

Aerobic Treatment of Wastewater and Aerobic Treatment Units

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 onsite (or near-site) renovation of domestic wastewater using suspended growth and/or submerged attached-growth bio-chemical treatment units with forced aeration is the topic of this module. For the purpose of this module, such devices will be referred to as aerobic treatment units or ATUs.
 2. Senior-level engineers, who have a focus in water resources, are the primary audience for this module. This module does presume that the student has a basic knowledge unit processing. However, it is anticipated that environmental health, soil science, and other science-based undergraduate students will benefit from the provided information. This module is also intended to serve as a reference for graduate courses in decentralized wastewater management.
 3. The primary goal of this module is for the student to understand how aerobic treatment technologies (which are well-established in large, centralized systems) can be scaled down for use in decentralized wastewater management systems. Before a student can appreciate aerobic wastewater treatment, that student must understand the consequences to the environment if high oxygen-demand wastewater enters a natural water body. The primary purpose aerobic treatment systems are to remove the oxygen demand from the wastewater.
 4. Upon completing this module students:
 - Will have a fundamental understanding of concepts pertinent to wastewater treatment that will enable them to more fully understand processes used for wastewater treatment, disposal and reuse.
 - Should be prepared for more in-depth study available in other curriculum modules.
 5. This module provides a review of microbial digestion of organic compounds, provides an introduction to suspended-growth and submerged attached-growth bioreactors, and provides discussion of how oxygen is transferred into solution within the various treatment units. This module will also attempt to instruct the student that ATUs must operate in the real world, and thus theoretical results will not match actual data taken from operational units.
 6. This course module includes text, a PowerPoint presentation with notes, example problems to be worked by the instructor, in-class problems to be worked by students.