



DUAL DEGREE BETWEEN

- **Master in Applied Telecommunications Engineering and Management (MASTEAM)**, EETAC, Universitat Politècnica de Catalunya (UPC), Castelldefels, Barcelona, Spain, <http://eetac.upc.edu/en/study/masters-degrees/masteam>, and
- **Master in Telecommunications Engineering (MSTE)**, Università degli Studi dell'Aquila (UNIVAQ), L'Aquila, Italy, <http://www.disim.univaq.it/didattica/content.php?laurea=9&pid=549&did=0>

Starting from the 2017/18 academic year, students from our Bachelor Degree programs (undergraduate students) or from our Telecommunications Engineering master MASTEAM (graduate students) with a good academic record can opt for a dual degree and obtain two master degrees in two years, or bachelor degree + two master degrees in 5 years.

For MASTEAM-UPC students, the itinerary is:

- During the first year, students must pass 60 ECTS credits of MASTEAM courses, excluding the Master Thesis. It is important to note that if a student carries out the Master Thesis, his/her studies are completed and he/she cannot access the double degree.
- The second year is spent at L'Aquila, taking the second year courses of MSTE, including the Master Thesis (which will be co-advised from a tutor in L'Aquila and a tutor in Barcelona).

Students must apply for admission in the dual degree program in the same period that EETAC Bachelor Degree students apply for mobility agreements (January-February, to start the second year at L'Aquila in September). Therefore, MASTEAM students have to apply at the end of the first semester of the program.

For MSTE-UNIVAQ students, the itinerary is:

- First year is spent at L'Aquila (60 ECTS) taking the first year courses.
- Second year is spent at Barcelona (60 ECTS), including 15 ECTS of mandatory courses, 33 ECTS is optional courses, and 12 ECTS as Master Thesis (which will be co-advised from a tutor in L'Aquila and a tutor in Barcelona).

Students should contact UNIVAQ's mobility coordinator in order to know the application periods.

For EETAC undergraduate students, the itinerary is:

- First, second and third years are spent in the EETAC Bachelor Degree courses as usual (Telecommunications Systems Engineering or Network Engineering / Telematics).
- The fourth year is spent at L'Aquila taking the first year (60 ECTS) of the MSTE, including a Degree Thesis. Once completed, the student receives the Bachelor Degree from EETAC.
- The fifth year is spent in Barcelona, taking the 60 ECTS of MASTEAM as usual. When completed, the student obtains both the MSTE and MASTEAM master degrees.

If the student opts out at the 4th year, he/she will obtain a recognition of the 4th year spent at L'Aquila as an Erasmus mobility period (recognized courses will be the mobility credits plus the optional courses of EETAC degrees), and will have to enrol in a Degree Thesis (TFG) at EETAC.

Rep. m. 581

Cooperation Agreement

**CONCERNING DUAL MASTER'S DEGREE
PROGRAMMES**

between

**UNIVERSITAT POLITÈCNICA DE CATALUNYA, Barcelona,
Spain**

and

UNIVERSITÀ DEGLI STUDI DELL'AQUILA, L'Aquila, Italy

Of the one part, Universitat Politècnica de Catalunya (UPC), having its legal address at Jordi Girona, 31, 08034 Barcelona, Spain, with fiscal identification number Q0818003F and represented herein by its rector, Dr Enric Fossas Colet, appointed by Decree 257/2013 of 26 November (Official Gazette of the Catalan Government no. 6512 of 29 November 2013) and acting by virtue of the provisions of Article 20 of Organic Law 6/2001 on Universities of 21 December and articles 67 and 68 of the Statutes of the Universitat Politècnica de Catalunya, which were approved by Governing Council Agreement 43/2012; approving the modification of the Statutes of the UPC and the publication of the full text (in Official Gazette of the Catalan Government no. 6140 of 1 June 2012, amended in Official Gazette of the Catalan Government no. 6257 of 20 November 2012);

