TITOLO DEL CORSO ENVIRONMENTAL GEOCHEMISTRY			
Settore Scientifico - Disciplinare: **GEO/08**		**CFU: 6** (4 LF + 2 LAB)	**Ore: 56**
Ore di studio per attività:	**Lezioni frontali:** 2	**Laboratorio:** 1	**Attività di campo:** 0
Tipologia di attività formativa: caratterizzante			

SYLLABUS

Prerequisiti: Mathematics, Chemistry, Geochemistry, Petrography, Geology, Geomorphology, Geophysics.

Lezioni frontali	
numero di ore 2	Argomento: Resources of the Earth. Resources management and sustainable development.
numero di ore 2	Argomento: Geochemical cycles.
numero di ore 4	Argomento: Representative samples for environmental pollution assessment. Environmental matrices sampling. Geochemical analysis of heavy-metal polluted ecosystems.
numero di ore 4	Argomento: Chemical analysis of samples and protocols. Quality controls.
numero di ore 4	Argomento: Source and origin of metals. Geochemical behavior of elements in the Earth's surface. Mobility and transport of pollutants in the environment.
numero di ore 2	Argomento: Epidemiology and the role of environmental geochemistry. Effect of toxic metals on human health.
numero di ore 4	Argomento: Background and baseline concentrations. Geochemical data statistical analysis.
numero di ore 6	Argomento: Geochemical mapping by GIS. Dot and interpolated geochemical maps.
numero di ore 4	Argomento: Isotopic studies to discriminate anthropogenic and natural sources of contaminants.
Laboratorio	
numero di ore 6	Attività: Environmental geochemical study on Island of Ischia soils for pollution assessment due both to human activities and natural factors: sampling plan preparation.

numero di ore 6	Attività: Univariate and multivariate statistical analysis of Ischia soil geochemical data (obtained from previous studies), with construction of histograms, box plot and cumulative frequency of all potentially toxic inorganic elements indicated by Italian environmental law (DLg 152/06).
numero di ore 6	Attività: Processing of Ischia soil geochemical data to perform geochemical environmental maps for all potentially toxic inorganic elements (DLg 152/06).
numero di ore 6	Attività: Data interpretation, assessment of the degree of contamination of Ischia soils, discrimination of anthropogenic and geogenic sources, selection of areas where risk analysis is needed (DLg 152/06).

Risultati di apprendimento attesi

Knowledge and understanding

The students must be able to apply their knowledge and understanding, and problem solving abilities in the multidisciplinary contexts related to Environmental Geochemistry. Students must demonstrate to knows how to elaborate even complex discussions concerning the various topics studied, the acquisition and reprocessing of geochemical environmental data.

Applying knowledge and understanding

Students must demonstrate they have acquired a training that allows them to transfer the acquired scientific methodologies in other contexts and to be able to plan and solve the problems related to Environmental Geochemistry. The training course is aimed to enhance the operational skills necessary to concretely apply the acquired knowledge and methodological tools.

Making judgements

Students must have the ability to integrate knowledge and handle complexity, and formulate judgments with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments.

Communication

The students must be able to communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously.

Learning skills

The students must have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.

Modalità di verifica dell'apprendimento

Esame finale:

Final exam that consists of written and oral tests. The written test consists of answering to 15 multiple choice questions. The oral exam consists of a discussion on lecture topics.