

**Module Description, available in: EN**

## *Environmental Remediation Technologies: soil, groundwater and atmosphere*

**General Information****Number of ECTS Credits**

3

**Module code**

TSM\_EnReTe

**Valid for academic year**

2020-2021

**Last modification**

2019-12-19

**Coordinator of the module**

Pamela Principi (SUPSI, pamela.principi@supsi.ch)

**Explanations regarding the language definitions for each location:**

- Instruction is given in the language defined below for each location/each time the module is held.
- Documentation is available in the languages defined below. Where documents are in several languages, the percentage distribution is shown (100% = all the documentation).
- The examination is available 100% in the languages shown for each location/each time it is held.

	Berne	Lausanne	Lugano	Zurich
<b>Instruction</b>				X E 100%
<b>Documentation</b>				X E 100%
<b>Examination</b>				X E 100%

**Module Category**

TSM Technical scientific module

**Lessons**

2 lecture periods and 1 tutorial period per week

**Entry level competences****Prerequisites, previous knowledge**

Basics in chemistry and physics

**Brief course description of module objectives and content**

This course will provide the student with the background knowledge useful to address different sources of pollution, of measures and technologies to prevent pollution and of contaminated systems and the available technologies for remediation. General aim is knowing the main factors and processes affecting contaminants distribution in the environment and remediation technologies for soil groundwater and atmosphere.

## Aims, content, methods

### Learning objectives and acquired competencies

The student will acquire the tools to be able to understand environmental problems, know the key-factors of remediation and the challenges of the near future, integrate knowledge of chemistry, biotechnology and ecology and read and understand up to date literature on remediation topics

### Contents of module with emphasis on teaching content

PART 1 general concepts of:

- environment, ecosystem, pollution, remediation.
- contaminants and emerging contaminants characteristics.
- representative sampling and monitoring.

PART 2 environmental compartments and contaminants:

- physical chemical and biological characteristics of soil;
- physical chemical and biological characteristics of groundwater;
- physical chemical and biological characteristics of atmosphere;
- contaminant transport and fate: physical chemical and biological processes in soil, water and atmosphere.

PART 3 remediation:

- containment technologies;
- removal technologies;
- treatment technologies.

### Teaching and learning methods

front lecturing theory lessons and student active involvement

### Literature

- Slides given at the course from the Lecturers
- Reference books details will be given at the beginning of the course

## Assessment

### Certification requirements

Module does not use certification requirements

### Basic principle for exams

**As a rule, all the standard final exams for modules and also all resit exams are to be in written form**

### Standard final exam for a module and written resit exam

Kind of exam

written

Duration of exam

120 minutes

Permissible aids

No aids permitted

### Special case: Resit exam as oral exam

Kind of exam

oral

Duration of exam

30 minutes

Permissible aids

No aids permitted