

**DRAFT**  
***CVEN 5574 Water Utility Management: Current Issues and  
Future Challenges***  
***Summer Syllabus 2025 (Jun 3 - Jul 3)***

**FACULTY:**

Richard Kuchenrither, Ph.D., P.E.  
Scholar in Residence  
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Brain Good, PE  
Chief Administrative Officer, Denver Water  
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Bob Harberg, PE  
City of Boulder  
harberg@gmail.com

**Workshop #1 History**  
Dick Kuchenrither  
JoAnn Silverstein

**Workshop #2 Water Project Delivery  
Options**  
Larry Wyeno, PE, City of Longmont, Retired  
Joe Willich, PE, Brown & Caldwell

**Workshop #3 Water Century**  
Tanya Heikkila, Ph.D. Professor, CU Denver  
School of Public Affairs  
Aditi Bhaskar, Associate Professor  
Civil, Environmental, Architectural  
Engineers Dept.

**Workshop #4 Future Technology Challenges**  
Amanda Tyndall, GE Water Technologies &  
Solutions  
Ashwin Dhanasekar, Water Research  
Steve Myers, Hach Company  
Phil Brandhuber, CU Envr Engr Lecture

**Workshop #5 Regulatory Challenges**  
Jojo La, Policy Advisor, Colorado Water  
Quality Control Comm.  
Cal Youngberg, City Longmont  
Environmental Services  
JoAnn Silverstein, University of Colorado

## **COURSE GENERAL INFORMATION**

**OFFICE:** Richard Kuchenrither, ECOT 541 E

Office Hours: By appointment

Email: [richard.d.kuchenrither@colorado.edu](mailto:richard.d.kuchenrither@colorado.edu)

Zoom, Skype: Arrange a set time

**CLASS MEETS: Tues, Wed., & Thurs.** 9:00 – 12:15; 6/1 to 7/1

Room ECCE 1B41

**DISTANCE LEARNING ACCESS: ZOOM**

Utility Management course for the summer 2022 semester:

Join Zoom Meeting XXXXXX

Pass code: XXXXXXXX

Meeting ID: XXXXXXXX

One tap mobile

+13462487799,,92176521821# US (Houston)

+16699006833,,92176521821# US (San Jose)

***This course requires the use of the Zoom conferencing tool which is currently not accessible to users using assistive technology. If you use assistive technology to access the course material, please contact your faculty member immediately to discuss.***

For more information, visit the OIT Zoom website:

<https://oit.colorado.edu/services/conferencing-services/web-conferencing-zoom/help/getting-started>

**CLASS WEB SITE:** Canvas class web site link: <https://canvas.colorado.edu/>

Use your CU IdentiKey Login Name and password.

## READINGS:

### Required Texts

1. Water Environment Federation, WEF (R. Kuchenrither, E. Speranza, B. Good, R. Allen, K. Pallansch) 2015, ***The Effective Water Professional: Leadership, Communication, Management, Finance and Governance***
2. Patterson, Kerry; Grenny, Joseph; McMillan, Ron and Switzler, Al. ***Crucial Conversations*** (2012) Mc Graw & Hill.

### Articles and book chapters to be made available in Canvas:

1. Strunk & White, *Elements of Style*, 4<sup>th</sup> Edition.
2. AWWA Journal, *Ancient water quality: Roman engineering of the Barbegal Mill*, April, 2012
3. Cadbury, Deborah 2003. *"Dreams of Iron and Steel"*. HarperCollins Publisher, Inc., Chapter 4
4. Gregory, George P. A Study in Local Decision Making: Pittsburg and Sewage Treatment
5. US Dept. of Health, Education and Welfare 1970. Community Water Supply Study.
6. National Academy of Sciences. Privatization of Water Services in the United States: An Assessments of Issues and Experience. Chapter 2 History of U.S. Water and Wastewater Systems
7. U.S. EPA 2000. The History of Drinking Water Treatment
8. Historical Development of Wastewater Collection and Treatment, *Fundamentals of Biological Wastewater Treatment*, Wiesmann, Udo, et. al. 2007
9. *What 17<sup>th</sup> – Century Pirates Can Teach Us About Job Design*, Rao, Hayagrenva
10. **"The Biggest Potential Water Disaster in the United States"**. The New Yorker, May 11<sup>th</sup>
11. **A Quiet Revolution: Southwest Cities Learn to Thrive Amid Drought**. Yale Environment 360. April 26<sup>th</sup>
12. **California Emerges as a Big Winner in Colorado River Water Deal.** The Los Angeles Times. May 23.
13. **AWWA Water2050 Sustainability, 2022**
14. **AWWA Water2050 Technology, 2022**
15. Zaleznik, Abraham. [1977] *"Managers and Leaders: Are They Different?"* Harvard Business Review
16. Bower, Marvin. 1997. *The Will to Lead*, "Developing Leaders in a Business." Chapter 3. Harvard Business School Press.
17. Watkins, *How Managers Become Leaders*
18. *In Praise of Followers*, Kelly
19. *How to Become a Powerful Follower...and a Good Leader*, Giacoman

