



POLITECNICO
MILANO 1863

SCUOLA DEL DESIGN

DESIGN & ENGINEERING - PROGETTO E INGEGNERIZZAZIONE DEL PRODOTTO INDUSTRIALE

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LAUREE MAGISTRALI



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MD Course in Design & Engineering

Aim

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Study Plan

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Partners





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MD Course in Design & Engineering

Aim

The aim of the Master Degree Course in Design & Engineering is to train **new professional figures** who hybridize design and engineering competences.

New professionals who are **able to manage the design activity through the whole product development process**, that is: from the conceptual phase up to the material selection, mechanical engineering studies and manufacturing documentation.

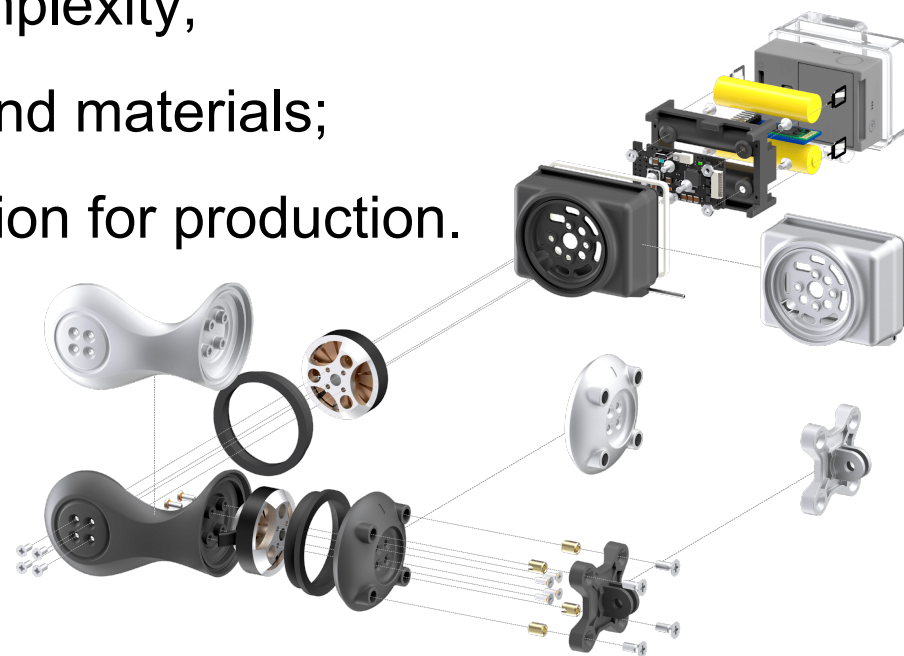


MD Course in Design & Engineering

Aim

These new professionals are able to:

- make a synthesis of design complexity;
- manage processes, functions and materials;
- make the technical documentation for production.



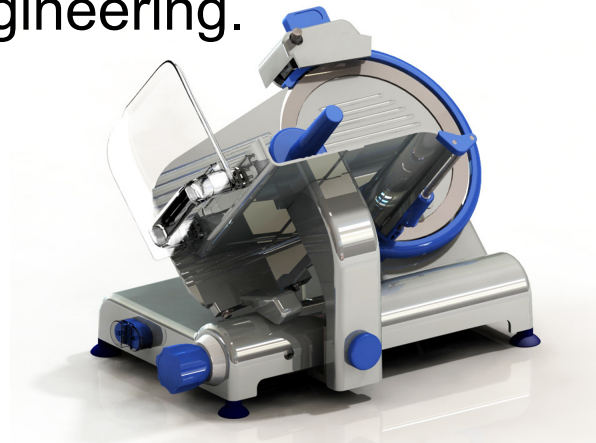


MD Course in Design & Engineering

Contents

Integrated education on three disciplines:

- Design;
- Materials Engineering;
- Mechanical Engineering.





