Emilie Roussel

Responsible for incoming students and Contact person for University Partners

international.letsit@upm.es

Exchange and R&D Opportunities
Welcome to Madrid
Madrid: International & Cultural city

Dynamic and always emerging: a bridge between Europe and Latinamerica

- Madrid is the capital of Spain, country of delicious gastronomy and famous events all along the year such as “San Fermín bulls” in Pamplona or the “Fallas” in Valencia.

- Spain is also a bridge between Europe and Latinamerica. Therefore, Spanish culture is spread through Latinamerican philosophy and long friendship.

- Madrid capital city has 3,285,000 inhabitants, sun all the year long and a very special atmosphere in between his streets and squares.

- With more than 220k students, Madrid offers dynamic and always exciting emerging activities in a non-stop multicultural day & night life.
Gran Via, main shopping street in Madrid © Ma tej Kastoś/Shutterstock
UPM: “Ingeniamos el Futuro”
Engineering the Future

18 Centers
Schools of Engineering & Architecture, Sports Science, Fashion Design

18 Centers
Telecommunications Eng.
Industrial Eng.
Aerospace Eng.
Informatics
Agronomical Eng.

4 Campus

> 35k enrolled students

Civil Eng.
Architectural
Naval Eng.
Industrial Design
Moncloa Campus of International Excellence

Faculty of Sports Science
School of Architecture
School of Building Technology Engineering
School of Aerospace Engineering
School of Naval Architecture and Marine Engineering

School of Civil Engineering
School of Agricultural, Food & Biosystems Engineering
School of Telecommunication Engineering
School of Forestry Engineering and Natural Resources
ETSIT-UPM in a Nutshell

An Engineering School that educates professionals in a combination of Electrical & Electronic Engineering & Computer Science Biomedical Engineering and Data Engineering

With R&D that contributes to technological knowledge generation & transfer through research and innovation with a sound knowledge of ICTs.
ETSIT-UPM in a Nutshell

Resources
- Prestige & Recognition
  - EUR-ACE® Accreditation
  - ABET Engineering Accreditation Commission
- Employment Ability
- Total

International Accreditation
- >500 agreements
- 16 Chairs from IPs
- >120 agreements
- >340 spots
- 26 DDegrees
- >350 R&D projects
- 179 International

Industrial Partnership
- Entrepreneurship

Research
The ETSIT-UPM in figures

More than 16,000 alumni

- 2,500 enrolled students
- 250 faculty members
- Library with more than 500 working places, cyber library and meeting rooms
- More than 600 laboratory places
- 2 sports fields
- Over than 50 lecture halls with multimedia equipment
ETSIT-UPM participates in the majority of international mobility programs; it has approximately 100 Erasmus agreements as well as 13 agreements in the framework of the Magalhães Program. Also, as regards Bilateral Agreements, there are approximately 100 framework agreements signed with universities in the USA, Canada, Asia, Australia and Latin America.
Accreditation and International Recognition

The Master in Telecommunication Engineering and the Bachelor of Engineering in Telecommunications Technologies and Services offered by the Universidad Politécnica de Madrid have been accredited by the Accreditation Board for Engineering Technology (ABET). Both degrees are also under the process for the accreditation from the European Network for Accreditation of Engineering Education (EUR-ACE).

**Corresponding levels in higher Education Systems**

<table>
<thead>
<tr>
<th>Level</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD</td>
<td>3-4 years</td>
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<tr>
<td>Masters’ Degree</td>
<td>2 years</td>
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<tr>
<td>Bachelor’s Degree</td>
<td>3 years</td>
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<tr>
<td>EUROPÉ</td>
<td></td>
</tr>
<tr>
<td>PhD Research</td>
<td>3-4 years</td>
</tr>
<tr>
<td>M.S.-M. Eng</td>
<td></td>
</tr>
<tr>
<td>Graduate Studies</td>
<td>2 years</td>
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<tr>
<td>B.S.</td>
<td></td>
</tr>
<tr>
<td>Undergraduate Studies</td>
<td>4 years</td>
</tr>
<tr>
<td>USA</td>
<td></td>
</tr>
<tr>
<td>PhD</td>
<td>3-4 years</td>
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<tr>
<td>Masters’ Degree</td>
<td>1-2 years</td>
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<tr>
<td>Bachelor’s Degree</td>
<td>4 years</td>
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<tr>
<td>ETSIT-UPM</td>
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</tbody>
</table>
Pillars of Telecommunication Engineering

