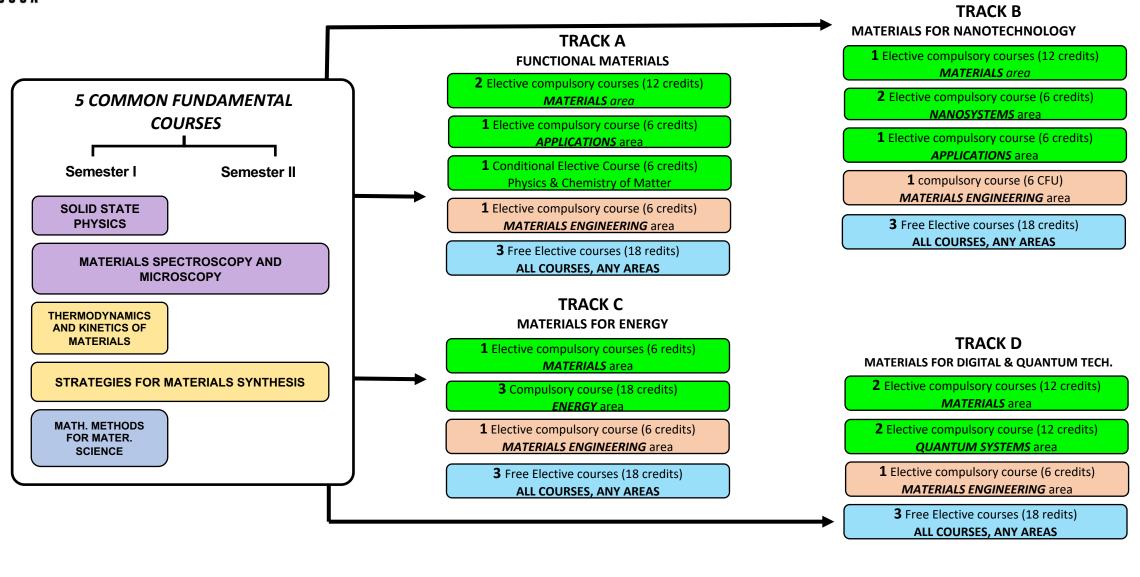


# MSc COURSE IN *MATERIALS SCIENCE & NANOTECHNOLOGY* 2025-2026



Communication skills (3 credits) + Internship (3 credits – including Scientific Literacy) + THESIS (30 credits)

FINAL DEFENSE

MATHEMATICAL METHODS FOR MATERIALS SCIENCE - THERMODYNAMICS AND KINETICS OF MATERIALS - SOLID STATE PHYSICS - MATERIALS SPECTROSCOPY AND MICROSCOPY - STRATEGIES FOR MATERIALS SYNTHESIS

# TRACK A Functional Materials

#### **MATERIALS** area

- CHEMISTRY OF INORGANIC MATERIALS
- CHEMISTRY OF MOLECULAR MATERIALS
- PHYSICAL CHEMISTRY OF SOLIDS
- PHYSICS OF SEMICONDUCTORS
- METALS SCIENCE AND SUSTAINABILITY
- ADVANCED SOLID STATE PHYSICS
- COMPUTATIONAL MATERIALS SCIENCE

#### **APPLICATIONS** area

- CHEMISTRY & TECHNOLOGY OF POLYMERS & INDUSTRIAL APPLICATIONS
- APPLICATIONS OF MATERIALS FOR IONIZING RADIATION DETECTION
- LOW ENVIRONMENTAL IMPACT MATERIALS AND PROCESSES
- MOLECULAR ELECTRONICS AND PHOTONICS
- QUANTUM PHOTONICS

#### 1 FURTHER ELECTIVE COURSE OF

MATERIALS area
THEORY & MODELS area
NANOSYSTEMS area
ENERGY area
QUANTUM SYSTEMS area
APPLICATIONS area

