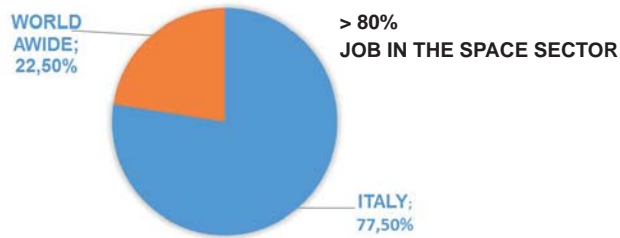
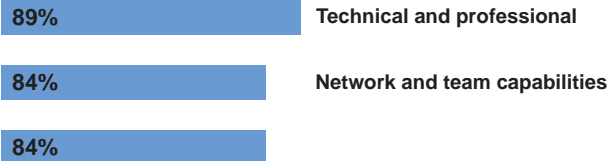


CAREER OPPORTUNITIES

91,9% EMPLOYED WITHIN ONE YEAR *



IMPROVEMENTS:



* survey based on data collected between 2012-2016



SPONSORED BY

Companies

Arescosmo
Airbus
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SUPPORTED BY

Space agencies

ASI
CNES
DLR
ESA



Partner Universities

CNAM Paris
EPFL Lausanne
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TU-Catalonia Barcellona Tech
Paris Tech
Stuttgart University
TU Munich

Research centres

CIRA
VON KARMAN INSTITUTE



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SAPIENZA
UNIVERSITÀ DI ROMA

Master for graduate students

Space Transportation Systems:
Launchers and Re-entry Vehicles

2017 - 2018



DESCRIPTION

The European Professional Master Course in Space Transportation Systems (STS) has been conceived and structured as a service to help the best graduates in finding a job with companies, agencies and authorities related to the aerospace field.

After the course, 80% of the participants find an employment in the aerospace or aerospace-related field.

Indeed, the sponsor industries are inclined to offer a regular employment contract after the internship period.

The Master Course STS offers an educational path that aims at creating highly qualified system engineers in Space Transportation/Analysis and Design of space vehicles and launchers, who are suitable for working with management, as well as R&D roles. Many of the space engineers that participated to the project of the Vega launcher have been trained by the Master STS course.



MODULES

- Module 1 Introduction
- Module 2 Overview of Launcher Systems
- Module 3 Space Program Management & Quality Certification
- Module 4 Mission Analysis
- Module 5 Combustion Modeling
- Module 6 LRE Thrust Chamber
- Module 7 Pump-fed Systems
- Module 8 Rocket Nozzles
- Module 9 Aero-thermo-dynamics of launchers and re-entry vehicles
- Module 10 Solid Rocket Motors
- Module 11 Space Launcher Structures
- Module 12 Launcher Design
- Module 13 Launcher Ground Segment
- Module 14 Launcher System Management

LECTURES

First phase: from December 11 to 21 (10 days)

Second phase: from January 8 to 26 (3 weeks)

Third phase: from January 29 to April 13 (13 weeks)

INTERNATIONALIZATION

The course has a strong international vocation, thanks to the composition of its faculty members, to the research centers that host the training activities and to the presence of students from many European universities. This provides a unique opportunity to study / work in an international environment.

The international activities are entrusted to the Strategic Committee of the Master STS, that includes some of the biggest industry leaders, top executives from agencies and international space companies.

Every year such members, in addition to delivering keynote lectures, are also responsible for assessing the student performance and perfecting the quality of training for the next edition.

From the current year, the activities of the Master STS will benefit from the participation of Prof. Jean-Jacques Dordain, ESA's former DG, now a Honorary Professor at the Sapienza University of Rome.

COURSEWORK

- Launcher course design
- Solid Rocket Motor/Liquid Rocket Engines
- Design of propulsion system by EcosimPro
- FEM application to space structures
- Principles of space Launch Base design
- Numerical Methods for High Speed Flows
- Programming in Fortran
- Programming in MatLab



ADMISSION AND COSTS

A maximum of **20 positions** are available for this Academic Year. Admission are conceived on a competitive selection basis (Curriculum Vitae and Interview) and performed at the students' home universities.

Participation is limited to graduate in a Master degree in Aerospace Engineering or other Engineering fields.

All candidates should demonstrate a sound knowledge of fundamental notions in Thermo-fluid-dynamics and Gas-dynamics, Aerospace Propulsion, Aerospace Structures, Aerospace Flight Mechanics.

The participation fee to the Master is **4.500,00**. Nevertheless, the students selected by the Sponsor Industries will be awarded with a scholarship covering the full cost.



PROGRAMME

The II^o Level University Master's degree in "Space Transportation Systems" (STS) has a duration of 12 months, and consists 60 ECTS credits.

Master activities are delivered in English for a total amount of 1,500 hours (compulsory attendance), scheduled as follows:

- **Theoretical education. Frontal lectures and experimental activities**, conceived as seminars. Work projects, exercises, middle-term tests (500 hours – first 5 months);

- **Intensive programme.** Training at the most renowned Research Centers in Europe: DLR– Lampoldshausen; CNES; ESA - REDU; VKI – Bruxelles; TU Catalonia - Barcellona, CIRA (200 hours – 1 month). Thanks to the contributions of ESA and Arianespace, it was possible, during the past master courses editions, to visit the Space base in Kourou (French Guyana);

- **Paid internship at aerospace companies**, Italian research centers and aerospace industries, with the possibility of practically implementing the knowledge and skills acquired during the first 6 months of the course. During this phase, the trainee will produce a Master's thesis, which will be evaluated as a final exam. (800 hours – 6 months).