Of the other part, Università degli Studi dell'Aquila (UAQ), having its legal address at Piazza V.Rivera, n.1 67100 L'Aquila, Italia, with fiscal identification number: 01021630668, represented herein by its rector Prof. Paola Inverardi, appointed by Decree of Ministry of Education, University and Research (MIUR) of 16 September 2013, and acting by virtue of Decree 270/2004 on higher education, and its amendments and integrations, and article 46 of the Statute of the University of L'Aquila, which was approved by the Ministry on 2012 and published in full text in Official Gazette n.22 of 27.01.2012 (in force since 11.02.2012);

hereinafter referred to as parties to this Agreement, hereby agree as follows:

Article 1 – Aim of the Agreement

This Agreement defines the requirements and obligations of UPC and UAQ in establishing a Dual Master's Degree Programme regarding students enrolled in the master's degree in Applied Telecommunications and Engineering Management (MASTEAM), which is taught at the Escola d'Enginyeria de Telecomunicació i Aeroespacial de Catalunya (EETAC), UNIVERSITAT POLITÈCNICA DE CATALUNYA (UPC) and students enrolled in the master's degree program in Telecommunications Engineering (MSTE), which is taught at the Department of Information Engineering, Computer Science and Mathematics (DISIM), UNIVERSITÀ DEGLI STUDI DELL'AQUILA (UAQ). The Programme, developed and organized jointly by the parties, leads to

two recognized Master's degree certificates, one from the student's home institution and one from the host institution.

Article 2 – Scope of the Agreement and definitions

This Agreement concerns the implementation of the Master's Degree Programme. The contents and the curriculum of the Programme are specified in separate documents attached as appendices to this Agreement. These appendices are signed by the Deans or the equivalent representatives responsible at School level for the contents of the Programme, and shall be issued for each Programme.

This Agreement specifies the rights and responsibilities of both parties, and the terms under which students from UPC and from UAQ may be granted, upon successful fulfillment of the Programme and of all requirements for graduation at each institution, the academic degrees and diplomas of comparable academic levels from both institutions.

Both parties agree to the following general forms of cooperation and general requirements for all students participating under this Agreement.

The term 'Master's programme' refers to the parties' programmes at Master's level leading to the corresponding degree issued by each party for that programme.

Article 3 – Extent of the Programme

A Dual Master's Degree is a programme at Master's level leading to two degree certificates, one from each institution. The students study at both institutions according to the curriculum and mobility plan defined in the appendices. The language of instruction of the Dual Master's Degree Programme is mainly English. Exceptions, if any, are clearly stated in the appendices.

The parties review the Programme's curriculum annually and make the necessary changes. Number of students participating in the Programme shall be negotiated and determined by the parties on a yearly basis.

Article 4 – Student Admission

The admission of students to the Programme will be conducted in accordance with the following principles:

- The parties shall agree on the application procedure, including application deadlines, selection criteria and student quota. They will be defined in the appendices.
- The students must meet the admission criteria of the Master's programmes of both institutions.

- Students are selected and admitted to the Programme based on their academic results, prerequisite requirements, motivation and language skills. The selection is carried out in collaboration between the two institutions.
- Students shall have a home institution and a host institution defined.
- Prerequisite for the mobility is that the student has successfully completed a sufficient number of credits at the home institution.
- No tuition fees are required at the host institution for students participating in the Programme, except for the diploma issue fee, which all students are required to pay.

Article 5 – Rights and Status of the Students

Students participating under this Agreement shall be enrolled as degree-seeking students. Students shall have the same rights and obligations as degree-seeking students in the respective institutions.

During the mobility, students will be responsible for covering the travel costs to the host country and living costs during their stay, including accommodation, books, equipment, consumables, language tuition prior to the commencement of coursework (where necessary), health and travel insurance, student union fee (if applicable) and other personal expenses arising out of the exchange.

Students participating in the Programme will be entitled to participate in any introductory programme that may customarily be arranged for international students at the host institution.

Article 6 - Rights and obligations of the parties

The host institution will render assistance to the incoming students in finding appropriate accommodation.

In order to provide the students full exposure to all aspects of the European dimension, the participating institutions under this Agreement shall try to put in place mechanisms to ensure that the students are offered the possibility to take at least one European language and/or culture course during the study period at the host institution.

Both parties agree to take action to obtain financial support for this Programme from European or other financial resources.

