

Spring 2021, Desalination for a Circular Water Economy, CEE 273M
Prof. Meagan Mauter

We are excited to announce that this course will be re-offered in Spring 2021!

Short Course Description:

This course explores the technological innovations required to support a circular water economy in which nontraditional water is treated to fit-for-purpose standards and reused locally. The first part of this course reviews the key constituents present in nontraditional source waters and the state-of-the-art pretreatment, desalination, and concentrate disposal technologies for their removal. Attention is given to the thermodynamic and operational barriers to improving the efficiency and cost-effectiveness of current technologies. The second part of this course identifies opportunities for next generation autonomous, precise, resilient, process-intensified, modular, and electrically powered desalination alternatives to lower the cost and energy intensity of water reuse. Over the duration of the course, students will form teams to perform an in-depth review of a single nontraditional source water treatment train, research the state-of-technology relative to that required for reuse, and perform a quantitative estimate of life cycle capex and opex costs.



Course Structure: This course combines a lecture-based introduction to critical material with extensive in-class discussion of daily readings from the peer reviewed literature. As such, it is designed for graduate students across the university with comfort reading the academic literature, a solid knowledge of physicochemical processes, and a basic understanding of traditional water treatment technologies. Assessment elements will include class participation, in class presentations, and a final project report. Enrollment limited to 20.

Units: 3 units

Meeting Times: M 1PM-4PM Pacific Time, Synchronous.

Grading Basis: S/NS

Enrollment Limit: 20

Final Exam: Final project, due last day of finals.