20. Lencioni, Patrick. 1998. *The Five Temptations of a CEO*. John Wiley & Sons.
21. Badaracco, Joseph L. Jr. 1998. "The Discipline of Building Character." Harvard Business Review.
22. Water and Wastewater Design-Build Handbook, 5<sup>th</sup> Edition. DBIA, AWWA and WEF.
23. Mankins, Michael C, 2004. *"Stop Wasting Valuable Time"*. Harvard Business Review
24. Covey, Three Roles of the Leaders in the New Paradigm
25. WEF 2002, *The Survival Guide*, Chapters 1, 3 and 6.
26. Johnson, Craig E. 2011. *Meeting the Ethical Challenges of Leadership*, 4<sup>th</sup> ed. Chapter 3, p. 77 to 104
27. State of Colorado WQCC, Regulation #85, Nutrients Management Control Regulation
28. USEPA/NRDC letter, Nutrient Reduction through Secondary Treatment and Applicable Technology-based Nitrogen and Phosphorus Limitations.

## COURSE DESCRIPTION AND OBJECTIVES

**Purpose.** Three trends in the environmental profession drive the value of this course: (1) changing professional and educational demands, (2) increasing need for civil engineers to meet future demands for young professionals and leaders in the water profession, and (3) retirement of a significant fraction of the civil engineering professional workforce over the next decade, forcing young leaders to step up sooner than they might expect.

The unique aspect of the class is an integrated graduate study of technology challenges and public affairs (leadership/management/communication/finance) to prepare students for careers in consulting firms, public water and wastewater utilities and other government agencies focused on management of water and environmental resources. The faculty includes Civil Engineering Department, School of Public Affairs and senior management from utilities and consulting firms.

**Objectives.** The course objectives include: learning how public utilities manage water supply and environmental services; how they work with their constituencies and each other; and what leadership is required to meet future challenges. Also, a unique sustainable and renewable case study is an opportunity for students to apply the course principles for plan implementation.

The course focuses on many of the humanistic challenges for consulting, utility and regulatory agencies, including:

- Workshops for Current Issues & Future Challenges
  - History
  - Global Water Century
  - Management Challenges- Crucial Conversations
  - Future Technology Challenges- Nexus of Water & Energy
  - Future Regulatory Challenges – Regulatory challenges
- Leadership
  - Leading local/regional/national/global projects and organizations
- Management
  - Program and Project Management and Project Delivery Options
  - Asset Management, Risk Management, and Resource Management
- Decision Making
  - Analytics
  - Value-based decisions
  - Challenges of communicating decisions
- Governance and Ethics
  - Ethics in leadership and management
  - Utilities controlled by public boards and city councils.
  - Privately owned utilities

**COURSE WORK:**

Class reading pre-work assignments/ Class participation

Class Project Report

Final Report Presentation

**GRADING:**

Homework Assignments 25%

Class participation/Reading prework 20%

Project Report 30%

Final report Presentation 25%

Grading Criteria and Expectations

- Ability to follow instructions and format assignments clearly
- Participating in class with video on (outside of the classroom)
- On-time submission of assignments
- Error free spelling and grammar
- Clarity of written or verbal analyses
  - (e.g. defining key concepts, using evidence and support from course readings and outside research)
- Content that demonstrates your knowledge of the topic and provides in-depth coverage of the required points
- Class attendance is kept. If you miss a class, you have to watch the recorded class, before the next class. If you miss watching the class, you are recorded as absent, unless you have permission from professor Kuchenrither. Each class marked absent will reduce your grade 1/3, i.e. A to A-
- High level of team participation (peer evaluations). Project includes evaluations from CATME (Comprehensive Assessment of Team Member Effectiveness) for self and team member evaluations.

