Introduction to Water Resource Management

- Explain how water and energy consumption are intrinsically linked.
- Differentiate between consumptive and non-consumptive uses of water.
- Explain the impact of government mandates and law on water resource management.

Applied and Professional Ethics in the Water Sector

- Define the values-based framework guiding water policy decisions.
- Examine the philosophical premise of water integrity vs. water stewardship.
- Explain the ethical conflicts posed by water governance and legally mandated practice.

California Water History

- Investigate the forces and events that have shaped water management in California.
- Examine individual, corporate, and local actions that impact water sustainability.
- Explain the basic water infrastructure of dams, reservoirs, canals, and pipelines.

Water Resources Management and the Public Policy Process

- Identify the political, social, and economic contexts that are shaped by policy making processes.
- Articulate the key parameters of public policy formulation.
- Explain the public trust framework of water policies.

Water Resources Automation and Technology

- Employ information systems crucial for managing water sector infrastructure, including SCADA systems to analyze, implement, and troubleshoot these systems effectively in real-world scenarios.
- Apply automation and smart technology solutions within the water industry to leverage these advancements to streamline operations, enhance efficiency, and optimize processes such as customer service and asset management.
- Comprehend cybersecurity principles specific to water infrastructure to implement robust security measures to safeguard critical systems against potential threats, identify vulnerabilities, mitigate risks, and ensure the integrity and confidentiality of water resource data.

Strategic Planning

- Define organizational structures and authorization documents.
- Identify the broad-scoped plans and methods to achieve the long-range goals of a water utility master plan.
- Describe the benefits of short-term planning, long-term and emergency planning to fulfill the mission of the utility.

Capital Budgeting and Debt Management Systems

- Identify a manager's responsibilities regarding the fiscal management of a utility.
- Develop an annual operating and capital budget.
- Examine the audit process to ensure accuracy and compliance in financial reporting.
- Evaluate the effect of organizational policies on water rate setting.

Managing Public Organizations

- Identify water infrastructure services, laws, regulations, economics, operations, and administration.
- Interpret and analyze financial, technical, and legal information.
- Articulate the environmental implications and far-reaching effects of non-compliance policies for water resources.

Human Resources Administration in Public Organizations

- Develop a workforce plan for a water utility.
- Examine participatory, collaborative organizational models dedicated to continual learning and improvements.

Collective Bargaining and Labor Relations

- Critique the concept of collective bargaining.
- Relate NLRB rulings to issues of job security, seniority, and calculation of seniority.
- Analyze the impact of different collective bargaining strategies on employee morale.
- Analyze alternative dispute resolutions.

Water Sector Leadership and Diversity

- Analyze how leadership influences performance in a diverse organization.
- Explain how leaders are developed and equipped for organizational shifts and changes.
- Examine organizational policies and procedures that encourage workforce diversity.
- Identify key strategies for promoting social justice, understanding the impacts of diversity on organizational stakeholders.

California Water Regulations and Management

- Develop a thorough understanding of California's complex water laws and regulations, including the prior appropriation doctrine, groundwater management regimes, and federal water management policies.
- Examine the regional regulatory frameworks, interpret water rights, and develop sustainable water management plans that balance competing interests and promote long-term resilience in the face of climate change and population growth in California.
- Articulate the importance of community engagement and stakeholder collaboration in water governance in the State of California.

- Evaluate communication strategies needed to engage with diverse populations, including government agencies, Indigenous communities, agricultural interests, and environmental organizations, to explore collaborative approaches to water management that foster trust, equity, and shared decision-making in the state of California.

Water Resource Economics

- Define economic policies, problems, and challenges of water infrastructure management.
- Investigate current economic theories and water management frameworks.

International Environmental Policy

- Evaluate the global theories of water as an economic good.
- Analyze engineered solutions focused on international water supply and demand management.
- Recognize the importance and sustainable use of water resources globally, regionally, and locally.

Native American Water Rights

- Explain the legal concept of a right.
- Investigate Indigenous water rights litigation and water rights cases.
- Analyze hydrographic survey reports to determine the exact owner and priority of a water right.

Water Resources GIS and Data Analysis

- Utilize GIS software to analyze and manage water distribution networks, treatment facilities, and wastewater systems to perform spatial analysis, and generate actionable insights to optimize water resource utilization and infrastructure maintenance.
- Apply GIS techniques to ensure compliance with regulatory standards such as the Clean Water Act and Safe Drinking Water Act and use spatial data analysis to assess environmental impacts, monitor water quality, and implement measures to mitigate pollution, thereby contributing to the sustainability and viability of water systems within regulatory frameworks.
- Integrate GIS with water resource planning, to make informed decisions regarding infrastructure development, water resource management, and stakeholder engagement.
- Leverage GIS tools to evaluate the feasibility of water projects and explore various scenarios, aiding in the sustainable and efficient management of water resources.

Applied Statistics in Water Resources

- Apply statistical tools and techniques to analyze water resource data using descriptive statistics, hypothesis testing, and multivariate regression, to effectively interpret data, identify patterns, and make informed decisions to address water management challenges.

- Critically analyze water policy issues using statistical methods to evaluate the effectiveness of existing policies, assess the impact of proposed interventions, and recommend evidence-based strategies for sustainable water resource management.
- Integrate statistical analysis into real-world water resource management scenarios to assess the viability of water projects, evaluate risk factors, and optimize resource allocation to achieve long-term sustainability and resilience in water systems.

Research Methods in Water Resources Management

- Describe the purpose of applied research.
- Identify the various components and methods of the research design process.
- Identify a research method or methods appropriate to their research topic and available resources according to nature and purpose of study.

Written Communication & Critical Thinking for Advancing Leaders

- Write argumentative, analytical, and research-supported papers that will employ effective critical thinking strategies.
- Demonstrate critical thinking skills by analyzing and evaluating a variety of texts through equity-focused, environmental, economic, and leadership lens.
- Locate, organize, evaluate, and document a variety of sources in a semester-long, community-based research paper, in APA citation format, that integrates concepts addressed throughout the course.

Internship

- Communicate effectively and technically orally and in writing
- Function effectively, professionally, and ethically on teams.
- Identify the structure and operations of the workplace.

Capstone Project

- Formulate research questions or a hypothesis.
- Critically review previous work of relevance to the selected research area.
- Construct a sound approach to address a water resources issue.
- Apply research principles to analyze a proposed water resources issue.
- Report findings in a written project.

Comprehensive Written Exam

- Demonstrate mastery of the body of knowledge in the field of water resources management, including the related societal, environmental, economic and professional competencies.