BSc & MSc in Telecommunication Engineering
BSc & MSc in Biomedical Engineering
BSc in Data and Systems Engineering
MSc in Signal Theory & Communications (Big-data/RF)
MSc in Photovoltaic Solar Energy
MSc in Electronic Systems Engineering
MSc in Cibersecurity
MSc in Telematic Services & Networks
MSc in Computational Statistics
Bachelor Degrees
Engineering in Telecommunication Technologies and Services
Areas
- Audiovisual
- Telematics
- Electronic Systems
- Telecommunication Systems

Biomedical Engineering
Areas
- Bioengineering
- Telemedicine
- Biomedical imaging
- Biomedical Computing

BSc in Data Engineering and Systems: 3rd year 2022-23
Master Degrees
Telecommunication Engineering 🇪🇸

Biomedical Engineering 🇪🇸

Other Master Degrees
- Photovoltaic Solar Energy 🇪🇸
- Electronic Systems Engineering
- Signal Theory and Communications 🇪🇸

PhD Programs
7 PhD Programs (Mention of Excellence)
Master in Telecommunication Engineering

2 year program – 120 ECTS – Awards Professional Qualifications

1st Year
- Signals and Communication
- Telematics
- Electronics
- Technology Management

- Core courses: 60 ECTS
- Professional Qualifications
- Focus on Systems Design and Development
Master in Telecommunication Engineering

2 year program – 120 ECTS – Awards Professional Qualifications

1st Year
- Core courses: 60 ECTS
- Professional Qualifications
- Focus on Systems Design and Development
- Signals and Communication
- Telematics
- Electronics
- Technology Management

2nd Year
- Options (majors) courses
- Elective courses: 30 ECTS
- Internships in companies
- International experience
- Master Thesis
- 30 ECTS
- School Depts/R&D Centers
- In companies
- International experience
- Core courses: 60 ECTS
- Professional Qualifications
- Focus on Systems Design and Development
# Master in Telecommunication Engineering

## 1st year: M1 – CORE courses

<table>
<thead>
<tr>
<th>AREAS</th>
<th>CORE COURSES</th>
<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>SIGNALS AND COMMUNICATIONS</td>
<td>COMMUNICATION SYSTEMS</td>
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<tr>
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<td>SIGNAL ANALYSIS FOR COMMUNICATIONS</td>
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<tr>
<td></td>
<td>RADIO ACCESS TECHNOLOGIES</td>
<td>3</td>
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<tr>
<td></td>
<td>MULTIMEDIA SYSTEMS AND SERVICES</td>
<td>6</td>
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<tr>
<td>ELECTRONICS</td>
<td>USER EQUIPMENTS AND TERMINALS</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>INSTRUMENTATION SYSTEMS ENGINEERING</td>
<td>6</td>
</tr>
<tr>
<td>TELEMATICS</td>
<td>COMMUNICATION NETWORKS</td>
<td>6</td>
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<tr>
<td></td>
<td>SERVICES AND APPLICATIONS</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>NETWORKS INTEGRATION, CONTENTS AND APPS</td>
<td>6</td>
</tr>
<tr>
<td>TECHNOLOGY MANAGEMENT</td>
<td>PROJECT MANAGEMENT</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>STRATEGIC VISION OF TECHNOLOGIES &amp; SYSTEMS INTEGRATION IN ICT SECTOR</td>
<td>3</td>
</tr>
</tbody>
</table>

For DD Students
Up to 50% can be recognized based on the student background
# Master in Telecommunication Engineering

**2nd year: M2 - OPTIONS**

## Signals and Communication
- Advanced Topics on Antenna Tech; Advanced Topics on Optica Communications; From Array Processing to MIMO Comm.; Satellite Comm; Sistemas Radar; Circuitos de Alta Frecuencia

## Machine Learning and Multimedia Science
- Data Science Foundations and App.; Predictive and Descriptive Learning; Vision Analysis and Deep Learning; Machine Learning Lab; Media Data System Design; Deep Learning for Acoustidc Signal Proc.