## SCHEDULE AND TOPICS

### 1. Jun 3, 2025 Introduction and Workshop 1: History of Water

Faculty: Dick Kuchenrither and JoAnn Silverstein

- Course Introduction
- Class Project
- Water History

#### Lesson 1 Prework:

##### Read:

1. *The Effective Water Professional: Leadership, Communications, Management, Finance & Governance*, Preface, 2015, Chapter 1.
2. AWWA Journal, *Ancient water quality: Roman engineering of the Barbegal Mill*, April, 2012.
3. Cadbury, Deborah 2003. *"Dreams of Iron and Steel"*. HarperCollins Publisher, Inc., Chapter 4.
4. Gregory, George P. *A Study in Local Decision Making: Pittsburg and Sewage Treatment*.
5. US Dept. of Health, Education and Welfare 1970. Community Water Supply Study.
6. National Academy of Sciences. *Privatization of Water Services in the United States: An Assessment of Issues and Experience*. Chapter 2 History of U.S. Water and Wastewater Systems.
7. U.S. EPA 2000. The History of Drinking Water Treatment.

**Submit:** 2-3 questions about *A Study in Local Decision Making: Pittsburg and Sewage Treatment* by 8 am Tuesday, Jun 4<sup>th</sup> .

**Homework Assignment #1** – Due by 5pm on June 11, 2024

### 2. June 4, 2025 Water Management

Faculty: Dick Kuchenrither, Edyta Stec-Uddin and Brian Good

- Course Introduction and Objectives
- Class Project Denver Water & Metro Water Recovery
  - Plant Backgrounds Presentations
  - Project Data
  - Carbon footprint, individually and combined
  - Carbon Credits
  - CO<sub>2</sub> reduction
  - Plant tours on Friday June 9<sup>th</sup>

**Dick  
Edyta & Brian**

## Lesson 2 Prework:

### Read:

1. *Project Description*.

**Submit:** 2-3 questions about the Project Description **by 8 am Tuesday Jun 4<sup>th</sup>** .

## Homework Assignment - None

**June 7, 2024 - Field Trip, Friday, 8 am to Noon at Denver Reuse and Metro Water Recovery Plants, meet at Engineering Center at 7:00 am.**

## 3. June 5, 2025 Field Trip Reuse and Metro Recovery Plants

\*\*\*\*\***Week 2**\*\*\*\*\*

## 4. June 10, 2025 Public Communication & Governance

Faculty: Bob Harberg and Dick Kuchenrither

- Topics
  - Public Involvement, Identifying key stakeholders and audiences (internal and external)
  - Governance

## Lesson 4 Prework:

### Read:

1. Water Environment Federation. 2002. *The Survival Guide: Public Communications for Water Professionals*. Chapter 1
2. WEF, *Effective Water Professional: Leadership, Communication, Management, Governance*, Chapter 6, 2015
3. AWWA, *Water Utility Management*, Chap 3. 2002

**Submit:** 2 -3 questions from both readings, including WEF Chap 1 *Public Communications* and AWWA Chap 3 *Effective Public Communication* **by 8 am Tuesday, June 4<sup>th</sup>** .

## Homework Assignment – None



## 5. June 11, 2025 Crucial Conversations

Faculty: Dick Kuchenrither, Liz Hill

- Separate people from the problem
- Start with the heart
- Listening vs. hearing
- Seek first to understand
- Embrace emotions
- Combination of I.Q. and E.Q.

### Lesson 5 Prework:

#### Read:

1. Crucial Conversations

**Submit:** 2-3 questions about Crucial Conversations **by 5pm Monday, June 17<sup>th</sup>.**

**Homework Assignment** – None

## 6. June 12, 2025 Workshop 2: Water Project Delivery Options

Faculty: Dick Kuchenrither, Larry Wyeno, Dana Lebeda, and Joe Willich

- Topics
  - Traditional Bidding
  - Design Build
  - Design Build Operate
  - Guaranteed Price
  - Public- private partnership
  - Construction Management at Risk

### Lesson 6 Prework:

#### Read:

1. Suggested Website Resource - Project Delivery Selection Matrix: (developed by CU/DBIA RMR: <http://www.colorado.edu/waterpds>)
2. Water and Wastewater Design-Build Handbook, 5<sup>th</sup> Ed., DBIA, AWWA and WEF

**Submit:** 2-3 questions from DB Handbook, Chap 1 and Project Delivery Selection Matrix **by 5pm Monday, June 10<sup>th</sup>.**

**Homework Assignment** – None

\*\*\*\*\*WEEK 3\*\*\*\*\*

## 7. June 17, 2025 Leadership

Faculty: Dick Kuchenrither, Karen Pallansch

- Leading Local/Regional/National/Global Projects and Organizations
- Leadership Skills
- Key Attributes

### Lesson 7 Prework:

#### Read:

1. WEF 2015, *The Effective Water Professional*, Chapter 2
2. Bowers, Marvin. *The Will to Lead*, Chapter 3
3. Zaleznik, Abraham. *Managers and Leaders: Are They Different?*
4. Watkins, *How Managers Become Leaders*

**Submit:** 2-3 questions about *Managers and Leaders: Are they Different?* and *The Will to Lead*, Chapter 3, **by 5 pm Monday, June 10<sup>th</sup>**.

