

MASTER COURSE IN MATERIALS ENGINEERING (LM 53) - A.A. 2026/2027

A1 Curriculum Manufacturing and product development

FIRST YEAR												
FIRST SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
146019	1	Engineering properties of materials	ING-IND/22	IMAT-01/A	9	9					80	
146018	2	Metallic materials engineering	ING-IND/21	IIND-03/C	9	9					81	
146016	3a	Physics and thermodynamics of materials Mod. 1 - Physics of materials	FIS/03	PHYS-03/A	6	6					52	
146016	3b	Physics and thermodynamics of materials Mod. 2 - Thermodynamics of materials	CHIM/07	CHEM-06/A	6	6					52	
		SAFETY TRAINING										(1)
				Tot. 1° sem	30	30	0	0	0	0		
SECOND SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
146020	4	Ceramic materials engineering	ING-IND/22	IMAT-01/A	6	6					54	
146021	5	Corrosion and degradation control of materials	ING-IND/22	IMAT-01/A	6	6					52	
146017	6a	Polymeric and composite materials engineering Mod. 1 - Polymeric materials	ING-IND/22	IMAT-01/A	6	6					54	
	6b	Polymeric and composite materials engineering Mod. 2 - Composite materials	ING-IND/22	IMAT-01/A	6	6					48	
		Other activities			3					3		(2)(3)
				Tot. 2° sem	27	24	0	0	0	3		
				Tot. 1st year	57	54	0	0	0	3		

PROFESSOR
Dorigato Andrea
Straffelini Giovanni
Quaranta Alberto
Parrino Francesco

PROFESSOR
Sglavo Vincenzo
Fedel Michele
Fambri Luca
Pegoretti Alessandro

SECOND YEAR												
FIRST SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
145957	7	Mechanics and materials for engineering design	ING-IND/14	IIND-03/A	9		9				81	
140347	8	Product design	ING-IND/22	IMAT-01/A	6		6				54	offered by LM 31 (4)
145483	9	Steelmaking and foundry technologies	ING-IND/21	IIND-03/C	6	6					54	
	12a	Elective course			6			6				(5)
				Tot. 1° sem	27	6	15	6	0	0		
SECOND SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
145475	10	Design methods for industrial engineering	ING-IND/15	IIND-03/B	6		6				54	
145482	11	Finite elements modeling	ING-IND/14	IIND-03/A	6		6				54	offered by LM 33 (6)
	12b	Elective course			6			6				(5)
145570		Final project			18					18		
				Tot. 2° sem	36	0	12	6	18	0		
				Tot. 2nd year	63	6	27	12	18	0		

PROFESSOR
Benedetti Matteo
Rossi Stefano
Straffelini Giovanni

PROFESSOR
Cristofolini Ilaria
Benedetti Matteo

TOTAL CFU	120	60	27	12	18	3
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ELECTIVE COURSES												
FIRST SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
140427		Glass engineering	ING-IND/22	IMAT-01/A	6			6			54	
145532		Powder metallurgy	ING-IND/21	IIND-03/C	6			6			48	
145783		Advanced Formula SAE	ING-IND/12	IMIS-01/A	6			6				offered by LM 33
SECOND SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
145572		Circular economy for materials processing	ING-IND/21	IIND-03/C	6			6			30	
146300		Laboratory of industrial product and process development	ING-IND/21	IIND-03/C	6			6			60	
146197		Microelectronics devices, sensors and MEMS	ING-INF/01	IINF-01/A	6			6			50	offered by LM 33
145524		Protection of materials and structures	ING-IND/22	IMAT-01/A	6			6			54	

PROFESSOR
Sglavo Vincenzo
Torresani Elisa
Bosetti Paolo

PROFESSOR
Pellizzari Massimo
Pellizzari Massimo
Dalla Betta Gian-Franco
Rossi Stefano

NOTES: Courses with low student enrollment may be delivered using alternative teaching methods.

(1) = All students must fulfill **safety training** requirements:

- **General safety training**

- **Specific safety training - Medium Risk**

For any further informations: <https://www.unitn.it/en/study/register/documents-and-certificates/safety-training>

(2) = The curriculum is considered complete with a total of 3CFU - type F. The credits have to be obtained during the master with the following regulation: <https://www.dii.unitn.it/en/121/other-activities-type-f-credits>.

(3) = **International students** are required to demonstrate an adequate level of knowledge of the Italian language (level A1).

(4) = Offered by LM 31 - AD 146013 Strategic product design.

(5) = Different elective modules - not included in the Manifesto - have to be approved by the Teaching board of the Department.

(6) = Offered by LM 33 - AD 140431 Modeling and design with finite elements.

Approved by the Department Board 18/03/2026

MASTER COURSE IN MATERIALS ENGINEERING (LM 53) - A.A. 2026/2027

A2 Curriculum Energy, environment and sustainable development

FIRST YEAR											
FIRST SEMESTER											
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Notes
146019	1	Engineering properties of materials	ING-IND/22	IMAT-01/A	9	9					
146018	2	Metallic materials engineering	ING-IND/21	IIND-03/C	9	9					
146016	3a	Physics and thermodynamics of materials Mod. 1 - Physics of materials	FIS/03	PHYS-03/A	6	6					
146016	3b	Physics and thermodynamics of materials Mod. 2 - Thermodynamics of materials	CHIM/07	CHEM-06/A	6	6					
		SAFETY TRAINING									(1)
				Tot. 1° sem	30	30	0	0	0	0	
SECOND SEMESTER											
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Notes
146020	4	Ceramic materials engineering	ING-IND/22	IMAT-01/A	6	6					
146021	5	Corrosion and degradation control of materials	ING-IND/22	IMAT-01/A	6	6					
146017	6a	Polymeric and composite materials engineering Mod. 1 - Polymeric materials	ING-IND/22	IMAT-01/A	6	6					
	6b	Polymeric and composite materials engineering Mod. 2 - Composite materials	ING-IND/22	IMAT-01/A	6	6					
		Other activities			3					3	(2)(3)
				Tot. 2° sem	27	24	0	0	0	3	
				Tot. 1st year	57	54	0	0	0	3	

