Information Theory and Coding

<u>Finalità</u>
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.

<u>Programma</u>
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.

<u>Attività d'esercitazione</u>
Training is based on classroom solutions of periodical homework assignments.

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

<u>Propedeuticità</u>
None.

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