



POLITECNICO
MILANO 1863



Dipartimento di Meccanica Department of Mechanical Engineering

www.mecc.polimi.it

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POLITECNICO DI MILANO

Politecnico di Milano, since 1863



POLITECNICO DI MILANO 1863/2013

150 

**150° ANNIVERSARIO DEL
POLITECNICO DI MILANO**

Il Politecnico celebra il suo 150° con un intero anno di eventi, seminari e convegni, spettacoli teatrali, mostre, laboratori, lezioni e incontri a tema con la partecipazione di prestigiose istituzioni culturali milanesi.



The Campuses of the Politecnico di Milano



The Campuses of the Politecnico di Milano



Schools of Engineering in Italy



Department of Mechanical Engineering



**16% of
engineers
graduated
from
Politecnico di
Milano**

International students coming from more than 100 countries

- ✓ 1513 at BSc (6%)
- ✓ 2102 at MSc (23%)
- ✓ 312 Ph.D. (29%)

Specializing Master and Short post-graduation courses

- ✓ More than 2500 students (20% from foreign countries)

The 12 Departments of the Politecnico di Milano

- **Aerospace Science and Technology**
- Architecture and Urban Studies
- Architecture, Built Environment and Construction Engineering
- Chemistry, Materials And Chemical Engineering “Giulio Natta”
- Civil and Environmental Engineering
- Design
- Electronics, Information and Bioengineering
- Energy
- **Management, Economics and Industrial Engineering**
- Mathematics
- **Mechanics**
- Physics

QS World University Rankings by Subject 2016

	World	EU	Italy
Engineering & Technology	24	7	1
Architecture & Built Environment	15	6	1
Art & Design	10	3	1
Computer Science & Information Systems	43	9	1
Chemical Engineering	51	11	1
Civil & Structural Engineering	14	5	1
Electrical & Electronic Engineering	44	11	2
Mechanical, Aeronautical & Manufacturing Engineering	18	6	1
Materials Sciences	51	12	1
Mathematics	51	14	1
Business & Management Studies	51	15	2
Physics & Astronomy	51	20	2

QS World University Rankings in Engineering and Technology 2015/2016

Politecnico di Milano	Score	World Rank
Academic Reputation (40%)	84	24
Employer Reputation (30%)	85,7	22
Citations per Paper Measures productivity for the last five years (15%)	78,1	253
H-index Citations (15%) Measures both the number of papers produced and the impact of the published work	84,4	61
Overall	83,7	24

Wharton-QS Stars Awards 2014 - Reimagine Education

A panel of international judges has voted Polimi as the best of the 43 universities worldwide participating in the Nurturing Employability category.

Nurturing Employability Award:

Winner	Enhancing Engineering Education for 21 st century Employability	Politecnico di Milano	Italy
Runner up	Accelerating Medical Innovation and Careers: MILI Global Valuation Laboratory	University of Minnesota	USA
3rd place	The HealthFusion Team Challenge; Building Stronger Healthcare	Queensland University of Technology	Australia

Best European universities in Engineering/Technology according to Employer evaluation (QS 2015) - 1

	Architecture / Built Environment	Art & Design	Computer Science	Chemical Engineering	Civil & Structural Engineering
1	UPC	Oxford	Oxford	Cambridge	Oxford
2	Cambridge	UCM	Cambridge	Oxford	Cambridge
3	TU Delft	Paris 1	LSE	TU Delft	TU Delft
4	Politecnico di Milano	Politecnico di Milano	ETH	Imperial College	Politecnico di Milano
5	Vilnius Gediminas	UAL	Imperial College	Politecnico di Milano	ETH
6	Salford	Loughborough	Politecnico di Milano	ETH	Imperial College
7	Lund	UCL	Lomonosov Moscow	RWTH Aachen	Edinburgh
8	RWTH	Goldsmiths	TU Munich	TU Munich	TU Munich

Best European universities in Engineering/Technology according to Employer evaluation (QS 2015) - 2

	Electrical & Electronic Engineering	Mechanical Engineering	Mathematics	Environmental Sciences
1	Cambridge	Cambridge	Cambridge	Cambridge
2	Oxford	Oxford	Oxford	Oxford
3	ETH	Politecnico di Milano	Lomonosov Moscow	ETH
4	Politecnico di Milano	Imperial College	ETH	Imperial College
5	Imperial College	RWTH Aachen	Imperial College	EPFL
6	TU Munich	ETH	LSE	TU Delft
7	Politecnico di Torino	TU Delft	Novosibirsk	Lomonosov Moscow
8	KTH	TU Munich	Politecnico di Milano	Politecnico di Milano

ARWU (Academic Ranking of World Universities)
ranks the Politecnico di Milano 90th on a world
scale

