The European Master Course “Space Transportation Systems” is activated in the Academic Year 2013/2014 (denoted as Master STS), at the faculty of Civil and Industrial Engineering of the University of Rome “La Sapienza”, in collaboration with the European Space Companies and Agencies. The Master STS is a professional master (second level degree) dedicated to graduate students

1. Goals
Goal of Master STS is the formation of highly qualified system engineers, capable to take managerial roles and/or to perform research tasks and technological development in the design, production, and marketing of space launchers and spacecraft. Master STS is also designed and organized in order to harmonize the hiring of new system engineers in industries and European and Italian Space Agencies.

2. Organization and educational activities.
The lectures will be held in English language. The time dedicated to the training activity amounts to 1,500 hours of the overall workload, with 450 hours dedicated to lectures and 100 hours dedicated to the end of study thesis. The remaining hours will be employed for the following educational activities: internships in Space Companies, Space Industries, European or Italian Research Institutes and Space Agencies; visits to Space Companies and Research Centers; workshops.

The Master's didactic activities are organized on the basis of weekly Units, which address the main topics in Space Transportation Systems. The following table details the number European Credit Transfer System (ECTS) associated with each didactical Unit:

<table>
<thead>
<tr>
<th>EDUCATIONAL ACTIVITIES</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1 - Ground Segment &amp; Launch Base</td>
<td>3</td>
</tr>
<tr>
<td>Unit 2 - Mission Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Unit 3 - Aerothermodynamics of Launchers</td>
<td>3</td>
</tr>
<tr>
<td>Unit 4 - Structural System &amp; Stages Separation</td>
<td>3</td>
</tr>
<tr>
<td>Unit 5 - High Speed &amp; Reentry Aerothermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>Unit 6 - CFD for High Speed Flows</td>
<td>3</td>
</tr>
<tr>
<td>Unit 7 - Solid Rocket Motors</td>
<td>3</td>
</tr>
<tr>
<td>Unit 8 - Liquid Rocket Engines</td>
<td>3</td>
</tr>
<tr>
<td>Unit 9 - Turbopumps and Tribology</td>
<td>3</td>
</tr>
<tr>
<td>Unit 10 - Combustion Chambers</td>
<td>3</td>
</tr>
<tr>
<td>Unit 11 - Space Program Management</td>
<td>3</td>
</tr>
<tr>
<td>Unit 12 - Guidance, Navigation, Control and Avionic Systems</td>
<td>3</td>
</tr>
<tr>
<td>Unit 13 - Combustion Experimental Activity for Rocket thrust Chamber</td>
<td>3</td>
</tr>
<tr>
<td>Unit 14 - Management propellants in microgravity Structural aspects for tanks</td>
<td>3</td>
</tr>
<tr>
<td>Unit 15 - Concurrent engineering application for Launcher design</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTHER ACTIVITIES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Internships in space agencies, industries, Italian/European research institutes. The topic of the stage will be connected to technological developments of new space transportation systems.</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WORSHOPS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CREDIT</td>
<td>1</td>
</tr>
<tr>
<td>THESIS</td>
<td>4</td>
</tr>
</tbody>
</table>
Examination tests will be held at the end of most if the units to assess the learning progresses attained by the students. Attendance to all Units provides 60 ECTS credits.

Didactical activities will take place:
- **Standard lectures** (from November to April) will be held in Rome at Palazzo Baleani, Corso Vittorio Emanuele II, 244, and at the Faculty of Civil and Industrial Engineering, Via Euodossiana, 18.
- **Advanced lectures** (May-June) will be held at European industries, research centers, and space agencies (CIRA in Capua, DLR in Lampoldshausen, CNES-ONERA-SNECMA in Paris, ESA ESTEC in Noordwijk, ISAE-ONERA in Toulouse, VKI in Bruxelles).

The Internships will take place at the following entities:
  a) Italian Companies (Aeroserkur, AVIO, Carlo Gavazzi Space, ELV, Thales Alenia Space, Vitrociset,...);
  b) European companies and Research Institutes

The lectures will start by half of November 2013, and end in April 2014.

Attending the educational activities is mandatory; the daily signature of each student will certify the attendance. Absences for more than 25% of the total number of hours prevent the award of the Master’s Degree. In case of no-attendance, poor profit, or improper conduct, the Scientific and Teaching Committee Board may suspend, or exclude, the participant.

In these events, the paid fees are not refunded.

3. **Duration of the course and number of available positions.**

The course’s duration is one year. The course has a limited number of available positions; the maximum number of positions open for this academic year is 20, while the minimum number of admitted students required to activate the course is 10.

