Module Description, available in: EN

Wastewater treatment (WWT) - Theory and bases for design

General Information

Number of ECTS Credits

3

Module code

TSM_WWTreat

Valid for academic year

2019-20

Last modification

2018-11-07

Coordinator of the module

Paolo Foa (SUPSI, paolo.foa@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		
Instruction					**X** E 100%			
Documentation					**X** E 100%			
Examination					**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

Wastewater process, chemistry

Brief course description of module objectives and content

The course will focus on the design of the main waste water treatment steps, giving principle, key factors and all the numerical information for the relevant calculations.
In order to link the notions given during the classes to the reality, at least two visit to local WWTPs are organized: during each of those the students will deal with the aspects they are going to see “on the paper”.
An overview on the evolution / innovation closes the course.
A brief introduction to chemical, physical and biological elementary concepts as well as a general overview of what is a WWTP is foreseen; however theoretical basics in wastewater field are a requirement to take the maximum advantage from the course.

Aims, content, methods

Learning objectives and acquired competencies

The course aims at providing students with the following skills:

1. refresh of chemical, physical and biological elementary concepts
2. fundamentals for designing the main unit operations of a WWTP
3. face to the reality of existing local WWTPs

Contents of module with emphasis on teaching content

- Introduction: chemical, physical and biological elementary concepts
- Overview of a WWTP
- Part 1: pre-treatment
    - Plant visit
    - Input data & pumping section
    - Grit & oil removal
    - Primary sedimentation
- Part 2: biological step
    - Plant visit
    - Biology 1
    - Biology 2
    - Secondary clarification
- Part 3: innovation
    - Micropollutants
    - WWTP & energy

Teaching and learning methods

Front lecturing (theory) with open discussion and classworks with calculation exercises

Literature

- Slides given at the course from the Lecturer;
- Tchobanoglous et al. (2003) Wastewater Engineering Treatment and Reuse, Metcalf & Eddy, McGraw Hill, 4th Edition.

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