Italy

Europe

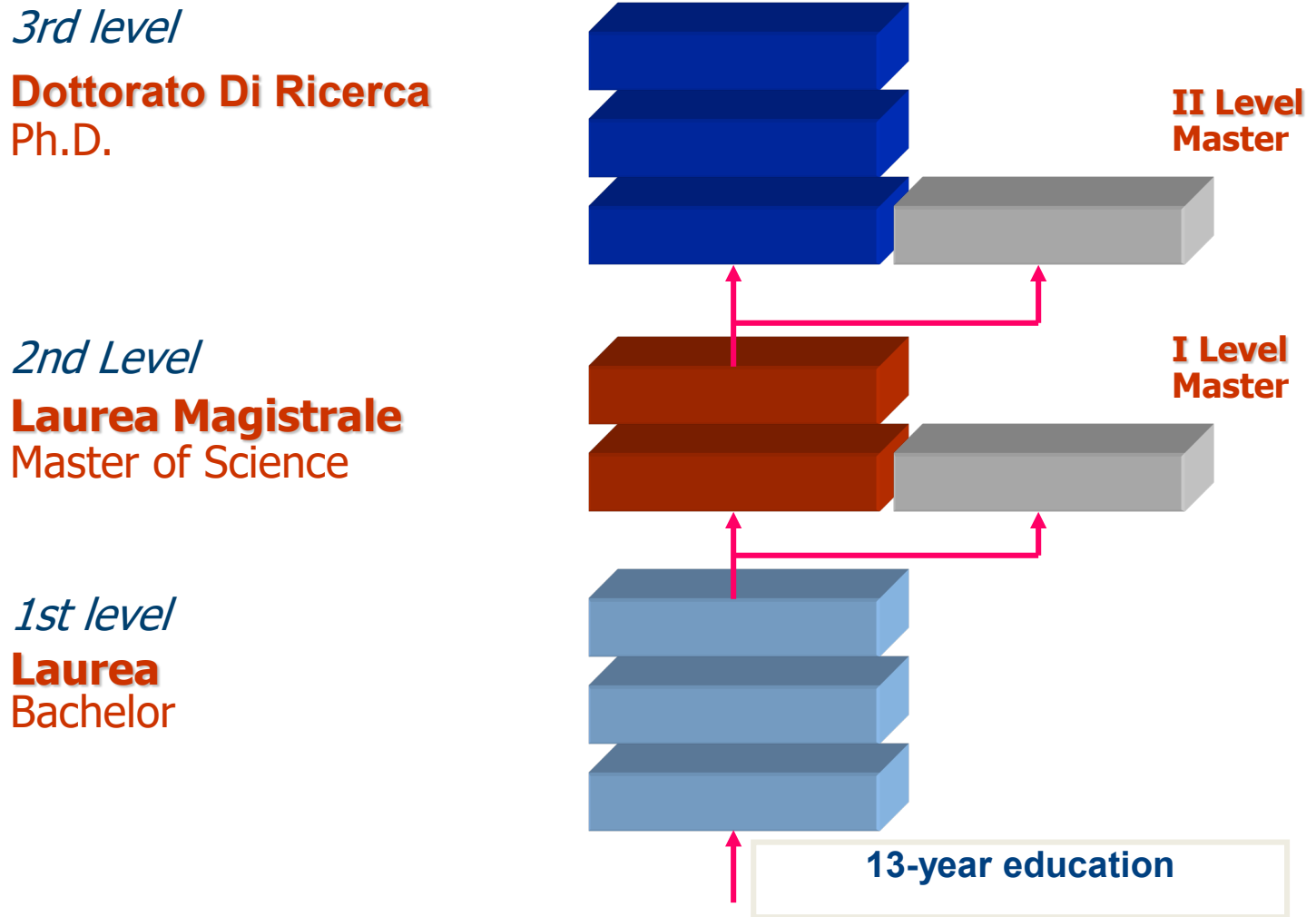
World

1

17

90

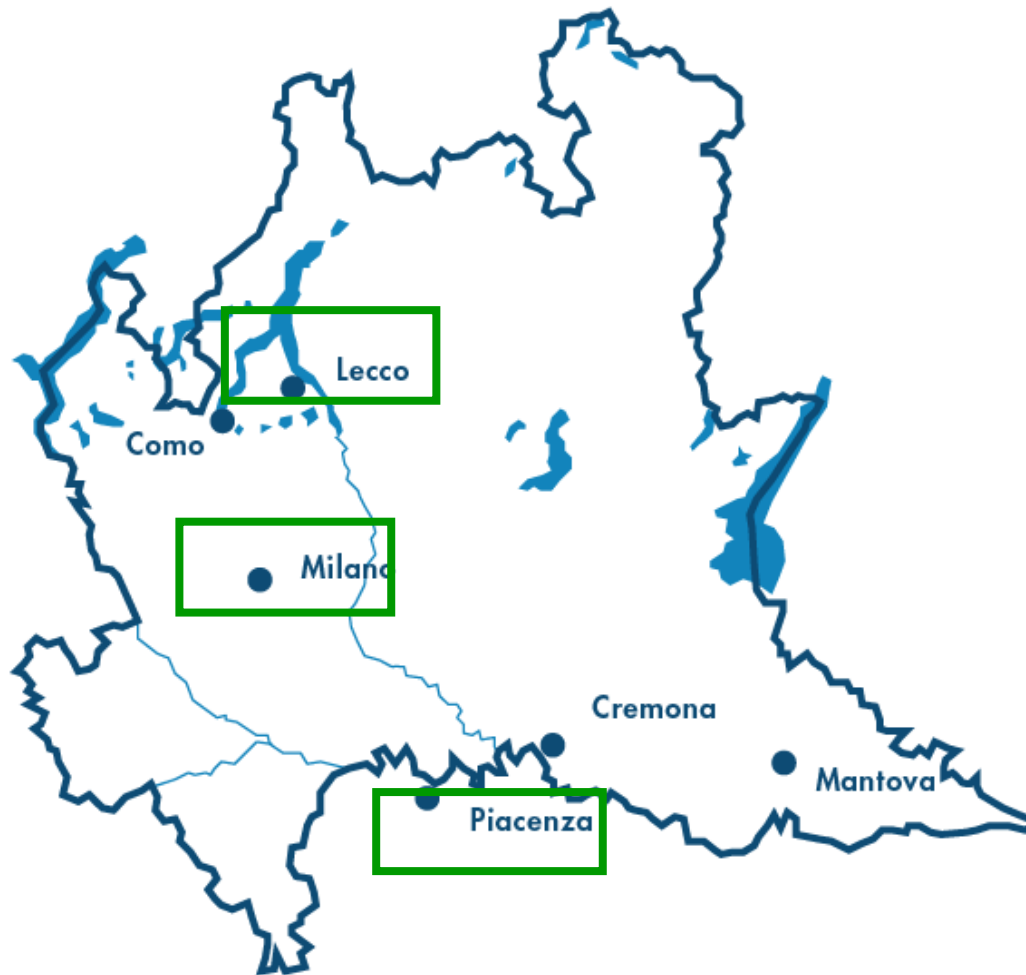
