

HISTORY OF THE DEPARTMENT

The University "Politecnico di Milano" was founded in 1863. Its mission is to teach technologies and educate students to become researchers. The University is continuously updating its tradition as a school that focuses on quality and innovation in teaching and research. Scientific research at Politecnico di Milano has always been oriented toward innovation and quality, always seeking a strong relationship with the industrial world through technology transfer. Attuning to the needs of the industrial sector helps research to continuously explore new areas and stay at the leading edge of science and technology.

The scientific community of Politecnico di Milano is made of more than 1,300 professors and research fellows, with 38,200 students (2013 update). According to QS World University Rankings 2012/2013, Politecnico di Milano ranked 28th worldwide in the area of Engineering and Technology. On a worldwide scale, it is the first Italian university entering the QS ranking among the top 30 technical universities. Furthermore, Politecnico di Milano participates in the coveted "club" of universities ranked in the top 100 in the world in the most prominent international rankings, along with only 15 other European universities.

Politecnico di Milano is currently articulated in 12 departments, where research is co-ordinated and carried out, and 6 schools, where education is co-ordinated and implemented. Several service Centres provide support for technical and administrative purposes.

DIPARTIMENTO DI SCIENZE E TECNOLOGIE AEROSPAZIALI

The Dipartimento di Scienze e Tecnologie Aerospaziali (Department of Aerospace Science and Technology, DAER-PoliMi) was established within Politecnico di Milano as an autonomous institute in the 1950s. The personnel of DAER-PoliMi currently consists of 43 faculty, 27 technical and administration staff, 70 research assistants and Ph.D. students. The main activity within the Department is scientific research.

The Department itself is the main reference body for the B.Sc. (Laurea) course in Aerospace Engineering, the M.Sc. (Laurea Magistrale) course in Aeronautical Engineering and Space Engineering, and the Ph.D. (Dottorato di Ricerca) course in Aerospace Engineering. M.Sc. and Ph.D. courses are offered in English. Each year, about 250 students complete the B.Sc., 180 the M.Sc., and 15 the Ph.D. In parallel, DAER-PoliMi staff is strongly involved in several research activities with academia, industries and research bodies worldwide.

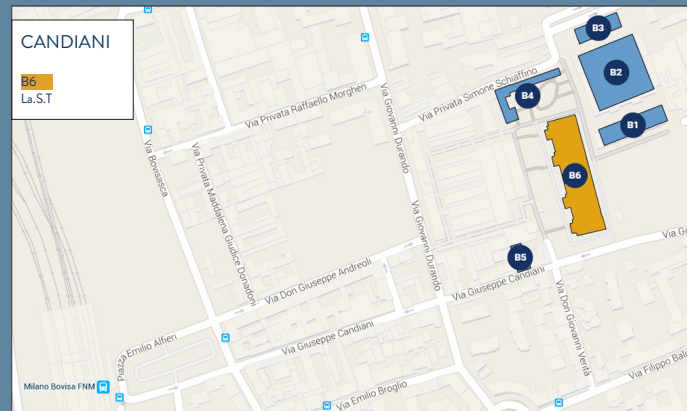
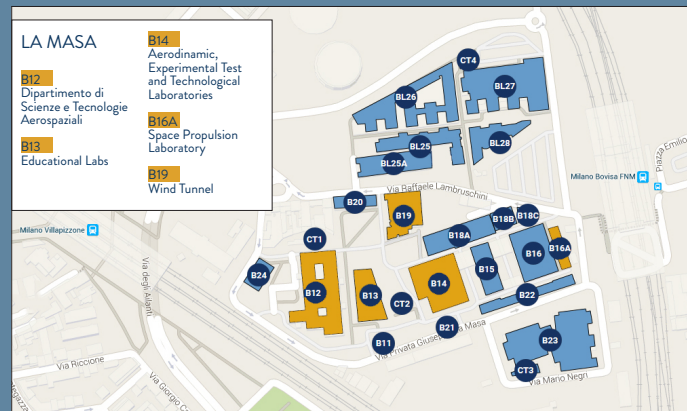
Politecnico di Milano
Aerospace Science and Technology Department
(DAER)

