ACWUA

Arab Countries Water Utilities Association

A GLOBAL CENTER OF EXCELLENCE FOR WATER AND WASTEWATER MANAGEMENT AND KNOWHO

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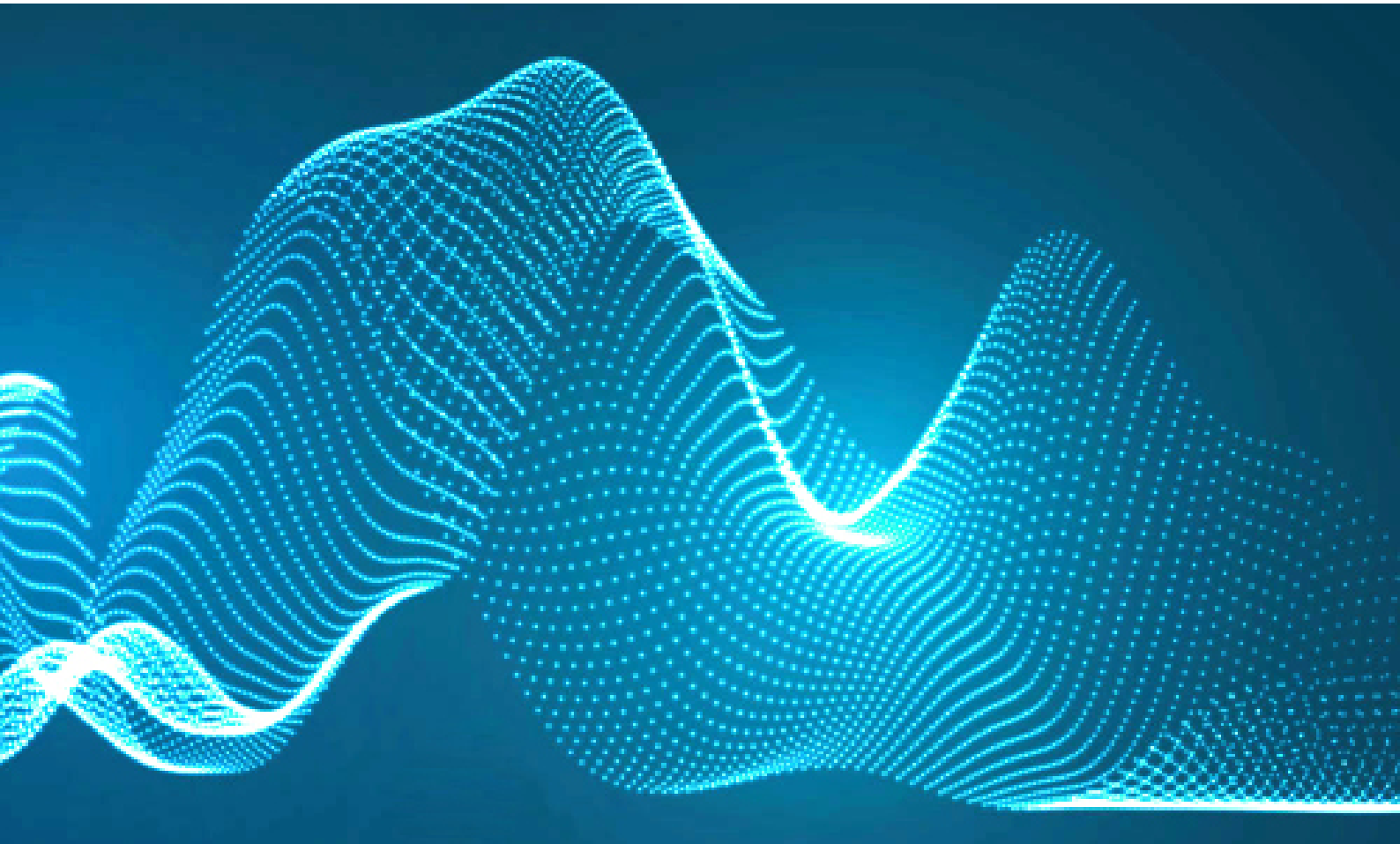
ACWUA
الجمعية العربية لمرافق المياه
Arab Countries Water Utilities Association

GLOBAL CENTER OF EXCELLENCE

- ACWUA Water Governance Managerial Tools Training Programs
- Water Utility Leadership Empowerment
- GIS Applications

First: ACWUA Water Governance Managerial Tool Training Progrms

ACWUA WATER GOVERNANCE MANAGERIAL TOOLS TRAINING PROGRAMS	
1.	Water Governance concept and principles.
2.	Climate change vulnerability assessment, Adaptation and mitigation.
3.	Water Allocation.
4.	Water Accounting.
5.	WEAP-MODFLOW as a Decision Support System (DSS) for integrated water resources management.
6.	Project Management Professional (PMP) Exam preparation.
7.	Relationship Management.
8.	Health and Safety.
9.	Total Safety Management for water and wastewater facilities (TSM Arabia).



