

Spring 2021

Instructor: Thomas Duster

Date & Time: M/W 12:30PM - 1:45PM via Zoom

This course will help students to:

- (a) identify and understand chemical and physical principles and processes that control the composition of natural and disturbed waters;
- (b) prepare students to critically evaluate scientific literature and experimental designs related to water quality, water remediation, and the source, fate, and transport of natural compounds and contaminants in aquatic systems; and
- (c) examine the validity of environmental water data. Note: This course assumes that students have completed a semester of general chemistry.

List of Topics Covered: concentration (units); instrumentation; extraction/digestion; field/ analytical methods; partitioning; rock/mineral weathering; eutrophication; leaching; acid mine drainage; acid rain; dissolved organic matter; dissolved oxygen; dissolved solids; suspended solids; emerging contaminants; organic contaminants; metals/radionuclides; types of chemical reactions (dissolution, precipitation, hydration, hydrolysis, reduction/oxidation, acid/base, aqueous/surface complexation); equilibrium; equilibrium constant; chemical thermodynamics; kinetics; activity; source, fate, and transport of pollutants; and many others.

