Comunicazioni elettriche A

<u>Finalità</u>
To describe the theoretical foundation of analog and digital communication systems and the elements necessary to their design.

<u>Programma</u>
Introduction — Lowpass equivalent of bandpass deterministic or random signals.
Analog Modulations — Amplitude modulation (AM): signal time-domain expression, spectrum, bandwidth, and transmitted power. DSB and SSB modulations. Detection of AM signals. Detection in the presence of phase and frequency errors. Carrier recovery for AM signals. Frequency modulation (FM) and phase modulation (PM). Bandwidth and transmitted power. Detection of FM and PM signals. The phase-locked loop (PLL). Frequency division multiplexing (FDM).
Digital modulations — Pulse code modulation (PCM), quantization noise. Time division multiplexing (TDM). Baseband digital transmissions. Pulse amplitude modulation (PAM). Matched filter. Error probability for binary and M-ary modulations. Nyquist pulse. Intersymbol interference. Eye diagrams. Equalization. Bandpass digital transmissions.

<u>Attività d'esercitazione</u>
Solution of previously assigned problems.

<u>Modalità d'esame</u>
Written and oral exam.

<u>Propedeuticità</u>
Teoria dei segnali A

<u>Testi consigliati</u>
Bruce Carlson, Paul B. Crilly, and Janet C. Rutledge:"Communication systems", 4th edition, McGraw Hill, 2001.