UNIVERSITÀ DEGLI STUDI DI PADOVA

MASTER'S (LM) DEGREE COURSE IN

MATERIALS ENGINEERING

Curriculum in FUNCTIONAL MATERIALS

This curriculum offers two tracks

Study programme for students enrolled in the academic year 2025-2026

1st YEAR	
MANDATORY UNITS	**CREDITS**
SOLID STATE PHYSICS	**9**
SCIENCE AND TECHNOLOGY OF CERAMICS	**9**
TECHNOLOGY OF METALS	**9**
COMPOSITE MATERIALS	**9**
POLYMER PROCESSING AND RECYCLING	**6**
MATERIALS STRUCTURAL INTEGRITY	**9**
2nd YEAR	
MANDATORY UNITS	**CREDITS**
MATERIALS SELECTION AND DESIGN	**6**
TRACK 1: NANO/BIO MATERIALS	
MANDATORY UNITS	**CREDITS**
NANOSTRUCTURED MATERIALS (1st year)	**9**
FUNDAMENTALS OF NANOSCIENCE (1st year)	**6**
BIOPOLYMERS ENGINEERING (2nd year)	**6**
INORGANIC BIOMATERIALS (2nd year)	**6**
TRACK 2: MATERIALS FOR ENERGY	
MANDATORY UNITS	**CREDITS**
PHOTOVOLTAIC SCIENCE AND TECHNOLOGY (1st year)	**6**
SUSTAINABLE ENERGY:MATERIALS AND TECHNOLOGIES (1st year)	**6**
RENEWABLE ENERGY TECHNOLOGIES (2nd year)	**9**
MANUFACTURING TECHNOLOGY (2nd year)	**6**

FREE-CHOICE UNITS AMONG THE FOLLOWING (12 credits, including units from other curricula or tracks)	
UNITS	**CREDITS**
INTRODUCTION TO THE FINITE ELEMENT METHOD	**6**
NANOFABRICATION	**6**
NANOSTRUCTURED MATERIALS (only for those who have not taken the activity of 9 credits)	**6**
BUSINESS MANAGEMENT	**6**
ELECTROCHEMICAL ENERGY STORAGE TECHNOLOGIES	**6**
PROCESS TECHNOLOGIES FOR CARBON-NEUTRAL FUELS	**6**
MEMBRANE SEPARATION PROCESSES	**6**
PARTICLE TECHNOLOGY FOR THE FOOD AND PHARMACEUTICAL INDUSTRIES	**6**
ADDITIVE MANUFACTURING	**6**
SPORTS ENGINEERING AND REHABILITATION DEVICES	**6**
	CREDITS
ENGLISH LANGUAGE B2 (PRODUCTIVE SKILLS)	**3**
FINAL THESIS	**21**

ANY FURTHER NOTES

Attendance requirement: Although not mandatory, classroom attendance is strongly recommended. There are no propaedeutic units to attend the second-year activities.

The Master's degree offers three curricula divided into distinct tracks (except for Advanced Materials Technologies).
Students are required to submit their study plan through the UNIWEB platform as early as the first enrolment year.

If the free-choice activities are chosen from those offered by the degree course, the study plan will be automatically approved.

This document was prepared in Spring 2025. Therefore, it is strongly recommended to check, at the beginning of each academic year, the correct placement of the course units in the semesters and the activation of the free-choice activities

MASTER'S (LM) DEGREE COURSE IN

MATERIALS ENGINEERING

Curriculum in Advanced Materials Technologies

Study programme for students enrolled in the academic year 2025-2026

1st YEAR	
MANDATORY UNITS	**CREDITS**
SOLID STATE PHYSICS	**9**
SCIENCE AND TECHNOLOGY OF CERAMICS	**9**
TECHNOLOGY OF METALS	**9**
COMPOSITE MATERIALS	**9**
PIEZOELECTRIC DEVICES	**6**
MATERIALS STRUCTURAL INTEGRITY	**9**
GLASS SCIENCE TECHNOLOGY	**6**
METALLURGICAL PRODUCTION PROCESSES	**9**
2nd YEAR	
MANDATORY UNITS	**CREDITS**
DESIGNING WITH POLYMERS	**6**
MANUFACTURING TECHNOLOGY	**6**
MATERIALS SELECTION AND DESIGN	**6**
FREE-CHOICE UNITS AMONG THE FOLLOWING (12 credits, including units from other curricula)	
UNITS	**CREDITS**
INTRODUCTION TO THE FINITE ELEMENT METHOD	**6**
NANOFABRICATION	**6**
NANOSTRUCTURED MATERIALS	**6**
BUSINESS MANAGEMENT	**6**
ELECTROCHEMICAL ENERGY STORAGE TECHNOLOGIES	**6**
PROCESS TECHNOLOGIES FOR CARBON-NEUTRAL FUELS	**6**
MEMBRANE SEPARATION PROCESSES	**6**
PARTICLE TECHNOLOGY FOR THE FOOD AND PHARMACEUTICAL INDUSTRIES	**6**