4. **Requirements for admission**

Any holder of a Master of Science Degree included in the following list of classes of degree can apply for the admission to the Master STS:

<table>
<thead>
<tr>
<th>DENOMINATION OF CLASS OF DEGREE</th>
<th>CODE OF CLASS OF DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace and Aeronautic Engineering</td>
<td>(25/S e LM-20)</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>(36/S e LM-33)</td>
</tr>
<tr>
<td>Robotic Engineering</td>
<td>(29/S e LM-25)</td>
</tr>
<tr>
<td>Telecommunication Engineering</td>
<td>(30/S e LM-27)</td>
</tr>
<tr>
<td>Electric Engineering</td>
<td>(31/S e LM-28)</td>
</tr>
<tr>
<td>Electronic Engineering</td>
<td>(32/S e LM-29)</td>
</tr>
<tr>
<td>Computer Science Engineering</td>
<td>(35/S e LM-32)</td>
</tr>
</tbody>
</table>

Note that: a Bachelor degree is not considered sufficient for applying to the Master STS. Applicants must mandatory hold one of the above listed master degrees.

4.1 **Admission of foreign students**

Students holding degrees conferred by foreign Universities can apply for the admission to the Master STS if their degree:

  a) is deemed culturally coherent with the Master STS goals after a preliminary exam of the Scientific and Teaching Committee Board of the Master STS, and / or,
  b) is included in existing agreements for inter-university cooperation and mobility.

Foreign students can apply for the admission only if the attainment date of their Degree is prior to the application deadline. It is also mandatory to include a “Declaration of Value”\(^1\) of their Degree, and the translation of all their diplomas.

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\(^1\) **NB:** The Declaration on Value is an official copy the Diploma, duly translate in Italian by an an official translator. The list of these translators is usually available at the Italian Consulate in foreign country. Then the translated diploma must be sent (via regular mail) to the "Academic Qualification Office", (Ufficio titoli di studio) of the Italian General Consulate in the country of the foreign students that want apply for this call. The Master STS will offer support to the Applicants to finalize the procedure (calling +3906444585882 or sending an e-mail to valentina.disabatino@uniroma1.it).
4.1.1 - Admission of EU citizens or Italian citizens in possession of qualifications obtained abroad, and non-EU citizens legally residing in Italy

EU citizens or Italian citizens in possession of qualifications obtained abroad and non-EU citizens legally residing in Italy, must apply for the admission directly to the University of Rome “La Sapienza”; they need to include their own graduation document with the application form, together with its Italian translation, and the Declaration of Value of their Degree, conferred by an Italian diplomatic representative in the Country where the degree was issued, the degree must be declared as equivalent to an Italian Master of science degree through the "Declaration of Value" for the purpose of enrollment to the Master

4.1.2 – Admission of non-EU citizens resident abroad.

Non-EU citizens resident abroad can apply for the admission by sending an application to the Italian diplomatic office in their Country, which will arrange for the submission to Sapienza University. The application should comply with all the requirements described here above.

5. Incompatibility

The simultaneous enrollment at other courses of study is forbidden, including courses of different level, at Italian or foreign Universities, or coequal Institutes. Training courses or High Education Courses are compatible.

6. Submission rules for the selection procedure

All candidates must comply with the steps indicated here below to be admitted to the selection procedure to the Master STS:

i. Registration;
ii. Payment of the “admission test fee” and of the “stamp duty”
iii. Submission of application for admission

For the enrollment in the selection please follow the instructions below:

How to enroll to the STS master course

The envelope containing the application form and all the supplemental enclosures, must

i. be sent by certified mail (with acknowledgement of receipt) and received not later than October 31, 2013 at the following address:

Director of the Master STS, Prof. Marcello ONOFRI

Department of Mechanical and Aerospace Engineering (DIMA), Via Eudossiana 18, 00184 Rome, Italy

ii. be sent via e-mail to segreteria.mastersts@uniroma1.it

Non-Italian applicants can get help to finalize the procedure by sending an e-mail request to this Master STS address: valentina.disabatino@uniroma1.it, or by calling this phone number: +39 644585882, Monday through Friday, from 9:30am to 1:00pm.

7. Late payment of the registration fee

The students complying with the registration fee deadline will be duly registered and insured. Students not complying with the registration payments within the indicated deadline have their application dismissed. Late registration is acceptable only for exceptional reasons and must be authorized by the Director of the Master. In this case a late payment penalty is foreseen.

8. Selection criteria

The admission requirements must be held at the time of the application deadline.
The selection procedure includes an interview aimed at assessing the level of scientific knowledge, attitudes and motivations of the candidates in the field of Space Transportation Systems, as well as on the verification of their level of proficiency in English. The interviews will be held at the applicants home Universities.
The Selection Board will grade each interviewed candidate, and finally will rank the candidates by the overall grade attributed to each applicant. This ranking will be published and / or posted at the Department of Mechanical and Aerospace Engineering, and will also be published on the website www.uniroma1.it/studenti/laureati/Master. The publication has the value of an official communication; therefore, no personal communication will be sent to the candidates.