Course information

Water Governance Concept and Principles	
Duration:	5 days
Objectives:	**By the end of this course, attendants will be able to:** **1.** Have comprehensive knowledge and skill relating to various water resource problems. **2.** Understand the concepts of Governance and crises. **3.** Synthesize insights related to water governance from the various working groups. **4.** Develop evidence-based governance indicators and pathways following a global comparative, synthesizing, integrative approach to identify gaps in water governance (particularly develop governance indicators, assess and compare policies towards SDGs implementation). **5.** Understand Policies to be adopted to reach the strategy of administrative reform. **6.** Capable to differentiate between good and poor governance.
Outlines:	• Water resources and sustainable development of water management. • Introduction to Integrated Water Resources Management and methods of developing water resources. • Governance: Definition, components and goals. • Principles of Governance (Transparency about Foundation principles, Financial data and goals). • Water governance indicators. • Elements and aims of good governance. • Gender and household water supply and hygiene. • Women and gender main streaming in water management. • Risk management and compliance. • Policy – legal frameworks and institutional arrangements. • Index of quality of administration. • The concept and objectives of administrative reform. • The objectives of administrative reform. • Policies to be adopted to reach the strategy of administrative reform. • The axis of the strategy of administrative reform. • Correct and proper management of any business, whatever it is. • Requirements for successful management and human capacity building. • Capacity building for institutions working in water resources management • Organizational structures. • Factors to build the necessary cadres and manpower in the institution.

Course information

Climate change vulnerability assessment, Adaptation and mitigation	
Duration:	5 days
Objectives:	**By the end of this course, attendants will be able to:** **1.** Understand climate change and climate variability. **2.** Understand and Conduct Vulnerability Assessment. **3.** Develop climate change scenarios and Trend Analysis. **4.** Understand Impact of climate change studies. **5.** Carry out and understand climate change mitigation for water sector. **6.** Recognize and understand different options of Adaptation to climate change. **7.** Introduce participants to impact of climate change for different Arab regions. **8.** Capable to understand, identify, analyze and manage Risks
Outlines:	**Introduction to climate change:** • Introduction to Science of Climate Change. • Climate Variability and Climate Change. • Observed Climate Changes. **Vulnerability Assessment and Adaptation measures for different sectors:** • Vulnerability assessment and adaptation measures for water sector. • Vulnerability assessment and adaptation measures for agriculture sector. • Vulnerability assessment and adaptation measures for health sector. • Vulnerability assessment and adaptation measures for ecosystems. • Vulnerability assessment and adaptation measures for urban systems. • Vulnerability assessment and adaptation measures for coastal areas. • Vulnerability assessment and adaptation measures on socio-economic conditions. **Climate change Modeling:** • Introduction to Downscaling Methods and its Advantages and Limitations. • Data preparation and filling missing data, Baseline scenario development. • Downloading GCMS output from CMIP5 website (CPR4.5 and CPR 6). • SDSM software download &Exercise on Maximum temperature downscaling. • Statistical downscaling climate change scenarios for Zarqa River basin. • Dynamic Downscaling of climate change scenarios for Jordan. • Exercise on Precipitation downscaling. **Case studies on climate change impacts adaptation and mitigation from the different Arab Region** • Al-Mashraq Region (Jordan, Palestine, Lebanon, Syria, Iraq). • Al-Magrab Region (Labia, Tunisia, Morocco, Algeria). • Gulf region. • Egypt and Sudan. • Alssahl Countries.

