



## EGR 242: Clean Water Technology II

A continuation of Wastewater Technology I (EGR 241) to prepare the student in the design, operation and maintenance of advanced wastewater treatment facilities. Topics covered will include: environmental concerns, chronic and acute toxicity of wastestreams, instrumentation of specialized treatment procedures, biological and chemical observations with "hands-on" treatment observations. The student will also be expected to attend tours of local facilities (domestic/industrial). The program will also prepare the student for the State Operator's Certification Examination - Intermediate Levels. Prerequisite: EGR 241. Three lecture hours and two laboratory hours per week.

### Course Student Learning Outcomes

1. Identify the organisms that are cultured in a wastewater treatment plant and what their relative abundances in the wastewater indicate about the condition of the wastewater treatment process. 2. Conduct total suspended solids testing on various process streams in a wastewater treatment plant. 3. Calibrate and operate pH meters and dissolved oxygen meters. 4. Conduct Biochemical Oxygen Demand tests to determine the organic strengths of the wastewater process streams. 5. Understand the operation and basic maintenance of various pumps including positive displacement pumps, centrifugal pumps, diaphragm pumps and air lift pumps. 6. Select the proper pump based on pump curve characteristics. 7. Understand the operation and maintenance of aeration equipment, clarifiers, solids handling and various disinfection equipment. 8. Apply mathematical formulas for the calculation of chemical dosages, process flows, and concentrations of materials for proper plant process control. 9. Determine the proper dosages of polymer for sludge conditioning. 10. Understand the basics of horsepower and electricity and be able to calculate power needs to move water. 11. Be prepared to take the Grade 3 or 4 Massachusetts Wastewater Operator Certification Examination.

**Credits:** 4

**Program:** Engineering