**Homework Assignment** – HW #2 Due June 19<sup>th</sup> .

## 8. June 18, 2025 Leadership

Faculty: Dick Kuchenrither, Karen Pallansch

- Temptations of a CEO
- Followership
- Leadership Success/Failure

### Lesson 8 Prework:

#### Read:

1. *The Five Temptations of a CEO*, Lencioni, Patrick.
2. *In Praise of Followers*, Kelly
3. *How to Become a Powerful Follower...and a Good Leader*, Giacoman

**Submit:** 2-3 questions from 2 readings: *The Five Temptations of a CEO*, and *How to Become a Powerful Follower* **by 5 pm Monday, June 10<sup>th</sup>** .

**Homework Assignment #3** – due by 5pm on June 20<sup>th</sup> .

## 9. June 19, 2025 Workshop 3: Global Water Century: Looking Ahead 100 years

Faculty: Dick Kuchenrither, Tanya Heikkila, and Aditi Bhaskar

- Current short-term goals <50 years
- Long term challenges 100 years
- Adaptive vs Predictive Management
- Utility water shortages due to climate change, conflicts
- Lectures, questions & breakout sessions

### Lesson 9 Prework:

#### Read:

1. Owen, David. 2022. **“The Biggest Potential Water Disaster in the United States”**. The New Yorker, May 11<sup>th</sup>.
2. Robbins, Jim. **A Quiet Revolution: Southwest Cities Learn to Thrive Amid Drought**. Yale Environment 360. April 26<sup>th</sup>.
3. Smith, Haley and Ian James. 2023. **“California Emerges as a Big Winner in Colorado River Water Deal.”** The Los Angeles Times. May 23.
4. Marchau, V.A., et al. **“Introduction.”** In Marchau, V.A., Walker, W.E., Bloemen, P.J. and Popper, S.W., eds, 2019. *Decision making under deep uncertainty: from theory to practice* (p. 405). Springer Nature. **Note: this is an Open Access book – please just skim the introduction chapter**  
<https://library.oapen.org/handle/20.500.12657/22900>

**Submit:** 2-3 questions from each article: *The Biggest Potential Water Disaster in the United States* and *A Quiet Revolution: Southwest Cities Learn to Thrive Amid Drought*. by **5 pm on Monday 17<sup>th</sup>**.

**Homework Assignment** – None

\*\*\*\*\*Week 4\*\*\*\*\*

## 10. June 24, 2025 Careers in the Water Profession

Faculty: Dick Kuchenrither

- Topics
  - Experience in water profession
  - Current experience
  - Importance of non-technical skills
  - New era in the water profession

- Presentations/ Panel Discussion

- Alex Sofranko, Parker Water
- Meg Parker, Carollo
- Ben Miller, TetraTech

**Lesson 10 Prework:**

**Read:**

1. *What 17<sup>th</sup> Century Pirates Can Teach Us about Job Design*

**Submit:** 2-3 questions about *What 17<sup>th</sup> Century Pirates Can Teach Us about Job Design* had effects on your career **by 5 pm Monday, Jun 17<sup>th</sup>** .

**Homework Assignment** – None

**11. June 25, 2025 Workshop 4: Future Technology Challenges- Nexus of Water & Energy**

Faculty: Dick Kuchenrither, Steve Myers, Amanda Tyndall, Phil Brandhuber, and Ashwin Dhanasekar

- Topics/Participants
  - Existing technologies
  - Developing technologies
  - Future technologies
- Presentations/ Panel Discussion
  - Steve Myers, Hach Company
  - Amanda Tyndall, Water Technologies & Solution
  - Ashwin Dhanasekar, Water Research Foundation
  - Phil Brandhuber, CU Envr Engr Lecturer

**Lesson 11 Prework:**

**Read:**

1. *AWWA Water2050 Sustainability, 2022*
2. *AWWA Water2050 Technology. 2022*

Provided articles, power points, via email a few days prior to workshop.

