SUMMER SCHOOL

on

Microwaves and mm-waves for the Design of Advanced Wireless Links: Communication, Sensing and Power Transfer

June 16-21, 2025
Polo della memoria San Rossore, via Risorgimento, Pisa, Italy

https://www.dii.unipi.it/microwaves-and-mm-waves-design-advanced-wireless-links-communication-sensing-and-power-transfer

Preliminary program (*last update: January 2025*)

Day	***Morning class***	***Afternoon class***
Monday **June 16, 2025**	**Introduction to the Summer School** Prof. Paolo Nepa and Prof. Andrea Michel *(University of Pisa, Summer School coordinators)*	**Wave propagation in complex environments and multipath models** *Dr. Pierpaolo Usai (University of Pisa)*
	Radio design criteria in the early XX century: learning from the Father of wireless *Prof. Filippo Giannetti (University of Pisa)*	**Guided wave modeling in coaxial cables, printed lines and waveguides** *Prof. Alice Buffi (University of Pisa)*
	Electromagnetic wave propagation: a ray-optical picture *Prof. Giuliano Manara (University of Pisa)*	
Tuesday **June 17, 2025** Off-campus lesson at Villa Griffone, Pontecchio Marconi, Bologna	*Transfer from Pisa to Pontecchio Marconi (by private bus)* **Guided tour of the Marconi Museum** (https://www.fgm.it/en/home.html)	**Devices and architectures for battery-less RF systems** *Prof. Alessandra Costanzo (University of Bologna)*
		Communication and sensing in smart radio environments enabled by reconfigurable surfaces *Prof. Davide Dardari (University of Bologna)* *Return to Pisa (by private bus)*

Wednesday **June 18, 2025**	**Microwave device modeling** *Prof. Simone Genovesi (University of Pisa)*	**Analysis and design of passive devices: modeling and numerical simulation** *Prof. Andrea Michel (University of Pisa)*
	Manipulating microwaves and mm-waves with passive devices *Prof. Filippo Costa (University of Pisa)*	**Microwave Lab measurements** *Dr. Andrea Motroni (University of Pisa)*
Thursday **June 19, 2025**	**The antenna as a system component** *Prof. Paolo Nepa (University of Pisa)*	**How antenna arrays advance wireless system performance** *Prof. Paolo Nepa (University of Pisa)*
	Fundamentals of satellite communications: a hands-on approach *Prof. Filippo Giannetti (University of Pisa)*	**Fundamentals of transceivers for communication systems** *Dr. Francesco Pieri (University of PIsa)*
Friday **June 20, 2025**	**Wireless communication systems and technologies: from the basics to 5G standards** *Dr. Giacomo Bacci (University of PIsa)*	**Wireless Internet of Things** Industrial speaker TBC
	Automotive mm-wave radar sensors *Prof. Sergio Saponara (University of PIsa)*	**EM waves for sensing** Industrial speaker TBC
Saturday **June 21, 2025**	**Antennas for radars and satellite communications** Industrial speaker TBC	**Project works: discussion and assignment** **Fill-out of a survey on the Summer School contents and organization** *Prof. Paolo Nepa and Prof. Andrea Michel (Summer School coordinators)*
	Satellite communication systems Industrial speaker TBC	