

Constructed Wetland Systems: Design Approaches 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. The topic for this course module is the application of constructed wetland systems (free water surface and vegetated submerged beds) to solve wastewater treatment problems in the context of decentralized wastewater management.
 2. The primary target audience is upper division (junior and senior) engineering undergraduate students. Graduate students in engineering or environmental science disciplines would also benefit from this material. It is assumed that the students using this material are already grounded in the fundamentals of wastewater treatment.
 3. The goal of this module is to familiarize students with how wetland treatment systems function, and to introduce them to design methods commonly in use today. Because this is an evolving technical discipline, many older design methods are outdated and result in unrealistic treatment expectations. Consequently, designers considering the use of treatment wetlands need to understand the strengths and weaknesses of different design methods, and be open to new developments in the field.
 4. Upon completing this module, students will have been introduced to the two main types of constructed wetlands (free water surface and vegetated submerged beds), and will have been exposed to five methods of designing wetlands that are in common use today. Comparing and contrasting these design methods provides important insights into the “degree of certainty” offered by the current level of understanding within the constructed wetland field.
 5. Upon completing this module, students will have an understanding of the internal mechanisms that operate within wetland treatment systems and how these mechanisms affect pollutant transformations and removal. They will also have been introduced to design methods in common use today.
 6. This course module includes text, PowerPoint lecture material, example problems, and a bibliography/reference list for more detailed information.