9. Loans and / or scholarships

The companies Avio-Group, Aerosekur, Astrium, Carlo Gavazzi Space SpA, ELV; Thales Alenia
Space and Vitrociset have made available a number of scholarships, which will be used to cover an equal number of tuition fees according to the ranking obtained during the selection procedure. Additional scholarships will make available covering up to 40% of the registration fee.

10. Waiver
Candidates admitted to the Master who wish to renounce their participation, must send a written communication to the Director of the Master. Any registration fee already paid will not be refund.

11. Final Graduation
At the end of the course, there will be a final graduation exam. Such final examination consists of an oral presentation of the project worked out during the internship planned for the second part of the STS master course.
To be eligible for the final exam, the student must
a) have attended the Master,
b) have acquired the necessary number of academic credits (CFUs), including credits corresponding to the various training activities carried out, which will be achieved by the examinations passed
c) be compliant with the payment of the Registration and fee for the final exam,
The final work will be presented to and discussed with the examination board of the Master, which will state the final grade on a grade scale from zero to 110; the board can award the “cum laude” honors. The lowest passing grade is 66/110 (sixty-six over one hundred tenths).

13 – Information
Teachers Reference:
Prof. Marcello Onofri
Prof. Mauro Valorani
Secretary:
Dr. Benedetta Ermini
Address:
Dipartimento di Ingegneria Meccanica e Aerospaziale, Via Eudossiana 18 - 00184 Rome

Phone number: +39 06 44585282
Fax: +39 06 44585246
E-mail: Segreteria.MasterSTS@uniroma1.it
Valentina.disabatino@uniroma1.it
Web Site: www.stsmastercourse.eu
CALL FOR PARTICIPATION

to the Master of SECOND Level in
“Space Transportation Systems”

Academic Year 2013-2014

To: Director of the Master STS
Prof. Marcello Onofri
DIMA
Via Eudossiana 18
00184, ROME, ITALY

I undersigned

Registration Code Number ________________________
ID Tax code_______________________________
Born in ____________________ On______________Nationality ________________________________
Home Address:
Street_________________________Zip Code_________Town________________________
Phone number __________Fax_____________mobile________________________
e-mail____________________________________

Hold the following University degree:
obtained on date______________at the University / Institute__________________________with the following grade________________

request to be admitted

to the Master of SECOND Level in “Space Transportation Systems” established at the Faculty of Civil and Industrial Engineering, University of Rome “La Sapienza”, in the academic year 2013/2014.

To this end, I enclose to this form the following documentation:
- Copy of a valid identification document, duly signed (e.g., Driving License, Passport, ID card);
- Copy of the ID Tax Code (e.g., SSN; Carte d’assurance de maladie, Health insurance card...)
- Copy of the receipt of payment of the fee for admission test;
- Copy of the university degree certificate including the grades of each exam;
- Copy of “Declaration of Value” (for those who obtained a university degree abroad);
- Curriculum Vitae et Studiorum;
- Declaration of consent for handling personal data (Annex 2);
- Any further qualifications for the purposes of the score of merit.

I undersigned declares:
1. to have read and approved in full the Call for Participation to the Master,
2. to be in possession of all the requirements set here, and
3. be aware that, under the law D.Lgs. N.445/2000, the act of giving incomplete or false information is a criminal offense.

Handwritten signature of the applicant
______________________________
Annex 2

Declaration of consent for handling personal data

(pursuant to D.Lgs.N. 196/2003)

According to D.Lgs.N. 196/2003, I take notice that the admission to the Master of SECOND Level in "Space Transportation Systems" requires both (i) the handling of personal data by the University of Rome "La Sapienza", and (ii) their possible transmission to other institutions either public or private, both in Italy and abroad. I also take notice that the University of Rome "La Sapienza" will use my personal data for aims solely related to the purpose for which they were provided, and in any instance, under the full compliance with the current legislation on personal data protection. Therefore, I hereby declare that:

1) being aware that the University is not allowed to process my admission request to the Master of SECOND Level in “Space Transportation Systems” without my consent for the handling of my personal data

☐ I consent ☐ I do not consent

2) As for the handling of my personal data to inform and promote cultural initiatives of the University, or of third parties, by means of announcements distributed to all participants:

☐ I consent ☐ I do not consent

3) As for the handling of my personal data by the University or others, in view of market research or customer satisfaction survey of the participants on the quality of the services rendered and the activities brought forth by the University:

☐ I consent ☐ I do not consent

Signature