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# Wireless and Wideband Communications

## Finalità

The course aims to provide an engineering knowledge of the architecture, design, and operation of a few important communication systems.

## Programma

Review of modulation and coding. Principal channel models in communication systems. Rayleigh and Rice fading channels. Spread spectrum transmission systems. Code division multiple access (CDMA). Localization systems (GPS). Performance of digital modulations in the presence of fading and diversity techniques. Cellular systems and frequency reuse. Free-space and flat-earth path loss. Architectural principles of cellular radio systems. GSM, IS-95 and GPRS systems. UMTS system. Multicarrier modulations (OFDM). Wireless area networks (WLAN, WPAN e Bluetooth). Voiceband and wideband telephone modems (ADSL). Digital audio and video broadcasting (DAB and DVB).

## Attività d'esercitazione

Assigned laboratory projects must be carried on using a simulator of transmission systems.

## Modalità d'esame

For those who attend the course: overall evaluation based on written tests, laboratory projects and possible oral examination.

For anyone: evaluation based on written and oral examination.

## Propedeuticità

Comunicazioni elettriche A.

## Testi consigliati

R. E. Ziemer, R. L. Peterson, Digital communications, Prentice Hall, 2001.

A. Bruce Carlson, Paul B. Crilly, and Janet C. Rutledge: Communication systems, 4th edition, McGraw Hill, 2002.