

Media Filters

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 Media Filters. Media Filters are passive secondary treatment systems in which a media is provided on which organisms which treat wastewater grow as the wastewater flows down through the media. These units have alternatively been called Media Filters, Trickling Biofilters, Fixed Film Bioreactors and other names. The module content is intended to provide students with a basic understanding of this treatment technology and ability to design using it.

2. This module is designed for upper-division undergraduate students in engineering or sciences. It could be used as part of a course for engineering students on decentralized wastewater treatment, or it could be part of a course for public health students dealing with onsite wastewater treatment.

3. The goal of the course is to provide information and background so that students come to understand how Media Filters operate and are designed.

4. In this course the students will learn what a packed bed filter is, its physical characteristics and a little about the biological processes that go on within the filter. Students will become familiar with several different media that can be used in Media Filters and will understand why design criteria vary for the different types of media. They will learn the importance of applying small, frequent doses of wastewater and different methods for achieving wastewater distribution on a packed bed filter. Students will learn the differences between single pass and recirculating systems and be able to design each. They will learn how to adjust controls for the pumps for both types of systems. Upon completion of the course, the students will be able to design a generic packed bed filter or choose a proprietary packed bed filter for a specific application.

5. The material covered includes background information and history of sand filters, theory of operation of pack bed filters in general, and discussion of the various design and operating parameters of sand filters and other pack bed filters utilizing different types of media. The material is divided into a discussion of single pass systems and recirculating systems with short sections added on the end to discuss controls for wastewater application, pump selection, system monitoring and soil dispersal of packed bed filter effluent.

6. Material is discussed primarily in narrative format with illustrations to provide insight into the physical characteristics of Media Filters and how they look. A complete set of power point presentation materials is provided with many illustrative photos of various Media Filters.