Information Theory and Coding

Finalità
The course aims to present the main results of information theory, with a rigorous approach and in the perspective of signal transmission, processing and storage.

Programma
Entropy and mutual information of discrete random variables. Typical sets and sequences. Entropy rate of stochastic processes. Data compression. Huffman and universal codes. Capacity of a discrete communication channel. Differential entropy of continuous random variables. Capacity of a gaussian communication channel. Rate distortion theory. Network information theory.

Attività d'esercitazione
Training is based on classroom solutions of periodical homework assignments.

Modalità d'esame
For those who attend the course: overall evaluation based on homework and oral examination.
For anyone: evaluation based on oral examination.

Propedeuticità
None.

Testi consigliati
T. M. Cover, J. A. Thomas, Elements of Information Theory, John Wiley and Sons, 1991.