Course information

Water Allocation	
Duration:	5 days
Objectives:	**By the end of this course, attendants will be able to:** **1.** Assess and evaluate available water resources. **2.** Identify all water users. **3.** Balance between water supply and demand. **4.** Make equity in water distribution between regions and user groups and understand water rights. **5.** Develop priorities to promote and support social-economic strategies. **6.** Protect water resources and ecosystems. **7.** Capable to promote the most efficient use of fresh water and reused water. **8.** Define the optimal use of available water resources.
Outlines:	**Assessment of water resources:** • Concepts of hydrological cycle. • Field measurements of hydrological parameters. • Analysis and interpretation of available of water resources. **Water budget and water priorities efficient use:** • Water balance calculation. • Water priorities among sectors. • Equity in water distribution between different administrative regions and between upstream and downstream areas. • Most efficient use of water resources. **Water rights and social –economic factors:** • Water rights and water legislation. • Water allocation supports and promotes economic and social development. • Cost benefit analysis and economic efficiency of water use. **Environmental protection:** • Water resources protection zones. • Hazards and vulnerability maps. • Ecosystem protection. **Case studies using WEAP Software:** • Case studies from Jordan and Arab countries on visualization of water supply and demand using WEAP standalone Software.

Course information

Water Accounting	
Duration:	4 days
Objectives:	**Upon the successful completion of the course, each participant will be able to:** **1.** Gain deep understanding of water accounting: concepts, definitions, importance, frameworks, etc., **2.** Utilize water accounting approaches, **3.** Measure of water accounting, **4.** Analyze water accounting data, **5.** Identifying the relationships between water accounting and decision making, **6.** **The above objectives will ultimately promote an ability to:** • Evaluate present status of water resources in a given area, • Asses trends in water resources demand, • Offer decision makers with policy options pertaining water scarcity. **7.** Help in achieving the water-related millennium development goals (MDGs).
Outlines:	**Fundamentals and concepts of water accounting:** • Background and definitions. **Water Related Issues/Reasons for water accounting:** • Growing population. • Food production. • Deforestation. • Climate Change. **International waters.** **Data required for water accounting:** • Hydrologic data. • Hydrologic measurements. • Data index and acquisition. • Data retrieval. • Data formats. **Water accounting systems:** • System of environmental-economic accounting for water. • Water footprint accounting. • Water accounting to assess use and productivity of water. **Application and evaluation of water accounting systems:** • Standardized Frameworks. • Wastewater Emissions. • Ecosystem Services. **Contemporary issues addressed by water accounting.** **Water accounting-monitoring and assessment.**

Course information

WEAP-MODFLOW as a Decision Support System (DSS) for integrated water resources management	
Duration:	5-6 days
Objectives:	**By the end of this course, attendants will be able to:** **1.** Identify and evaluate traditional and non-traditional water resources. **2.** Link between surface water and groundwater resources. **3.** Calculate water balance on the wellfield, basin and national levels. **4.** Calculate unmet demand for city or basin. **5.** Build simulation scenarios for groundwater / surface water interactions. **6.** Predict future effect of climatic change scenarios on water resources. **7.** Asses and evaluate socio-economic developments. **8.** Simulate scenarios for water management options.
Outlines:	**Introduction to assessment water supply and demand:** • Evaluation and assessment of water resources. • Assessment of water supply and demand for each city or basin. • Linkage between surface water and groundwater as well as reuse water on local and national levels. **Water balance and interpretation of WEAP-MODFLOW Results:** • Water Budget calculation. • Calculation and estimation of water recharge. • Determination water deficit and unmet demand for domestic, agricultural and industrial sectors. • Visualization of water supply and demand for any consumer ***of Climate Change and Population Growth aspects on water resources management*** • Climate change effective on water resources and demand by implementing scenarios. • Studying the Effective of population growth on water demand. **Optimal and sustainable use of water resources:** • Determining the over pumping areas and calculate the detail water balance for each wellfield. • Implementing scenarios to Improve and support sustainable use of water resources on basin and national levels and scenarios. **Case studies on linkage WAEP-MODFLOW System:** • Case studies from Jordan and Arab countries on the linkage between surface water and groundwater using WEAP-MODFLOW linkage tool.