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Straffellini Giovanni
Quaranta Alberto
Parrino Francesco

PROFESSOR
Sglavo Vincenzo
Fedel Michele
Fambri Luca
Pegoretti Alessandro

SECOND YEAR											
FIRST SEMESTER											
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Notes
146022	7	Electrochemistry for energy and environment	ING-IND/23	ICHI-01/A	6		6				
140429	8	Materials for energy	ING-IND/22	IMAT-01/A	6		6				
145957	9	Mechanics and materials for engineering design	ING-IND/14	IIND-03/A	9		9				
146023	10	Nanomaterials, nanotechnologies and smart materials	ING-IND/22	IMAT-01/A	6		6				
	12a	Elective course			6			6			(4)
				Tot. 1° sem	33	0	27	6	0	0	
SECOND SEMESTER											
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Notes
145486	11	Recycling and sustainable materials	ING-IND/22	IMAT-01/A	6	6					
	12b	Elective course			6			6			(4)
145570		Final project			18				18		
				Tot. 2° sem	30	6	0	6	18	0	
				Tot. 2nd year	63	6	27	12	18	0	
TOTAL CFU					120	60	27	12	18	3	

PROFESSOR
Fedel Michele
Biesuz Mattia
Benedetti Matteo
Lutterotti Luca

PROFESSOR
Pegoretti Alessandro

ELECTIVE COURSES											
FIRST SEMESTER											
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Notes
140427		Glass engineering	ING-IND/22	IMAT-01/A	6			6			
145532		Powder metallurgy	ING-IND/21	IIND-03/C	6			6			
145783		Advanced Formula SAE	ING-IND/12	IMIS-01/A	6			6			offered by LM 33
SECOND SEMESTER											
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Notes
145572		Circular economy for materials processing	ING-IND/21	IIND-03/C	6			6			
146300		Laboratory of industrial product and process development	ING-IND/21	IIND-03/C	6			6			
146197		Microelectronics devices, sensors and MEMS	ING-INF/01	IINF-01/A	6			6			offered by LM 33
145524		Protection of materials and structures	ING-IND/22	IMAT-01/A	6			6			

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MASTER COURSE IN MATERIALS ENGINEERING (LM 53) - A.A. 2026/2027

INTERNATIONAL MASTER ON SCIENCE IN SUSTAINABLE MATERIALS (EIT SUMA)

Track KU Leuven entry point/UniTrento exit point

FIRST YEAR												
KU LEUVEN FIRST SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
	1	Metals: Production and Recycling	ING-IND/21	IIND-03/C	6	6						
	2	Ceramics and Powder Metallurgy	ING-IND/22	IMAT-01/A	3	3						
	5	Polymers & Composites	ING-IND/22	IMAT-01/A	6	6						
	6	Design of Experiment and Data Analysis	ING-IND/15	IIND-03/B	6		6					
	7	Computational thermodynamics	CHIM/07	CHEM-06/A	3	3						
	8	Advanced Thermomechanical Processing	ING-IND/21	IIND-03/C	6	6						
Tot.					30	24	6	0	0	0		
KU LEUVEN SECOND SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
	9	Materials Characterization Techniques			6	6						
	10	Mat. Modelling and Simulation Techniques			6	6						
	11	Surface Science and Engineering			6	6						
	12	Sustainable Materials Management			3		3					
	13	Engineering and Entrepreneurship			6		6					
	14a	Elective course			3			3				
Tot.					30	18	9	3	0	0		
Tot. 1st year					60	42	15	3	0	0		

SECOND YEAR												
UNITRENTO THIRD SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
146022	15	Electrochemistry for energy and environment	ING-IND/23	ICHI-01/A	6		6				54	
140429	16	Materials for energy	ING-IND/22	IMAT-01/A	6	6					52	
146072	17	Mechanics and materials for engineering design	ING-IND/14	IIND-03/A	6		6				54	
146125		Final project			12				12			
		SAFETY COURSES										(1)
Tot.					30	6	12	0	12	0		
UNITRENTO FOURTH SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
145572	18	Recycling and sustainable materials	ING-IND/22	IMAT-01/A	6	6					52	
	14b	Elective course			6			6				(3)
146074		Industrial internship			6					6		
146124		Final project			12				12			
Tot.					30	6	0	6	12	6		
Tot. 2nd year					60	12	12	6	24	6		
TOTAL CFU					120	54	27	9	24	6		

PROFESSOR
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Biesuz Mattia
Benedetti Matteo

PROFESSOR
Pegoretti Alessandro

ELECTIVE COURSES												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
145572		Circular economy for materials processing	ING-IND/21	IIND-03/C	6			6			30	
145524		Protection of materials and structures	ING-IND/22	IMAT-01/A	6			6			54	
146300		Laboratory of industrial product and process development	ING-IND/21	IIND-03/C	6			6			60	

PROFESSOR
Pellizzari Massimo
Rossi Stefano
Pellizzari Massimo

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- Specific safety training - Medium Risk

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