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INTERNSHIP OFFER FOR INTERNATIONAL STUDENTS

INSTITUTION	Universidad Politécnica de Cartagena www.upct.es South-East of Spain
SHORT DESCRIPTION OF THE INSTITUTION	The UPCT is a public institution, established in 1998 in Spain. It is comprised of 7 Schools of Engineering, Business and Architecture and offers several Master and PhD Programmes.
RECEIVING SCHOOL / FACULTY	Escuela Técnica Superior de Ingeniería de Telecomunicación (ETSIT) School of Telecommunication Engineering
ADDRESS	Campus Muralla del Mar S/N, Antigones 30202 Cartagena, Murcia (Spain)
PLACEMENT OFFERED	ETSIT. Telecomunicacion Universidad Politecnica Cartagena
DESCRIPTION OF THE PLACEMENT ACTIVITY	Design of filters based on gap waveguides Passive RF and microwave components In the communication systems for satellites, microwave filters play an important role [1]. Rectangular waveguide (RW) technology has been widely used to implement high-performance filters at microwave/mm-wave applications, owing to its high-quality factor, low loss, and high-power handling capability with respect to their substrate integrated waveguide (SIW) and planar counterparts [2,3]. However, SIW and planar filters offer a low profile, a reduced size, lightweight and an easy integration of components compared to RW filters. In addition, SIW and planar filters are cheaper to manufacture from printed circuit technology than RW ones using high-accuracy computer numerical control (CNC) machining. However, the high insertion losses of SIW and planar filters, due to the dielectric substrate and conductors, are their main drawbacks compared to RW counterparts. Recently, gap waveguide (GW) technology has been developed to improve the longitudinal wave propagation between two air-filled parallel metallic plates [4]. The mains advantage of this technology is that it does not require metallic contact between both parallel plates, thus allowing the fabrication of low-cost components at millimeter and submillimeter wavelengths. The aim of this project is to analyze, design and implement filters in GW technology.

	Bibliography: [1] R. J. Cameron, C. M. Kudsia, R. Mansour. Microwave filters for communication systems: fundamentals, design, and applications. Hoboken: Wiley; 2007. [2] J. S. Hong, M. Lancaster. Microstrip filters for RF/microwave applications. New York: Wiley; 2001. [3] C. Máximo-Gutiérrez, J. Hinojosa, F. L. Martínez-Viviente, A. Alvarez-Melcon. Design of high-performance microstrip and coplanar low-pass filter based on electromagnetic bandgap (EBG) structures. AEU-Int J Electron Commun 2020;123: 153311–7. [4] Kildal PS. Three metamaterial-based gap waveguides between parallel metal plates for mm/submm waves. In: 3rd European Conf on Antennas and Propag (EUCAP), Berlin, Germany, 23-27 Mar 2009, p. 28-38.
REQUIRED STUDENT PROFILE	Electrical Engineering/ Telecommunication Engineering
REQUIRED SKILLS	Last course of bachelor/master in electrical/telecom engineering
WORKING LANGUAGE	English
DURATION	3 or 6 months
WORKING HOURS	25 hours per week
FINANCIAL AID	No. FREE SPANISH CLASS ACCORDING THE ACCADEMIC YEAR.
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