

Constructed Wetlands for Wastewater Treatment

Online course. Course organisers: Diederik Rousseau and Hans van Bruggen
Lecturers in the course: Dr. Sylvia Toet, Dr. Frank Kansime, Dr. Nicholas Azza, Dr. Jan Pokorny, Dr. Jan Vymazal, Prof. Patrick Denny, Dr. Diederik Rousseau, Dr. Hans van Bruggen, Dr. Eneas Salati Filho

Objectives of the course

"sustainable water treatment by (constructed) wetlands"

Wetlands perform vital functions in the water cycle and are important for flood management, climate and biodiversity. They sustain the livelihoods of hundreds of millions of people. For this reason it is important to maintain the wetlands in an excellent condition while using them for water treatment. Wetlands (both natural and constructed) are able to purify water because of their ability to filter suspended solids and to take-up nutrients from the water. In this course the participants will be informed about the proper way of using wetlands for water treatment (both wastewater and recycling water). The objective is to enable the participants at the end of the course to make a proper design of their own wetland system for wastewater treatment.



After completion of the online Wetlands for Water Quality course, the participants will be able to:

- Assess the value of wetlands and explain the use of natural and constructed wetlands for the treatment of water;
- Describe the concept of wastewater treatment by natural wetlands and constructed wetlands;
- Design a wetland treatment system.

Why take this online course?

- through innovative learning methodologies participants will learn how to treat (waste) water in a constructed or natural wetland, based on international guidelines
- participants can follow the course from home or office, with ample opportunities for communication with trainers and other participants
- participants connect with (inter)national professionals on the use of wetlands for water treatment and become part of an international network covering different regions, sectors and disciplinary backgrounds
- participants get access to up-to-date knowledge and expertise and share this with fellow-participants and colleagues

Target group

wetland management professionals and wastewater treatment professionals

The course is designed for professionals actively involved in wetland management, and/or wastewater treatment. They may be working in organisations responsible for water treatment or responsible for wetland conservation/sustainable use of wetlands. The target group is also those who have an interest in onsite wastewater treatment for small communities.

Course content and time schedule

Module 1: - Introduction to wetlands for water quality

1. General overview of the "Wetlands for Water Quality" module contents
2. History of and philosophy on the use of wetlands for water treatment
3. The UNESCO-IHE I-learning Environment
4. Homework WWQ-1 and WWQ-2
5. Meet the course coordinators
6. Welcome by Prof. Meganck, rector of UNESCO-IHE
7. Overview all assignments

Module 2 - Importance of wetlands

1. The value of wetlands
2. Ecology of tropical wetlands
 - 2 - 1. Wetland Types
 - 2 - 2. Types of Wetland Vegetation
 - 2 - 3. Vegetation Dynamics
 - 2 - 4. Functions and Benefits
3. Wetlands and climate
4. Assignment

Module 3 – Natural wetlands for water treatment

1. Basic principles
2. Case study Lake Victoria
3. Case study Nakivubo swamp
4. Assignment

Module 4 - Constructed wetlands for water treatment

1. Types of constructed wetlands and principles
2. Constructed wetlands for various types of wastewater, like municipal, domestic, agriculture,

industry, runoff, and sludge dewatering and stabilisation

3. Design of constructed wetlands
4. Operation and maintenance of constructed wetlands
5. Constructed wetlands in Flanders (Belgium)
6. Case study constructed wetland on Texel Island
7. Economics and reuse

Module 5 - Final assignment

Make a design of a specific wetland

Participants complete the course in a period of about four months (16 weeks) with a workload of 140 hours. A participant is expected to spend about 8 hours per week on average through reading, discussion and assignments. The course is sub-divided into 3 modules and a written assignment.

Within the course, each module starts and ends on a specified day. Generally, a subject takes 3 weeks. Within this period, the participant is free to study in his or her own time. Questions with regard to the subject can be posted on the discussion forum, eliciting responses from fellow participants. The teachers also regularly comment on the questions posted on this forum.

Each subject ends with assignments for which participants have to use their newly acquired knowledge and interact with the teacher and the other participants using the discussion platform of the I-learning Environment. Participation will be assessed on the basis of tutor assignments, contribution to the online discussion assignments and the final paper. After completion, participants will receive a certificate of attendance issued by UNESCO-IHE.

Advantages of an online course

- The course can be followed at any location, as long as participants have an Internet connection.
- The I-Learning Environment provides participants with training material for downloading and communication with trainers and participants.
- The course offers new learning methods; challenging lectures combined with online group interaction and discussions.
- The course aims at life-long learning where professionals combine learning with daily work and the possibility to directly apply acquired knowledge and skills.
- For groups, option to combine online learning with face-to-face workshops or video-conferences.

Fee

The course fee is 550 Euro, which includes access to the I-Learning Environment and its training materials and full training support. The participants will receive free of charge the book "Constructed Wetlands for Pollution Control" by the IWA specialist group on the Use of Macrophytes in Water Pollution Control.

Entry requirements

Participants are expected to be professionally or academically involved or interested in wetlands for water treatment and have sufficient English language skills. For the internet-based component of the course, participants must have access to a computer with 512 kilobits per second (kbps) downstream internet connection or better.

More information and registration Deadline for submission for the next course is August 15, 2009

For more information about the course please contact Dr. Hans van Bruggen (h.vanbruggen@unesco-ihe.org) . You can download a registration form by following this link:

http://www.unesco-ihe.org/education/prospective_students/application_forms

This programme is also offered as a 3 weeks short course at UNESCO-IHE in Delft. For this short course in Delft some NUFFIC fellowships are available. More information about the short course by following this link:

http://www.unesco-ihe.org/education/short_courses/regular_short_courses/wetlands_for_water_quality

Starting Date: September 1, 2009