The Italian Education System



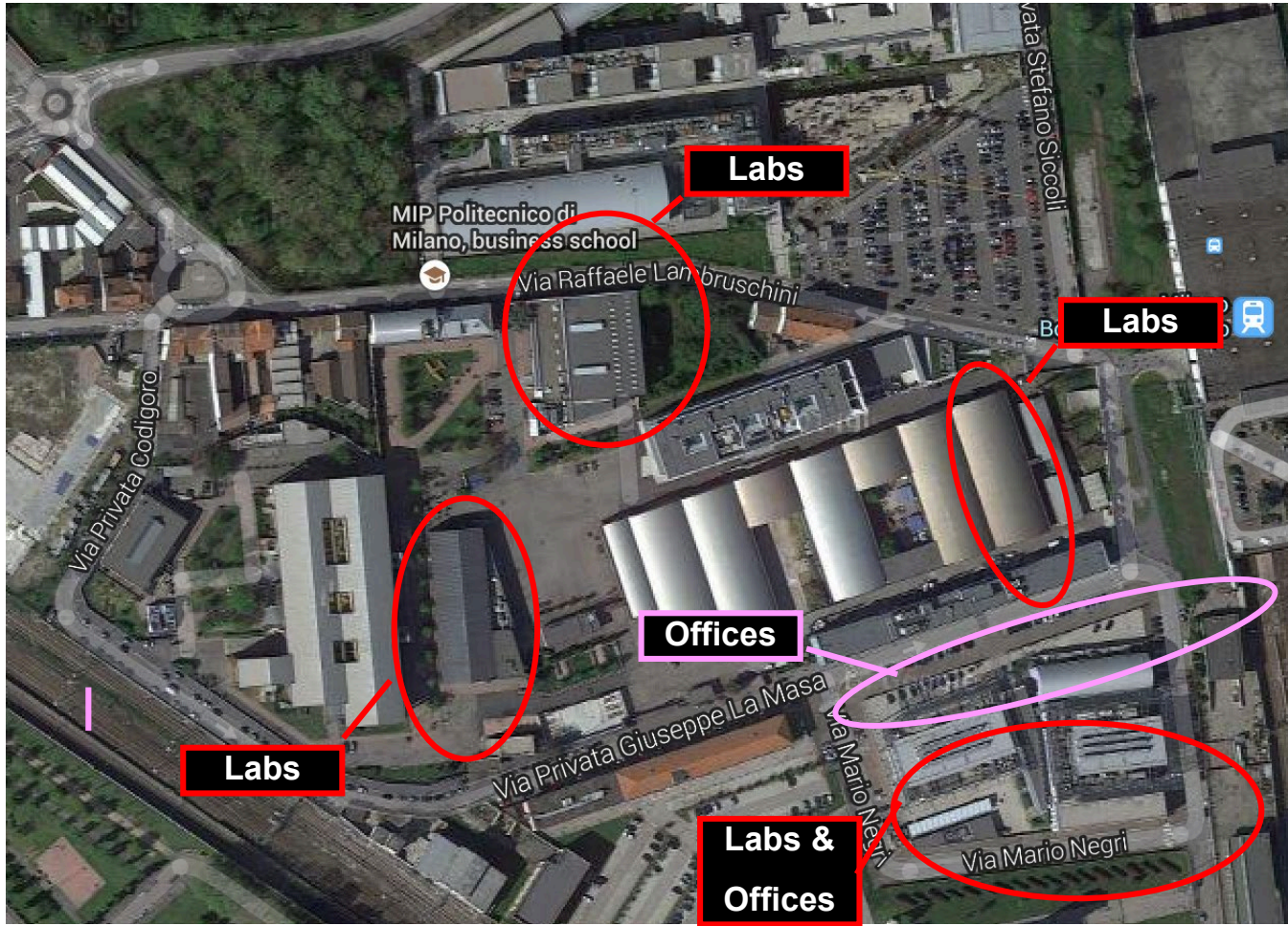
The Department of Mechanical Engineering



