

Aerospace engineering courses at Sapienza

The long tradition of Sapienza University in the field of aerospace education dates back to the establishment in 1926 of the School of Aeronautical Engineering, which offered postgraduate training to a limited number of engineers. The rapid expansion of the aerospace industry, and of activity in the sector, soon made it necessary to provide a more comprehensive form of training in aeronautics, aimed at a wider range of users; this led in 1980 to the establishment of a 5-year degree course in Aeronautical Engineering, within the Faculty of Engineering.

In 1990, teaching in the space sector was introduced alongside aeronautics, and the degree course was given the new name of Degree in Aerospace Engineering.

Today, the teaching offer consists of a three-year combined aeronautics and space engineering course (**Degree in Aerospace Engineering**) and two separate Graduate Degrees: one in **Aeronautical Engineering** and the other in **Space and Astronautical Engineering**.

Typically, the teaching offer at Sapienza is based on **interdisciplinarity** that reflects technological developments in aerospace over recent decades, as well as the particular characteristics of the industry, where multidisciplinary skills are increasingly seen as adding value.

Internationalisation is another special feature of our courses, which offer study pathways at the most important European schools of Aerospace Engineering, via the ERASMUS transfer programmes and the PEGASUS network.

Within the Degree Courses, our students take part in **international activities** such as the Design/Build/Fly (DBF) competition that takes place every year in the U.S., where the world's most important aeronautical schools are represented and where Sapienza has regularly obtained prestigious results.

Similarly, in the space field our students have taken part in the European Student Moon Orbiter (ESMO) project promoted by the European Space Agency.

The main **career prospects** for Aerospace Engineering graduates are in the aeronautical and space industries, air transport service companies, national and international research agencies, space agencies, and universities.

Additionally, thanks to the general character of the training given, other career prospects exist in the engineering-related sectors. The job locations may be regional, national or, increasingly, anywhere in Europe.

Further information about the teaching offer, how to enrol on the courses, and social opportunities for students, is available online at www.ingaero.uniroma1.it, along with other

information about the research topics on which the tutors are engaged.

Within the Degree Thesis, the Masters, and the PhD courses, the students can take part in international research programmes. These have achieved highly significant outcomes, for instance by contributing to the structural and propulsor design of the VEGA European rocket, or participating in the Mars Express, which proved the existence of water on Mars, and the Cassini-Huygens missions, which discovered an ocean below the surface of Titan



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Area Council for Aerospace Engineering

1450 students

130 graduates/year [Degree]

100 graduates/year [Graduate Degrees]

60 specific courses in this sector

40 tutors in the aerospace sectors

Degree Courses

- Three-year course in Aerospace Engineering
- Graduate Degree in Aeronautical Engineering
- Graduate Degree in Space and Astronautical Engineering

Level 2 Masters

- Satellites and orbiting platforms
- Space transport systems
- Civil aviation management

Research PhD

- Aerospace technology



SAPIENZA
UNIVERSITÀ DI ROMA

Degree Course in Aerospace Engineering

2014-2015



The three-year course in Aerospace Engineering gives the graduate a solid basic preparation in mathematics and physics, and knowledge of the fundamental aspects of the typical disciplines of aeronautical and space engineering.

The experimental and numerical workshop modules provide the student with the practical tools that enable them to successfully enter the world of work.

The level of skills attained on completion of the study pathway enables graduates to enter and operate in the world of work.

At the same time the three-year Degree Course has the essential function of preparing the student to enter the Graduate Degree Courses in Aeronautical Engineering and Aerospace and Astronautical Engineering.

SPECIFIC OBJECTIVES

- High quality standard of graduates
- Extensive basic education
- Training in the traditional aerospace sectors and information engineering.

YEAR 1

SUBJECT	CFU Credits	SEMESTER
Calculus I	9	I
Calculus lab.	3	I
Geometry	9	I
Calculus II	9	II
Chemical principles	9	II
Physics I	9	II

DIDACTIC STRUCTURE

- Duration: 3 years (180 credits)
- The degree in Aerospace Engineering gives access to all the aerospace Graduate Degree courses.

The following key skills and abilities are developed during the study pathway:

Year 1: general subjects (mathematical analysis, geometry, physics, chemistry, and economics);

Year 2: basic learning in the engineering subjects (mathematical physics, science of construction, materials, electrical engineering)

Year 3: typical sectors of aerospace engineering (aerodynamics, mechanics of flight, aerospace construction, aerospace propulsion).

ADMISSION REQUIREMENTS

Admission to the Degree Course requires an upper secondary school diploma, or its recognised equivalent if the applicant is from outside Italy.

Other requirements: ability to think logically, an adequate background in mathematics, and good knowledge of the Italian

YEAR 2

SUBJECT	CFU Credits	SEMESTER
Physics II	9	I
Technical physics	6	I
Materials science and technology	6	I
Analytical mechanics	9	I
Aerodynamics	9	II
Electrotechnics	6	II
Applied mechanics and technical drawing	9	II
Mechanics of solids and structures	6	II

CAREER PROSPECTS

The career prospects for the aerospace engineer derive from the skills acquired and include working in firms, agencies, and institutions involved in various ways with the manufacture and operation of aircraft and space missions.

This includes, by way of example, the following career prospects:

- aircraft maintenance
- airport facilities management
- commercial design software operator in the aerospace industry
- technical support within service companies and public bodies involved in aviation and the space sector.

YEAR 3

SUBJECT	CFU Credits	SEMESTER
Aerospace structure analysis	9	I
Programming and numerical methods	9	I
Telecommunications for aerospace	6	I
Aerospace propulsion	9	I
Flight mechanics	9	II
6 CFU credits chosen from :		
Space environment	6	II
Aircraft systems	6	II
Space exploration systems	6	II
Space systems	6	II
Aerospace structures technology	6	II
Workshops (student choice)	3	II
Courses (student choice)	12	