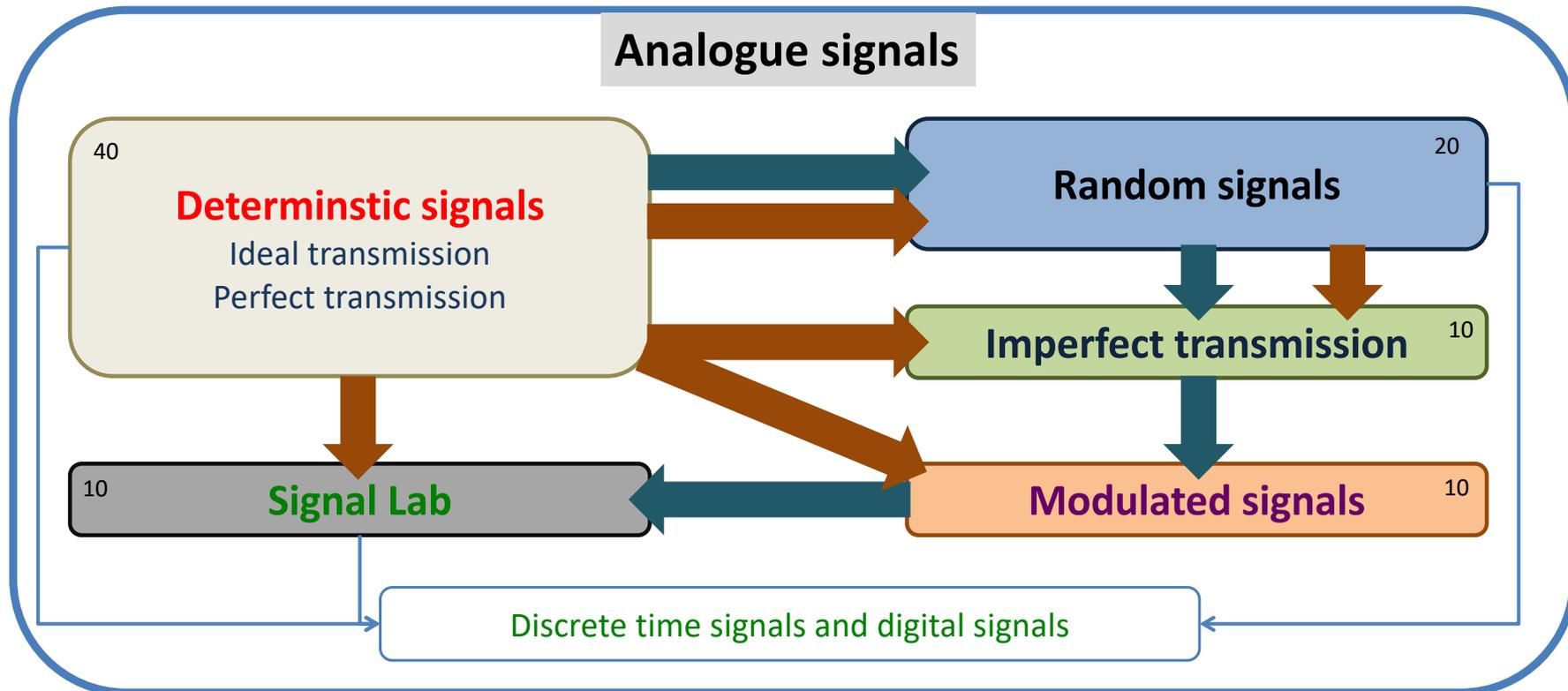
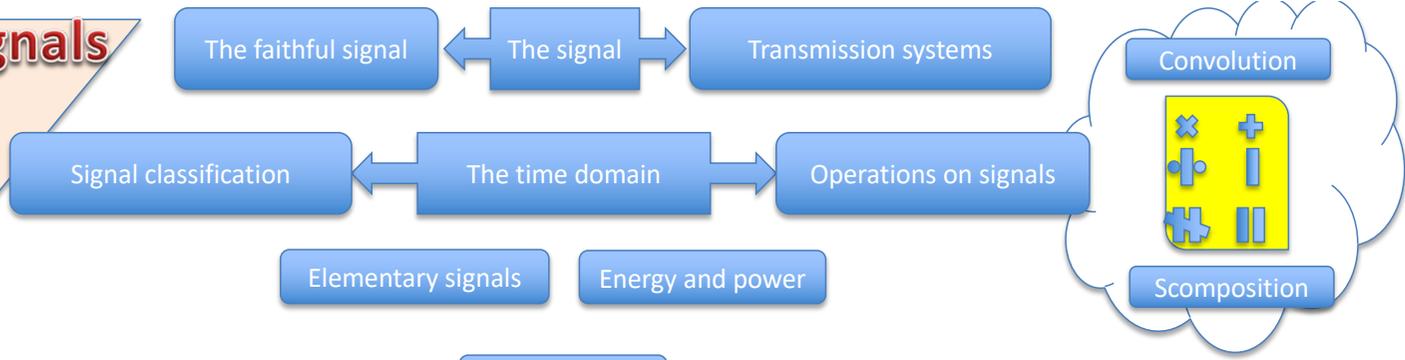