The Department sites



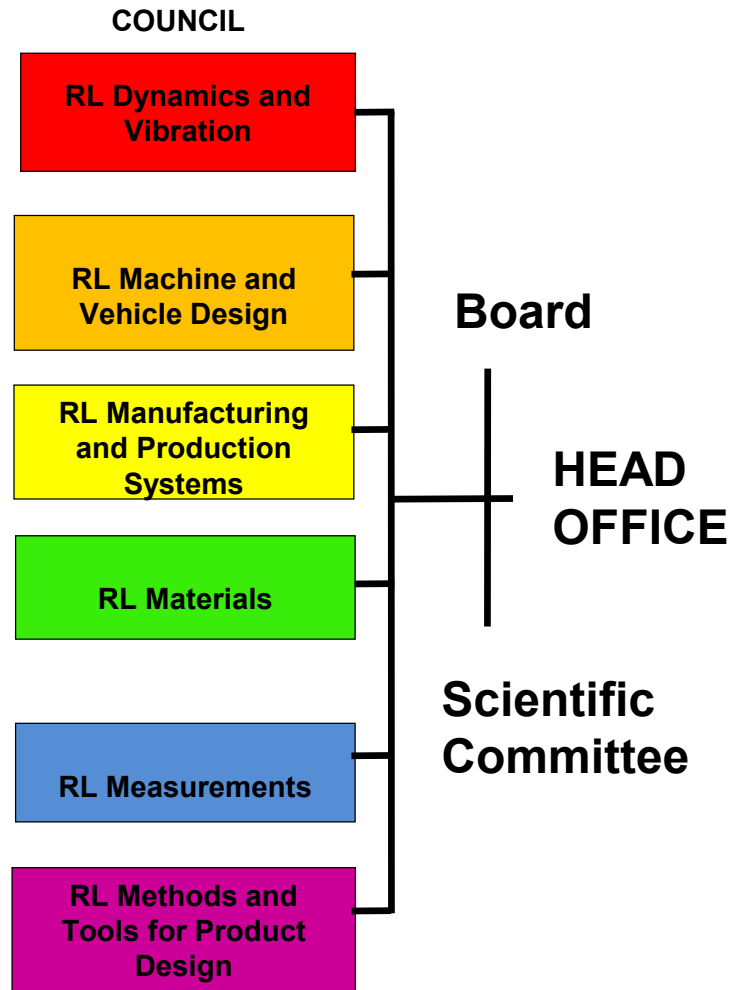
Department site: Milano-Bovisa Campus (since 1998)



Research Activities



Research organization

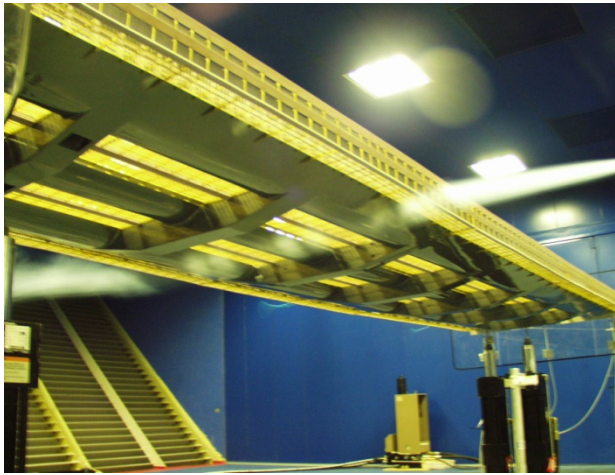


Structure and Research activities

Research activities are split into Research Lines and Research Groups

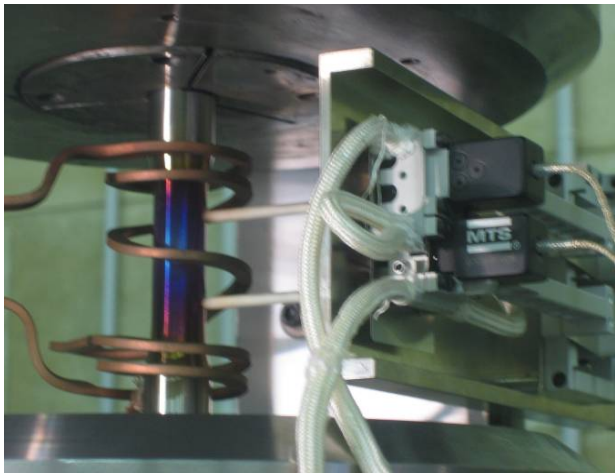
Research lines	Research Groups
Methods and Tools for Product Design	<ul style="list-style-type: none">- Virtual Prototyping and Product Design- Product Lifecycle Management
Machine and Vehicle Design	<ul style="list-style-type: none">- Advanced Design of Mechanical Components- Structural Integrity and Prognostics- Ground Vehicle Design and Testing
Dynamic and Vibrations of Mechanical Systems	<ul style="list-style-type: none">- Mechatronics and Smart Structures- Rail Vehicle Dynamics- Road Vehicle Dynamics- Rotor-dynamics- Wind Engineering
Measurements and experimental techniques	<ul style="list-style-type: none">- Mechanical and Thermal Measurements
Materials	<ul style="list-style-type: none">- Advanced Materials- Applied Metallurgy- Steel Making and metallurgical processes
Manufacturing and Production Systems	<ul style="list-style-type: none">- Manufacturing Processes- Manufacturing Systems and Quality