Campus Bovisa
Via La Masa, 34 - 20156 Milano - Italy
Edificio B12 "Enrico Forlanini" - 2nd floor

tel. +39.02.2399.8323-24
fax +39.02.2399.8334

<http://www.aero.polimi.it/>

DOVE SIAMO CAMPUS BOVISA - La Masa e Candiani



POLITECNICO
MILANO 1863

DIPARTIMENTO DI SCIENZE
E TECNOLOGIE AEROSPAZIALI

SCIENTIFIC LAB

FRAME-Lab - Fixed and
Rotary-wing Aircraft
Multidisciplinary Eng.



SCIENTIFIC LABS

DEPARTMENT OF AEROSPACE SCIENCE AND TECHNOLOGY (DAER)

Research activities within the Aerospace Science and Technology Department (DAER) of Politecnico di Milano are organized in scientific laboratories. These laboratories represent the core of the research competences developed at DAER over the years. They are highly specialized, agile and vital competence centers.

SCIENTIFIC LABS

The Department has formed 14 research laboratories, which contribute to the majority of research activities.

- AMATECH - Aerospace MATERIALS and TECHNOLOGIES
- ASCL - Aerospace Systems and Control Lab
- ASDL - AeroSTRUCTURES Design Lab
- AVLab - Aeroelasticity and Vibroacoustics Lab
- CrashLab
- FlowCon - Instability and Flow Control Lab
- FMSlab - Flight Mechanics & Flight Systems Lab
- FRAME - Fixed and Rotary-wing Aircraft Multidisciplinary Eng.
- PFDLab - Physical Fluid Dynamics Lab
- POLI-Wind - Wind Energy Lab
- RAL - Rotorcraft Aerodynamics Lab
- SIAMS - Structural Integrity of Advanced Materials and Structures
- SME - Space Missions Engineering
- SPLab - Space Propulsion Laboratory and Nanoenergetics

FRAME-LAB

FIXED AND ROTARY-WING AIRCRAFT MULTIDISCIPLINARY ENG.

The objective of FRAME-Lab is the analysis of aircraft as complex dynamical systems, considering aeromechanics, aerodynamics, aeroelasticity, servo-systems, control, and human-machine interaction, to support the integrated multidisciplinary design.



CONTACT PERSON

Prof. Giuseppe Quaranta

PHONE NUMBER

+39 02 2399 8405

MAIL ADDRESS

giuseppe.quaranta@polimi.it

WEB SITE

<http://www.aero.polimi.it/en/research/research-laboratories/>

ONGOING ACTIVITIES

- Rotorcraft aeromechanics, including complex interactional phenomena like rotorcraft-pilot couplings, or aero-servo-elastic stability.
- Design methods for the investigation of innovative rotorcraft configurations, including innovative tiltrotor design or cyclocopters.
- Rotorcraft safety within the European Joint Doctorate project NITROS.
- Development of novel gurney flap configuration to improve rotorcraft performances.
- Development of active and passive systems for the reduction of vibration.
- Novel investigation methods for the stability analysis of dynamic systems lead to the development of a new framework based on the robust control theory.
- Investigation of chiral structural topologies for the realization of morphing aerodynamic surface for fixed and rotary wing aircraft.
- In-flight icing prediction and control are currently being carried out in collaboration.

FUTURE PLANS

Future plans will be concentrated on the development of genuinely multidisciplinary methodologies for the conceptual design of rotorcraft system. The aim is to introduce in the conceptual design phase more sophisticated models and aspects usually neglected at this stage, such as aeroelasticity, pilot modeling and flight control systems, that may have a significant role in performances, stability and handling qualities of the final vehicle.

ERC KEYWORDS

PE7_9 Man-machine-interfaces

PE7_4 Systems engineering, sensorics, actorics, automation

PE7_1 Control Engineering

PE8_1 Aerospace Engineering

FREE KEYWORDS

- Rotary-wing aircraft
- Multidisciplinary analysis