**Submit:** 2-3 questions from each presenter **by 5 pm Monday, June 24<sup>th</sup>**.

**Homework Assignment** – None

## 12. June 26, 2025 Challenges of Communicating and Change Management Decisions

Faculty: Dick Kuchenrither, Jeff Theerman

- Topics
  - Negotiation and conflict resolution
  - Understanding principles of risk communications
  - Leveraging the media
  - Change management

### Lesson 12 Prework:

#### Read:

1. Water Environment Federation. 2002. *The Survival Guide: Public Communications for Water Professionals*. Chapter 6.

**Submit:** 2 -3 questions about Public Communications **by 5 pm Monday, June 24<sup>th</sup>**

**Homework Assignment** – None

\*\*\*\*\*WEEK 5 \*\*\*\*\*

## 13. July 1, 2025 Ethics Faculty: Dick Kuchenrither

- Topics
  - Code of Ethics
    - Class exercise
    - Leadership and management
  - NSPE

### Lesson 13 Prework:

#### Read:

1. Johnson, Craig E. 2011. *Meeting the Ethical Challenges of Leadership*, Chapter 3, p. 77 to 104
2. Badaracco, Joseph L. *The Discipline of Building Character*
3. NSPE, Code of Ethics for Engineering

**Submit:** 2 -3 questions for both: *Meeting the Ethical Challenges of Leadership* and *The Discipline of Building Character* **by 5 pm Monday, June 24<sup>th</sup>**.

**Homework Assignment** – None

#### **14. Jul 2, 2025 Workshop 5: Future Regulatory Challenges - Regulatory Soup**

Faculty: Dick Kuchenrither, JoAnn Silverstein, Jojo La and Cal Youngberg

- Topics
  - Integrated Water Resources (drinking water, wastewater, & reuse)
  - Wastewater & Water
  - New Era
- Presentation/ Panel Discussion
  - JoAnn Silverstein, Professor University of Colorado
  - Jojo La, Colorado Water Quality Control Commission
  - Cal Youngberg, City of Longmont

#### **Lesson 14 Prework:**

##### **Read:**

1. CDPHE Info
  - a. Webpage [webpage](#) (Water Quality 10 – year Roadmap)
  - b. [10-Year Roadmap Action Tables](#)
  - c. [Clean Water Policy 8: Implementation Policy](#)
  - d. State of Colorado WQCC, Regulation #85, Nutrients Management Control Regulation
2. USEPA/NRDC letter, Nutrient Reduction through Secondary Treatment and Applicable Technology-based Nitrogen and Phosphorus Limitations.

**Submit:** 2 -3 questions for USEPA/NRDC letter and CDPHE 10 – year roadmap action  
**by 5pm Monday, Jul 1<sup>st</sup>**

**Homework Assignment** – None

#### **15. Jul 3, 2025, Project Presentations**

## **ADDITIONAL INFORMATION**

### **CU Policy Statements**

All of CU's Policy statements are important for this class. Please become familiar with the CU policies at <http://www.colorado.edu/policies/> and take particular note of those policies listed below. Please do not hesitate to ask me for clarification about how any of these policies relate to our class.

### **Accommodation for Disabilities**

If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the [Disability Services website](#). Contact Disability Services at 303-492-8671 or [dsinfo@colorado.edu](mailto:dsinfo@colorado.edu) for further assistance. If you have a temporary medical condition or injury, see [Temporary Medical Conditions](#) under the Students tab on the Disability Services website.

### **Classroom Behavior**

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. For more information, see the policies on [classroom behavior](#) and the [Student Code of Conduct](#).

### **Preferred Student Names and Pronouns**

CU Boulder recognizes that students' legal information doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

### **Honor Code**

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code ([honor@colorado.edu](mailto:honor@colorado.edu); 303-492-5550).

Students found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code as well as academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found at the [Honor Code Office website](#).

### **Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation**

The University of Colorado Boulder (CU Boulder) is committed to fostering a positive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct, intimate partner abuse (including dating or domestic violence), stalking, or protected-class discrimination or harassment by members of our community. Individuals who believe they have been subject to misconduct or retaliatory actions for reporting a concern should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or [cureport@colorado.edu](mailto:cureport@colorado.edu). Information about the OIEC, university policies, [anonymous reporting](#), and the campus resources can be found on the [OIEC website](#).

Please know that faculty and instructors have a responsibility to inform OIEC when made aware of incidents of sexual misconduct, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

### **Religious Holidays**

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, I follow the CU campus policy on religious observances.

See the [campus policy regarding religious observances](#) for full details.