

## INTERNATIONAL MASTER'S DEGREE IN MATERIALS SCIENCE

University of Milano-Bicocca — Department of Materials Science

# MATERIALS SCIENCE

### DESCRIPTION OF THE COURSE

MSc. Degree in Material Science offered by the Department of Materials Science at the University of Milano-Bicocca is a 2-year study program aimed at providing advanced knowledge on chemistry and physics of materials, along with modelling approaches and experimental techniques of materials characterization, with practical applications in experimental laboratories. The students learn about the interpretation and the design of function vs. structure relationships in a wide class of materials, providing an underlying basis for understanding principles, applications and entrepreneurial aspects of nanotechnology. In order to allow for an individual specialization, the program provides a broad choice of courses on specific classes of materials and their function-related structures. Besides technical knowledge, the program also focusses on acquiring competencies related to research skills and scientific communication. Finally, the theoretical knowledge is applied and enhanced through an internship and a Master thesis, which are carried out within a network of collaborations involving research groups and industrial partners.

Overall, the program endeavors to create graduates with a multi-disciplinary approach in developing new pathways for innovation, with a specific view to integrate scientific and ethical perspective to the sustainability of processes and technologies in materials science.

### DUAL DEGREE OPPORTUNITY

The Master degree programme includes student positions within the International programme of Dual MSc Degree in Sustainable Materials (SUMA MSc Degree). The Dual Degree track meets the requirements of the Quality Label of the European Institute of Innovation and Technology (EIT) of the European Commission for the high education target in the field of Raw Materials. The network of international SUMA Master Tracks is funded by EU within the IMAGINE European project. In the Dual Degree track, 60 ECTS are acquired at UNIMIB and 60 ECTS at the Katholieke Universiteit Leuven (Belgium). For admission to the Dual Degree Track, candidates have 1) to submit an application to the SUMA web site ([www.master-suma.eu](http://www.master-suma.eu)), then 2) to follow the instructions and deadlines for admission to UNIMIB as entry University, as indicated in Admission procedure. Further details are available at <https://elearning.unimib.it/course/view.php?id=22185>.

### CAREER PATH

New materials determine the performance, efficiency, quality and sustainability of products and processes in all modern industries and application areas. With a MSc Degree in Materials Science, graduates can either directly work in industry or can further specialize by carrying out a PhD.

### COURSE DIRECTOR

Prof. Alberto Paleari

### BSc & MSc COURSE COORDINATOR

Prof. Angiolina Comotti

#### PROGRAM DURATION

2 Years

#### START DATE

October

#### CREDITS

120 ECTS

#### LANGUAGE

English

#### LOCATION

Milan, Italy

Milan – Leuven (Dual Degree track)

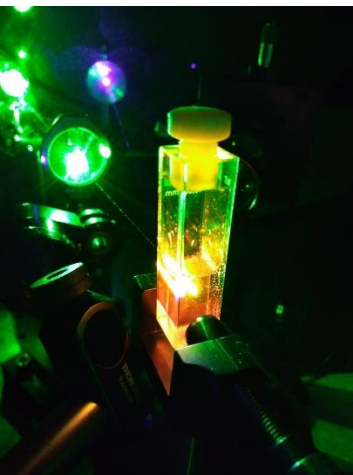
#### TUITION

Foreign students with a Bachelor degree (earned abroad) who enroll in Materials Science will be entitled for the following benefits:

1<sup>st</sup> Year: Full fee waiver

2<sup>nd</sup> Year: € 600,00

EIT Grants (Dual Degree only) € 13.500



## CURRICULUM\*

### First year courses

Functional Analysis, 6 ECTS  
Solid State Physics, 8 ECTS  
Physical Characterization of Materials & Laboratory, 8 ECTS  
Thermodynamics and Kinetics of Materials, 6 ECTS  
Applied Physical Chemistry with Laboratory, 8 ECTS

#### One of the following:

- a) Physics of Semiconductors, 6 ECTS
- b) Physics of Homogeneous and Nanostructured Dielectrics 6 ECTS
- c) Molecular Electronics and Photonics, 6 ECTS

#### One of the following:

- a) Chemistry of Molecular Materials 6 ECTS
- b) Chemistry of Inorganic Materials, 6 ECTS
- c) Physical Chemistry of Solid State and Surfaces 6 ECTS

