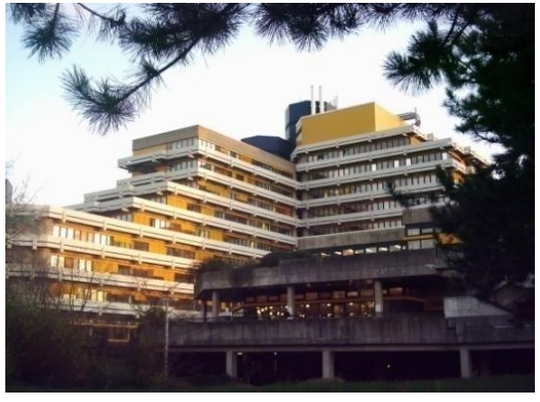
Technology
Arts Sciences
TH Köln

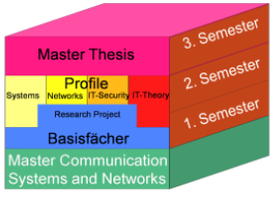
Hochschule
Bonn-Rhein-Sieg
University of Applied Sciences



Master-Program Communication Systems and Networks

Double Degree Opportunities

Prof. Uwe Dettmar

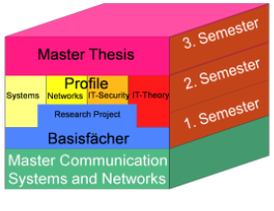


Double Degree Program with the Polytechnical University of Valencia, Spain

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Polytechnical University Valencia (UPV) and Technische Hochschule Köln (THK) promote the exchange of students in degree courses of "*Master of Science in Communication Systems and Networks*" and "*Máster Universitario en Tecnologías, Sistemas y Redes de Comunicaciones*" ("Master in Telecommunication Technologies, Systems and Networks") to obtain a **Double Degree**.

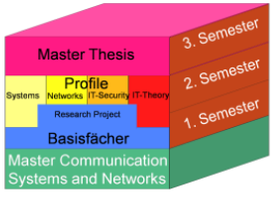
https://www.etsit.upv.es/



Double Degree Program with Polytechnical University of Valencia, Spain

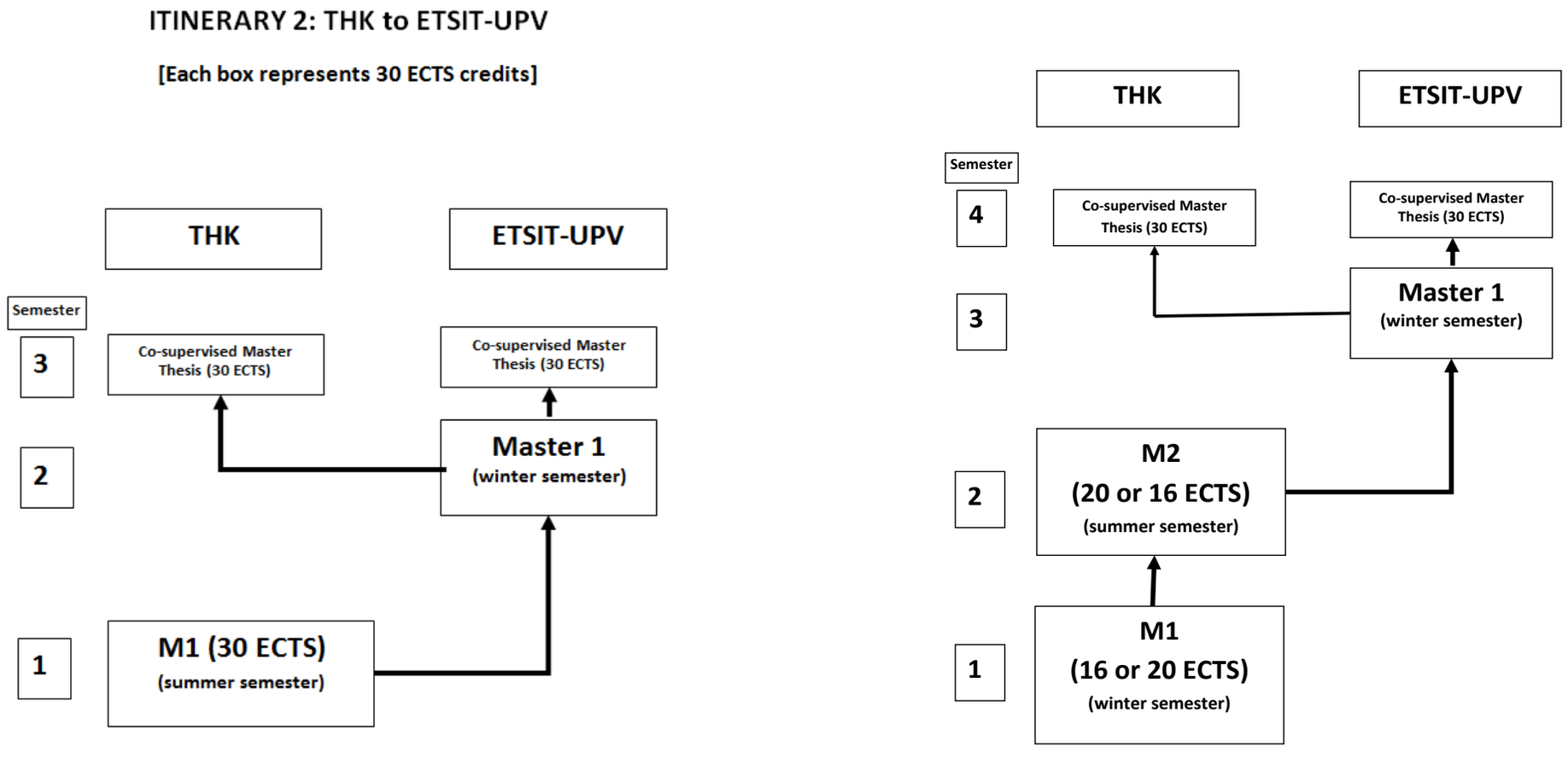
- Students have to acquire 90 ECTS credits in total during their studies at both Universities in the respective Master programs.
- Courses during one or two semester in Köln and one semester in Valencia and afterwards final thesis in Köln or Valencia.