Article 7 – Study Plan and Course of Study

Detailed conditions regarding the course of studies shall be specified in the appendices, as well as in the individual student agreements (learning agreements), signed by representatives of the respective schools and/or divisions of each institution.

Each student will propose an individual study plan made according to the agreed curriculum (appendix) for the total duration of the Programme. This study plan will be reviewed and, if needed, modified prior to final admission. A written study contract (learning agreement) must be established and signed by both institutions and the student, prior to arrival at the host institution. This contract may be revised at any time in written form with seal of approval from the academic representatives of the two institutions.

Article 8 – Final Degree Project

The total workload for the final degree project (master's thesis) should correspond to one semester and preferably full-time. The subject of the final degree project must always receive an advance approval in writing from a faculty member of the host as well as the home institution. The final degree project is normally carried out under the supervision of a faculty member of the host institution, who is responsible for the arrangement of topic and subject area of the project. Co-supervision by a faculty member of the home institution will be promoted, enhancing mutual collaboration between both institutions when possible. Normally, the final degree project is carried out in the country of the host institution, but exceptions may be negotiated on a case-by-case basis.

The final degree project shall fulfil the rules and regulations of both institutions. The final degree project results in a report written in English.

In accordance with legislation in force, students must defend their master's thesis at UPC in order to be awarded UPC's master degree. Master thesis can be done at UPC or at UAQ, and preferably under a joint supervision by professors of both institutions.

Article 9 – Control of results

At the end of the academic year, the host institution shall send to the home institution a copy of each student's transcript in English. The parties agree that exams/courses shall be graded and awarded credits according to the rules of the institution where the exam/course is carried out.

If a student does not earn all of the required credits at the host institution within the established period, under the agreement of both institutions an additional semester can be given to the student.

Article 10 - Delivery of the academic degrees

Each institution grants the student credit transfer from the other institution according to the applicable rules, laws and regulations of that institution.

Students successfully completing their studies of the Master's Degree Programme obtain two degrees, one issued by the home institution and one issued by the host institution.

Article 11 - Academic and administrative representatives

Each institution will nominate an academic and an administrative representative for the Programme. These representatives will be responsible for following the Programme and for ensuring that measures are taken in accordance with this Agreement. The representatives will provide advisory and other academic and administrative services to students participating under this Agreement. Names and contact details of these representatives are in an appendix to this Agreement.

Article 12 - Quality assurance

Both parties will implement their local evaluation systems for courses and programmes. The feedback and future improvements will be treated at the annual meetings of the persons responsible for the Dual Master's Degree Programme.

Article 13 - Use of Corporate Image

Each partner grants its consent to using their institutional logo, whether electronic or printed, for the only purposes of marketing and promoting this double degree agreement.

Any other cases in which the partners believe it is necessary to use the partner's logos, it must ask for the prior authorisation of the University, through the Communication and Promotion Service or similar, specifying the application in which they wish to use the logo (whether graphic or electronic or any other format) and for what they wish to use it.

The authorisation, which must always be in writing, shall specify the use(s) being authorised, as well as the period during which the authorisation shall remain valid, which must never be later than the period of validity of this agreement.

Article 14 - Transparency

In accordance with current legislation on transparency, public access to information and good governance, the UPC will, in relation to this agreement, publish information on the signatories, object, term and obligations of the parties, including their financial obligations, as well as any amendments made.

Article 15 - Terms of Agreement

The signing of this agreement does not entail any financial obligation on the part of the parties.

This Agreement shall come into effect on the day of signature by both institutions and is valid for five years. Either institution may terminate this Agreement, provided that written notice of the intent is given at least six months prior to termination. Commitments already in progress shall be fulfilled.

Article 16 - Amendments or changes

Amendments or changes to this Agreement shall be made in writing and signed by the duly authorised representatives of the institutions.

The parties agree to solve in a friendly manner any controversy rising from the interpretation of the present Agreement.

In case the controversy cannot be resolved, the claim will be submitted for arbitration; each party will appoint a member of the arbitration panel, and one member will be chosen by mutual consent.

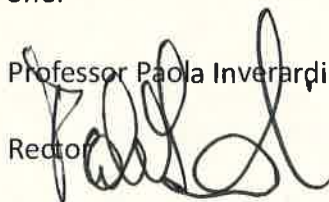
This Agreement has been signed in two originals in English, of which each institution has taken one.

