

Innovative Postgraduate Education in The Field of Environment Protection: Methods and Tools



“Environmental Geochemistry”

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ISEC's lecturer

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•BIO Presenter

- PhD in Geography

- Research interests:** environmental sciences, environmental geochemistry, urban and mining geochemistry and ecology, environment and food safety

- Projects:** leading and participating in more than 30 national and international projects (OSCE, NATO, USAID, EU CASE, FP7, H2020, Erasmus MENVIPRO etc)

- Publications:** an author and co-author of 120 publications;

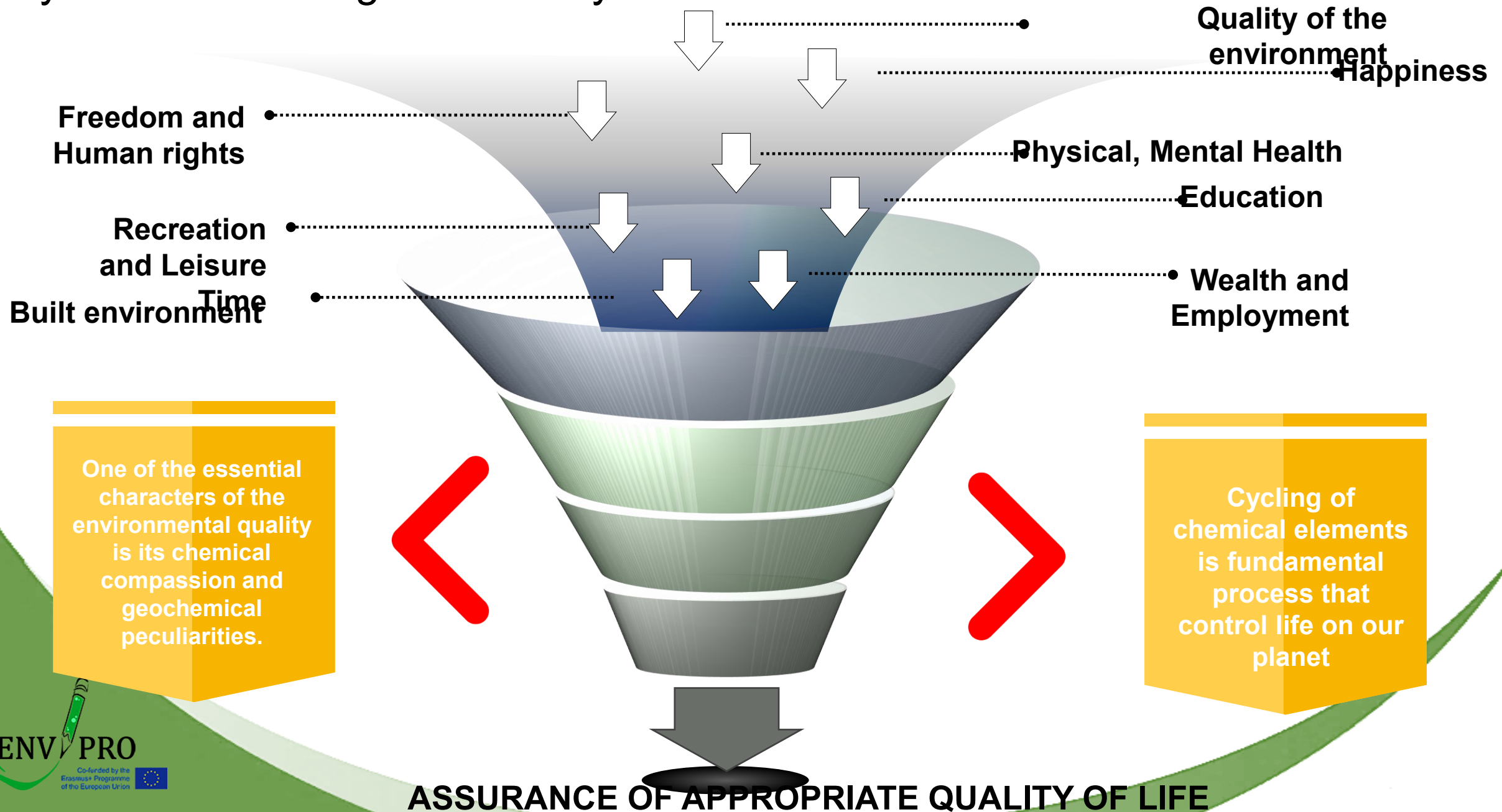
- Lecturer and Head of the “Environmental Protection and Nature Management” educational department of ISEC and CENS, NAS RA.