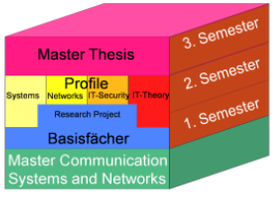
- Further Infos: Prof. Dr. Uwe Dettmar



Double degree with UPV

- Student from Cologne outgoing to Valencia





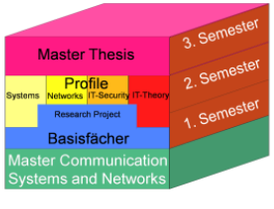
Courses offered at UPV (winter 25/26)

Code	Course title in English and Spanish	Cred.	Slides	Exams writing	Exams wording	Classes
30740 S	Photonic technologies in wireless networks Tecnologías fotónicas en redes inalámbricas	3 ECTS	E	E	E	E*
30752 S	Internet of Things (IoT) platforms Plataformas IoT	3 ECTS	E	E	E[1]	E*
30751 S	Implementation of content distribution networks Implantación de redes de distribución de contenidos	3 ECTS	S	S	S	S
30739 S	Aerospace communications systems Sistemas de comunicaciones aeroespaciales	3 ECTS	S/E	S/E	S/E	S
30747 S	Design of quality service networks Diseño de redes con calidad de servicio	3 ECTS	S	S	S	S
30738 S	Next generation mobile communications networks Redes de comunicaciones móviles de nueva generación	3 ECTS	E	E	E	E*
30748 S	Architecture and protocols in mobile communications Arquitectura y protocolos en comunicaciones móviles	3 ECTS	S/E	E	S	S
30734 S	Signal processing in wireless communications Procesado de señal en comunicaciones inalámbricas	3 ECTS	S	E	E	S
30737 S	Electromagnetism in advanced materials design Electromagnetismo en el diseño de materiales avanzados	3 ECTS	E/S	E	E	E*
35663 S	WEB application development tools Herramientas para el desarrollo de Aplicaciones WEB	3 ECTS	S	S	S	S
35666 S	Systems virtualization Virtualización de sistemas	3 ECTS	S	S/E	S/E	S
35669 S	Digitalization in industry Digitalización en la industria	3 ECTS	S	S	S	S
35670 S	Applications in mobile communications systems Aplicaciones en sistemas de comunicaciones móviles	3 ECTS	E	E	E	E*
35671 S	RADAR applications Aplicaciones RADAR	3 ECTS	E	E	E	E*