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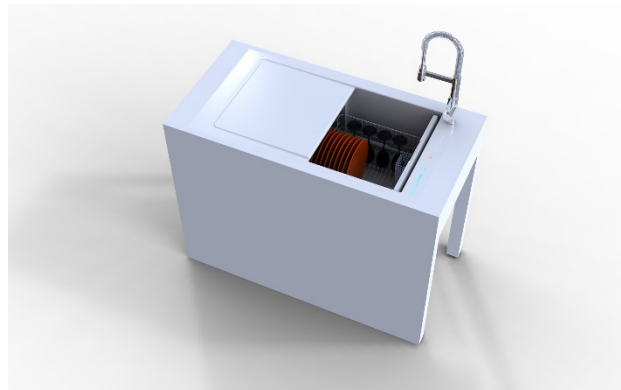
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MD Course in Design & Engineering

Contents_Design

It provides a deeper knowledge about design culture and processes.

The aim is to develop skills to design innovative products based on the understanding of: context, users needs and experiences, industrial and manufacturing processes.



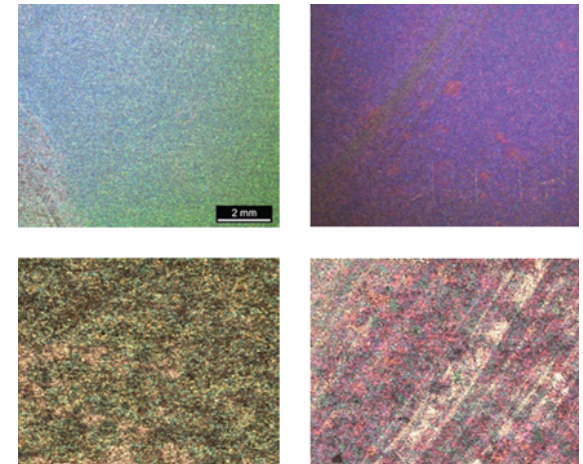


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Contents_Materials Engineering

It provides designers with specific operational skills in:

- materials properties for D&E applications
- criteria for material selection
- surfaces finishing
- nanotechnologies & functional materials



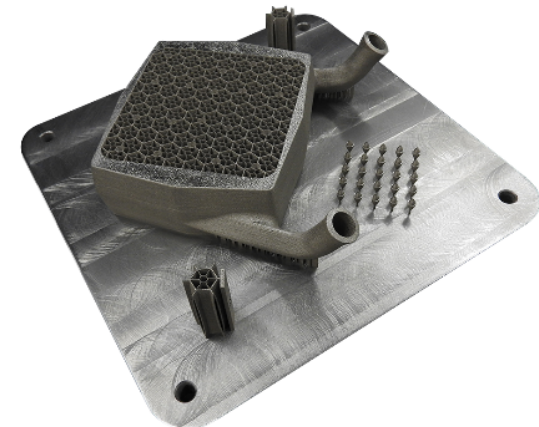


MD Course in Design & Engineering

Contents_Mechanical Engineering

The aim is to provide knowledge on methods and skills for mastering digital tools to perform engineering studies of product designs, including:

- building digital prototypes of products through 3D modeling and reverse modeling;
- performing analysis and simulations through virtual prototyping and finite element analysis techniques;
- testing manufacturability.





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Study Plan_2019/20



MD Course in Design & Engineering

1° Year






1° sem	 Product development Design Studio 1 Section DE1/DE2 (<i>product feasibility</i>)/ Section DE3 (<i>product interaction</i>) (Methods and tools for detailed design)	12 CFU
	 Design Thinking and Processes	6 CFU
	 Materials selection criteria in design & engineering	12 CFU
	 Mechanical Design	6 CFU
2° sem	 Product development Design studio 2 Section DE1/DE2 (<i>product feasibility</i>)/ Section DE3 (<i>product interaction</i>) (Materials for design)	12 CFU
	 Design and Corporate Economics	6 CFU
	 Design for Manufacturing	6 CFU