Research Lines



Dynamics and Vibration

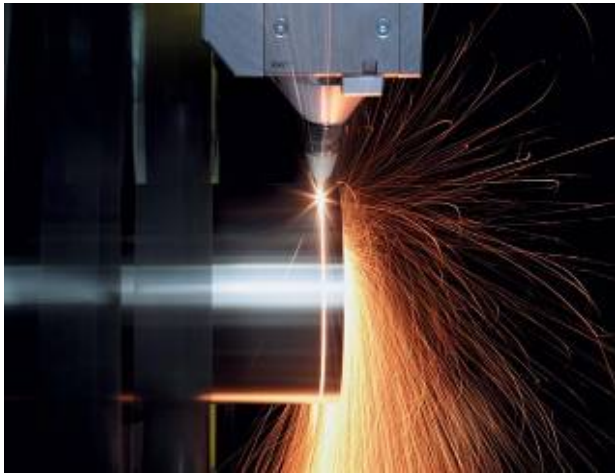
- Mechatronics and Smart Structures [M&SS]
- Rail Vehicle Dynamics [RWD]
- Road Vehicle Dynamics [RVD]
- Rotor dynamics [RTD]
- Wind Engineering [WND]



Machine and Vehicle Design

- Advanced Design of Mech. components [DMC]
- Structural Integrity and Prognostics [SIP]
- Ground Vehicle Design and Testing [VDT]

Research Lines



Manufacturing and Production Systems

- Manufacturing Processes [MPR]
- Manufacturing Systems and Quality [MSQ]

Materials

- Advanced Materials [AMT]
- Applied Metallurgy [HTS]
- Steelmaking and Metallurgical Processes [SMP]

Research Lines



Measurements and Experimental Techniques

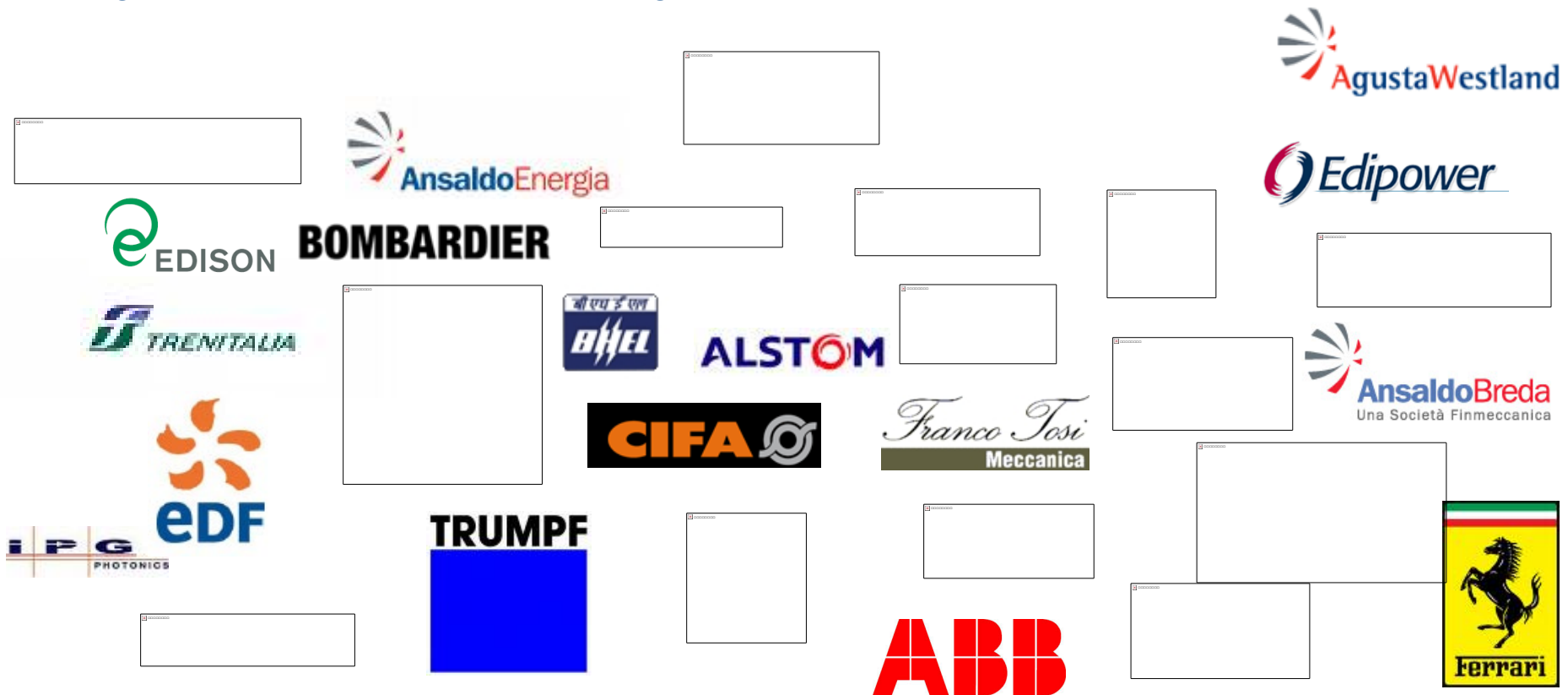
- Mechanical and Thermal Measurements [MTM]

Methods and Tools for Product Design

- Virtual Prototyping [VPR]
- Product Design [PDS]

Industrial Partnerships

A network of approx. 260 companies (mainly SMEs) hosts our students for their stage as part of their bachelor degree.



