

AGET 760

Comprehensive Nutrient Management Planning & System Design

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Required Text: Agricultural Waste Management Field Handbook
<http://www.info.usda.gov/CED/ftp/CED/neh651-all.pdf>

Format: Web-based

Grading:

Homework/Quiz	40%
Midterm Exam	20 %
Final Exam	20 %
Semester Design Project	20%

Course Overview:

The consumer demand for safe and inexpensive meat products has driven the livestock industry toward more concentrated production facilities. These facilities house large numbers of animals in environmentally controlled production facilities. The quantity and quality of the livestock waste produced in confinement operations requires an extensive set of engineered systems for proper storage, treatment, and utilization. Land application of nutrients must be done in a manner that minimizes environmental impact. Today's systems must be designed to meet increasingly stringent environmental regulations with little opportunity for capital recovery.

This course will explore many of the engineering and management components involved in developing a "Comprehensive Nutrient Management Plan" for a livestock production facility including: aerobic and anaerobic lagoon design, waste storage, land application of animal wastes, nutrient balance, best management practices for reducing nutrients in runoff, and odor management.

Lecture Outline:

Chapter 1	<u>Laws, Regulations, Policy, and Water Quality Criteria</u>
Chapter 2	<u>Planning Considerations</u>
Chapter 3	<u>Agricultural Wastes and Water, Air, and Animal Resources</u>
Chapter 4	<u>Agricultural Waste Characteristics</u>
Chapter 5	<u>Role of Soils in Waste Management</u>
Chapter 6	<u>Role of Plants in Waste Management</u>
Chapter 7	<u>Geologic and Ground Water Considerations</u>
Chapter 8	<u>Siting Agricultural Waste Management Systems</u>
Chapter 9	<u>Agricultural Waste Management Systems</u>
Chapter 10	<u>Agricultural Waste Management System Component Design</u>
Chapter 11	<u>Waste Utilization</u>
Chapter 12	<u>Waste Management Equipment</u>
Chapter 13	<u>Operation, Maintenance, and Safety</u>