

## **Master of Science in Aerospace Engineering**

### **AIMS**

The program has been established and is specifically intended to train specialized professionals able to effectively carry out the design and management of complex space systems, as well as to prepare students for further studies in the space engineering field. These objectives are pursued by providing a thorough education in the foundations of the space engineering sciences, with emphasis on research and the experimental methods.

### **COURSE DESCRIPTION AND CAREER PROSPECT**

Research and course work in space engineering at the University of Pisa cover a very broad range of subjects. In working for their degree, space engineering students may pursue a major study in one of the following areas: space systems, space propulsion, space structures, aerothermodynamics, space flight dynamics and control. The choice of one of these fields allows students to focus their activities, while taking advantage of the flexibility offered by the breadth of interests of the space group at DIA.

The MSSE program opens the way to further academic work as well as to professional activities in aerospace industry, in public and private research institutions in the aerospace field, in the Air Force, and in industrial companies for the production of machinery and equipment where the application of space-derived technologies is especially relevant. Finally, as a consequence of the multidisciplinary nature of the educational program, the space engineering graduates will also easily find employment in the mechanical industry, with specific reference to structural and fluid mechanic design work.

### **COURSE CONTACTS**

Dipartimento di Ingegneria Aerospaziale

Via Girolamo Caruso, 8

56122 Pisa, Italy

Tel. +39 050 2217 211

Fax +39 050 2217 244

Contact person:

Ms. Sara Andrenucci

s.andrenucci@ing.unipi.it

WEB SITE: [http://www.spaceatdia.org/index.php?page=MSSE-program#aca\\_supp](http://www.spaceatdia.org/index.php?page=MSSE-program#aca_supp)

## **ENTRY REQUIREMENTS**

### *Selection*

Entering students should have a sound background in undergraduate mathematics, physics, and engineering science. The theoretical and scientific aspects of space engineering are treated in detail, with the aim of developing the capabilities necessary for the effective design and management of space vehicles and systems. The combination of knowledge and skills characterizing the graduate program in space engineering are:

- a thorough knowledge of the theoretical and scientific aspects of the physical and mathematical disciplines and of the other fundamental sciences, together with the capability to use this knowledge to understand complex problems, or problems requiring an interdisciplinary approach;
- a thorough knowledge of the theoretical and scientific aspects of engineering in general, and in more detail, space and aeronautical engineering;
- the capability to conceive, plan, design and manage complex and/or innovative systems, processes and services;
- the capability of designing and managing complex experiments.

## **STUDY PLAN**

**For the 2012/13 academic year the plan of study suggested by the University for the Space Engineering option is the following:**

### **Year 1**

Aerospace Structures	1st & 2nd semester	12 CFU
Aerospace Control Systems	1st & 2nd semester	12 CFU
Spaceflight Mechanics I	1st semester	6 CFU
Spaceflight Mechanics II	2nd semester	6 CFU
Electric Propulsion I	1st semester	6 CFU
Electric Propulsion II	2nd semester	6 CFU
Satellite Instrumentation	1st semester	6 CFU
Thermal Fluid Science	2nd semester	6 CFU

## **Year 2**

Machine Design	1st & 2nd semester	12 CFU
Rocket Propulsion I	1st semester	6 CFU
Rocket Propulsion II	2nd semester	6 CFU
Space Systems I	1st semester	6 CFU
Space Systems II	2nd semester	6 CFU
Final Project	1st & 2nd semester	24 CFU

## **TERM PROGRAM**

The academic calendar defines the periods of lectures, examinations and vacations for all of the Engineering courses offered at the University of Pisa. All Engineering courses are taught over two semesters separated by a period reserved for the examinations. Yearly courses are also held in two segments, with intermediate exams, if any, held during the recess period between lectures. The first semester develops from September to February and the second from February to July.

Lecture Periods:

1st period: October 1 – mid December

2nd period: March 1 – end of May with one week vacation for Easter

Examinations:

3 sessions in January and February (three weeks between sessions)

3 sessions in June and July (three weeks between sessions)

2 sessions in September (three weeks between sessions)