Course information

Project Management Professional (PMP) Exam preparation	
Duration:	5 days
Objectives:	**By the end of this course, attendants will be able to:** **1.** Identify the requirements of an effective project management system, and its primary planning and control functions. **2.** Perform the project initiation process and properly select the most suitable delivery approach, i.e., in-house task forces, outside turnkey parties, etc. **3.** Structure a WBS for project scope identification. **4.** Create reliable project schedule using CPM, while accounting for resource availability. **5.** Apply non-conventional techniques for project scheduling such as, PERT, LOB, etc. **6.** Perform time-cost trade-off in schedule development and updating. **7.** Estimate project costs at different stages of project delivery. **8.** Incorporate the risk dimension into project plans. **9.** Apply the basic steps/tools of project monitoring, updating and control, particularly through the earned value analysis (EVA). **10.** Create and analyze project performance reports and charts. **11.** Perform the project close-out process, including the project handover activities and lessons learned document.
Outlines:	**Introduction and basics:** • Introduction, course objectives. • Overview of projects and project management. • Projects and an organization's mission. • Stages in project development. **Project initiation and delivery approach:** • Project identification process, business case. • Development of Business Case. • Business Case Example. • Financial and intangible considerations, economic evaluation. • NPV analysis. **Scope planning:** • Scope identification. • Developing work breakdown structure (WBS). **Project scheduling and resource planning:** • Activities definition. • Activity sequencing, resources and duration estimation. • Bar/Gantt charts. • CPM calculations, software application.

Outlines:	• Resource loading and allocation. • Resource planning under limited resources, prioritization of project jobs. **Project execution and control:** • Execution and the work environment. • Tracking work progress. • Schedule updating, software application. • Project acceleration, time-cost trade-off. **Project costing:** • Top-down vs. Bottom-up estimates. • Capacity ratios/curves, parametric estimates. • Detailed estimates. • Budgeting, development of S-curve. **Project risk:** • Stages of risk planning. • Risk identification and assessment. • Developing risk-based schedules and cost plans. **Performance evaluation:** • Project control via the earned value analysis (EVA). • Cost and schedule performance indices/charts. • Variance analysis ($ vs. Man-hours). • Future predictions till completion. **Project close-out:** • Closure, hand-over activities. • Post implementation reviews, lessons learned. **Practical Examples.**

