

# MASTER DEGREE IN MATERIALS SCIENCE 2019-2020

*Dual Degree UNIMIB-KU Leuven*

First year at UNIMIB (in blue)

Second year at KU-Leuven (in green, with equivalent UNIMIB courses in *blue italics*)

## MANDATORY FUNDAMENTAL-COURSES (36 ECTS)

5 COURSES	TYPE	ECTS	year	SEM
FUNCTIONAL ANALYSIS	SUPPLEMENTARY	6	1	1
SOLID STATE PHYSICS	CORE - Physics and Chemistry	8	1	1-2
PHYSICAL CHARACTERIZATION OF MATERIALS WITH LABORATORY	CORE - Physics and Chemistry	8	1	1-2
THERMODYNAMICS AND KINETICS OF MATERIALS	CORE - Physics and Chemistry	6	1	2
APPLIED PHYSICAL CHEMISTRY WITH LABORATORY	CORE - Physics and Chemistry	8	1	1-2

## MANDATORY AREA-COURSES (18 ECTS)

### MATERIALS AREA (PHYSICS)

COURSE	TYPE	ECTS	year	SEM
PHYSICS OF HOMOGENEOUS AND NANOSTRUCTURED DIELECTRICS	CORE - Physics and Chemistry	6	1	2

### MATERIALS AREA (CHEMISTRY)

COURSE	TYPE	ECTS	year	SEM
PHYSICAL CHEMISTRY OF SOLID STATE AND SURFACES	CORE - Physics and Chemistry	6	1	2

### APPLICATIONS AREA (TECHNOLOGY)

COURSE	TYPE	ECTS	year	SEM
LOW ENVIRONMENTAL IMPACT MATERIALS & PROCESSES	CORE - Physics and Chemistry	6	2	1
SUSTAINABLE MATERIALS MANAGEMENT (KU Leuven)		3	2	2
RESOURCE RECOVERY AND RECYCLING (KU Leuven)		3	2	2

## MANDATORY APPLICATION-COURSES (12 ECTS)

### MATERIALS AREA (APPLICATIONS)

COURSE	TYPE	ECTS	year	SEM
METALS SCIENCE AND SUSTAINABILITY	SUPPLEMENTARY	6	1	1

### MATERIALS AREA (APPLICATIONS)

COURSE	TYPE	ECTS	year	SEM
MATERIALS AND DEVICES FOR ENERGY ENGINEERING	SUPPLEMENTARY	6	1	1

**MANDATORY INNOVATION-COURSE (6 ECTS)**

COURSE	TYPE	ECTS	year	SEM
NANOTECHNOLOGY & INNOVATION	CORE - engineering	6	2	1
NANOMATERIALS FOR NANOELECTRONICS (KU-Leuven)		3	2	2
ADVANCED CERAMIC MATERIALS (KU-Leuven)		3	2	1

**OTHER ACTIVITIES (48 ECTS)**

ELECTIVES COURSES	TYPE	ECTS	year	SEM
<i>Suggestions:</i> CHEMISTRY AND TECHNOLOGY OF POLYMERS AND INDUSTRIAL APPLICATIONS (6 CFU) PHYSICS AND TECHNOLOGY OF ELECTRONIC DEVICES WITH LABORATORY (6 CFU)	TO BE CHOSEN FREELY BY THE STUDENT (art.10, comma 5, lettera a)	12	1-2	1-2
<i>Suggestions:</i> Properties of Composites A & B (6 CFU) (KU-Leuven) Innovation Management & Strategy (6 CFU) (KU-Leuven)		12	2	

	TYPE	ECTS	year	SEM
MASTER THESIS	MASTER THESIS (art.10, comma 5, lettera c)	30	2	1-2
MASTER THESIS AND INTERNSHIP (KU-Leuven)		30	2	

	TYPE	ECTS	year	SEM
LABORATORY OF SCIENTIFIC LANGUAGE/FURTHER LINGUISTIC KNOWLEDGE (3 CFU)	ADDITIONAL TRAINING ACTIVITIES (code F in Table Soft skills)	3	1/2	
PROJECT MANAGEMENT (KU-Leuven)		3	2	2

	TYPE	ECTS	year	SEM
INTERNSHIP (3 CFU)	STAGE AND INTERNSHIP	3	2	1-2
ENGINEERING ECONOMY (KU-Leuven)		3	2	1