

UNIVERSITY OF CALGARY  
DEPARTMENT OF CHEMISTRY  
**COURSE SYLLABUS**  
**FALL 2019**

**COURSE: CHEMISTRY 599.22/619.22 – Water Chemistry**

DAYS	TIME	ROOM	INSTRUCTOR	OFFICE	PHONE	EMAIL	OFFICE HOURS
Tu/Th	11:00-12:15	ST 063	Dr. Kimura-Hara	SB 333	220-7519	s.kimurahara@ucalgary.ca	M/W 4-5pm or By appointment

**REQUIRED TEXTBOOK:** Water Chemistry, Mark M. Benjamin, 2<sup>nd</sup> Edition, Waveland, 2015 available for purchase at the University bookstore, rent online at <https://bookshelf.vitalsource.com/books/9781478628729>, or available on reserves at the Taylor Family Digital Library.

**RECOMMENDED TEXTBOOK:** Water Chemistry, Vernon L. Snoeyink and David Jenkins, Wiley, 1980 available on reserves at the Taylor Family Digital Library.

**TOPICS COVERED:**

Application of principles of chemical equilibrium and chemical kinetics to water quality.

- Chemistry review: Concentration units, ionic strength, balancing chemical reactions
- Chemical equilibrium and activity coefficients
- Acid/base speciation and chemistry: solving equilibrium equations, pC-pH diagrams, proton condition
- Titration and buffers: buffer intensity, equivalence points, carbonate system and alkalinity
- Metals in aqueous systems: speciation and complexation of dissolved metals, predominance area diagrams, precipitation reactions
- Oxidation-reduction
- Disinfection: chlorine and chloramine chemistry, disinfection by-products

All other relevant course information can be found in the official course syllabus.

This course does not have a laboratory component.

Department Approval \_\_\_\_\_ Electronically Approved \_\_\_\_\_ Date \_\_\_\_\_ August 29, 2019 \_\_\_\_\_