

MASTER DEGREE IN MATERIALS SCIENCE 2018-2019

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 |
|---|--------------------|------|------|-----|
| <i>NANOTECHNOLOGY & INNOVATION</i> | CORE - engineering | 6 | 2 | 1 |
| <i>NANOMATERIALS FOR NANO-ELECTRONICS (KU-Leuven)</i> | | 3 | 2 | 2 |
| <i>ADVANCED CERAMIC MATERIALS (KU-Leuven)</i> | | 3 | 2 | 1 |

OTHER ACTIVITIES (48 ECTS)

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

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

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

| | TYPE | ECTS | year | SEM |
|--|----------------------|------|------|-----|
| <i>INTERNSHIP (3 CFU)</i> | STAGE AND INTERNSHIP | 3 | 2 | 1-2 |
| <i>ENGINEERING ECONOMY (KU-Leuven)</i> | | 3 | 2 | 1 |