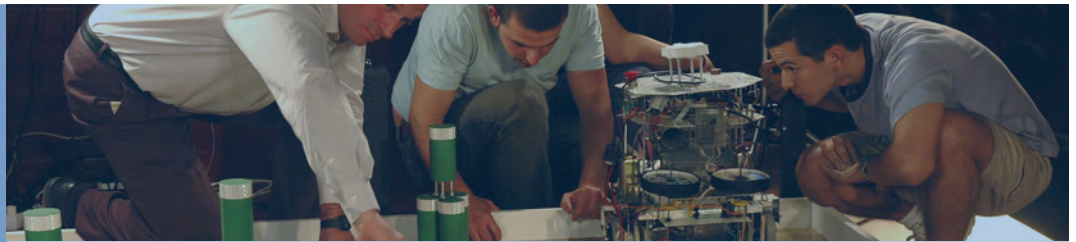# Universidad de Alcalá

COMMUNICATIONS, MULTIRATE SYSTEMS, AND BIOMEDICAL ENGINEERING

**Code
746**

COMB

RESEARCH AREA

Technological Sciences

COORDINATOR

Manuel Blanco Velasco

KEY WORDS

Machine Learning, OFDM, Communications, Electrocardiogram, Pain

AIM

- Telecommunication area
- Companies in the area of health sciences

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ABOUT US

The group focuses its scientific activity on the design and implementation of sub-band signal decomposition techniques for their treatment, codification, and transmission using multi-carrier systems. The purpose is the development of new communication techniques as well as systems to detect pathologies based on the above methods.

RESEARCH LINES

- Design of broadband transceivers for Powerline Communications (PLC), wired or fiber (xDSL), and wireless communications (WiFi, WIMAX, LTE, LTEA…)
- Channel estimation and synchronization techniques in redundant data communications (multi-carrier and single carrier)
- Signal processing for broadband communications
- Biomedical signal processing
- Efficient multimedia encoders
- ECG signal encoders
- Alternas detection of ventricular repolarization
- Pain and stress analysis

OFFERED SERVICES

- Design of optimization methods for designing prototype filters
- Fast and efficient algorithms for its implementation
- Design of multi-carrier modulators for data transmission through state-of-the-art communication systems (wireless and xDSL)
- Development of communication channel simulator (technology xDLS)
- Design o high quality audio encoders for low delay applications
- Design of quality on-demand encoders of electrocardiogram (ECG) with high compression ratio
- Design and implementation of biomedical signal processing algorithms
- Application of machine learning to detection and classification applications

MARKETABLE RESULTS