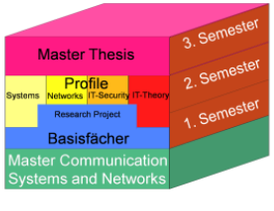
Remarks:

- **Code: no. of code and official language of the course**
- Slides: the language of slides
- Exam writing: You can write your exam in E/S
- Exam wording: The wording of the exam is in E/S
- Classes. The teacher can change the official language to S: Spanish even if all the students understand English

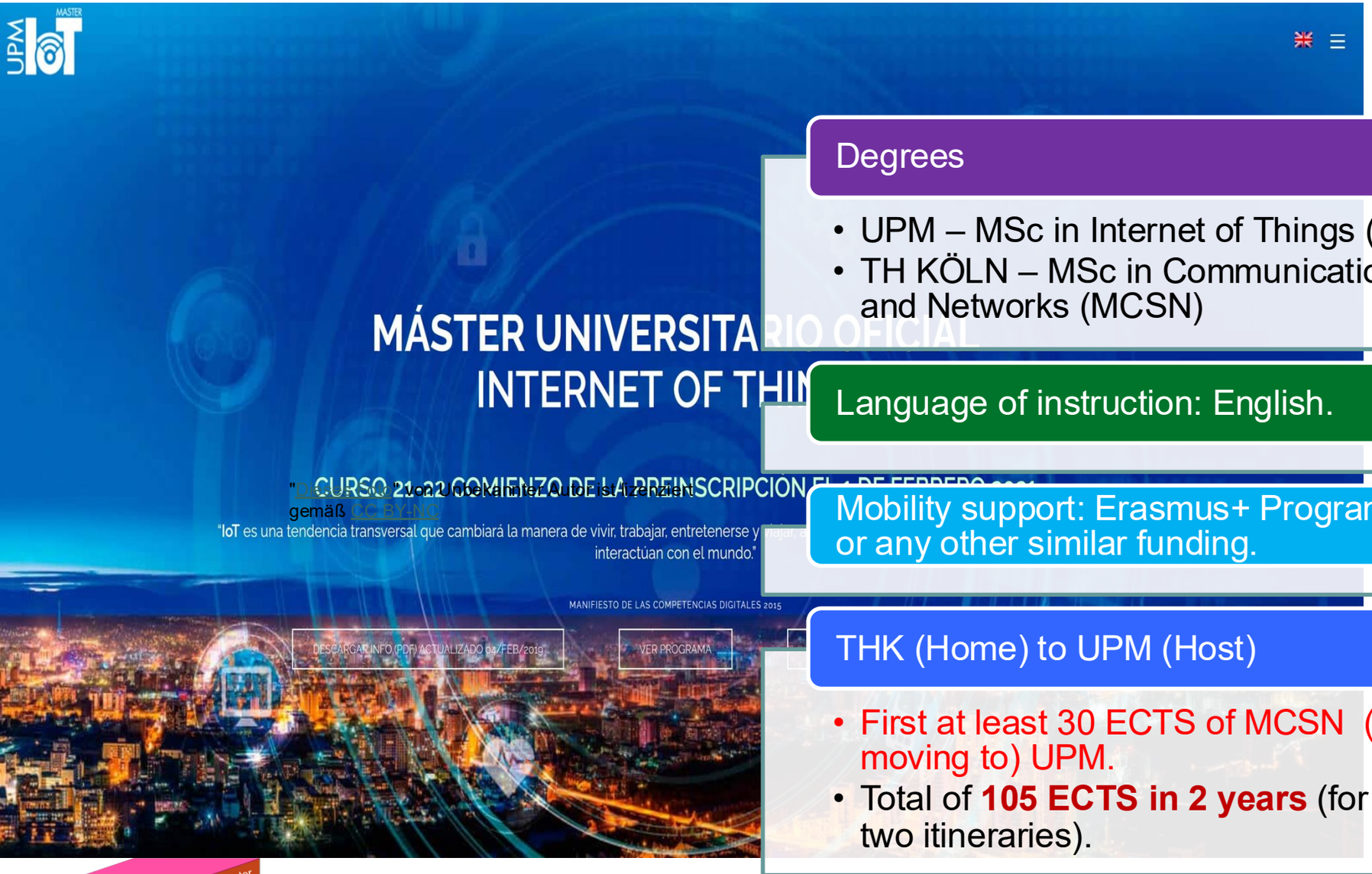
E*: English if all the students agree on it