Lilit Sahakyan

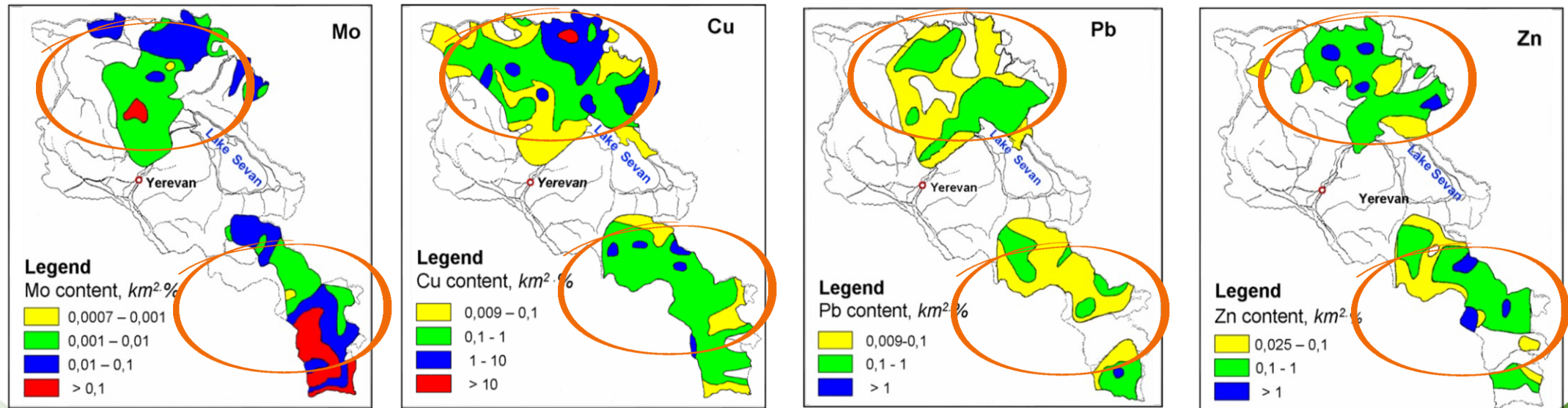
Director of the Center for Ecological-
Noosphere Studies of NAS RA

Why environmental geochemistry?



Why environmental geochemistry?

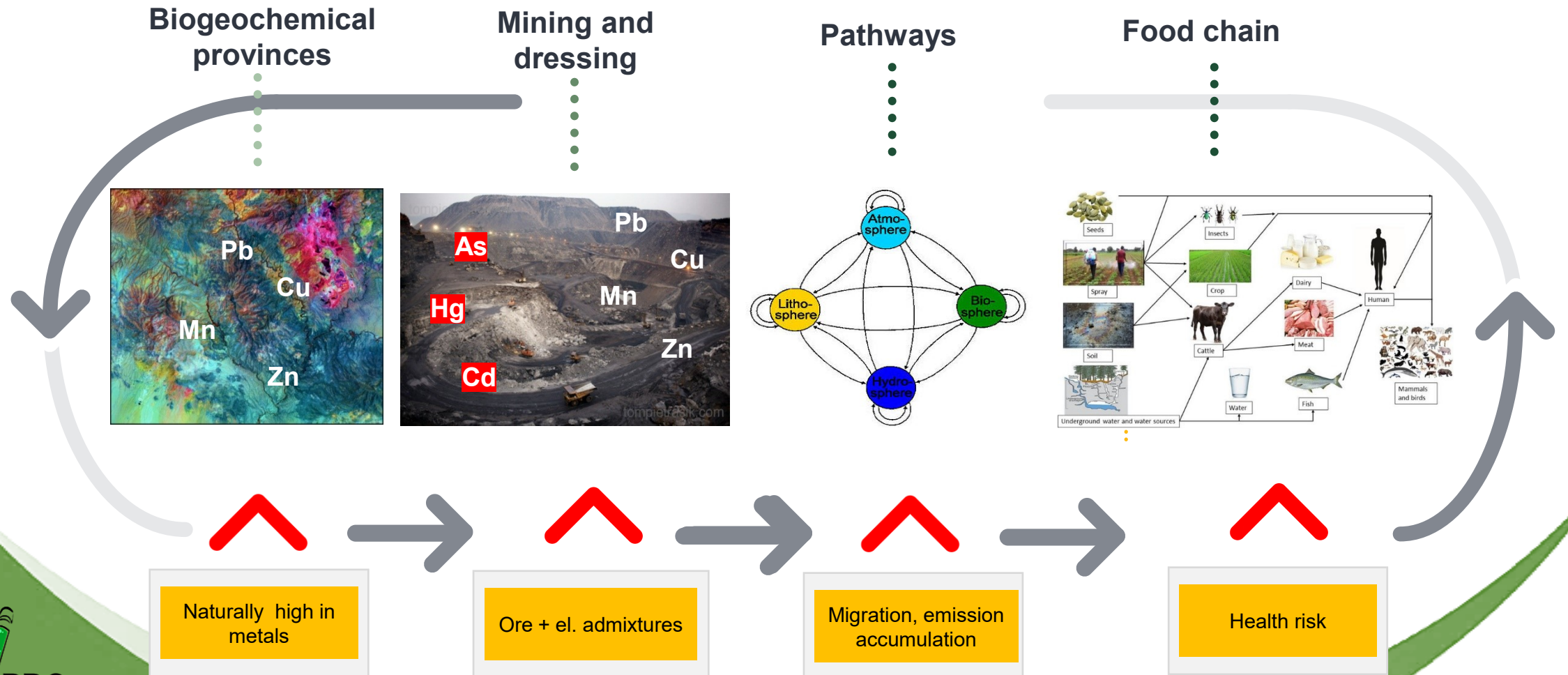
SPECIALIZED GEOCHEMICAL SCHEMATIC MAPS OF **Cu**, **Mo**, **Zn** ,**Pb** CONTENTS ON ARMENIA'S TERRITORY