Course information

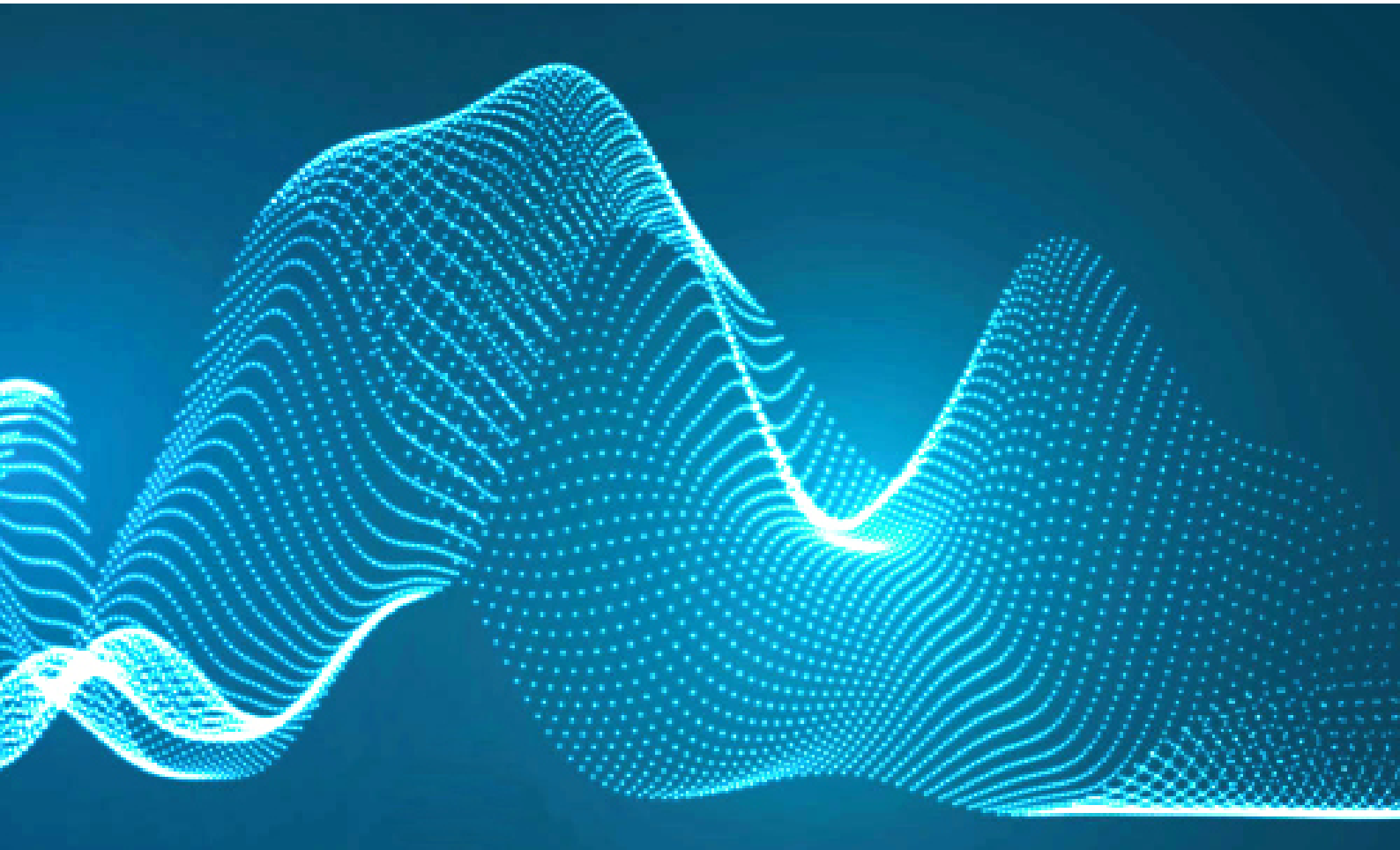
Relationship Management	
Duration:	3 days
Objectives:	**Upon the successful completion of the course, each participant will be able to:** **1.** Apply and gain an in-depth knowledge on building relationships. **2.** Discuss relationship management and the challenges associated with it. **3.** Heightened self-awareness and apply stakeholder management through identifying key relationships, prioritizing relationships and strategies to engage stakeholders. **4.** Identify how to become a trusted advisor and an invaluable resource to clients.
Outlines:	• What is Relationship Management & What are the Challenges Associated with it? • Heightened Self Awareness What am I Like & How do My Clients See me? • Stakeholder Management Identifying Key Relationships. • Prioritizing Relationships. • Strategies to Engage Stakeholders. • How to Become a Trusted Advisor & an Invaluable Resource Your Clients. • Creating the Right First Impression & Maintaining it in the Long Term. • Establishing & Building Rapport. • Trust & Loyalty. • Improving the Quality of Your Service Provision. • The Six Aspects of Knowledge. • Developing a Networking Strategy & Architecture. • Setting & Resetting Expectation through Client Contracting. • Managing Conflict & Getting Through the Difficulties. • Developing & Consolidating Your Relationship Management Approach. • Course Conclusion.

Course information

Health and Safety	
Duration:	3 days
Objectives:	**1.** This course introduces the trainee to the study of workplace occupational health and safety. **2.** The trainee will learn safe work practices in workplace and utilities. **3.** The trainee will be able to identify and prevent or correct problems associated with occupational safety and health in these locations. **4.** The course is designed to assist the student with the implementation of safe healthy practices at work.
Outlines:	• Health and safety concept. • The scope and nature of health and safety. • Reasons for maintaining and promoting high standards of health and safety. • Health and safety management systems. • Health and safety risks assessment. • Preventive and corrective measure, and hierarchy of controls. • Emergency preparedness and planning. • Permit to work systems. • Electrical safety. • Machineries safety. • Biological safety. • Ergonomics safety. • Work at heights safety. • Confined space safety.

Second: Water Utility Leadership Empowerment

Water Utility Leadership Empowerment	
1.	Management of Public Private Partnership (PPP).
2.	Financing modalities
3.	Strategic Utility Planning.
4.	Efficient Utility Management.
5.	Risk Management.