Fundamentals of Telecommunications

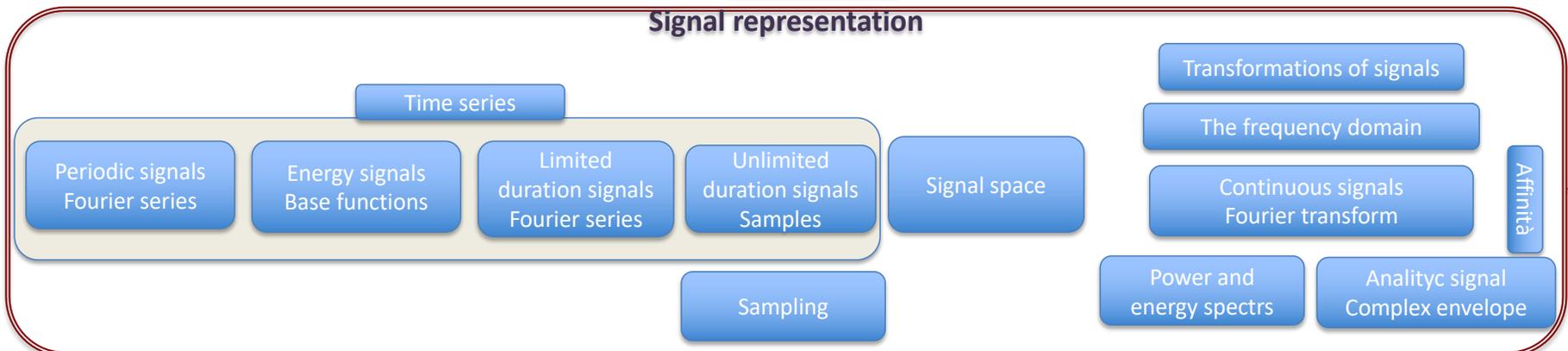


Deterministic signals Flow diagram

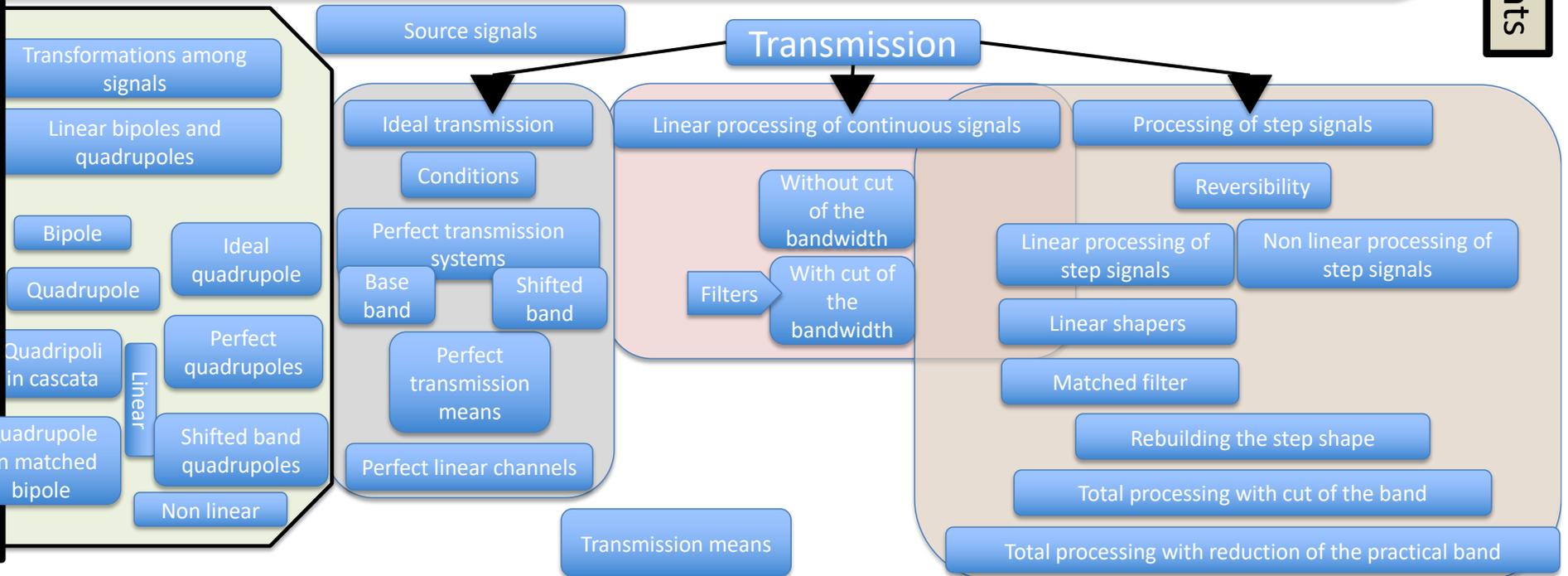


Definitions
Mathematical instruments

Affinity



Application of the instruments
to processing



Random signals

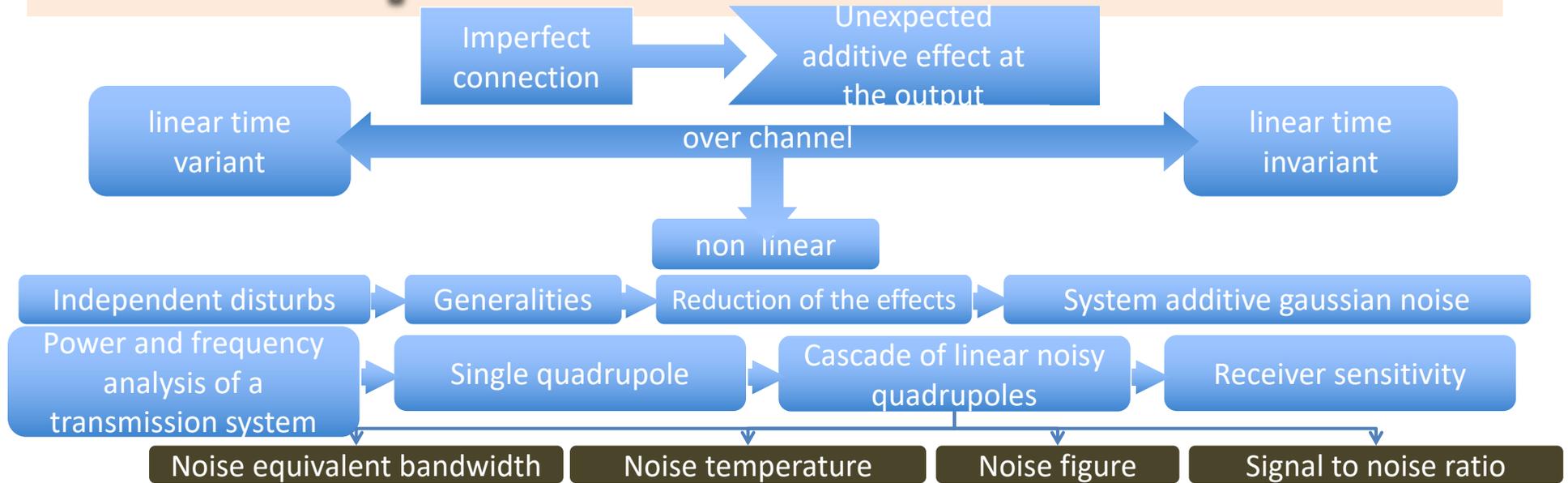
Theory of probability

Random variables, distribution and density probability functions, conditioned probability functions. Moments of a random variables, characteristic function and generating function of a r.v., functions of random variables, evaluation of the distribution function, evaluation of the probability density function, sequences of random variables, Transformation of random variables, independence of random variables, expected values, variances and covariances, conditional density functions, characteristic function, complex random variables.

