



POLITECNICO
MILANO 1863

DEPARTMENT OF ARCHITECTURE
BUILT ENVIRONMENT AND
CONSTRUCTION ENGINEERING

Material
Balance
Research

Material Balance Design

Digital Techniques And Circular Innovations In Architecture

II edition
2025/2026

I and II Level
Master Program

In a fast changing world the Master is intended to give skills, knowledge and awareness on how to understand, anticipate and deal with complexity and upcoming challenges.

The program will build distinctive and **forward-thinking figures** in the field of architecture, engineering and construction. Through comprehensive training, it will foster expertise in **digital techniques** and **circular innovations**, aligning with the growing requirements of the national and international construction market seeking **sustainable regeneration and material scouting experts**.

Objective_01

Train new professionals capable of facing and managing complex projects through the synergy between **digital technologies'** potential **and environmental balance** needs.

Objective_02

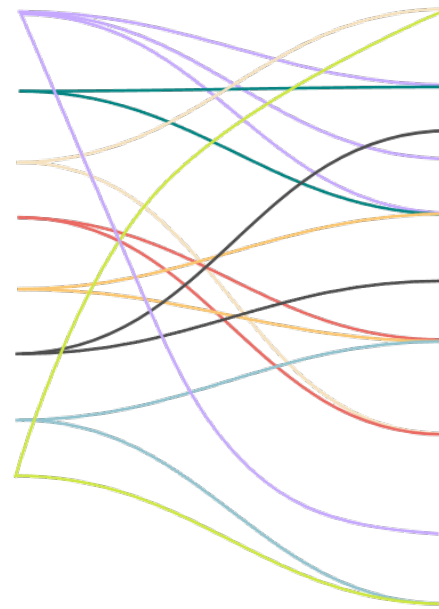
Acquire knowledge based on a new "material balance", **from concept design to construction details**, capable of designing the transformation of our future environment with a renewed awareness.

Objective_03

Study and creation of new principles, tools, processes, **and innovative products that rethink the contemporary role of the designer.**

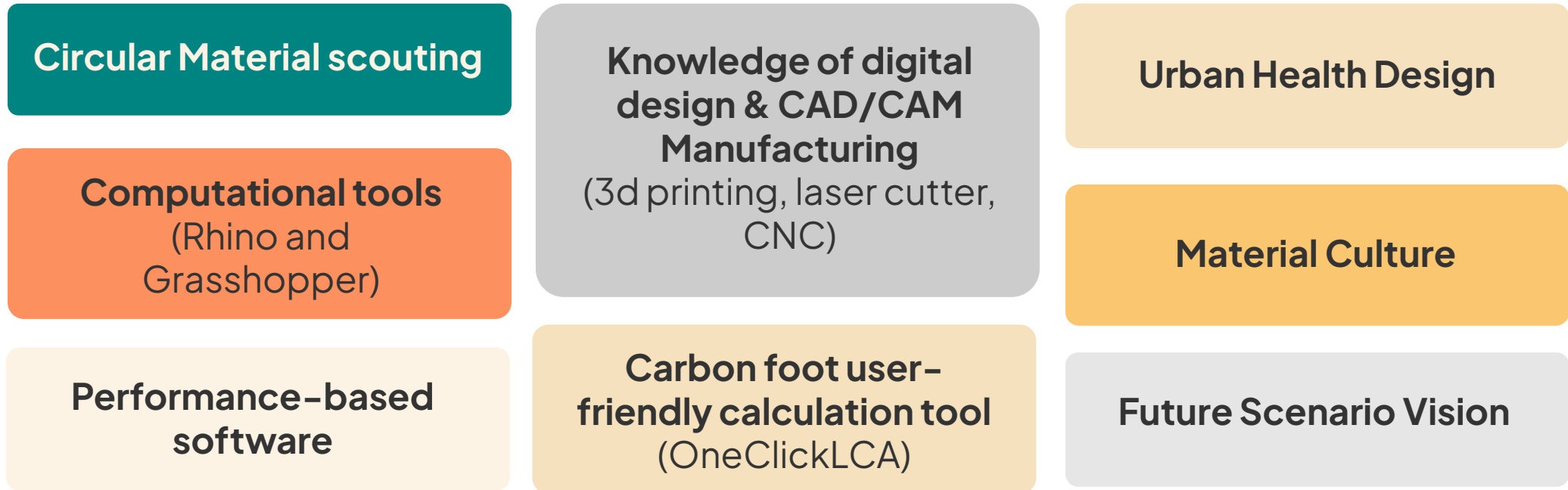
Areas

Architectural firms
Engineering companies
Manufacturing industries
Innovative Material and Industries
Construction Companies
Start-ups
NGO/ Institutional Bodies
Academia Worldwide



Expertise

Material Scouting
Computational Design
Visionary Thinking
Cutting-edge knowledge
Entrepreneur in Building Sector
Circular Innovations in AEC
Bio-based Components and
Supply Chain
Innovative facades
History of Material Culture



WHAT IS MATERIAL BALANCE?