Double Degree programs with the partner Universidad Politécnica de Madrid



Double Degree with UP Madrid Internet-of-Things



Degrees

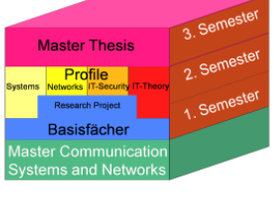
- UPM – MSc in Internet of Things (MIoT)
- TH KÖLN – MSc in Communication Systems and Networks (MCSN)

Language of instruction: English.

Mobility support: Erasmus+ Program or any other similar funding.

THK (Home) to UPM (Host)

- First at least 30 ECTS of MCSN (before moving to) UPM.
- Total of **105 ECTS in 2 years** (for any of the two itineraries).



Program Structure

Term 1 (Summer) @ Köln

- In total 30 ECTS:
  - 20 ECTS of Compulsory (inc. 10 ECTS Research project *) + 5 ECTS of Speclialisation + 5 ECTS of Elective courses.

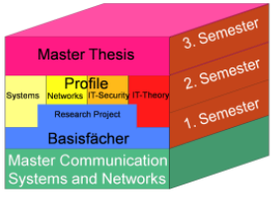
(*) Joint supervision by both institutions, graded at THK. It has to be in the field of IoT.

Term 2 (Fall) @ Madrid

- 30 ECTS.

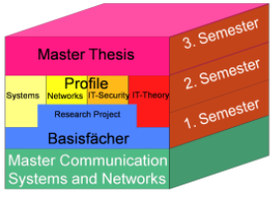
Year 2 @ Köln

- 15 ECTS: 5 ECTS of a Compulsory course + 10 ECTS of Elective courses.
- 30 ECTS Master's Thesis.
  - Joint supervision by both institutions.
  - Defense takes place at THK.



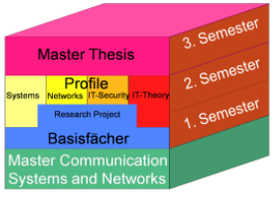
First semester (summer at THK)

MCSN courses at THK	Course type	Credits (30)	Recognized MIoT courses at UPM	Credits (18)
Advanced Mathematics	Compulsory	5		
Fundamentals of System- and Network Theory	Compulsory	5		
Embedded Security , Cryptology or IT Security	Specialisation	5	Security for IoT Applications	4.5
Research Project (in the field of IoT)*	Compulsory	10	Big Data Applications for IoT + Cloud computing for IoT	9
Intelligent Information Systems	Elective	5	Intelligent Applications using IoT devices	4.5



2nd semester (winter at UPM)

MIoT .courses at UPM	Credits (30)	Recognized MCSN courses at THK	Course type	Credits (15)
Embedded platforms and communications for IoT	4.5			
Mobile Devices Programming	4.5			
Sensor Networks	4.5	Kommunikation in verteilten Systemen (Communication in Distributed Systems and Networks)	Specialisation	5
Cyberphysical systems modelling	4.5			
Distributed Systems for IoT	4.5	Zuverlässigkeit von Systemen (Reliability of Systems)	Specialisation	5
Architectures and service platforms	4.5	Next Generation Networks	Specialisation	5
Information Models	3			

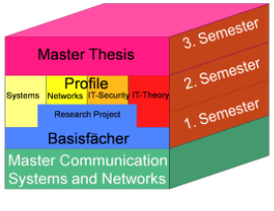


THK 2nd year

MCSN courses at THK	Course type	Credits (45)	Recognized MIoT courses at UPM	Credits (12)
	Elective*	5		
	Elective*	5		
Project Management	Compulsory	5		
Master Thesis**	Compulsory	27 + 3	Master Thesis**	12

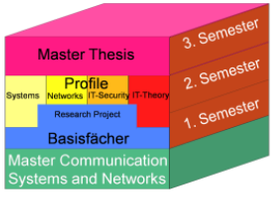
* Students cannot choose as elective courses any that is included in this annex as “recognized MCSN courses at THK”

