

€ TRAINING

Biological Wastewater Treatment: Principles,
Modelling and Design



Biological Wastewater Treatment: Principles, Modelling and Design

Introduction:

This course seeks to address the quantity, complexity, and diversity of the developments in the wastewater treatment profession, particularly in developing countries where access is not readily available to advanced-level courses in wastewater treatment.

Course Objectives:

At the end of this course the participants will be able to:

- Describe the prime objective of wastewater treatment and sanitation.
- Determine the stoichiometric and kinetic parameters of the different metabolic processes of the microorganisms involved during the biological wastewater treatment process
- Critically determine and analyze quantity and quality characteristics of wastewaters
- Design and critically assess different wastewater treatment systems and configurations performing biological organic matter, nitrogen as well as phosphorus removal.
- Design and critically evaluate different disinfection treatments
- Assess and describe through mathematical expressions the different processes occurring during wastewater treatment as well as effects caused by inhibitory compounds
- Design and assess the operation of a biofilm system for wastewater treatment

Targeted Audience:

- Sanitary engineers
- Environmental biotechnologists
- Biochemists
- Civil engineers
- Environmental engineers
- Chemists
- Environmental scientists
- Different professionals working or interested in the wastewater treatment field.

Course Outlines:

Unit 1:

- Wastewater Treatment Development
- Microbial Metabolism
- Wastewater Characterization

Unit 2:

- Organic Matter Removal
- Nitrogen Removal
- Innovative Nitrogen Removal

- Phosphorus Removal

Unit 3:

- Pathogen Removal
- Aeration and Mixing
- Toxicity

Unit 4:

- Bulking Sludge
- Final Settling
- Membrane Bio-reactors
- Modeling Activated Sludge Processes

Unit 5:

- Process Control
- Anaerobic Wastewater Treatment
- Modeling Biofilms
- Biofilm Reactors