



UNIVERSITÀ DI PISA
DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE
Dottorato di Ricerca in Ingegneria dell'Informazione

Doctoral Course

"5G and V2X communications"

Teacher: Dario Sabella

INTEL Deutschland GmbH - Germany

Short Abstract:

The course will cover the main aspects of 5G, from the description of the technology to the standards and industry associations working in the field. Among the most prominent vertical segments fueled by 5G are: Industrial IOT, Automotive, and Immersive Media. A particular emphasis will be given to the automotive segment, and the V2X communication, both from 3GPP point of view and relevance from industrial associations in the automotive sector (e.g. 5GAA). Short examples from Industry Groups, associations and involved companies will complete the course.

Course Contents in brief:

- 3GPP Release 15/16 for enhanced mobile broadband (NR eMBB), ultra-reliable low latency communication (NR URLLC), NR-V2X
- 5GS, edge computing, MEC, network slicing, predictive QoS
- 5GAA, AECC, Trials

Total # of hours of lecture: 20

References:

- [1] 3GPP, Technical Report TR 28.801, "Telecommunication management; Study on management and orchestration of network slicing for next generation network," 2017
- [2] 3GPP, Technical Specification TS 23.501 "System architecture for the 5G System (5GS)," 2019
- [3] 3GPP, Technical Specification TS 38.300 "NR; Overall description; Stage-2," 2019
- [4] 3GPP, Technical Specification TS 38.401 "NG-RAN; Architecture description," 2019
- [5] Next Generation Mobile Networks Alliance (NGMN), "Description of Network Slicing Concept by NGMN Alliance, NGMN 5G P1 Requirements & Architecture Work Stream End-to-End Architecture," 2016

- [6] https://www.5gitaly.eu/wp-content/uploads/2019/12/libro5G_2019_online.pdf
 - [7] https://www.ngmn.org/wp-content/uploads/Publications/2019/190916-NGMN_E2EArchFramework_v3.0.8.pdf
 - [8] https://5g-ppp.eu/wp-content/uploads/2019/07/5G-PPP-5G-Architecture-White-Paper_v3.0_PublicConsultation.pdf
 - [9] https://5gaa.org/wp-content/uploads/2018/08/V2X_white_paper_v1_0.pdf
 - [10] https://5gaa.org/wp-content/uploads/2017/12/5GAA_T-170219-whitepaper-EdgeComputing_5GAA.pdf
 - [11] https://aecc.org/wp-content/uploads/2019/09/AECC_WG2_TR_v1.0.2.pdf
 - [12] <https://builders.intel.com/docs/networkbuilders/edge-computing-from-standard-to-actual-infrastructure-deployment-and-software-development.pdf>
-

CV of the Teacher

Dario Sabella received his Dr. Eng. Degree in Electronics Engineering from Politecnico di Torino, Italy, in 2002. After graduation, he joined the research center of TIM (Telecom Italia group), being involved in several R&D projects targeting future generation communications. In 2004 he received an additional post-degree specialization Master in Telecommunications. Then he worked in the Wireless Access Innovation division, as responsible in various TIM research activities for the study of OFDMA technologies (WiMAX, 3GPP LTE and LTE-A); he worked also in FP7 and H2020 European projects (EARTH, ARTIST4G, iJOIN, Flex5Gware). From February 2017 he's working with Intel as Senior Research and Standards engineer. He has been co-author of several publications and patents in the field of wireless communications, radio resource management, packet scheduling and energy efficiency. He has organized several international workshops and conferences on green communications and heterogeneous networks.



Patents & Pub

Room and Schedule

Room: *Aula Riunioni del Dipartimento di Ingegneria dell'Informazione, Via G. Caruso 16, Pisa – Ground Floor*

Schedule:

Day1 (half day) - 4 May 2020

Key components and spectrum

KPI of 5G

5G verticals

Day2 - 5 May 2020

Architecture: NSA, SA variants

5GS, edge computing, MEC,
network slicing, predictive QoS

Day3 - 6 May 2020

5G NR - Rel.15/16

LTE-V2X

5G-V2X

Day4 (half day) - 7 May 2020

5GAA

AECC

Trials
