

Flight safety and airworthiness – a masters programme (FSAMP)

An Overview of the Doctoral Course in Aeronautical and Space Engineering

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SAPIENZA
UNIVERSITÀ DI ROMA

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Ph.D. Program in Aeronautical and Space Engineering

An outline

- ★ The PhD in Aeronautical and Space Engineering represents the highest level of university education in the aerospace sector provided by the University of Rome La Sapienza.
- ★ The doctoral course aims at training the skills necessary to carry out highly qualified aerospace research.
- ★ The training course of the doctoral course provides for the carrying out of an original research work to be completed over a period of 3 years.
- ★ This path provides for an initial phase of completion of the candidate's technical-scientific preparation, then carrying out the research activity under the guidance of one of the professors of the doctoral course



Ph.D. Program in Aeronautical and Space Engineering

Objective of the course

The objective of the course is to train research doctors able to successfully integrate themselves in the field of research and development of innovative solutions typical of sectors such as aeronautics and space, which have always required frontier technology, with specialization in the fields of:

- Aerospace Computational Engineering
- Air-Breathing and Rocket Propulsion
- Aircraft Systems Engineering
- Air and Space Transportation Systems
- Guidance, Navigation and Control in Air and Space Transportation Systems
- Humans in Aerospace
- Materials and Structures
- Spacecraft Propulsion
- Space Systems
- Space exploration



Ph.D. Program in Aeronautical and Space Engineering

A sample of typical thematic

A)-Aeronautical Engineering

Flight mechanics (advanced aviation, study of failures, autonomous flight/navigation, next-generation helicopters, vertical take-off/landing aircraft)

Propulsion and Aerodynamics (low environmental impact propellers, helicopters, turbulence)

Construction, structures and materials (innovative aircraft configurations, newly developed materials, fluid structure interaction, composite structures, smart structures)

B)-Space engineering

Space Exploration (Robotic Missions, Space Vehicle Return Technologies, Space Geodesy Missions)

Satellite systems (Development of satellite platforms - small satellites, remote sensing and data transmission technologies and innovative satellite platforms, new space system architectures, spatial debris)

Launchers: (advanced propulsion systems; new advanced aircraft)



International Partnerships

Universities, Agencies, Research Centres

Carleton University (Canada)

CIRA (Italy)

CNR-INSEAN (Italy)

Clean Combustion Research Center At Kaust (Saudi Arabia)

Combustion Research Facility At Sandia National Laboratory (Livermore , Usa)

DLR (Germany)

European Space Agency (Esa-Estec, Holland)

Georgia Institute Of Technology (Atlanta, Usa)

Institut National Des Sciences Appliquées Centre Val De Loire, France

Italian Space Agency (Asi)

Los Alamos National Laboratory (Usa)

Nasa Langley (Usa)

Onera (Francia)

Princeton University (Usa)

Purdue University, Usa

Technion, Israel Institute Of Technology, (Israel)

University Of Illinois (Usa)

University Of Notre Dame (Usa)

Von Karman Institute For Fluid Dynamics (Belgium)



Ph.D. Program in Aeronautical and Space Engineering

Main Facts

- ★ The duration of the program is strictly 3 years, with a possible extension of 6 months
- ★ On a yearly basis, Sapienza opens a competitive call for new PhD students
- ★ Each year we enrol an average number of 10 PhD students
- ★ Each PhD student can choose a tutor among 25 university professors that form the scientific board of the program
- ★ To become a member of the scientific board of the program, a professor willing to join the board is required to comply with a prescribed standard of scientific performance
- ★ Each year, Sapienza allocates to this PhD program 3-4 fellowships to cover the program fee and to provide some minimal compensation to the 3-4 PhD students who ranked first in the competitive call
- ★ The students can attend the program either with a non Sapienza fellow ship or on their own financial capacity
- ★ Sapienza also provides 1-2 fellowships for non italian students per year



Activities during the 3 Year Program

- Year 1
 - PhD students are required to participate in the training activities provided by the College and those agreed with the tutor. These activities can also be carried out within the framework of the courses offered by the Master's Degrees of Sapienza.
 - At the beginning of the first year, each student must define a study plan consistent with the themes of their research, indicating the list of courses they wish to attend, including a summary programme of each selected course.
 - In addition to the training activities, seminars / readings of teachers of the doctoral course are also planned.
 - Doctoral candidates of the first year will be invited to attend national and international conferences and congresses for which a partial coverage of expenses is foreseen.
- Year 2 & 3
 - The training activities for the second and third year are agreed between the doctoral student, the Tutor and the College of Teachers in a manner calibrated to the needs of each doctoral student's research project.
 - The participation in the seminars held or periodically organized by the teachers of the College is foreseen.



Additional courses attended during the PhD Program

Each student defines his/her plan of higher education

- ★ Numerical Aerodynamics
- ★ Combustion
- ★ Computational Gasdynamics
- ★ Vision Computers
- ★ Math Physics
- ★ Learning Machines
- ★ Space Missions And Systems
- ★ Multibody Space Structures
- ★ Nonlinear Systems And Control
- ★ Non-Linear Waves And Solitones
- ★ Radio Propagation
- ★ Robotics
- ★ Smart Composite Structure
- ★ Space Missions And Systems
- ★ Dynamics Of Systems
- ★ Theory Of Interplanetary Trajectory



Types of Degrees

- ★ Phd doctorate degree: issued by Sapienza with an Italian evaluation board
- ★ Joint Doctorate Degree: issued by Sapienza and a partner institution
- ★ Doctor Europeous Degree: issued by Sapienza with a European evaluation board



Placement

PhDs in aeronautics and space technology find their professional position in companies in research programmes, universities and national and international research centres. In particular, in the following professional figures:


- ★ Qualified technicians with specific skills
- ★ Scientific researchers at research centres and laboratories
- ★ Technical managers in industry
- ★ Executives in national and international administrative bodies
- ★ Researchers and lecturers at universities.



Ph.D. Program in Aeronautical and Space Engineering

The web site page: <https://web.uniroma1.it/aerophd/>

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WELCOME TO OUR PHD PROGRAM



EVALUATION OF DOCUMENTATION FOR ADMISSION TO YEAR XXXIII
The evaluation of documentation presented for admission to the year XXXIII of PhD course in Aeroanautical and Space Engineering has been completed. Results are published [here](#)

AMELIA EARHART FELLOWSHIP AWAR



PhD student Melissa Arras has won one of the Amelia Earhart Fellowships awarded in 2015 to women pursuing their PhD in the aerospace field

2015 STATE OF INNOVATION

Institution	Citations
University of Michigan System	U.S.
University of Michigan	U.S.
Sapienza University	Italy
University of Texas Austin	U.S.
U.S. Department of Energy	U.S.

Scientific literature citations tell us that Sapienza is the most impactful aerospace research institution in Europe and the third one in the world.

CONTACTS

- ▶ Coordinator
- ▶ Administrative Office

LINKS

- ▶ Sapienza University of Rome
- ▶ Department of Mechanical and Aerospace Engineering

AEROSPACE COURSES

- ▶ Aeronautical and Space Engineering Bachelor and Master Courses
- ▶ Second level master course in Satellites Systems and Services
- ▶ Second level master course in Space Transportation Systems

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