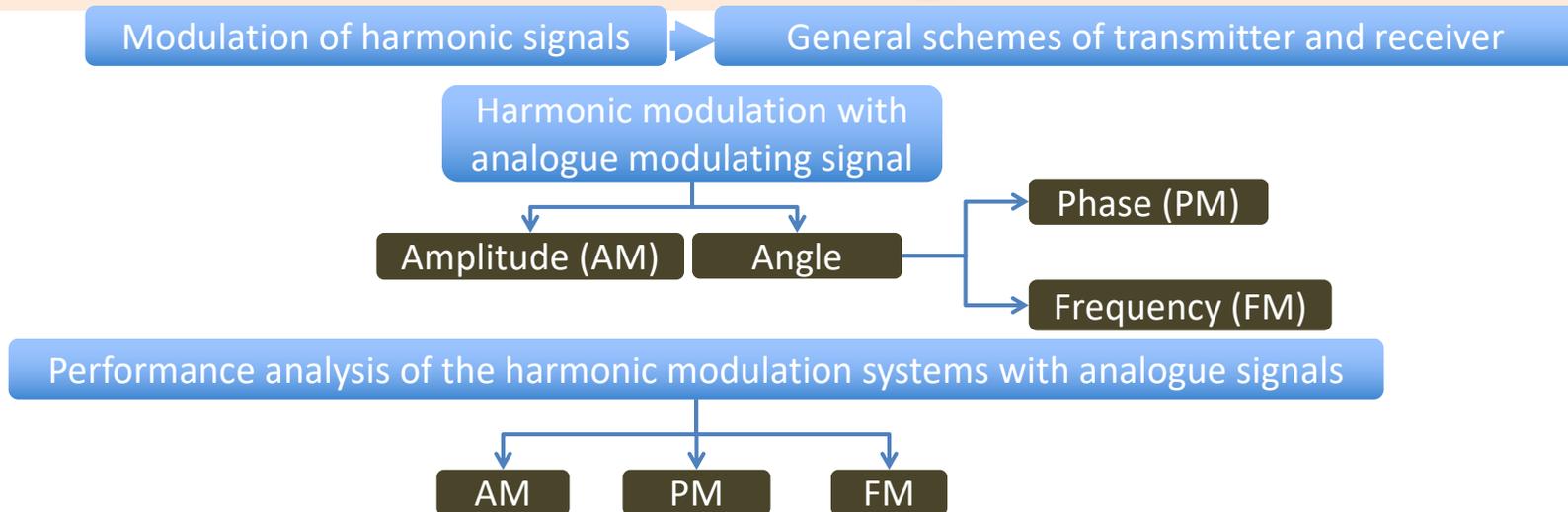
Random processes

General concepts, characterising quantities, Properties, Moments, Discrete time processes, Classification, basics on spectral theory, Transformation of random processes, the Gaussian process. Generalities on stochastic processes, random signals and their sources, characterisation of continuous processes, stationary continuous processes, cross correlation, sum process and complex process, stationary real discrete processes, cyclostationary processes of first and second order, processes represented by means of complex envelope, stationary non base band process, processes represented by means of time series, real processes with random factors, Processes sampled in base band, complex processes with random factors, process sum of real processes with random factors, Gaussian continuous processes : the noise, Gaussian stationary noise non in base band, white Gaussian noise in the signal space, Markov processes, properties, Markov time discrete and time continuous processes.

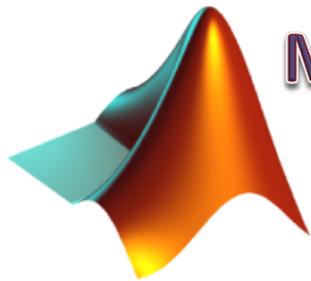
Imperfect transmission



Modulated signals



Laboratory of signals



Matlab

Introduction



Graphical
representation of
signals

Execution of operations
between signals (even
periodic)



Study of the properties of signals (such as
energy or power) and correlations.