Consortia and Spin-Offs



ITALCERTIFER

Consortium

The European notified body for certification, homologation and research in the railway sector



MUSP

Consortium

Skilled in R&D on machine tools and production systems for the advanced manufacturing industry

Consortia and Spin-Offs



POLI.design

Consortium

Established with the aim of advancing professionalism, research and creativity



TiVeT

Spin-off (2005)

Its core business is the design and development of innovative active dampers

Consortia and Spin-Offs



Innovative Security Solutions

Spin-off (2006)

ISS has a broad expertise about various methodologies related to measurement for industry and in particular develops and markets high-technology solutions for: robot guidance for bin-picking and product and process quality control



MCM EnergyLab

Spin-off (2006)

MCM's line of business consists in the development, design and supply of digital control and static energy conversion systems that can be used as critical components in various applications for energy saving purposes.

Consortia and Spin-Offs

SmartMechanical - Company

SmartMechanical Company

Spin-off (2012)

SmartMechanical-Company has been created to exploit a number of patents originated within Politecnico di Milano mainly in the field of systems for measuring the inertia tensor of vehicle components or systems.

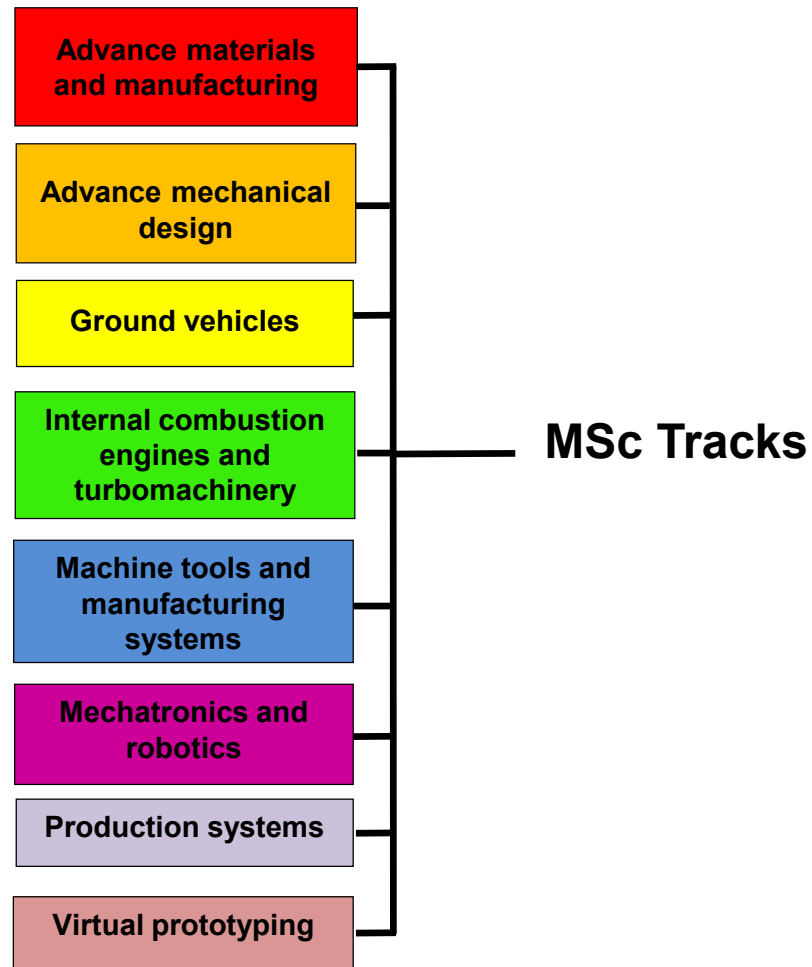


E-Co Srl

Spin-off (2012)

E-CO's core business consists in the development, design, prototyping, production and system integration of hybrid conversion kits to obtain vehicles with low or no environmental impact in order to allow a sustainable mobility and a quick growth of hybrid and electric market.

MSc Tracks in Mechanical Engineering






DOUBLE DEGREE PROGRAM

Master's schemes

POLIMI Master scheme

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8	Semester 9	Semester 10
Bachelor Year 1 POLIMI		Bachelor Year 2 POLIMI		Bachelor Year 3 POLIMI		Master Year 1 POLIMI		Master Year 2 POLIMI	


Master




SJTU Master scheme

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8	Semester 9	Semester 10	Semester 11	Semester 12	Semester 13
Bachelor Year 1 SJTU		Bachelor Year 2 SJTU		Bachelor Year 2 SJTU		Bachelor Year 4 SJTU		Master Year 1 SJTU		Master Year 2 SJTU		Master Year 3.1 SJTU