#### One of the following:

- a) Chemistry and Technology of Polymers & Industrial Applications, 6 ECTS
- b) Low Environmental Impact Materials & Processes, 6 ECTS
- c) Physics and Technology of Electronic Devices with Laboratory 6 ECTS

#### One of the following:

- a) Metals Science and Sustainability, 6 ECTS
- b) Radiation Matter Interaction 6 ECTS
- c) Surfaces & Interfaces 6 ECTS
- d) Fundamental of Quantum Mechanics for Materials Scientists, 6 ECTS
- e) Basic Chemistry for Materials Science, 6 ECTS

\*The Dual Degree programme has a specific path (see link in *Further Information*)

### Second year courses

#### One of the following:

- a) Nanotechnology & Innovation, 6 ECTS
- b) Engineered Nanomaterials, 6 ECTS
- c) Quantum Electronic, 6 ECTS

#### One of the following:

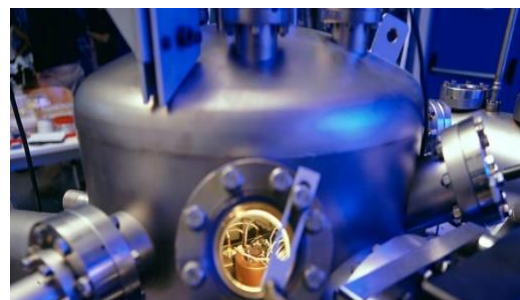
- a) Materials and Devices for Energy Engineering, 6 ECTS
- b) Synthesis and Special Organic Techniques in Material Chemistry, 6 ECTS
- c) Statistical Thermodynamics of Materials, 6 ECTS
- d) Quantum Materials Synthesis, 6 ECTS
- e) Quantum Materials 6 ECTS (primo anno)

**Elective courses**, 12 ECTS - Students are free to choose from the course offered at Milano-Bicocca University.

**Stage**, 3 ECTS

**Further linguistic knowledge** or Laboratory of scientific language, 3 ECTS

**Master Thesis**, 3



common  
teachings

at choice

## FURTHER INFORMATION

[didattica.materiali@unimib.it](mailto:didattica.materiali@unimib.it); <https://elearning.unimib.it/course/index.php?categoryid=4578>

## DEGREE REQUIREMENTS

Three years Bachelor Degree from an accredited college/university or its equivalent. **Language Certification:** Certificate of proficiency in English corresponding to at least B2 level, issued by recognized Institutions, or BSc Degree earned by attending a University course fully taught in English.

The applications for admission must be presented online at the web site of the University of Milano-Bicocca at the link [https://s3w.si.unimib.it/Home.do;jsessionid=37226A3BEE95999EBEA995E481FC1AF9.esse3-unimib-prod-03?cod\\_lingua=eng](https://s3w.si.unimib.it/Home.do;jsessionid=37226A3BEE95999EBEA995E481FC1AF9.esse3-unimib-prod-03?cod_lingua=eng).

It is necessary to follow the instructions at this link <https://elearning.unimib.it/course/view.php?id=17945>.

**Please note** extra-UE students requiring VISA must apply for pre-enrolment on the **www.university.it Portal**, together with the submission of the application, attaching all the required documents. Without this step, it is not possible to get visa and to enroll.

Applications open on the 1<sup>st</sup> of April 2021 Interview for students are scheduled in the following dates:

- **June 18<sup>th</sup> 2021** (for those who apply before June 14<sup>th</sup>)
- **September 24<sup>th</sup> 2021** (for those who apply from June 15<sup>th</sup> till September 20<sup>th</sup>)

## ACCOMMODATION AT UNIVERSITY OF MILANO-BICOCCA

The University of Milano - Bicocca makes available accommodation for international students. To book accommodation and learn about the costs and terms of your stay you can write to: [booking.bicocca.fms.it@sodexo.com](mailto:booking.bicocca.fms.it@sodexo.com).

The University of Milano-Bicocca also offers scholarships to cover accommodation and living costs. For terms of application please consult <https://www.unimib.it/servizi/diritto-allo-studio-tasse-150-ore/borse-studio>.