## Electronics
- Microelectronic Design
- Microelectronic Technology
- Nanoelectronic; Semiconductor Devices
- Engineering of Systems with Processors
- Photovoltaic Solar Energy

## Telematics
- Security, Trust and Privacy in Services of Info Society
- Cloud Computing, Network & Services Virtualization
- Infraestruct. & Foundations for Big Data Info. Sys
- Information Sys and Knowledge Technologies
- Corporative Netw, Operators & Internet WS

## Bioengineering
- Bioengineering Fundamentals
- Medical Images and Signals
- Telemedicine
- Neurosensorial Engineering
- Biosensors

## Management, Innovation & ICT Business
- Information Systems for Business; ICT Market Policy and Regulation; Technology and Business Innovation
- Business Administration and Management
- Strategies and Techniques for Decision Making
## Master in Telecommunication Engineering

### 2nd year: M2 - OPTIONS

**Signals and Communication**
- Advanced Topics on Antenna Tech; Advanced Topics on Optica Communications; From Array Processing to MIMO Comm.; Satellite Comm; Sistemas Radar; Circuitos de Alta Frecuencia

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- Data Science Foundations and App.; Predictive and Descriptive Learning; Vision Analysis and Deep Learning; Machine Learning Lab; Media Data System Design; Deep Learning for Acoustidc Signal Proc.

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- Microelectronic Design
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- Security, Trust and Privacy in Services of Info Society
- Cloud Computing, Network & Services Virtualization
- Infrastructure & Foundations for Big Data Info. Sys
- Information Sys and Knowledge Technologies
- Corporate Netw, Operators & Internet WS

**Bioengineering**
- Bioengineering Fundamentals
- Medical Images and Signals
- Telemedicine
- Neurosensorial Engineering
- Biosensors

**Internships Program**
- Companies/R&D Labs

---

**M2 or also M1**
- Working experience compat with studies
- Opp for MsTh Development
- 99% of them funded
INTERNSHIPS PROGRAM

In Companies / R&D Centers / ETSIT R&D Labs

• Available for all ETSIT-UPM students Louis Incoming Students Included
• Elective (NOT Mandatory) in ETSIT-UPM degrees
• 99% Funded & always compatible with studies
• Two MODES:
  • Curricular: are part of the Academic Curriculum (ECTS awarded - are EVALUATED)
  • Extra-Curricular: can be part of the European Degree Supplement

Students take an active role seeking them: done on competence
Master Programs
1 year – 60 ECTS

Biomedical Engineering
Signal Theory & Communications
Electronic Systems Engineering
Telematic Networks & Services Engineering
Computational Statistics
Cybersecurity
Photovoltaic Solar Energy
UNIVERSITY LIFE

The Moncloa Campus (better known as Ciudad Universitaria) is located in a privileged geographical location, one of the central areas of Madrid, integrated in the city itself. The constant presence of students in the university environment extends throughout the entire neighbourhood of Moncloa.

Services for Students

As a new student at the ETSIT-UPM you will begin your studies with an Orientation Workshop. You will familiarise yourself with the university environment and meet your mentor who is here to help you with everything related to your studies. The International Office is always open to provide students with general information and support.
Student Associations

- BEST Madrid UPM
- CD-CROM (Role Play and Strategy Games)
- Club de Cine Antena (Cinema Fans)
- Club Deportivo (Sports Club)
- Club Ícaro (Open Air Sports)
- Club Literario (Literature Club)
- Club Musical Delta (Musicians and Music Lovers)
- El ECO de Teleco (Humorous University Magazine)
- EURIELEC (Electronics and Computers)
- Grupo de Cámara y Coro (Classical Music)

- Asociación Hispano-China de Estudiantes UPM (Hispano-China Students Association)
- IAESTE (International Exchange and language Courses)
- ONGAWA (Engineering for Human Development)
- No es culpa nuestra (Theatre Group)
- Radio-Club EIT (Radio Fan Club)
- Rama de estudiantes de IEEE
- Satelec (Annual Employment Forum)