Professor Paola Inverardi

Rector

UNIVERSITÀ DEGLI STUDI DELL'AQUILA

L'Aquila,



26 OTT. 2016

Dr Enric Fossas Colet

Rector

UNIVERSITAT POLITÈCNICA DE CATALUNYA

Barcelona,



UNIVERSITAT POLITÈCNICA
DE CATALUNYA

Appendix I:

Dual Degree Agreement between Escola d'Enginyeria de Telecomunicació i Aeroespacial de Castelldefels (EETAC)

and

Department of Information Engineering, Computer Science and Mathematics (DISIM)

Duration: Academic Year 2016/17 to 2020/2021

| | |
|-----------------------------|--|
| Degree programme at | DISIM |
| Degree awarded | Master Degree in Telecommunications Engineering |
| Language of instruction | English |
| Entrance Admission criteria | Bachelor Degree in Engineering Science (at least 180 ects done) (*) |
| | |
| Degree programme at | EETAC |
| Degree Awarded | Master Degree in Applied Telecommunications and Engineering Management |
| Language of instruction | English |
| Entrance Admission criteria | Bachelor Degree in Engineering Science (at least 180 ects done) (*) |

(*)The required background for the applicants is at least 180 ECTS of a Bachelor's degree in engineering, or science, preferably Electrical or Computer Engineering, including at least 60 ECTS credits of course work in electrical engineering, computer engineering or computer science and in addition basic courses in mathematics, including calculus, linear algebra and mathematical statistics. The applicant must have passed courses in programming, preferably C or Java. It is recommended that applicants have experience in solving problems using computational software, particularly MATLAB, and have passed courses covering operating systems and signals and systems.

The applicants must provide proof of their proficiency in English, e.g.

- via an internally recognizes test such as TOEFL or IELTS, accepted university tests

- a Bachelor degree from a University where English is the only language of instruction
- a certificate from the home university stating that the applicant's proficiency in English is adequate for advanced studies with English as the language of instruction

The number of students nominated per year is limited to maximum 3 students in each direction.

A study plan has to be set up for each individual student and it has to be approved by the program directors for both masters.

All the degrees will be awarded at the end of the formation, once the student has finished all the required courses at both institutions

Nominations and applications:

For students from UPC to UAQ the nomination and complete application documents must be sent to UAQ by April 15th the previous academic year.

For students from UAQ to UPC the nomination and complete application documents must be sent to UPC by April 15th the previous academic year.

Final admission is in competition and in accordance with the current regulations and at the discretion of the host university.

Schematic Study Plan

UPC students studying at UAQ

Option 1:

| Year | Institution | Studies | Remarks |
|------|-------------|---|--|
| 1 | UAQ | Compulsory and elective courses | 60 ECTS (including at least 10 ECTS in an engineering project) |
| 2 | UPC | Courses + Master Thesis (co-supervised) | 60 ECTS |

In this option students from UPC will be of the 4th year of Bachelor, and the 60 ECTS done at UAQ will be considered as their last year of Bachelor studies (optative courses + thesis). For this reason they must do a project at UAQ that will be considered their bachelor thesis. This bachelor thesis has to be defended at least at UPC (in accordance with legislation in force, students must defend their bachelor's thesis at UPC in order to be awarded UPC's

– bachelor degree) and preferably at both institutions. The defence in UPC could occur by vide-conference system.

– Only when finishing the UPC master the dual degree will be achieved.

Option 2:

| Year | Institution | Studies | Remarks |
|------|-------------|--|----------|
| 1 | UPC | Master's compulsory and elective courses | 60 ECTS* |
| 2 | UAQ | Courses + Master Thesis (co-pervised) | 60 ECTS |

*Students should move when they have done at least 54 ECTS at UPC, doing the remaining 6 as additional courses at UAQ or at UPC when coming back.

