Course Title:	NUMERICAL METHODS FOR OUT-OF EQUILIBRIUM STATISTICAL PHYSICS
Instructor	Davide Valenti, Grazia Cottone
N of hours	15
description	Numerical methods for stochastic processes as tools to describe out-of- equilibrium nonlinear systems and noise induced effects
contents	• Knowledge and use of the main characteristics of FORTRAN* language. • Use of FORTRAN* language to devise numerical methods for studying and modeling nonlinear physical systems. • Numerical methods for second order partial derivative equations. Analytical and numerical resolution of heat equation. Comparison between the two approaches. • Numerical implementation of algorithms for the pseudo-random generation of white Gaussian noise. • Numerical methods for solving stochastic differential equations in the presence of nonlinear potentials. Noise enhanced stability. Dynamics of a Brownian particle subject to an oscillating bistable potential: stochastic resonance. Noise induced effects in physical and/or biological systems. • *In alternative, students attending the course can use C or Python