Margerite
(France)
“I chose the ETSIT UPM because of its international prestige. I especially chose digital image and video processing because of the quality of the professors and laboratories.”
Research Development Innovation at ETSIT-UPM

www.etsit.upm.es/research
Research Units

4 Research Centers/Institutes & 6 Departments

35 Accredited Research Groups

17 Chairs from Industry Partners

515 researchers
248 faculty members
Main Research Areas

- Signal Processing and Communications
- Radiofrequency Technologies
- Telematics, data science & data engineering
- Biomedical Engineering
- Electronic and Photonic Technologies
- Solar Energy and other sustainable energies
- Horizontal Technologies
Strategic Areas

- Connected Industry
- Data Engineering & Digital Transformation
- Distributed renewable generation and consumption
- Future Telecomms
- Health and Wellbeing support
- Interaction & Interfaces
- Mobility and Transport
- Smart Cities
Seven PhD programs train future researchers in the above areas:

- PhD in Communication Systems and Technologies
- PhD in Telematics Systems Engineering
- PhD in Biomedical Engineering
- PhD in Electronic Systems Engineering
- PhD in Devices and Materials for ICTs
- PhD in Photovoltaic Solar Energy
- PhD in Mathematics, Statistics & Operations Research
Some Figures

“In God we trust, all others bring data” (W. E. Deming. Debatable):

- 369 research projects, 486 JCRs, 52 PhD theses, 34 patents (average annual values 2013-17). Source: Observatorio I+D UPM
- 515 researchers & 248 faculty members.
- More than 500 active agreements with industry partners.
- Contributing btw 20-25% to UPM funds in research projects. E.g. FP7 funding (last finished programme so far): UPM: 1st Spanish University in FP7 funding (83M€, 18.5 M€ come from ETSIT)
Main Research Areas

- Signal Processing and Communications
  - Analysis - Synthesis - Audio - Speech - Image – Video
  - Computer vision - Pattern recognition
  - Visual communications - User interfaces
  - Intelligent transport
  - Mobile communications – 5G, SDR
  - Satellite communications and navigation systems.
Main Research Areas

• Signal Processing and Communications
• Radiofrequency Technologies
  • Design and characterization of Circuits & Antennas
  • Radar
  • Electronic warfare
  • Radiation – Propagation
Main Research Areas

- Signal Processing and Communications
- Radiofrequency Technologies
- Telematics, data science & data engineering
  - Network & Software engineering – Real-time Systems
  - Cybersecurity
  - Cloud computing, Big data analytics
  - Artificial Intelligence - Deep Learning
Main Research Areas

- Signal Processing and Communications
- Radiofrequency Technologies
- Telematics, sw and data science
- Biomedical Engineering
  - Active and healthy aging
  - Medical Imaging – Medical data analytics
  - Biomedical engineering for diabetes care
  - Life supporting technologies
Main Research Areas

- Signal Processing and Communications
- Radiofrequency Technologies
- Telematics, sw and data science
- Biomedical Engineering
- Electronic and Photonic Technologies
  - Optoelectronics - THz Photonics
  - Semiconductor materials
  - Nanoelectronics - Graphene
Main Research Areas

• Signal Processing and Communications
• Radiofrequency Technologies
• Telematics, sw and data science
• Biomedical Engineering
• Electronic and Photonic Technologies
• Solar Energy and other sustainable energies
  • Novel materials and solar cell concepts
  • Off-grid PV and rural electrificación
  • Distributed generation and smart grids
  • Energy storage
  • Electric vehicle
Main Research Areas

- Signal Processing and Communications
- Radiofrequency Technologies
- Telematics, sw and data science
- Biomedical Engineering
- Electronic and Photonic Technologies
- Solar Energy and other sustainable energies
- Horizontal Technologies
  - Applied Physics – Electromagnetism
  - Computation and numerical simulation
  - Complex networks
  - Optimization
  - Dynamics and control - Nonlinear systems & chaos
E.T.S.I.T.-UPM

Studying at ETSIT

contact: international.etsit@upm.es

• How to apply?
  http://www.etsit.upm.es/de/international-office/studying-at-etsit-upm/how-to-apply.html

• Course Catalogue
  http://www.etsit.upm.es/de/international-office/studying-at-etsit-upm/course-catalogue.html

• How to apply to do a Traineeship?

• Language requirements and Spanish courses
Experiences

¡Os esperamos!
Looking forward to welcoming you!