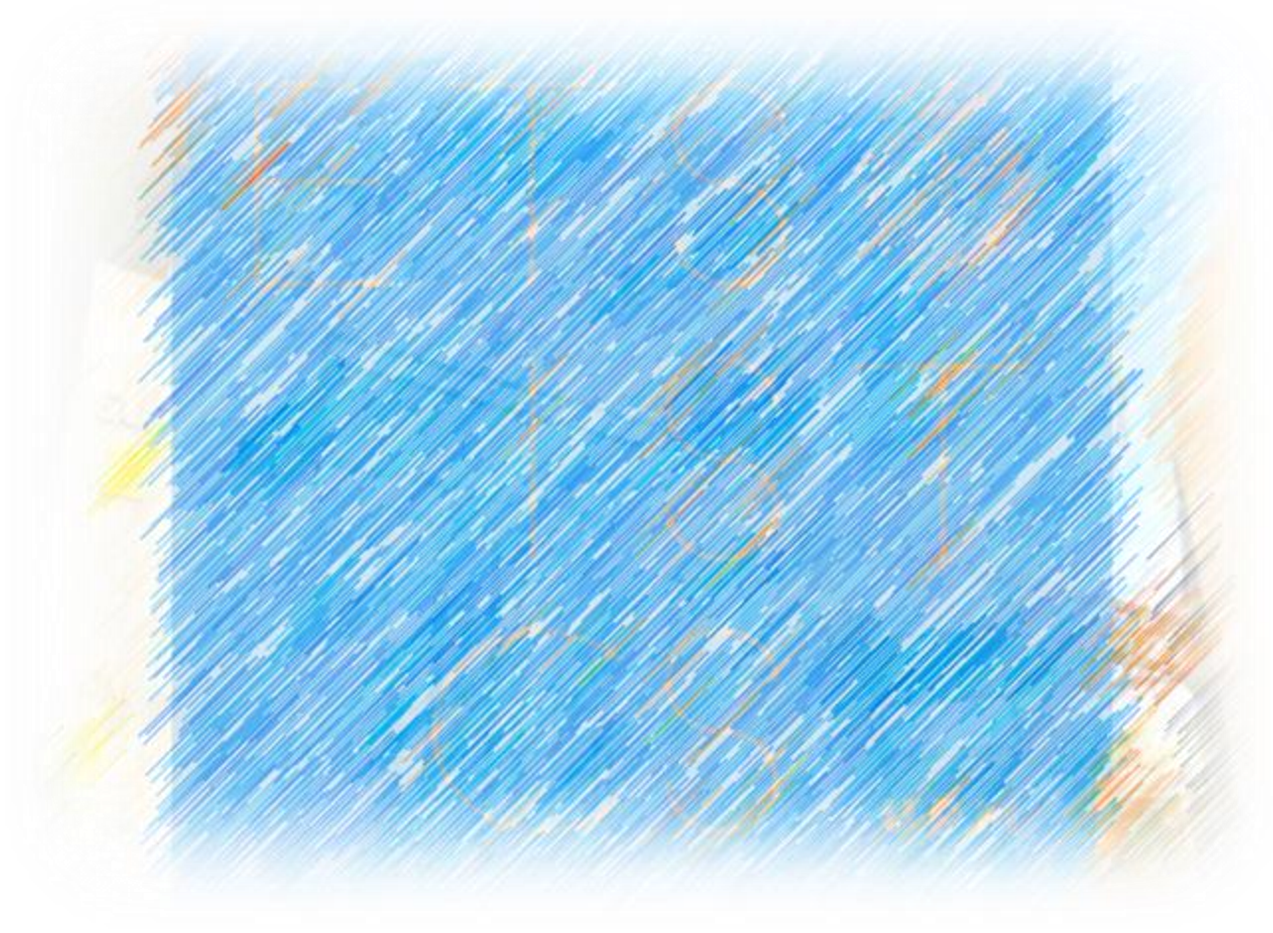
** The Master Thesis will be done during the second year at THK, jointly supervised by UPM and THK academics, and graded at THK according to THK regulations.