BACHELOR

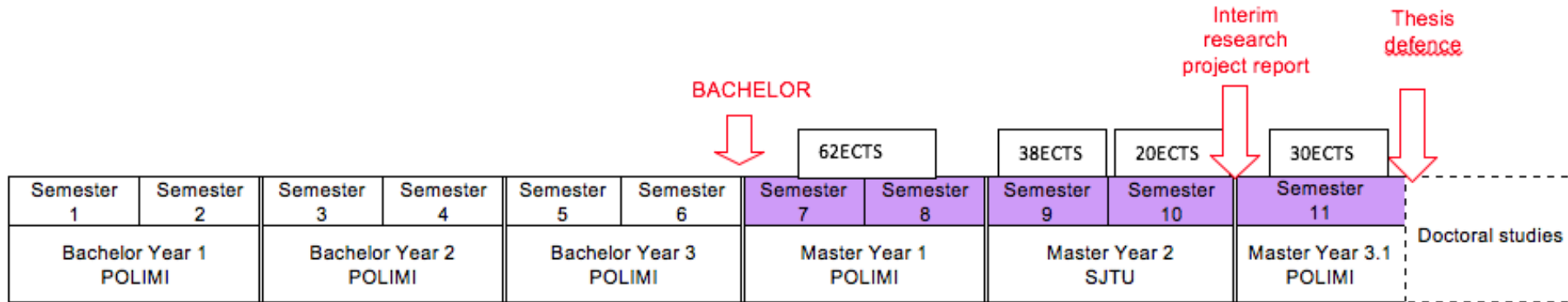


MASTER

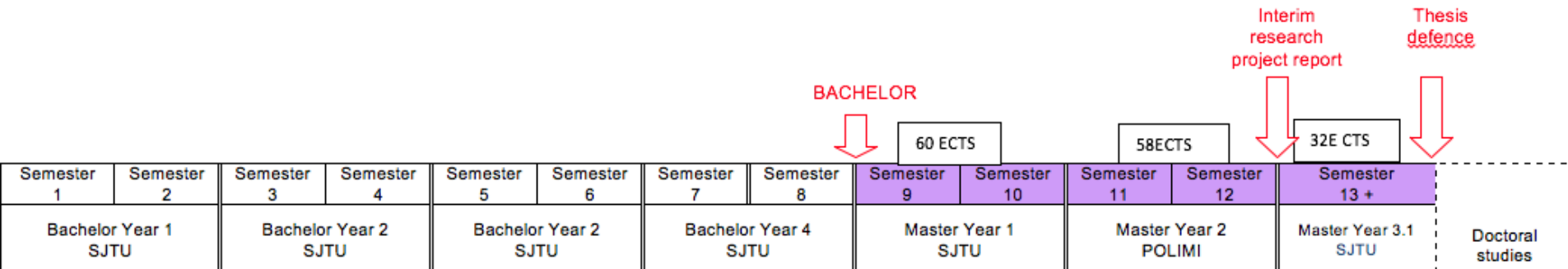


Master's schemes

Double degree scheme for POLIMI students



Double degree scheme for SJTU students



↑
MASTER
SJTU +
Polimi

POLIMI – SJTU double degree summary requirements

Location	Time	Courses	Credits SJTU	Credits ECTS
SJTU	Semester 1	10 courses	30	60
SJTU	Semester 2			
POLIMI	Semester 3 + Semester 4	4 courses		38
		<ul style="list-style-type: none"> • Research project co-supervised • Interim research project report 		20
SJTU	Semester 5	<ul style="list-style-type: none"> • Research project continued • Submission of thesis 50-100 pages in English + version in Chinese • Defense in English. Joint jury • Research paper for publication 		32
		Total		150

Language requirements at POLIMI for SJTU students

1. TOEFL (Test of English as a Foreign Language) score at least 78 (internet-based test).
2. IELTS (Academic version) Overall Band score of at least 6

Research project and Master thesis requirements

- Topic chosen on arrival in host university. Validation by both tutors.
- Joint supervision. Main supervisor in host university. Reporting by students to home university tutor + consultation between tutors
- Submission of interim report before end of semester 4
- Submission of thesis before end of semester 5
- Thesis defense at home university with videoconference link to partner university. 3-5 jury members including external jury member. Joint jury.
- Common grading scale

Study program for SJTU students – 1° and 2° semester of the study program

At SJTU

			Lectures and practices	SJTU Credits	ECTS Credits
Class	Code	Course title and contents	Hours		
Humanities and Social Sciences (Compulsory)	G090501	Dialectics	36	2.0	
	G090503	Scientific Socialism in Theory and practice	18	1.0	
LANGUAGES (Compulsory)	G140501	English	54	3.0	
Mathematics (Compulsory)	G071503		54	3.0	
Engineering		Students choose 7 courses (3 credits each) according to their major		21 (7 x 3.0)	
			Total	30	60

Study program for SJTU students – 3° and 4° semester of the study program

At POLIMI:

1. SJTU students choose a track (major) among 3 proposal. They must take total of 38 ECTS of courses
2. Research project + Interim research project report (equivalent to 20 ECTS)

Study program for SJTU students – 3° and 4° semester of the study program

Track MM1: Industrial Engineering

Code	Course title	Semester	ECTS Credits	ECTS Group
072461	INDUSTRIAL PLANT DESIGN	1	10.0	10.0
091082	CONTINUOUS IMPROVEMENT IN MANUFACTURING A	1	8.0	8.0
094714+TBD	ITALIAN AND EUROPEAN CULTURE + INTEGRATION(*)	1	6.0+4.0	10.0
085737	MANAGEMENT OF LARGE ENGINEERING PROJECTS	2	10.0	
085774	ASSET LIFECYCLE MANAGEMENT	2	10.0	
085738	SAFETY AND ENVIRONMENT	2	10.0	
079840	AUTOMATED PRODUCTION SYSTEM	2	10.0	
091078	PRECISION MANUFACTURING	2	10.0	10.0
091115	RECONFIGURABLE MANUFACTURING SYSTEMS - A	2	10.0	
TBD	RESEARCH PROJECT	1	20.0	20.0
TBD	RESEARCH PROJECT	2	20.0	