Source: Saghatelyan, 2004

Why environmental geochemistry?

FROM GEOCHEMICAL PECULIARITIES TO HUMAN



Comparative analyze and benchmarking



Stefano Albanese, PhD Professor (Associate) at University of Naples Federico II, Italy

The screenshot shows the official website of the University of Naples Federico II. At the top, there is a blue header with the university's logo and name. Below this, a navigation bar includes links for 'STUDENTS', 'PROFESSORS', and 'STAFF'. A search bar is also present. The main content area features a 'Departments' section with a list of departments, including 'Department of Earth, Environment and Resources Sciences'. A sidebar on the left contains a 'FUNCTIONS' menu with various links like 'ORGANIZATION CHART', 'STATUTES AND REGULATIONS', etc.

The screenshot shows the DISTAR website, which is the portal for the Department of Earth, Environment and Resources Sciences. The header includes the department's name and a search bar. The main content area features a large banner with the text 'RESEARCH AREAS AND THEMES' over a colorful map. Below the banner, there are sections for 'IN EVIDENZA' (highlighted) and 'BACHECA DIDATTICA' (didactic board), which lists various academic activities and events. A calendar for October 2022 is also visible in the bottom right corner.

Course Objectives

2014

2020

Course goal is to acquaint future specialists with the

- ✓ basic features of geochemical processes, phenomena,
- ✓ the main features of geochemical research methods,
- ✓ to provide the necessary theoretical-practical knowledge and skills for the assessment of the types, scales, levels, hazards, risk and pollution pathways of the various environmental Media.
- ✓ It will also enable them to become familiar with measures to reduce the level of environmental pollution.

Slide 7

Course Tasks

2014թ.

2020թ.

Course tasks are to introduce:

- ✓ The methodological bases, approaches, study objects and subject, scientific goal and problems of the "Environmental geochemistry" science.
- ✓ Basic geochemical processes, phenomena, conceptual apparatus
- ✓ Basic scientific research methods used in environmental geochemistry.
- ✓ Geochemical features of urban, mining and agricultural areas
- ✓ Possible directions and application in the researches of environmental geochemistry
- ✓ Environmental pollution issues, including Worldwide and RA environmental pollution
- ✓ The process of geochemical research, involving students in the actual research carried out within the framework of practical work

Course Comparative Analysis

TOPICS 8

2014թ.

Topic 1- Environmental Geochemistry; Introduction

Topic 2 - Biosphere, Noosphere and anthroposphere

Topic 3 - Energy and materials flow and cycling

Topic 4 - Environmental pollution as a geochemical phenomena

Topic 5 - Overall Scientific and Environmental geochemical scientific research methods

Topic 6 - Geochemical peculiarities of different functional territories and their research

Topic 7 - Geochemical and ecological peculiarity of the territory of Armenia

Topic 8 - Application of environmental geochemistry research results

TOPICS 5

2020թ.

Topic 1 - “Environmental Geochemistry” introduction to science and course.

Topic 2 - Main terms and concepts used during the course

Topic 3 - Environmental pollution as a geochemical phenomena

Health risk assessment

Topic 4 - Overall Scientific and Environmental geochemical scientific research methods

Topic 5- Geochemical peculiarities of different functional territories and their research ; Case study Armenia.

Course Comparative Analysis

2014թ.

120 Hours including

- 24 hours lecture
- 8 hours seminars and practics,
- 88 hours self work

Credits` 4

2020թ.

