# EGR 244: Basic Drinking Water Treatment

This course prepares students for entry into the field of water supply management and the operation of drinking water treatment facilities. The principles of hydrology associated with groundwater and surface water supply management are studied, including the hydrologic cycle, precipitation type and measurement, aquifer types and groundwater flow measurements, surface water flow measurements, and surface water and well sampling. Students study source water supplies and protection, regulations, physical and chemical treatment processes, and operator safety. This class includes field trips. This class is approved for preparation for taking the Grade 2 Massachusetts Drinking Water Treatment Plant Operator Certification Examination. Three class hours and three laboratory hours a week. Instructional Support Fee applies.

## Course Student Learning Outcomes

1. Understand the basics of the three water infrastructure systems including drinking water, stormwater, and wastewater in the United States.

1. Understand how water moves through the hydrologic cycle from the oceans, to the atmosphere, to the ground, then over the ground and under the ground, and back to the ocean.
2. Study trends in precipitation and calculations of precipitation and runoff over a watershed area.
3. Understand the role of the drinking water operator and their ethical responsibility to the community they serve.
4. Explain what a public water supply is, and how they are categorized.
5. Prepare a basic water budget based on evaporation rate, precipitation, inflows and outflows from a water system.
6. Explain the different processes used to treat water at a conventional drinking water filtration plant.
7. Apply mathematical formulas for the calculations of flows and concentrations of materials moving through a drinking water filtration plant.
8. Explain the operation and basic maintenance of various pieces of equipment used at a drinking water filtration plant, such as pumps, clarifiers, flow meters, valves and filters.

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1. Determine dosages and concentrations of chemicals used in the water treatment processes.

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1. Determine flows in natural streams as well as flows within a drinking water plant.

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1. Perform mathematical calculations involving areas, volumes, flows, pressure, horsepower and electricity.

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1. Be prepared to take the Massachusetts Grade 1 and Grade 2 Drinking water Treatment Plant Operator Certification Examinations.

**Credits:** 4
**Program:** Engineering