Water Utility Leadership Empowerment Outlines

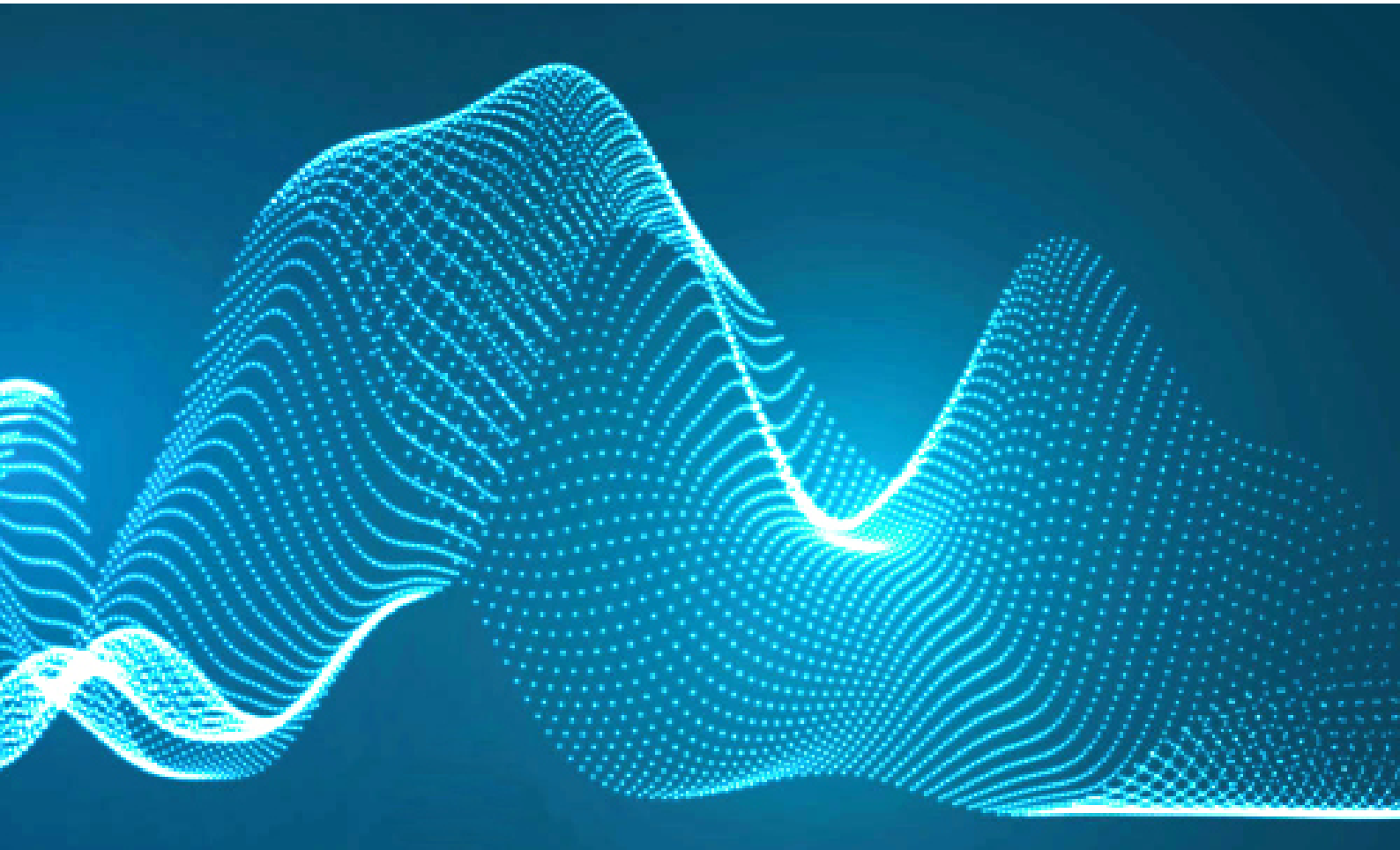
NO.	ROLE	NO.	MODULES	TRAINING HOURS	TOTAL
1.	Management of Public Private Partnership(PPP)	1.1	Private Sector Participation	15	25
		1.2.	Monitoring of PPP and Regulatory and accountability framework. 1.2.1 Monitoring of PPP (5 hrs.) 1.2.2 Regulatory and accountability framework (5 hrs.)	10	
2.	Financing modalities	2.1	Financing modalities	10	20
		2.2	Tariff setting and regulation	5	
		2.3	Pro-poor water and wastewater service provision	5	
3	Strategic Utility Planning	3.1	Strategic planning and managing of utility	10	15
		3.2	Resilience building and risk informed programming; emergency preparedness	5	
4	Efficient Utility Management	4.1	Operations and Maintenance management	10	30
		4.2	Customer Relation Management	5	
		4.3	Human Resources management	5	
		4.4	Developing Governance Scheme	5	
		4.5	Effective Communication Skills	5	