Study program for SJTU students – 3° and 4° semester of the study program

Track MM4: Motors and turbomachinery

Code	Course title	Semester	ETCS Credits	ETCS Group	
091128	INTERNAL COMBUSTION ENGINES LM A	1	10.0	10.0	
091129	TURBOMACHINES LM A	1	10.0	10.0	
091131	POWER PRODUCTION FROM RENEWABLE SOURCES B	1	6.0	6.0	
091130	COMBUSTION AND SAFETY B	2	6.0		
091132	ADVANCED ENERGY SYSTEMS B	2	6.0		
091133	MODELING TECHNIQUES FOR THE SIMULATION OF THERMAL MACHINES SYSTEMS	2	6.0		
091134	THERMAL FLUID DYNAMICS	2	6.0		
094714	ITALIAN AND EUROPEAN CULTURE	1	6.0	12	
091136	AUTOMATIC CONTROL SYSTEMS B	1	6.0		
093839	ENVIRONMENTAL AND INDUSTRIAL NOISE MANAGEMENT	1	6.0		
091221	MACHINE AND SYSTEM RELIABILITY	1	6.0		
091086	INDUSTRIAL PLANT DESIGN B	1	6.0		
091138	MATERIALS FOR ENERGY B	1	6.0		
091120	DESIGN METHODS	1	6.0		
091101	CONTINUOUS IMPROVEMENT IN MANUFACTURING B	1	6.0		
091140	ELECTRIC SYSTEMS FOR TRANSPORTATION	1	6.0		
091141	MECHATRONIC SYSTEMS WITH LABORATORY B	1	6.0		
091097	ADVANCED MEASUREMENT TECHNIQUES	1	6.0		
087711	ELECTRICAL DRIVES FOR TRANSPORTATION AND INDUSTRY	2	6.0		
091137	GROUND VEHICLE ENGINEERING B	2	6.0		
084843	METALS AND ALLOYS FOR ADVANCED APPLICATIONS	2	6.0		
091118	METHODS AND TOOLS FOR SYSTEMATIC INNOVATION B	2	6.0		
091093	FUNCTIONAL MECHANICAL DESIGN	2	6.0		
091139	MECHANICAL DESIGN FOR HIGH TEMPERATURE ENGINEERING APPLICATIONS	2	6.0		
TBD	RESEARCH PROJECT	1	20.0		20.0
TBD	RESEARCH PROJECT	2	20.0		

Study program for SJTU students – 3° and 4° semester of the study program

Track MM8: Vehicles

Code	Course title	Semester	ETCS Credits	ETCS Group
075849	GROUND VEHICLE ENGINEERING (A)	2	10.0	10.0
075850	VEHICLE DYNAMICS AND CONTROL A	1	10.0	10.0
091141	MECHATRONIC SYSTEMS WITH LABORATORY B	1	6.0	6.0
091221	MACHINE AND SYSTEM RELIABILITY	1	6.0	
091184	VEHICLE DESIGN (OPTIMAL DESIGN)	2	6.0	12
094714	ITALIAN AND EUROPEAN CULTURE	1	6.0	
091136	AUTOMATIC CONTROL SYSTEMS B	1	6.0	
091221	MACHINE AND SYSTEM RELIABILITY	1	6.0	
091099	VIBRATION AND NOISE CONTROL	1	6.0	
091086	INDUSTRIAL PLANT DESIGN B	1	6.0	
091120	DESIGN METHODS	1	6.0	
091187	INTERNAL COMBUSTION ENGINES LM C	1	6.0	
091140	ELECTRIC SYSTEMS FOR TRANSPORTATION	1	6.0	
093840	DESIGN METHODOLOGIES WITH ADVANCED MATERIALS	1	6.0	
093841	FINITE ELEMENTS FOR MECHANICAL SYSTEMS DESIGN	1	6.0	
091141	MECHATRONIC SYSTEMS WITH LABORATORY B	1	6.0	
091097	ADVANCED MEASUREMENT TECHNIQUES	1	6.0	
087711	ELECTRICAL DRIVES FOR TRANSPORTATION AND INDUSTRY	2	6.0	
091109	PATENTS AND INDUSTRIAL PROPERTY	2	6.0	
091100	WIND ENGINEERING	2	6.0	
084843	METALS AND ALLOYS FOR ADVANCED APPLICATIONS	2	6.0	
091184	VEHICLE DESIGN (OPTIMAL DESIGN)	2	6.0	
091093	FUNCTIONAL MECHANICAL DESIGN	2	6.0	
091186	PASSIVE SAFETY	2	6.0	
TBD	RESEARCH PROJECT	1	20.0	20.0
TBD	RESEARCH PROJECT	2	20.0	

Study program for SJTU students – 5^o semester of the study program

At SJTU:

Complete thesis in English and Chinese + thesis defense in English in front of a joint jury + publish 1 journal paper (32 ECTS)



**LIFE IN MILAN and
STUDENT PERSONAL EXPERIENCES**

Life in Milan



Life in Milan



POLIMI
SPORT

POLITECNICO DI MILANO

OMEGA
BORGIOVAN

LAPP II

90

KAOS

BREMA
GMP

BETA

DYNAMIS
POLIMI REPARTO CORSE

Life in Milan



Life in Milan



Life in Milan



Life in Milan



Life in Milan



Life in Milan



Life in Milan



Life in Milan



ALESSANDRO PERSONAL EXPERIENCE



Alex 亚历山大 

China



Scan the QR code to add me on WeChat

STEFANO PERSONAL EXPERIENCE



Stefano 



Scan the QR Code to add me on WeChat



QUESTION AND ANSWERS

QUESTION AND ANSWERS



Alex 亚历山大

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