MASTER'S DEGREE PROGRAMME IN MATERIALS ENGINEERING

Study programme for students enrolled in the academic year 2023-2024

CURRICULUM IN FUNCTIONAL MATERIALS

(This curriculum is divided into two tracks)

1st YEAR	
MANDATORY UNITS	**CREDITS**
SOLID STATE PHYSICS	**9**
COMPOSITE MATERIALS	**9**
TECHNOLOGY OF METALS	**9**
POLYMER PROCESSING AND RECYCLING	**6**
MATERIALS STRUCTURAL INTEGRITY	**9**
SCIENCE AND TECHNOLOGY OF CERAMICS	**9**
2nd YEAR	
MANDATORY UNITS	**CREDITS**
MATERIALS SELECTION AND DESIGN	**6**
Select one of these tracks:	
TRACK 1: NANO/BIO MATERIALS	
MANDATORY UNITS	**CREDITS**
NANOSTRUCTURED MATERIALS	**9**
FUNDAMENTALS OF NANOSCIENCE	**6**
SPORTS ENGINEERING AND REHABILITATION DEVICES	**6**
BIOPOLYMERS ENGINEERING	**6**
TRACK 2: MATERIALS FOR ENERGY	
MANDATORY UNITS	**CREDITS**
RENEWABLE ENERGY TECHNOLOGIES	**9**
PHOTOVOLTAIC SCIENCE AND TECHNOLOGY	**6**
SUSTAINABLE ENERGY:MATERIALS AND TECHNOLOGIES	**6**

MANUFACTURING TECHNOLOGY	**6**
FREE-CHOICE UNITS AMONG THE FOLLOWING ACTIVITIES (12 credits, including units from other curricula or tracks)	
UNITS	**CREDITS**
QUALITY IN MANUFACTURING ENGINEERING	**6**
INTRODUCTION TO THE FINITE ELEMENT METHOD	**6**
NANOFABRICATION	**6**
NANOSTRUCTURED MATERIALS (only if the student has not already taken the one of 9 credits)	**6**
BUSINESS MANAGEMENT	**6**
ELECTROCHEMICAL ENERGY STORAGE TECHNOLOGIES	**6**
PROCESS TECHNOLOGIES FOR CARBON-NEUTRAL FUELS	**6**
ENGLISH LANGUAGE B2 (PRODUCTIVE SKILLS)	**3**
MASTER'S THESIS	**21**

Final Notes:

The Master's degree programme offers three curricula divided into distinct tracks (except for Advanced Materials Technologies).
There are no propaedeutic units to attend the second-year activities.
Although not mandatory, classroom attendance is strongly recommended.
Students are required to submit their study plan through the UNIWEB platform as early as the first enrolment year.

This document was prepared in Spring 2023. 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 actual activation of the free-choice activities.

MASTER'S DEGREE PROGRAMME IN MATERIALS ENGINEERING *Study programme for students enrolled in the academic year 2023-2024*	
CURRICULUM IN ADVANCED MATERIALS TECHNOLOGIES	
1st YEAR	
MANDATORY UNITS	**CREDITS**
SOLID STATE PHYSICS	**9**
COMPOSITE MATERIALS	**9**
TECHNOLOGY OF METALS	**9**
ELECTRICAL AND ELECTROMAGNETIC MICRO/NANODEVICES	**6**
MATERIALS STRUCTURAL INTEGRITY	**9**
GLASS SCIENCE TECHNOLOGY	**6**
IRONMAKING AND STEELMAKING	**9**
SCIENCE AND TECHNOLOGY OF CERAMICS	**9**
2nd YEAR	
MANDATORY UNITS	**CREDITS**
DESIGNING WITH POLYMERS	**6**
MANUFACTURING TECHNOLOGY	**6**
MATERIALS SELECTION AND DESIGN	**6**
FREE-CHOICE UNITS AMONG THE FOLLOWING ACTIVITIES (12 credits, including units from other curricula)	
UNITS	**CREDITS**
QUALITY IN MANUFACTURING ENGINEERING	**6**
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**
ENGLISH LANGUAGE B2 (PRODUCTIVE SKILLS)	**3**
MASTER'S THESIS	**21**

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MASTER'S DEGREE PROGRAMME IN MATERIALS ENGINEERING

Study programme for students enrolled in the academic year 2023-2024

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.