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1° and 2° Year

Selection of 2 optional courses

1/2 sem	An optional course between:	6 CFU
	 Reverse modeling	
	 Metodi di rappresentazione parametrica	
	 Virtual prototyping	
	 Nanotecnologie e materiali funzionali per il design	
	 Il Metodo degli elementi finiti	





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2° Year

1° sem	 Final project work	18 CFU
	 Semiotics	6 CFU
2° sem	Internship	12 CFU
	Degree Examination	9CFU



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MD Course in Design & Engineering

Sections

The first year, the master degree course has 3 Sections, where:

Theoretical courses are the same;

Design Studios differ: 2 options are available

(see next page);



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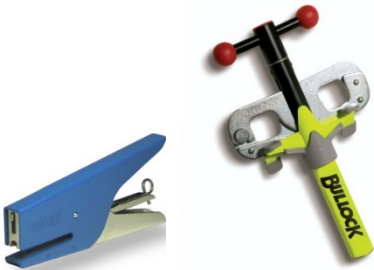





Sections_Design Studio options

Section	Language Section	Languages elective courses	Focus of Design Studio
DE1			Product Development Design Studio for product feasibility
DE2			Product Development Design Studio for product feasibility
DE3			Product Development Design Studio for product interaction



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Sections_Design Studio options

Section	Focus of Design studio	Product examples	
DE1	Product development Design studio for product feasibility		
DE2	Product development Design studio for product feasibility		
DE3	Product development Design studio for product interaction		



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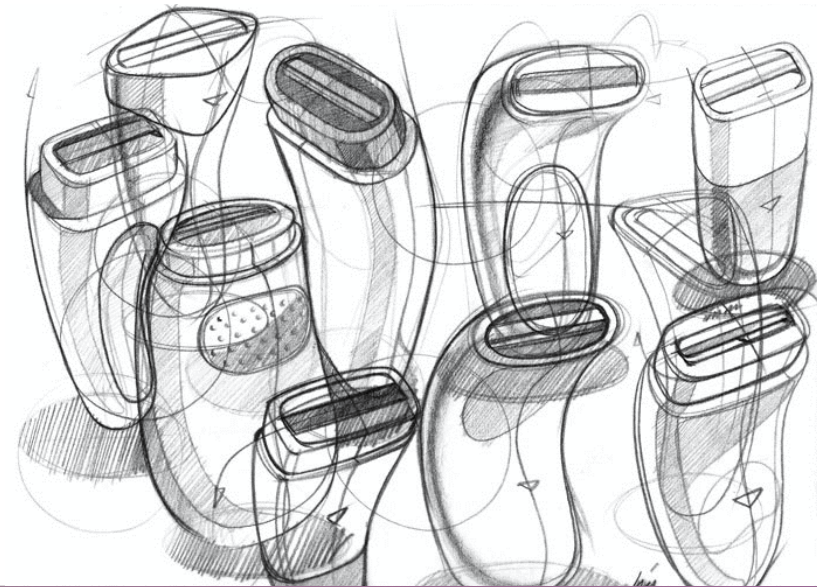
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What you will learn (product feasibility)

To analyze and synthesize the aesthetic, mode of use and technical feasibility of industrial products.





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MD Course in Design & Engineering

What you will learn (product feasibility)

To describe the industrial feasibility of products through the detailed design.