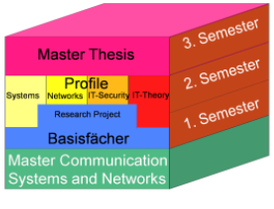
UPM Master Internet-of Things

- https://masteriot.etsist.upm.es
- **Academic information:** https://www.etsist.upm.es/estudios/postgrado/Master-IoT
- master.iot@upm.es, sre.etsist@upm.es





UPM Master of Wireless Communications



Communication Systems and Networks

Program Structure

Term 1 (Summer) @ Köln

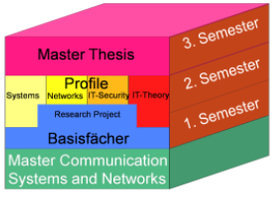
- 30 ECTS:

Term 2 (Fall) @ Madrid

- 30 ECTS.

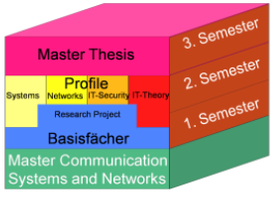
Year 2 @ Köln

- 40 ECTS:
  - 10 ECTS Research Project
  - 30 ECTS: Master Thesis and Colloquium



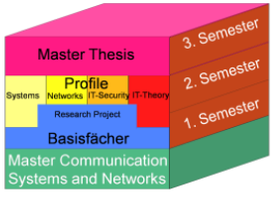
Master Wireless Communications
1st semester (summer)

MCSN courses at THK	Course type	Credits (30)	Recognized MWC courses at UPM	Credits (9)
Advanced Mathematics	Compulsory	5		
Fundamentals of System- and Network Theory	Compulsory	5		
Communication in Distributed Systems and Networks	Specialisation	5	Wireless Sensor Networks	4.5
Elective 1	Elective*	5		
Project Management	Compulsory	5		
Finite element method in electrical engineering (Elective 2)	Elective	5	Wireless Channel Modelling	4.5



Master Wireless Communications
2nd semester (winter/UPM)

MWC courses at UPM	Credits (30)	Recognized MCSN courses at THK	Course type	Credits (20)
Advanced Information Theory	6	Advanced Channel Coding	Specialisation	5
Mobile Communication Systems	6	Digital Signal Processing	Specialisation	5
RF Wireless Technology	6	RF System Design	Specialisation	5
Antenna Technology	4.5			
Network Architecture and Protocols	4.5	Next Generation Networks	Specialisation	5
Scientific Research Methodology	3			



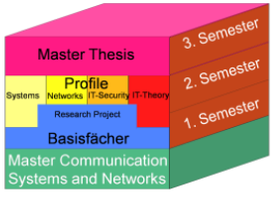
Master Wireless Communcations
2nd year

MCSN courses at THK	Course type	Credits (40)	Recognized MWC courses at UPM	Credits (21)
Research Project (in the field of Wireless Communications)*	Compulsory	10	Short Range Wireless Communications + Wireless Communications in ITS	9
Master Thesis,***	Compulsory	27 + 3	Master Thesis**	12

* The research project will be jointly supervised by UPM and THK academics, and graded according to THK regulations.

** The Master Thesis will be done during the second year at THK or UPM, jointly supervised by UPM and THK academics, and graded at THK according to THK regulations.

*** Students have to submit a research paper to a peer-reviewed conference or journal before submitting their Master Thesis

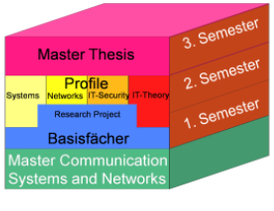


UPM Master Internet-of Things

- https://masteriohttps://telecocampussur.etsist.upm.es/master-universitario-en-wireless-communications/t.etsist.upm.es

- **Academic information:** https://www.etsist.upm.es/estudios-ingenieria-sistemas-telecomunicaciones-madrid/masters-ingenieria-madrid/mwc

- Double Degree: https://www.etsist.upm.es/estudios-ingenieria-sistemas-telecomunicaciones-madrid/masters-ingenieria-madrid/mwc/double-degrees



Summary

- We offer three Double Degree contracts with well reputated Spanish Universities
- Please note that a placement should be done until end of March due to Erasmus+ time schedule requirements
- Apply as soon as possible!!

- Further Questions
  - Prof. Dr. Uwe Dettmar
  - Office hour Wednesday at 11 am
  - uwe.dettmar@th-koeln.de