



# EUROPEAN PROFESSIONAL MASTER FOR GRADUATE STUDENTS IN SPACE TRANSPORTATION SYSTEMS: LAUNCHERS AND RE-ENTRY VEHICLES

**APPLICATION DEADLINE: 17 JANUARY 2022**

## DESCRIPTION

The European Professional Master in “Space Transportation Systems” (STS) has been conceived and structured as a service to help the best graduates in finding a job within companies or agencies operating in the field of space launchers and re-entry vehicles. The educational path aims at developing highly qualified system engineer experts in Design and Analysis, as well as management and R&D activity. The program includes training periods at Sapienza and in EU Research Centers and 6-month stages offered by the Partner Industries. After the course, 90% of the participants find an employment in the aerospace or aerospace-related field. Partner Industries are indeed inclined to offer a regular employment contract after the internship period. One of the Master’s most effective results has been the support provided to the project of the Vega launcher, with several former students who later became principal actors in the project.

## TRAINING PROGRAMME

The II° Level University Master’s degree in “Space Transportation Systems” (STS) has a duration of 12 months and grants 60 ECTS credits. It is carried out in English and consists in a compulsory attendance comprised of 1.500 hours activity, scheduled as follows:

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

**Intensive programme.** Training in some of the best research Centers in Italy and Europe, such as: CIRA; DLR-Lampoldshausen; CNES; ONERA; ESA/ESTEC/ESRIN; VKI– Bruxelles (40 hours – 1 week).

**Paid internship** at aerospace companies, Italian research centers and aerospace industries, with the possibility of implementing the skills learned during the theoretical course. During this phase a Master’s thesis will be carried out by students who will be evaluated through a final exam (960 hours – 6 months).

## ADMISSION AND COSTS

A maximum of 20 positions are available for this Academic Year. The Admission procedure is carried out on a competitive selection basis (Curriculum Vitae and Interview). Participation is limited to graduate students holding a Master Degree in Aerospace Engineering or other Engineering fields. All candidates must demonstrate a sound knowledge of fundamental notions in Thermo-fluid-dynamics and Gas-dynamics, Aerospace Propulsion, Aerospace Structures, Aerospace Flight Mechanics. The official participation fee to the Master Course is € 4.500. However, the Sponsor Industries cover 100% of costs to their selected trainees (Approximately 12 scholarships available).

## SPONSORS



## CONTACT INFORMATION & ENROLLMENT

[mastersts@uniroma1.it](mailto:mastersts@uniroma1.it)

Website (ITA): [link](#) Website (ENG): [link](#) Click here to enroll: [link](#) Call for Applications: [link](#)

Master code: 29033



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## 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 student performance and perfecting the quality of training for the next edition.

## COURSEWORKS

- Programming in MatLab
- Programming in Fortran
- Launcher design coursework
- Solid Rocket Motors / 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



## MODULES

- Module 01 Overview of Launcher Systems
- Module 02 Mission Analysis
- Module 03 Combustion Modelling
- Module 04 Liquid Rocket Engine Thrust Chambers
- Module 05 Pump-Fed Systems
- Module 06 Rocket Nozzles
- Module 07 Aerothermodynamics of Launchers and Re-entry Vehicles
- Module 08 Solid Rocket Motors
- Module 09 Launcher Design
- Module 10 EcosimPro ESPSS Library
- Module 11 Structures
- Module 12 Ground Segment
- Module 13 Space Program and Launcher System Management
- Module 14 Quality, Certification, Cost Management



## Companies

- ARIANEGROUP
- ARIANESPACE
- OHBITALIA
- AVIO
- THALESALLENIA SPACE
- VITROCISSET

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## Space Agencies



## Partner Universities

- CNAM PARIS
- EPFL LAUSANNE
- ISAE TOULOUSE
- PARIS TECH
- TU DELFT
- TU-CATALONIA BARCELONA TECH
- STUTTART UNIVERSITY
- TU MUNICH

## Research Centres

- CIRA
- VON KARMAN INSTITUTE

SUPPORTED BY



## ADMINISTRATION OFFICE

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