

Course Code	Course Title	Credit Hours
ENS-860	Treatment and Management of Wastewater	3 (3+0)

Course Description

The aim of this course is to introduce the students to the area of wastewater treatment. The course will cover characteristics of wastewater; primary, secondary and tertiary treatment processes; sludge disposal; and design of a wastewater treatment system. At the end of the course the students will have a working knowledge of the wastewater treatment industry and have the skills to develop a preliminary design of a treatment system. This will be achieved through descriptive lectures with an industry focus and supervised field visits.

Course Outline

The nature and sources of wastewater; Modern wastewater treatment: primary treatment, secondary treatment, tertiary treatment, removal of pathogens by sewage treatment process, removal of organics and inorganics by sewage treatment processes; Oxidation ponds; Septic tanks; Use of treated wastewater; Wetland and aquaculture system; Sludge processing and land application of biosolids; Biofuel production from wastewater.

Recommended Books

1. Sharma, S. K., & Sanghi, R. (Eds.). (2013). *Wastewater reuse and management*. Springer Netherlands.
2. Rice, E. W., Bridgewater, L., & American Public Health Association (Eds.). (2017). *Standard methods for the examination of water and wastewater*. 23rd edition. American Public Health Association, Washington, DC.
3. Maier, R. M., Pepper, I. L., & Gerba, C. P. (2009). *Environmental microbiology*. 2nd edition. Academic press.
4. Tchobanoglus, G., Burton, F., & Stensel, H. D. (2003). *Wastewater engineering: treatment and reuse*. 4th edition. McGraw-Hill Inc.