



UNIVERSITY OF MILANO-BICOCCA - DEPARTMENT OF MATERIALS SCIENCE

MATERIALS SCIENCE



PROGRAM DURATION

2 YEARS



START DATE

OCTOBER 2021



CREDITS

120 ECTS



TUITION FEE

FOREIGN STUDENTS WITH A BACHELOR DEGREE (EARNED ABROAD) WHO ENROLL IN MATERIALS SCIENCE WILL BE ENTITLED FOR THE FOLLOWING BENEFITS:

1ST YEAR: FULL FEE WAIVER

2ND YEAR: € 600

EIT GRANTS (DUAL DEGREE ONLY)
€ 13.500



LOCATION

MILAN, ITALY

MILAN - LEUVEN (DUAL DEGREE TRACK)



CONTACT

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COURSE DIRECTOR

ALBERTO PALEARI

BSc & MSc COURSE COORDINATOR

ANGIOLINA COMOTTI



PROGRAM DESCRIPTION

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**.



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.

<https://en.unimib.it/international/international-programmes/materials-science>

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

ACCOMMODATION AT BICOCCA

To book accommodation and learn about the costs and terms of your stay you can write to:

booking.bicocca.fms.it@sodexo.com

Our University also offers scholarships to cover accommodation and living costs. For terms of application please consult:

www.unimib.it/servizi/diritto-allo-studio-tasse-150-ore/borse-studio

HOW TO ENROLL

Admission procedures **vary according to the student's nationality and place of residence**. For complete clarity concerning different procedures, we invite those interested to consult our website:

<https://www.unimib.it/unimib-international/bachelor-and-masters/how-enroll>

The enrolment application form must be filled in on line at <https://s3w.si.unimib.it/esse3/Start.do>. Please, click top-right of the page for the English (EN) version. Please note NO-UE students requiring VISA **must apply for enrolment to the Italian Embassy (or Consulate)**. Contact the Embassy in advance in order to know all requirements for enrolment and Study Visa Procedure.

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 (FIRST YEAR)

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 ECTS



DEGREE REQUIREMENTS

Min. 3 years Bachelor Degree from an accredited college/university or its equivalent.

Language Certification: Certificate of proficiency in English corresponding to min. B2 level, issued by recognized institutions.



DOUBLE DEGREE

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), 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>