Dottorato di Ricerca in Scienze Chimiche, Geologiche e Ambientali

PhD course:
Machine learning for multivariate data analysis

Monday 5th July 9.00-17.00 - webex
Tuesday 6th July 9.00-17.00 - webex

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This course is an introduction to different key aspects of advanced multivariate data analysis in science. This includes mathematical and statistical methods able to face, analyse and describe complex systems, that is, systems characterised and influenced by several factors (variables). It is thus addressed to PhD students who want to acquire or intensify knowledge on multivariate analysis from different disciplines (Chemistry, Physics, Biology, Geology, Environmental Sciences, etc.).

The course will introduce principles and theory of the main multivariate modelling and machine learning approaches. These can be useful for exploratory analysis, i.e. to find and visualise main patterns in complex data systems (Principal Component Analysis), as well as to relate a set of independent variables to a modelled qualitative or quantitative response.

Theory lessons will be supported with guided exercises and practical sessions on real data as case studies. Practical sessions will be based on available statistical toolboxes for multivariate data analysis developed in MATLAB.