

**Module Description, available in: EN**

## *Environmental Remediation Technologies*

### General Information

**Number of ECTS Credits**

3

**Module code**

TSM\_EnReTe

**Valid for academic year**

2019-2020

**Last modification**

2018-10-30

**Responsible of module**

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**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 specialization module

**Lessons**

2 lecture periods and 1 tutorial period per week

### Entry level competences

**Prerequisites, previous knowledge**

Environmental science, chemistry

### 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.

In the second part of the course, the process of collection, interpretation and processing up to date information will be carried on with the students.

## 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.  
Energy and material flow in ecosystems, human influence on ecosystems.  
Water and wastewater: sampling, quality assessment, treatment; reuse  
Offgas Air: sampling, quality assessment, source of pollution, emission treatment;  
Organic Waste: sampling, treatment, quality assessment, reuse  
Soil: soil sampling and remediation.  
Chemical-physical and biological remediation technologies: real case applications.

#### Part 2:

This part will be organized by selecting with each student or small group of students, the most informative papers accessible through database search and that deal with the remediation techniques. Each student will research a topic and present it with state of the art literature.

### Teaching and learning methods

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 repetition exams are to be in written form**

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

#### Kind of exam

written

#### Duration of exam

120 minutes

#### Permissible aids

No aids permitted

### Special case: Repetition exam as oral exam

#### Kind of exam

oral

#### Duration of exam

30 minutes

#### Permissible aids

No aids permitted