Focus on the research for a new approach that aims to rebalance our relationship with the environment

FUTURE SCENARIOS

MATERIAL BODIES & DIGITAL PHENOMENOLOGY

Design to rediscover a material, environmental and social culture

DIGITAL FABRICATION

Computer-controlled digital production process. Deep analysis and study of innovative manufacturing techniques.

The module covers:

- Architectural demonstrators
- Robotic Manufacturing
- Wood technologies
- Bespoke textile technologies

SOFT SKILLS

ALGORITHMIC DESIGN

Material and Design process optimization by linking specific requirements and design needs.

The module covers:

- Performance-based design
- Sustainable acoustic materials
- Thermal simulations
- Lighting

HANDS-ON WORKSHOPS

CIRCULAR MATERIALS SCOUTING

Research of materials and products that are wholly or partially derived from bio-based or recyclable materials

EXECUTIVE DESIGN DEVELOPMENT Facade Technologies

URBAN HEALTH DESIGN

The master's program is blended with online theoretical and in-person practical sessions at the ABC Department's Maba.SAPERLab Laboratory.

Lessons

Blended mode:
online and in
presence

Workshop

Design exercise
integrated to
theory, identified
during the
training process

Assignments

Online students will be
required to complete
tasks during the
course of the master's
programme

Internship

To be carried out at
one of the partner/
sponsor or eventually
other companies

Final exam

Public discussion of
the final paper based
on the contents of the
Master's program and
the activities carried
out as part of
the internship

Where /

MaBa.SAPERLab is a Politecnico di Milano 300 sqm space which operates within a **multidisciplinary vision** of architecture, design and construction . It researches on innovative technologies and advanced manufacturing techniques enhancing a conscious awareness of contemporary challenges.

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I and II Level Master



MaBa

Workshops Life @Maba Master





Partners & Supporters

mad
architects

RIMOND 

Zaha Hadid
Architects

a-fact
ARCHITECTURE FACTORY

ACPV ARCHITECTS
ANTONIO CITTERIO PATRICIA VIEL

Snøhetta 

 **Deerns**

BOLLINGER+GROHMANN

 **MDL CIRCLE**

A I V O X

ATI | Project
CREATING A BETTER REALITY

**Henning
Larsen** 

GIÒFORMA

Director

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Mattia Mariani | Deerns

Tommaso Maserati | Snøhetta

Paolo Mazza | ACPV Architects

Francesco Perego | Aivox

Tommaso Pagnacco | Bollinger+Grohmann

Lorenzo Pirone | Rimond

Gianluca Racana | Zaha Hadid Architects

Andrea Rossi | A-fact architecture

Study plan



From March 2025 to March 2026

Classes 2/3 times a week

Schedule: 5:00 p.m. - 9:00 p.m.



In person at MaBa.SAPERLAB

Remotely on Microsoft Teams

Companies' workshops and visits

Tuition fees

In-presence attendance

€ 7.500 + 500 (enrolment fee)

On-line attendance

€ 4.500 + 500 (enrolment fee)

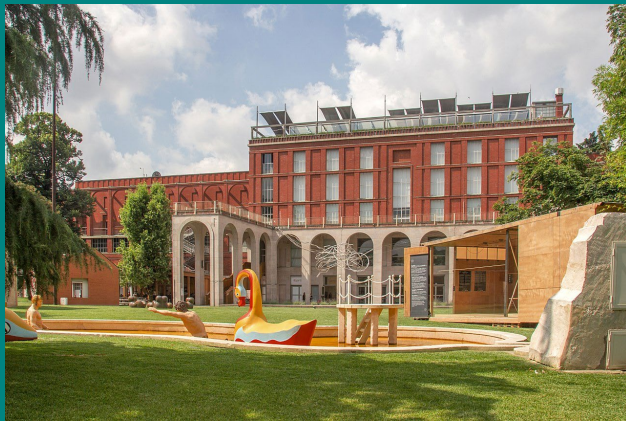
XIX Biennale of Venice 2025



Climate Fresk



Arch Week 2025



Company and Construction Site Visits





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