

Course offered for the STAT PhD program starting from a.y. 2020/2021

TITLE	Why elemental speciation in aqueous media is the reading key in total environment understanding?
Main Lecturer	Marino Vetuschì Zuccolini
Duration and Credits	2 CFU - 8 hours
Course description	Elemental mass transfer among the "spheres" of the total Environment, is highly efficient thanks to the presence of liquid water. Aqueous solutions are ubiquitous both in geological and biological systems over a widespread range of intensive and properties as pressure, temperature, pH, redox state, solutes activity and gases fugacity. Thus nutrients, metals, metalloids and isotopes transfer and distributions are driven by bulk major and trace chemistry and chemical-physical parameters. In this short course elemental speciation, namely the evaluation of type and quantity of species dissolved in solutions, is presented as a tool to understand its availability and reactivity in natural system. The main effort will be to help the variegated audience in understanding the characterization of a water dominated heterogeneous multicomponent system in terms of dominant equilibrium dissolved species. The course is composed by a theoretical part and a practical section where some examples will be discussed in more details.
Course organization	In view of the variety of the audience an introduction to theory of heterogeneous and multicomponent aqueous solution speciation will be presented so as to ensure a full availability of the second section of the course where some examples will be deal with.
Teaching period	November