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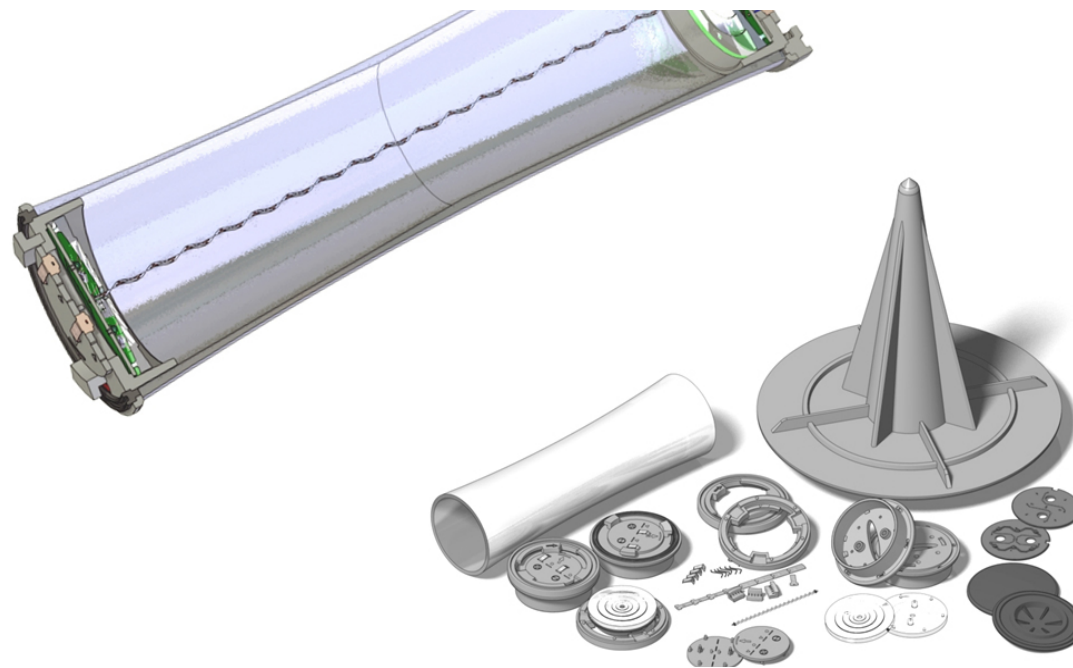
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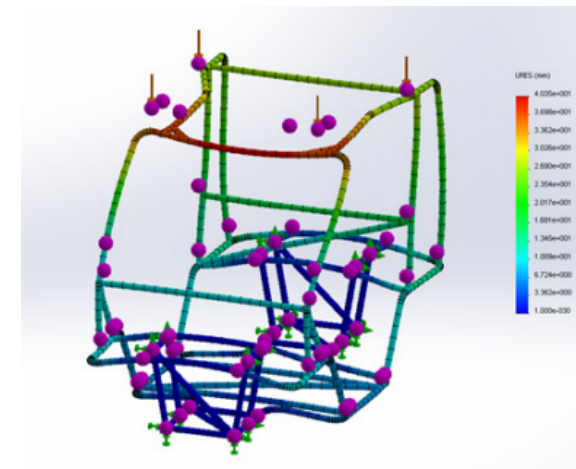
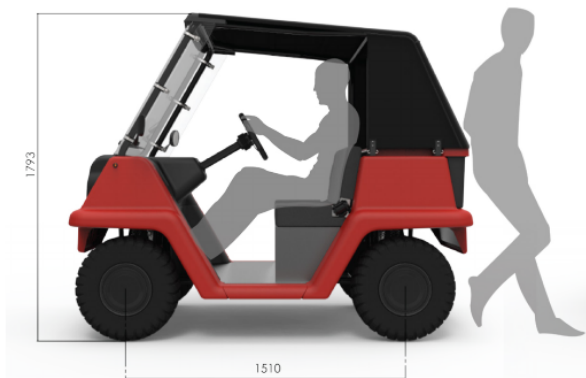




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What you will learn (product feasibility)

To master digital tools to perform engineering analyses of product designs (i.e., ergonomic issues, material deformation, manufacturability, ...).





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MD Course in Design & Engineering

What you will learn (product interaction)

To approach the design of an interactive product with the right tools, from the methodological and practical viewpoints.





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What you will learn (product interaction)

To build the user experience addressing both meaning and aesthetics and to structure the user's interactive process.

