code	Subject	Number of credits	Estimated Student Workload (hours)	Individual study (hours)	Assignments (hours)						Form of assessment*
						C	S	L	P	Professional internship	Total	
0	1	2	3	4	5	6	7	8	9	10	11	12
1.	MSM2BS1	Functionalisation of composite materials	4	100	58	1	-	2	-	-	42	E3
2.	MSM2BF2	Analytical methods for analysis sustainable materials	4	100	58	1	-	2	-	-	42	E3
3.	MSM2BF3	Metal and ceramic matrix composites	4	100	58	2	-	1	-	-	42	E3
4.	MSM2BS4	Sustainable development of materials	4	100	58	1	2	-	-	-	42	E3
5.	MSM2BC5	Project management for multidisciplinary research	4	100	72	1	1	-	-	-	28	C3
6.	MSM2BS6	Professional internship activities 3	10	250	194	-	-	-	-	4	56	C3
Total compulsory subjects			30	750	498	6	3	5	-	4	252	4E, 2C
Optional compulsorys related to the study program												
7.	MSM2BO07	Volunteering 3	3	75	15	60				-	60	A/R
Total compulsory optional			3	75	15	60				-	60	A/R

*Compulsory subject with additional credits

Grade: E – exam., C – colloquium, A/R – Pass/Fail



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4th SEMESTER2nd YEAR

This provision applies to the first year of study, beginning with the 2027–2028 academic year.

No.	Code	Subject	Number of credits	Estimated Student Workload (hours)	Individual study (hours)	Assignments (hours)						Form of assessment*
						C	S	L	P	Professional internship	total	
0	1	2	3	4	5	6	7	8	9	10	11	12
1.	MSM2BS8	Professional internship activities 4	10	250	194	-	-	-	-	4	56	C4
2.	MSM2BS9	Internship related to the preparation of the master's dissertation	10	250	152	-	-	-	-	7	98	C4
3.	MSM2BS10	Preparation of the Master's Dissertation	10	250	152	-	-	-	-	7	98	C4
Total compulsory subjects			30	750	498	18					252	18
Optional compulsorys related to the study program												
4.	MSM2BO011	Volunteering 4	3	75	15	60				-	60	A/R
Total compulsory optional			3	75	15	60				-	60	A/R

*Compulsory subject with additional credits

Grade: E – exam., C – colloquium, A/R – Pass/Fail



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X. Balance Sheet

Type of Subjects		Lecture classes/week	Practical classes/week	Total
BF	Fundamental Subjects	12	9	294
BC	Complementary Subjects	3	3	84
BS	Specialization Subjects	6	9	210
	Professional internship activities		4 x 4	224
	Internship related to the preparation of the master's dissertation		7	98
	Preparation of the Master's Dissertation		7	98
Total		21	51	1008
Cod of compulsory optionals				
BO- compulsory optional				240
Volunteering 1,2,3,4				

Sem.	Lecture classes	Practical classes	Professional internship activities	Examinations	Colloquium
1 st	8 x 14	6 x 14	4 x 14	3	3
2 nd	7 x 14	7 x 14	4 x 14	4	2
3 rd	6 x 14	8 x 14	4 x 14	4	2
4 th	Professional internship activities	-	4 x 14	-	1
	Internship related to the preparation of the master's dissertation	-	7 x 14 = 98	-	1
	Preparation of the Master's Dissertation	-	7 x 14 = 98	-	1
Total	294	294	420	11 E	10 C
	The ratio of practical hours to lecture hours is 1:1, in accordance with the applicable specific standards ($\pm 20\%$).			The ratio between the number of examinations and the number of colloquia is 1.1, in accordance with the applicable specific standards ($E \geq C$).	



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