



Dipartimento di Scienze e Tecnologie

ACADEMIC YEAR 2017/2018

STUDY COURSE IN GEOLOGICAL SCIENCES
TEACHING: GEOCHEMISTRY (6 CFU)

PROFESSOR DOMENICO CICCHELLA

- Abundance of chemical elements in the Universe
- Formation and evolution of the Solar System
- Cosmic abundance of the chemical elements
- The chart of nuclides
- Origin of the elements
- Origin and evolution of the solar system
- Meteorites: origin, mineralogical and chemical composition
- Abundance and distribution of chemical elements in the Earth
- Structure and composition of the Crust, Mantle and Core
- Earth History: heating, chemical differentiation, hydrosphere and atmosphere formation
- Influence of chemical properties of elements on their geochemical behavior
- Geochemical classification of the elements
- Igneous, sedimentary and metamorphic rocks
- Alteration and formation of soils
- The Global Water Cycle
- Hydrological cycle models and climatic variation scenarios
- The global cycle of carbon, nitrogen, phosphorus and sulfur
- Cycles: bioaccumulation and impact on living ecosystems
- Environmental impacts of pH, redox potential, temperature, BOD, salinity, mineralogy, adsorption phenomena, bioaccumulation
- Study of heavy metals contaminated ecosystems
- Source and origin of heavy metals
- Mobility and immobility of heavy metals in the environment
- Potentially toxic metals
- Essentiality and risks arising from the presence of potentially toxic metals
- Radiogenic elements
- Radioactive decay
- Decay systems and their applications
- Decay series
- Isotopic fractionation in geological systems

References

- Course materials prepared by professor
- G. Ottonello "Principi di geochimica", Zanichelli, 1991
- Longinelli, S. Deganello "Introduzione alla geochimica", UTET, 1999
- De Vivo B., Lima A., Siegel F.R., 2004. Geochimica Ambientale. Liguori Editore, Napoli.