

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

Center for Water Studies 101 – Fundamentals of Water & Wastewater

3 hours lecture, 3 units

Catalog Description

This course provides a broad overview of the water and wastewater fields and issues confronting the industry. Students will learn how source waters are obtained, treated, and distributed and how wastewater is collected, transported, and disposed of in the western states, California, and the local San Diego area. Contemporary issues facing the water and wastewater industry will be explored.

Prerequisite

None

Course Content

- 1) Need and uses of water
- 2) Political/organizational structures
- 3) Development of the water transportation, treatment and delivery infrastructure
- 4) Water treatment process
- 5) Water distribution networks
- 6) Wastewater collections systems
- 7) Wastewater treatment
- 8) Resource recovery/alternative treatment methods
- 9) Regulatory compliance issues
- 10) Future direction of the water/wastewater industry

Course Objectives

Students will be able to:

- 1) Explain the needs and uses of water.
- 2) Describe the political/organizational structures necessary to develop and regulate water and wastewater systems.
- 3) Understand the water transportation, treatment and delivery infrastructure developed to provide water in California and locally.
- 4) Describe the water treatment process, water distribution networks, wastewater collections systems, and the wastewater treatment process.
- 5) Explain resource recovery/alternative treatment methods.
- 6) Discuss regulatory compliance issues.
- 7) Describe the future direction of the water/wastewater industry.

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
- 2) Writing assignments
- 3) Exams and quizzes
- 4) Homework assignments
- 5) Projects and assignments utilizing the Field Operations Skills Yard

Special Materials Required of Student

None

Minimum Instructional Facilities

Smart classroom

Method of Instruction

- 1) Lecture and discussion
- 2) Audiovisual
- 3) Field trips
- 4) Demonstrations utilizing the Field Operations Skills Yard

Out-of-Class Assignments

- 1) Reading assignments
- 2) Writing assignments
- 3) Projects
- 4) Reports

Texts and References

- 1) Required (representative example):
 - a. Walker, Dan. *Thirst for Independence, The San Diego Water Story*. Sunbelt Publications, 2004.
- 2) Supplemental: None

Exit Skills

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

- 1) Describe the essential uses of water, the infrastructure which has been developed to meet demand, and the problems, constraints, and regulatory compliance issues facing the water industry.
- 2) List the major agencies involved in providing water to the greater San Diego region.
- 3) Identify the major regulatory agencies that monitor and regulate the water and wastewater industries.
- 4) Describe the political/organizational structures of the water utilities industry.
- 5) Compare and contrast the sources of wastewater, the major collection and transportation networks, the major wastewater treatment and reclamation facilities, and the major problems and constraints facing the wastewater industry in San Diego County.
- 6) Describe the development of the water transportation, treatment and delivery infrastructure for water and wastewater.
- 7) List the sequential steps involved in water treatment.
- 8) List the various processes and systems involved in wastewater treatment and collection.
- 9) Describe the current issues, emerging trends, and future direction of the water and wastewater industries.

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Describe the essential uses of water, the infrastructure which has been developed to meet demand, and the problems, constraints, and issues facing the water industry.
- 2) List the major agencies involved in developing and transporting water to southern California and providing water and wastewater services in the greater San Diego region.
- 3) Identify the major regulatory agencies that monitor and regulate the water/wastewater industry.
- 4) Compare and contrast the sources of water and wastewater, the major collection and transportation networks, and the major water and wastewater treatment and reclamation facilities operating in San Diego County.