

EARTH SCIENCES

Coordinator: Prof^a Manuela Abreu

Objectives:

The rapid evolution of Agriculture and Industry, due to the growing increase of population and the development of scientific research, and associated with the use of fossil fuels, created some negative impacts in the Earth-System. Consequently, the understanding of the interactions developed between Atmosphere, Geosphere, Hydrosphere and Biosphere is the fundamental objective of the Unity “Earth Sciences”.

Programme:

Geology and Hydrogeology: Principles of Geology. Genesis and classification of magmatic, sedimentary and metamorphic rocks. Geology and Lithology of Portugal. Structure and tectonic. Porosity and permeability. Aquifers: type, protection (land use), water quality and quantity. Portuguese aquifer systems.

Environmental Geochemistry: Common solid phases in the weathering crust: silicates; oxides and hydroxides; carbonates; sulphates; chlorides. Weathering processes and secondary solid phases. Geochemical behaviour of major, minor and trace elements of environmental importance. Solid-liquid system: reactivity of solid phases relatively to the most common contaminants.

Climatology and Climate Change: The atmosphere in the climate system. Atmosphere-surface interactions: energy and water. Atmospheric general circulation, atmosphere-ocean-surface interactions, variations and oscillations of general patterns. Natural and enhanced greenhouse effect - role of gases and aerosols. Projections of climate changes and consequences.