1st YEAR	
MANDATORY UNITS	**CREDITS**
SOLID STATE PHYSICS	**9**
TECHNOLOGY OF METALS	**9**
NANOSTRUCTURED MATERIALS	**9**
Select one of these tracks	
TRACK 1: ADVANCED METALLIC MATERIALS	
MANDATORY UNITS	**CREDITS**
IRONMAKING AND STEELMAKING	**9**
CORROSION AND PROTECTION OF MATERIALS	**6**
MATERIALS SELECTION AND DESIGN	**6**
MANUFACTURING TECHNOLOGY	**6**
MATERIALS STRUCTURAL INTEGRITY	**9**
ELECTROMAGENTIC PROCESSING OF MATERIALS	**6**
TRACK 2: POLYMER AND COMPOSITES	
MANDATORY UNITS	**CREDITS**
COMPOSITE MATERIALS	**9**
POLYMER PROCESSING AND RECYCLING	**6**
COMPUTATIONAL MATERIALS SCIENCE	**6**
GLASSS SCIENCE AND TECHNOLOGY	**6**
MATERIALS STRUCTURAL INTEGRITY	**9**
BIOPOLYMERS ENGINEERING	**6**
TRACK 3: SMART SURFACES AND FUNCTIONAL MATERIALS	
MANDATORY UNITS	**CREDITS**
COMPUTATIONAL MATERIALS SCIENCE	**6**
GLASS SCIENCE AND TECHNOLOGY	**6**
CORROSION AND PROTECTION OF MATERIALS	**6**

MATERIALS SELECTION AND DESIGN	**6**
PHOTOVOLTAIC SCIENCE AND TECHNOLOGY	**6**
BIOPOLYMERS ENGINEERING	**6**
PARTICLE TECHNOLOGY FOR THE FOOD AND PHARMACEUTICAL INDUSTRIES	**6**
TRACK 4: ADVANCED PROCESSING TECHNOLOGIES	
MANDATORY UNITS	**CREDITS**
GLASS SCIENCE AND TECHNOLOGY	**6**
SCIENCE AND TECHNOLOGY OF CERAMICS	**9**
MANUFACTURING TECHNOLOGY	**6**
MATERIALS SELECTION AND DESIGN	**6**
MATERIALS STRUCTURAL INTEGRITY	**9**
ELECTROMAGNETIC PROCESSING OF MATERIALS	**6**
TRACK 5: NANO- AND BIOMATERIALS	
MANDATORY UNITS	**CREDITS**
FUNDAMENTALS OF NANOSCIENCE	**6**
COMPOSITE MATERIALS	**9**
SCIENCE AND TECHNOLOGY OF CERAMICS	**9**
MATERIALS SELECTION AND DESIGN	**6**
SPORTS ENGINEERING AND REHABILITATION DEVICES	**6**
BIOPOLYMERS ENGINEERING	**6**
FREE-CHOICE UNITS AMONG THE FOLLOWING ACTIVITIES (6 credits, including units from other curricula or tracks)	
UNITS	**CREDITS**
QUALITY IN MANUFACTURING ENGINEERING	**6**
INTRODUCTION TO THE FINITE ELEMENT METHOD	**6**
NANOFABRICATION	**6**
BUSINESS MANAGEMENT	**6**
ELECTROCHEMICAL ENERGY STORAGE TECHNOLOGIES	**6**
PROCESS TECHNOLOGIES FOR CARBON-NEUTRAL FUELS	**6**
OTHER ACTIVITIES	**9**

FOREIGN LANGUAGES	**6**
MASTER'S THESIS	**30**

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