Lecture Contact Hours: 48-54; Outside-of-Class Hours: 96-108; Total Student Learning Hours: 144-162

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

Center for Water Studies 103 – Water Resources Management

3 hours lecture, 3 units

Catalog Description
With the ever-increasing demands for safe and reliable supplies of potable water, combined with decreasing supplies and over commitments of our existing water resources, we are facing a serious water crisis in the western United States. This course explores the history and development of California water resources, legal and financial issues, water portfolio diversification, the role of groundwater recharge and management, wastewater reclamation and reuse, desalination, and energy conservation.

Prerequisite
None

Course Content
1) Need, uses and importance of water
2) Hydrologic cycle, climate, and weather
3) Historical perspective of water development and use
4) Surface water and groundwater hydrology
5) Water allocation law
6) Economics of water
7) Water conflicts: balancing competing demands and uses of water
8) Development of the water transportation, treatment and distribution infrastructure
9) Water distribution networks
10) Wastewater collections treatment and disposal systems
11) Resource recovery/alternative treatment methods
12) Regulatory compliance issues
13) Future direction of the water/wastewater industry

Course Objectives
Given water resources management scenarios, students will be able to:
1) Describe the infrastructure that has been developed to meet demand, and the problems the water industry faces.
2) Identify the various legal and financial constraints which complicate efficient and effective water resource management.
3) Explain the concept and importance of water portfolio diversification.
4) Describe the political/organizational structures and list the major agencies involved in providing water in the greater San Diego region.
5) Identify the major regulatory agencies that monitor and regulate the water/wastewater industry.
6) Compare and contrast resource recovery and alternative treatment methods.
7) Identify the three primary factions in competition for water supply in California and the key issues for each faction.

Method of Evaluation
A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for

evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

1) Projects, writing assignments, and exams/quizzes which measure students' ability to describe the essential uses of water, the problems/constraints confronting the water/wastewater industry, and the major regulatory agencies that monitor and regulate the water/wastewater industry.
2) Projects, writing assignments, and exams/quizzes which measure students' ability to identify how source waters are obtained, treated and distributed, and how wastewater is collected, transported and disposed of in the area.

Special Materials Required of Student
None

Minimum Instructional Facilities
Smart classroom

Method of Instruction
1) Lecture and discussion
2) Multimedia presentations
3) Field trips

Out-of-Class Assignments
1) Reading assignments
2) Writing assignments

Texts and References
1) Required (representative examples): Cech, Thomas. *Principles of Water Resources: History, Development, Management, and Policy*. 4th edition. Wiley, 2018. ISBN: 978-1-118-79029-8
2) Supplemental: None

Student Learning Outcomes
Upon successful completion of this course, students will be able to:
1) Describe the essential uses of water and the developed water supply infrastructure involved in providing drinking water to the San Diego region and the state of California.
2) Describe the various issues facing the water industry, and the political and organizational structures and agencies involved in providing water to the San Diego region and the state of California.
3) Compare and contrast the sources of water and wastewater, the major collection and transportation networks in the western United States, California and the local San Diego region, and the major water conveyance infrastructure and wastewater treatment and reclamation facilities operating in San Diego County.
4) Explain how the carbon footprint of the existing water and wastewater infrastructure significantly impacts California's energy supply and power demands, and describe the alternative resource recovery and treatment methods available to mitigate that impact.