ADDITIVE MANUFACTURING	**6**
SPORTS ENGINEERING AND REHABILITATION DEVICES	**6**
	CREDITS
ENGLISH LANGUAGE B2 (PRODUCTIVE SKILLS)	**3**
FINAL THESIS	**21**

ANY FURTHER NOTES

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MASTER'S (LM) DEGREE COURSE IN

MATERIALS ENGINEERING

Curriculum AMASE*

* This curriculum is reserved to those students selected through the international procedure as reported on AMASE Advanced Materials Science and Engineering - international Master in Materials Science website https://www.eusmat.net/international-studies/master/amase/.

This curriculum offers five tracks.

Study programme for students enrolled in the academic year 2025-2026

1st YEAR	
MANDATORY UNITS	**CREDITS**
SOLID STATE PHYSICS	**9**
SCIENCE AND TECHNOLOGY OF CERAMICS	**9**
TECHNOLOGY OF METALS	**9**
TRACK 1: ADVANCED METALLIC MATERIALS	
MANDATORY UNITS	**CREDITS**
METALLURGICAL PRODUCTION PROCESSES	**9**
CORROSION AND PROTECTION OF MATERIALS	**6**
MANUFACTURING TECHNOLOGY	**6**
MATERIALS STRUCTURAL INTEGRITY	**6**
ELECTROHEAT SCIENCE FOR MATERIALS TECHNOLOGIES AND CHEMICAL PROCESSES	**6**
QUALITY AND METROLOGY IN MANUFACTURING	**6**
TRACK 2: POLYMER AND COMPOSITES	
MANDATORY UNITS	**CREDITS**
COMPOSITE MATERIALS	**9**
POLYMER PROCESSING AND RECYCLING	**6**
COMPUTATIONAL MATERIALS SCIENCE	**6**
MATERIALS STRUCTURAL INTEGRITY	**9**
BIOPOLYMERS ENGINEERING	**6**
DESIGNING WITH POLYMERS	**6**
TRACK 3: SURFACES AND FUNCTIONAL MATERIALS	

MANDATORY UNITS	CREDITS
COMPUTATIONAL MATERIALS SCIENCE	**6**
GLASS SCIENCE AND TECHNOLOGY	**6**
CORROSION AND PROTECTION OF MATERIALS	**6**
BIOPOLYMERS ENGINEERING	**6**
NANOSTRUCTURED MATERIALS	**6**
PIEZOELETRIC DEVICES	**6**
INORGANIC BIOMATERIALS	**6**
TRACK 4: ADVANCED PROCESSING TECHNOLOGIES	
MANDATORY UNITS	**CREDITS**
MANUFACTURING TECHNOLOGY	**6**
MATERIALS SELECTION AND DESIGN	**6**
MATERIALS STRUCTURAL INTEGRITY	**9**
POLYMER PROCESSING AND RECYCLING	**6**
COMPOSITE MATERIALS	**9**
ELECTROHEAT SCIENCE FOR MATERIALS TECHNOLOGIES AND CHEMICAL PROCESSES	**6**
TRACK 5: NANO- AND BIOMATERIALS	
MANDATORY UNITS	**CREDITS**
FUNDAMENTALS OF NANOSCIENCE	**6**
BIOPOLYMERS ENGINEERING	**6**
COMPUTATIONAL MATERIALS SCIENCE	**6**
GLASS SCIENCE TECHNOLOGY	**6**
NANOSTRUCTURED MATERIALS	**6**
PIEZOELETRIC DEVICES	**6**
INORGANIC BIOMATERIALS	**6**
FREE-CHOICE UNITS AMONG THE FOLLOWING (6 credits, including units from other curricula or tracks)	

UNITS	CREDITS
INTRODUCTION TO THE FINITE ELEMENT METHOD	**6**
NANOFABRICATION	**6**
BUSINESS MANAGEMENT	**6**
ELECTROCHEMICAL ENERGY STORAGE TECHNOLOGIES	**6**
PROCESS TECHNOLOGIES FOR CARBON-NEUTRAL FUELS	**6**
MEMBRANE SEPARATION PROCESSES	**6**
PARTICLE TECHNOLOGY FOR THE FOOD AND PHARMACEUTICAL INDUSTRIES	**6**
ADDITIVE MANUFACTURING	**6**
SPORTS ENGINEERING AND REHABILITATION DEVICES	**6**
	CREDITS
OTHER ACTIVITIES	**9**
FOREIGN LANGUAGES	**6**
FINAL THESIS	**30**

ANY FURTHER NOTES

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Students are required to submit their study plan through the UNIWEB platform as early as the first enrolment year.

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