

Constructed Wetlands: A Critical Review of Wetland Treatment Processes

Module Perspective

1. What is the topic?
2. Who is (are) the audience(s)?
3. What is the course goal?
4. What are the learning objectives?
5. What are you trying to cover?
6. How do you plan to do this?

1. This module introduces the student to a relatively new technology for use in treating small scale wastewater flows. The two types of constructed wetlands, namely free water surface (FWS) and vegetated submerged bed (VSB) are discussed along with their capabilities and limitations in an attempt to put their use into proper perspective. In spite of the great amount of resources devoted to their proper use, design, application, and performance, the four common misconceptions will also be discussed.
2. It is intended for senior civil engineering and environmental health students who have previously completed an introductory course in environmental engineering.
3. To make the student aware that constructed wetlands may be an appropriate wastewater treatment technology for small communities where inexpensive land is available, skilled labor is scarce, and nitrogen and phosphorous removal are not requirements. At the same time the students will be informed of the aesthetic appeal to the general public which tends to make them even more attractive in spite of their limitations.
4. The main objectives are to see to it that the students understand the terminology of constructed wetlands and the processes within the two types. Also to teach students to differentiate between the constructed wetland being studied and the larger natural wetlands which have historically existed.
5. The definitions pertaining to constructed wetlands and large polishing wetlands and their history. The two types of constructed wetlands which share the same characteristics, but are distinguished by the location of the hydraulic grade line. The removal mechanisms for pollutants in both types are outlined, such as biochemical oxygen demand (BOD), total suspended solids (TSS), nitrogen, phosphorous, pathogens, metals and trace organics. Construction, operation, maintenance, and design considerations are also discussed. Finally, the four common misconceptions concerning constructed wetlands are presented.
6. The method of delivery will depend upon the instructor's past experience and teaching method preference. Most likely the standard lecture method using audio-visual aids, such as overhead projector and Power Point.