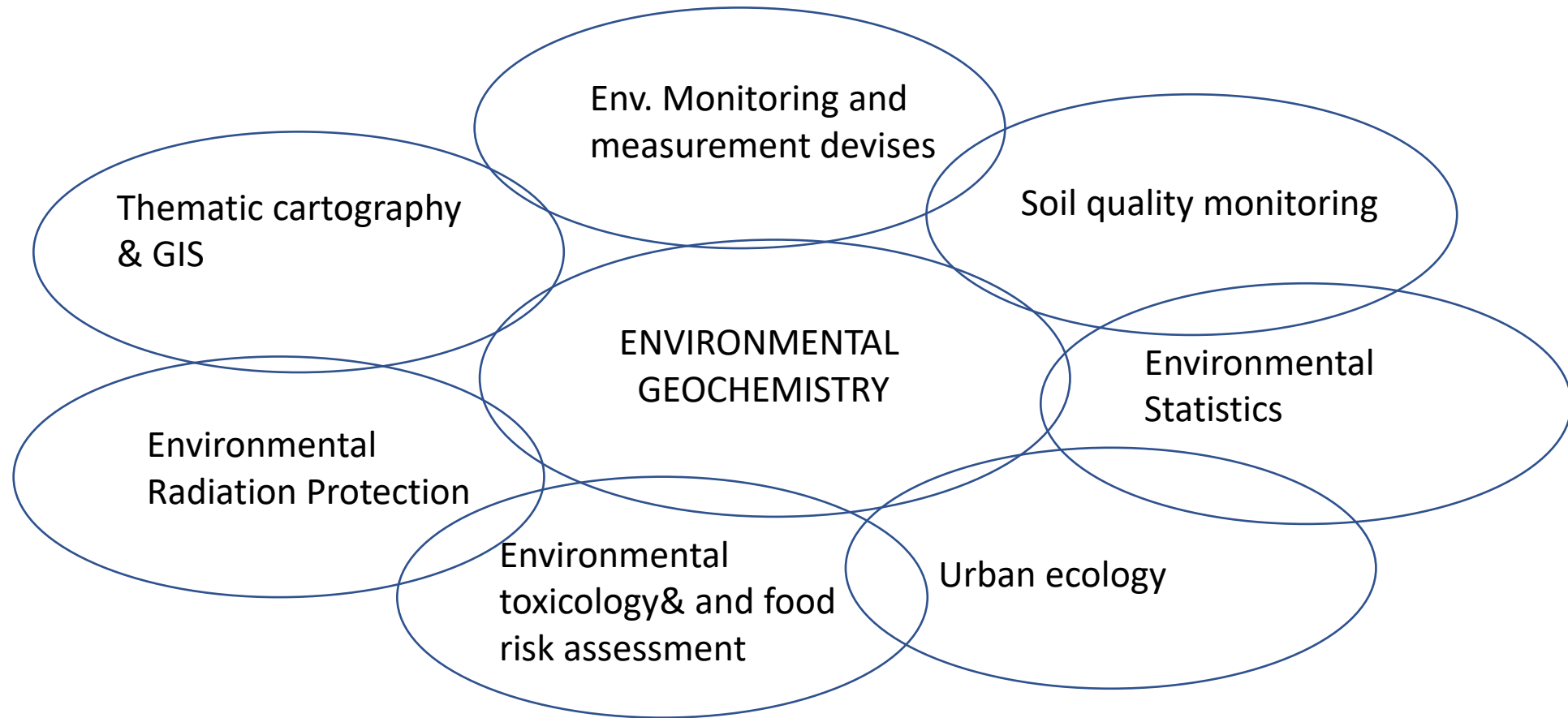
150Hours including

- 24 hours lecture,
- 24 hours seminars and practics,
- 102 hours self work : Project based education

Credits` 5



Interdisciplinary Connections With Other Courses



ERLEP Laboratory Involvement in the Course Curricula



Course Outcomes

2014թ.

1. **KNOW** the basic principles of the science of "Environmental Geochemistry", the methodological basis, the peculiarities of the formation of geochemical phenomena and processes. Main areas of geochemical knowledge application.
2. **BE ABLE TO** conduct research, analyze and evaluate the results of other similar research.
3. **MASTER** research methods of the Environmental geochemistry

2020թ.

1. **KNOW** the basic principles of the science of "Environmental Geochemistry", the methodological basis, the peculiarities of the formation of geochemical phenomena and processes. Main areas of geochemical knowledge application.
2. **BE ABLE TO** conduct research, analyze and evaluate the results of other similar research.
3. **MASTER** research methods of the Environmental geochemistry and health risk assessment methods.

THANK YOU !

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