UAQ students studying at UPC

Option 1:

| Year | Institution | Studies | Remarks |
|------|-------------|---|---------|
| 1 | UAQ | Compulsory and elective courses | 60 ECTS |
| 2 | UPC | Courses + Master Thesis (co-supervised) | 60 ECTS |

Option 2:

| Year | Institution | Studies | Remarks |
|------|-------------|--|---------|
| 1 | UPC | Master's compulsory and elective courses | 60 ECTS |
| 2 | UAQ | Courses + Master Thesis (co-pervised) | 60 ECTS |

Detailed syllabus of Masters

Detailed syllabus is given because as students from different background can be accepted to enroll at both masters, depending on their bachelor, it would be more advisable to follow some specific courses to avoid repetition of previous learning.

UAQ: Master degree in Telecommunications Engineering

| Semester | Courses | ECTS credits |
|----------|--|--------------|
| 1 and 3 | Environmental Impact of EM Fields | 9 |
| | Modelling and control of communication networks | 9 |
| | Digital electronic systems | 9 |
| | Antennas and RF subsystems | 6 |
| | RF design for Internet of Things | 9 |
| | Wireless communications | 9 |
| | Embedded systems | 9 |
| | Laboratory of SDR, SDN and IoT | 6 |
| | Software engineering | 9 |
| | Nanophotonics | 9 |
| | | |
| 2 and 4 | Combinatorics and criptography | 6 |
| | Measurements for telecommunications | 6 |
| | Network optimization | 6 |
| | Propagation and modelling of communications channels | 6 |
| | Digital communications | 9 |
| | Digital signal processing and multimedia | 6 |
| | Remote sensing | 6 |
| | Advanced and software defined networks | 6 |
| | Photonic networks | 6 |
| | Further training and internship (**) | 3-12 |
| | Master thesis and final dissertation | 12-18 |

(**) This activity is often taken as the first of thesis work.

UPC: Master Degree in Applied Telecommunications and Engineering Management

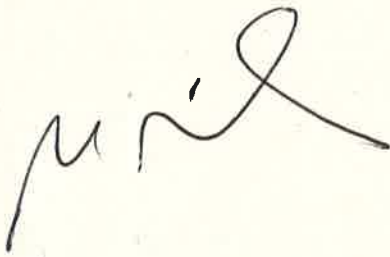

| Semester | Courses | ECTS credits |
|----------|---|--------------|
| 1 | Optimization for Applied Engineering Design | 3 |
| | Network Engineering | 3 |
| | Next Generation Wireless communications and IoT | 3 |
| | Sensors and Interfaces | 3 |
| | ICT-based Entrepreneurship | 3 |
| | Optical Networks for Cloud-Based Services | 3 |
| | IoT & Ubiquitous | 3 |
| | 5G mobile network planning | 3 |
| | Applied Image processing | 3 |
| | Low power systems with energy harvesting | 3 |

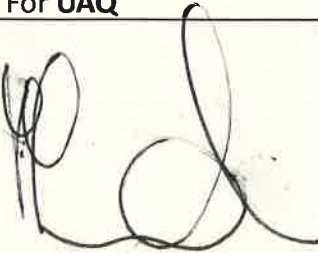
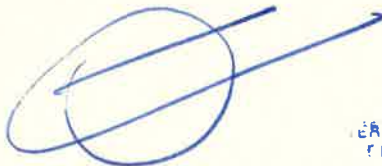
| | | |
|---|---|-------|
| | Augmented reality and smart objects | 3 |
| 2 | Service engineering | 3 |
| | Body sensor networks | 3 |
| | Creativity and engineering | 3 |
| | Network security authentication and authorization | 3 |
| | Software defined radio | 3 |
| | Big data & Data mining | 6 |
| | Project on ICT-based business models | 3 |
| | Master Thesis | 12-30 |

Contacts:

| | |
|---|---|
| Academic responsible for the programme at UAQ | Academic responsible for the programme at UPC |
| Contact person: Fabio Graziosi | Contact person: David Rincon |

Signatures

| | |
|---|--|
| Date: For the DISIM | Date: For the EETAC |
|  |  |
| Name: Bruno Rubino | Name: Lluís Alonso Zarate |
| Position Director of DISIM | Position: Director of EETAC |

| | |
|---|--|
| Date: For UAQ | Date: For UPC |
|  |  |
| Prof. Paola Inverardi | Dr Enric FOSSAS COLET |
| Position | Rector |



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