

CIVE 498/898 Spring 2019: Geoenvironmental Engineering

Instructor: Dr. Jongwan Eun

Class Time: **MW 10:30 – 11:45 AM PKI 160 (Omaha) and SEC 111(Lincoln) with TV system**

Geoenvironmental Engineering is a *very active and interdisciplinary field*, and a *big industry* in civil engineering, directly related to sustainability and resilience of human society.

The overall objective of this course is to provide an understanding of the use of geotechnical and geological concepts in the analysis and design of waste containment system. Focus will be placed on the evaluation of waste containment facilities, with particular emphasis on the behavior and design of engineered barriers. The course will also cover relevant aspects of contaminant transport theory and application, design of drainage layers, landfill stability, and waste settlement. The content is based on the various subjects and interdisciplinary practice. Class discussions also include case histories, which are particularly relevant to illustrate the process followed in the conceptual design of waste containment facilities. In addition, the knowledge acquired in this class can be used for the design and analysis of the geotechnical systems. During this course, students will be trained to investigate geo-materials (e.g., geosynthetic and recycled material) with the engineering point of view.

A graduate student majoring in geotechnical or environmental engineering would be perfect to attend the class. But it will be very good for senior level undergraduates or other major students who have some interests and background of hydrogeology, hydraulics, or vadose zone.

When you finish this class you will;

- Understand fundamental behavior of clay as a barrier material.
- Select, justify the selection, and design **base liner systems, interim/final cover systems, and leachate/gas collection systems** for municipal and hazardous waste.
- Master concepts in **unsaturated soil mechanics**.
- Develop an understanding of **mass transport in porous medium (e.g., vadose zone)**.
- Identify the types, properties and characteristics of different **geosynthetic**.
- Understand **current issues and innovative technologies** related to geoenvironmental engineering field and **sustainability of waste management**.

Anaerobic Bioreactor



Study Focus

