UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Geochemistry

2021-2-E3401Q017

Aims

Introducing the basic concepts of inorganic chemistry and applying them to geological processes: magmatism, metamorphism and surface alteration, erosion and transport.

Contents

Nucleosynthesis, solar system formation, differentiation of the Earth. Element affinities, partition coefficients, formation of the continental crust. Distribution, mobility and behaviour of elements during the main petrogenetic processes (magmatism, metamorphism, surface cycling). Trace elements, discrimination diagrams. Ionic mobility, chemical index of alteration. Physical-chemical factors in sedimentation: diagenesis, clays.

Geochemical characterization of the main terrestrial water reservoirs: oceans, surficial and subsurface continental waters. Thermodynamics of aqueous solutions. Water-rock interaction. Lakes and oceans: biomass, nutrients, geochemical cycles of carbon, nitrogen and phosphorus; reservoirs and fluxes.

Geochemistry of the atmosphere: primordial terrestrial atmosphere, role of CO_2 in the Precambrian, transition to oxidising conditions, present-day atmosphere, climatic cycles and CO_2 concentration.

Instruments for the measurement of major and trace elements.

Detailed program

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Prerequisites

Chemistry, physics (suggested)

Teaching form

mixed delivery: lecture and/or live interactive videoconference

Textbook and teaching resource

A. Longinelli, S. Deganello – Introduzione alla Geochimica – UTET

J.I. Drever –The Geochemistry of Natural Waters – Prentice-Hall.

Semester

winter term

Assessment method

oral exam

Office hours

wednesday 11-13