Code B_2735

Department	Electrical and Electronic Engineering
UniCa reference person	Giovanni Andrea Casula
Project title in English	Seminar Series on mm-Wave and Sub-THz IC Design for Wireless Communication, Radar and Sensing Applications
Project title in Italian	Ciclo di seminari sulla progettazione di circuiti integrati a onde millimetriche e alle frequenze dei sub-THz per comunicazioni wireless, applicazioni radar e di rilevamento
Subject area of reference (World University Ranking)	ENGINEERING AND TECHNOLOGY
Project summary and VPS' profile	The activities will consist of a series of three seminars of about three hours each on mm-Wave and Sub-THz IC Design for Wireless Communication, Radar and Sensing Applications. The seminars will first provide a broad graduate-level overview of the following topics: IC technologies for RF and mm-wave applications, realization and optimization of active and passive devices, low-noise amplifiers, power amplifiers, active and passive mixers, oscillators, frequency multipliers, phase shifters, phased-arrays, system-on-chip aspects (electromagnetic compatibility, modeling of networks for the distribution of the dc supply). With this background, all topics will be illustrated with detailed examples from recent research projects and published results. In particular, architecture, design and experimental results will be presented and discussed in detail for the following systems: dual-band phased-array transmitter and receiver frontends for modular mm-wave 5G systems, 60GHz and 80GHz radar frontends for medical and automotive applications, a 60GHz RFID tag reader based on a novel interferometer concept, a 200GHz transceiver for high-efficiency board-to-board data transmission at 50Gbps, a 140GHz (D-Band) true-time-delay beamsteering four-channel transceiver for 6G wireless systems capable of up to 200Gbps data rates. Finally, novel concepts to enable data transmission and sensing over carriers above the fmax of the available transistors will be presented and discussed. The seminars will be delivered in presence during the planned six-day visit at the Department of Electrical and Electronic Engineering (DIEE).
Proposed length of stay	Short visit of 6 days
Expected period of activity	July 2024
Academic position of the VPS'	Professor
Course of Study	Dottorato di ricerca (PhD Course)
Language of instruction	Italian for the 5 year Master Degree - English for the PhD Course