MASTER DEGREE IN MATERIALS SCIENCE
2020-2021

First year

MANDATORY COURSES (36 ECTS) at UNIMIB

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	1
APPLIED PHYSICAL CHEMISTRY WITH LABORATORY	CORE - Physics and Chemistry	8	1	1-2

THREE MANDATORY COURSES FROM THE FOLLOWING SETS, ONE PER AREA (18 ECTS)

MATERIALS AREA (PHYSICS)

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

MATERIALS AREA (CHEMISTRY)

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

APPLICATIONS AREA (TECHNOLOGY)

1 COURSE	TYPE	ECTS	year	SEM
CHEMISTRY AND TECHNOLOGY OF POLYMERS AND INDUSTRIAL APPLICATIONS	CORE - Physics and Chemistry	6	1	2
LOW ENVIRONMENTAL IMPACT MATERIALS AND PROCESSES	CORE - Physics and Chemistry	6	1	2
PHYSICS AND TECHNOLOGY OF ELECTRONIC DEVICES WITH LABORATORY	CORE - Physics and Chemistry	6	2	1

ONE MANDATORY COURSE OUT THE FOLLOWING ONES (6 ECTS)

MATERIALS AREA (APPLICATIONS)

1 COURSE	TYPE	ECTS	year	SEM
METALS SCIENCE AND SUSTAINABILITY	SUPPLEMENTARY	6	1	1
SURFACES AND INTERFACES	SUPPLEMENTARY	6	1	2
RADIATION MATTER INTERACTION	SUPPLEMENTARY	6	1	2
*FUNDAMENTALS OF QUANTUM MECHANICS FOR MATERIALS SCIENTISTS	SUPPLEMENTARY	6	1	1
*BASIC CHEMISTRY FOR MATERIALS SCIENCE	SUPPLEMENTARY	6	1	1

*all students may attend these courses, which are however mainly devoted to students with BSc degrees different from Materials Science (credits of these courses are secured in the plan of study only after approval by the Course committee).

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Second year

ONE MANDATORY COURSE FROM THE FOLLOWING ONES (6 ECTS)

MATERIALS AREA (NANOSCIENCE)

COURSE	TYPE	ECTS	year	SEM
NANOTECHNOLOGY AND INNOVATION	CORE - engineering	6	2	1
ENGINEERED NANOMATERIALS	CORE - engineering	6	2	1

ONE MANDATORY COURSE OUT OF THE FOLLOWING ONES (6 ECTS)

MATERIALS AREA (APPLICATIONS)

1 COURSE	TYPE	ECTS	year	SEM
SYNTHESIS AND SPECIAL ORGANIC TECHNIQUES IN MATERIALS CHEMISTRY	SUPPLEMENTARY	6	2	1
STATISTICAL THERMODYNAMICS OF MATERIALS	SUPPLEMENTARY	6	2	1
MATERIALS AND DEVICES FOR ENERGY ENGINEERING	SUPPLEMENTARY	6	2	1

OTHER ACTIVITIES (48 ECTS)

	TYPE	ECTS	year	SEM
ELECTIVES COURSES	TO BE CHOSEN FREELY BY THE STUDENT (art.10, comma 5, lettera a)	12	1-2	1-2

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

	TYPE	ECTS	year	SEM
ADDITIONAL COMMUNICATION SKILLS	ADDITIONAL TRAINING ACTIVITIES (art. 10, comma5, lettera d)	3	2	1-2

	TYPE	ECTS	year	SEM
INTERNSHIP	ADDITIONAL TRAINING ACTIVITIES (art. 10, comma5, lettera d)	3	2	1-2