#### **MATERIALS ENGINEERING** area

- ADVANCED FUNCTIONAL POLYMERS
- ENGINEERED NANOMATERIALS
- QUANTUM ELECTRONICS

3 Free Elective courses (18 credits)
ALL COURSES, ANY AREAS

# TRACK B

# Materials for Nanotech ELECTIVE COURSES

#### **MATERIALS** area

- CHEMISTRY OF INORGANIC MATERIALS
- CHEMISTRY OF MOLECULAR MATERIALS
- PHYSICAL CHEMISTRY OF SOLIDS
- PHYSICS OF SEMICONDUCTORS
- METALS SCIENCE AND SUSTAINABILITY
- ADVANCED SOLID STATE PHYSICS
- COMPUTATIONAL MATERIALS SCIENCE

#### **APPLICATIONS** area

- CHEMISTRY & TECHNOLOGY OF POLYMERS & INDUSTRIAL APPLICATIONS
- APPLICATIONS OF MATERIALS FOR IONIZING RADIATION DETECTION
- LOW ENVIRONMENTAL IMPACT MATERIALS AND PROCESSES
- MOLECULAR ELECTRONICS AND PHOTONICS
- QUANTUM PHOTONICS

#### **NANOSYSTEMS** area

- NANOTECHNOLOGY & INNOVATION
- NANOCHEMISTRY AND NANOPOROUS MATERIALS & NANOMEDICINE
- PHYSICS OF SOFT MATTER NANOSTRUCTURES
- FABRICATION AND CHARACTERIZATION OF NANO & QUANTUM MATERIALS

#### **MATERIALS ENGINEERING** area

- ENGINEERED NANOMATERIALS
  - QUANTUM ELECTRONICS

3 Free Elective courses (18 credits)
ALL COURSES, ANY AREAS

# TRACK C

# Materials for Energy ELECTIVE COURSES

#### **MATERIALS** area

- CHEMISTRY OF INORGANIC MATERIALS
- CHEMISTRY OF MOLECULAR MATERIALS
- PHYSICAL CHEMISTRY OF SOLIDS
- PHYSICS OF SEMICONDUCTORS
- METALS SCIENCE AND SUSTAINABILITY

#### **ENERGY** area

- FUNDAMENTALS OF ELECTROCHEMISTRY FOR ENERGY STORAGE
- CATALYSIS FOR ENERGY AND THE ENVIRONMENT
- MODELS AND MATERIALS FOR ELECTROCHEMICAL
- ENERGY GENERATION AND CONVERSION
- ENERGETICS

#### **MATERIALS ENGINEERING** area

- PHOTOVOLTAICS & OTHER RENEWABLE ENERGY TECHNOLOGIES
  - 3 Free Elective courses (18 credits)
    ALL COURSES, ANY AREAS

### **→** TRACK D

# Materials for Digital&Quantum Tech

#### **MATERIALS** area

- PHYSICAL CHEMISTRY OF SOLIDS
- PHYSICS OF SEMICONDUCTORS
- COMPUTATIONAL MATERIALS SCIENCE
- METALS SCIENCE AND SUSTAINABILITY

#### **QUANTUM SYSTEMS** area

- FABRICATION AND CHARACTERIZATION OF NANO &
   QUANTUM MATERIALS
- QUANTUM PHOTONICS
- NANOTECHNOLOGY & INNOVATION
- ADVANCED SOLID STATE PHYSICS

#### **MATERIALS ENGINEERING** area

- PHYSICS AND TECHNOLOGY OF ELECTRONIC DEVICES
- QUANTUM ELECTRONICS

3 Free Elective courses (18 credits)
ALL COURSES, ANY AREAS

# **ALL TRACKS** MANDATORY INTEGRATIVE ACTIVITIES

# **COMMUNICATION SKILLS (3 credits)**

- ITALIAN LANGUAGE (A1 Level) Foreign students
- English Language (C1 level) or other language (B2 level) or Lab of Sci English Italian students

### **INTERNSHIP** (3 credits)

- Certification of Scientific Literacy by UNIMIB Library
- · Training for the Master Thesis activity

### THESIS (30 credits)