UNIVERSITÀ
DI TORINO

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VP008_CHIM

Visiting Professor Program
Academic Year 2024/2025

TEACHING COMMITMENT: **20 hours**

COURSE TITLE

Chemistry of Aquatic Systems

TEACHING PERIOD

2nd term

SCIENTIFIC AREA

Environmental Chemistry

LANGUAGE USED TO TEACH

English

COURSE SUMMARY

Introduction to the treatment of water for human use. Anthropic and natural pollution of water. The chlorination technique for water disinfection, the reactions that take place in the presence of chlorine/hypochlorous acid, formation of chlorinated by-products. Water disinfection with chlorine dioxide, advantages compared to the chlorination and problems of the technique. Ozonization of water, problems linked to the use of ozone and reactions of ozone in the aqueous solution. Water disinfection by use of ultraviolet radiation. Redox reactions in natural waters, the role of oxygen. Biological oxygen activation, definition of redox potentials in natural waters. Relationship between redox potentials and biogeochemical cycles, redox speciation in thermally stratified lakes. Photochemical processes (direct and indirect photolysis) in natural waters, photochemical models to describe aquatic systems under irradiation.

LEARNING OBJECTIVES

This course shares the general goal of providing a detailed knowledge of the systemic analysis of the natural environment. Therefore, the student will acquire competences concerning the chemical mechanisms behind the environment processes and the pollution phenomena, the dynamics of the abiotic environmental components, their interactions, as well as the environmental legislation. Moreover, the student will receive specific know-how to assess and manage the natural and anthropic changes in the ecosystems, as far as chemical processes and pollution are concerned. This knowledge will allow for the planning and management of environmental restoration practices in the framework of existing legislation and best available technologies.

VISITING PROFESSOR PROFILE

The Visiting Professor should have expertise in photochemistry of natural waters and in water treatment processes.

CONTACT REFERENT

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