



MASTER COURSE IN MATERIALS ENGINEERING (LM 53) - A.A. 2022/23

A3 Curriculum Engineered materials and biomedical applications

FIRST YEAR											
FIRST SEMESTER											
Esse3 code	N°	Courses	SSD	CFU	B	C	D	E	F	Duration (hours)	Notes
146018	1	Metallic materials engineering	ING-IND/21	9	9					90	
146016	2a	Physics and thermodynamics of materials (Mod. 1 - Physics of materials)	FIS/03	6	6					60	
	2b	Physics and thermodynamics of materials (Mod. 2 - Thermodynamics of materials)	CHIM/07	6	6					60	
146019	3	Engineering properties of materials	ING-IND/22	9	9					90	
		SAFETY COURSES									(1)
		<i>Tot.</i>		30	30	0	0	0	0		
SECOND SEMESTER											
Esse3 code	N°	Courses	SSD	CFU	B	C	D	E	F	Duration (hours)	Notes
146020	4	Ceramic materials engineering	ING-IND/22	6	6					60	
146017	5a	Polymeric and composite materials engineering (Mod. 1)	ING-IND/22	6	6					60	
	5b	Polymeric and composite materials engineering (Mod. 2)	ING-IND/22	6	6					60	
146021	6	Corrosion and degradation control of materials	ING-IND/22	6	6					60	
		<i>Tot.</i>		24	24	0	0	0	0		
		Tot. 1st year		54	54	0	0	0	0		

PROFESSOR
Straffelini Giovanni
Quaranta Alberto (T)
Parrino Francesco
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PROFESSOR
Sglavo Vincenzo Maria
Fambri Luca (T)
Pegoretti Alessandro
Fedel Michele

SECOND YEAR											
FIRST SEMESTER											
Esse3 code	N°	Courses	SSD	CFU	B	C	D	E	F	Duration (hours)	Notes
146024	7	Fundamentals of mechanics and biomechanics	ING-IND/14	6		6				60	
146025	8	Principles of biomaterials and medical device design	ING-IND/34	9		9				90	
145487	9	Bioinspired and functional materials	ING-IND/22	6		6				60	
146026	10	Biomedical metallic materials and technologies	ING-IND/21	6	6					60	
	12a	Elective course		6			6			60	(2)
		<i>Tot.</i>		33	6	21	6	0	0		
SECOND SEMESTER											
Esse3 code	N°	Courses	SSD	CFU	B	C	D	E	F	Duration (hours)	Notes
140436	11	Biomaterials and biomedical technologies	ING-IND/34	6		6				60	
	12b	Elective course		6			6			60	(2)
		Other activities		3					3		(3)
145570		Final project		18				18			
		<i>Tot.</i>		33	0	6	6	18	3		
		Tot. 2nd year		66	6	27	12	18	3		

PROFESSOR
Fontanari Vigilio
Motta Antonella
Maniglio Devid
Pellizzari Massimo

PROFESSOR
Maniglio Devid

TOTAL CFU	120	60	27	12	18	3
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ELECTIVE COURSES											
FIRST SEMESTER											
Esse3 code	N°	Courses	SSD	CFU	B	C	D	E	F	Duration (hours)	Notes
146096		Interdisciplinary laboratory: Ceramic materials	ING-IND/22	3			3			30	(5)
146097		Interdisciplinary laboratory: Polymeric materials	ING-IND/22	3			3			30	(5)
146098		Interdisciplinary laboratory: Advanced metals	ING-IND/21	3			3			30	(5)
146099		Interdisciplinary laboratory: Characterization techniques	CHIM/07	3			3			30	(5)
140427		Glass engineering	ING-IND/22	6			6			60	
145531		Electronic materials and technologies	ING-INF/01	6			6			60	
145783		Advanced Formula SAE	ING-IND/12	6			6				(6)
SECOND SEMESTER											
Esse3 code	N°	Courses	SSD	CFU	B	C	D	E	F	Duration (hours)	Notes
146094		Bioinks and 3D Printing	ING-IND/34	6			6			60	
145574		Bio-signals and transducers	ING-INF/06	6			6			60	(6)
145572		Circular economy for materials processing	ING-IND/21	6			6			60	
146095		Optoelectronics and quantum devices for sensing and automation	FIS/01	6			6			60	(6)
145532		Powder metallurgy	ING-IND/21	6			6			60	
145524		Protection of materials and structures	ING-IND/22	6			6			60	

PROFESSOR
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NOTES:

- (1) = To access the research facilities of the Department is required to have obtained the certifications of:
- the course **Health and safety in the workplace** (Esse3 code FORGE) or similar courses;
 - the course **Sicurezza in laboratorio** (Esse3 code 140550) or similar specific training safety course - medium risk.
- (2) = Different elective modules - not included in the Manifesto - have to be approved by the Teaching board of the Department.
- (3) = 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>.
- (4) = **International students** are required to demonstrate an adequate level of competence of the Italian Language (Level A1 CEFR – 3 ECTS/CFU – type F) before starting the exam session of the second year.
- (5) = The student must choose two of the four course modules to achieve the 6 credits. The choice of a single module is not allowed.
- (6) = offered by LM 33.

Approved on 19/01/2022 by the Department's Board