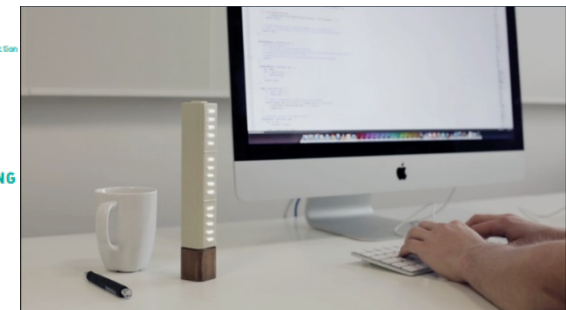




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What you will learn (product interaction)

To “design” user experience through the analysis and the understanding of how the product interacts (communicates) with users, the user groups and the context in which the product will be used.





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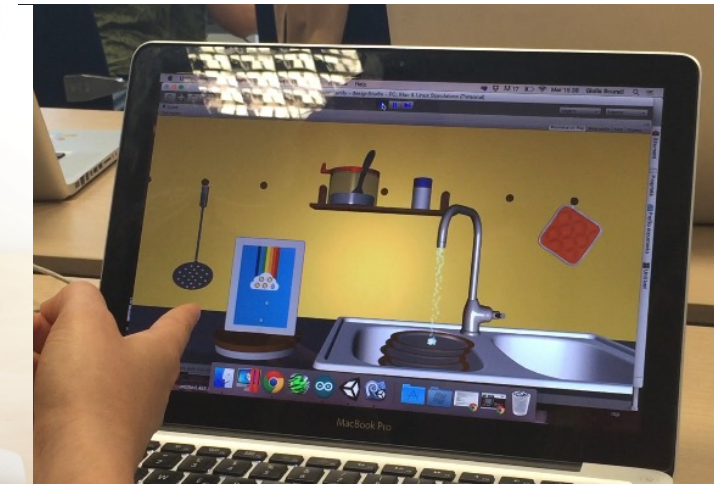
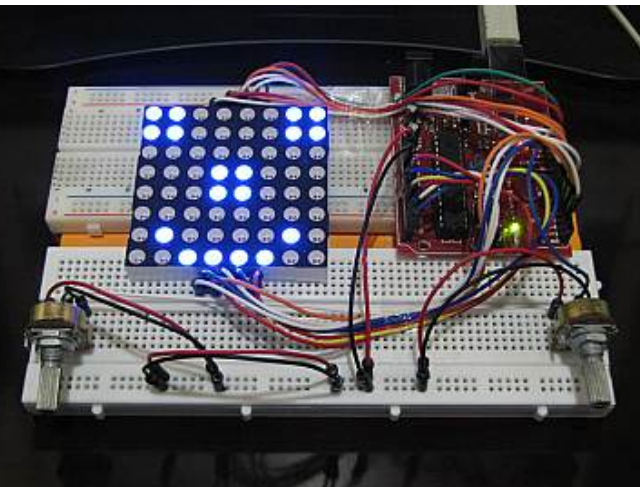
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What you will learn (product interaction)

To handle the basics of physical computing.

To use the tools and platform for applied interaction.





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Exchange programs

UE and Extra UE in 2° semester

Double degree Les Ecoles Centrales, France



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Partners who collaborated to the Master Programme

Afidamp

Consorzio ReMedia

Indesit

Pplast

AMR

Ditron

Luxottica

RCM/Afidamp

Artemide

Ducati energia

Marcato

Seiko Instrument

Berkel

Dyson

Metalcem

Studio Volpi

BLM

Egolite

MIDEA

Terenzi

Bosch

Electrolux

Misumi

Toshiba

Caccia

E-novia

Mitsubishi Electric

Tucano Urbano

Candy Hoover Group

EOS

Persico

Vitec group

Cifarelli

Gruppo SEB

Philips

Whirlpool



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Course Website

<http://design-engineering.polimi.it/>



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WELCOME TO DESIGN & ENGINEERING

www.design-engineering.polimi.it

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