Water Utility Leadership Empowerment Outlines

NO.	ROLE	NO.	MODULES	TRAINING HOURS	TOTAL
5.	Risk Management	5.1	• Fundamentals of risk (e.g., what is risk?). • Risk Management Planning. • Risk assessment and management process. • Identify Risk.	5	25
		5.2	• Risk Register. • Qualitative Risk Analysis. • Definition of Risk Scale. • Risk Scoring. • Probability and Impact.	5	
		5.3	• Risk probability Impact Matrix. • Quantitative Risk Analysis. • Expected Monterey Value. • Risk Response Planning.	5	
		5.4	• Risk Response Implementa-tion. • Risk Monitoring and control. • Risk Appetite. • Risk Threshold. • Risk Tolerance. • Go/ No go decision. • Case Study.	5	
		5.5	• Risk Management relation to other knowledge areas. • Methods for dealing with risk and uncertainty. • Risk Severity Matrix Approach. • Risk simulation (Monte Carlo simulation). • Case Study.	5	

Third: GIS Application

GIS Application	
1.	Applying local government information model for water utility (Esri standard).
2.	How to correct, upgrade customer information and GIS data by conducting comprehensive customer survey project.
3.	Facilitate editing GIS water utility data using water network editing tools.
4.	GIS introduction and workflows.
5.	Using Geographic Information System for Water Networks Maintenance & Operations.
6.	Minimize water loss by using GIS.
7.	Designing Routes using GIS maps for Meters Collectors.



Applying local government information model for water utility (Esri standard).	
Duration	5 days (40 Hours)
Outlines:	• Arcgis overview. • Arcgis for local government. • Benefits of using local government information model. • Migration GIS data into LGIM model. • Deploy the new model.

HOW TO CORRECT, UPGRADE CUSTOMER INFORMATION AND GIS DATA BY CONDUCTING COMPREHENSIVE CUSTOMER SURVEY PROJECT.	
Duration	5 days (10 Hours)
Outlines:	• Preparing stage. • Execution stage. • QC stage. • Corrected data migration.

FACILITATE EDITING GIS WATER UTILITY DATA USING WATER NETWORK EDITING TOOLS.	
Duration	2 days (16 Hours)
Outlines:	• Introduction to esri water editing tool. • Configure editing tools. • Customize editing tools. • Editing data using the tools. • Working with Attribute assistant.

GIS INTRODUCTION AND WORKFLOWS.	
Duration	5 days (40 Hours)
Outlines:	• The basics of GIS. • Understanding and integrating GIS data. • The importance of coordinate systems. • Acquiring and selecting GIS data. • Interacting with a map. • Working with tabular data &Methods for sharing geographic data. • Managing map layers. • Displaying and working with data. • Creating and editing data. • Design map layout and labeling feature.

USING GEOGRAPHIC INFORMATION SYSTEM FOR WATER NETWORKS MAINTENANCE & OPERATIONS.	
Duration	2 days (16 Hours)
Outlines:	**Introduction about water system elements:** • Water System Elements. • Classifications of Water System Elements. **Implementing Complaints and Maintenance Systems in the water sector using GIS:** • Elements and components of the complaints and maintenance systems. • The objectives of implementing the complaints and maintenance system. • Main tasks and functions of the complaints and maintenance system. • The advantages of using GIS technology in the complaints and maintenance system. **Steps of using complaints and maintenance system:** • Workflow of call recipient (Call Record). • Workflow for assigning service request. • Workflow for creating Work Order. • Generating Reports.

MINIMIZE WATER LOSS BY USING GIS.	
Duration	3 days (24 Hours)
Outlines:	• Integrating between GIS and operation (water supply). • Integration between GIS and Billing system. • Integration between GIS and complaints system. • GIS data analysis. • Generating reports.

DESIGNING ROUTES USING GIS MAPS FOR METERS COLLECTORS	
Duration	5 days (40 Hours)
Outlines:	**Introduction:** • Concepts and functions of the billing system. • Concepts and targets of collection Area. • Tasks and actions carried out by the Readers. **Geographic Information System (GIS):** • Introduction to GIS. • The advantages of using GIS software in the Readers works. • Determine the geographical location of subscribers and update it. • The geographic distribution of subscribers. • Identify the geographic areas of collection. • Explore the geographic boundaries for collection areas and the geographic distribution for subscribers. **Routes:** • Concept of routes. • The objectives and tasks of routes. **Creation of routes using GIS:** • Steps and ways to drawing routes. • Documenting routes. **Working on routes using GIS:** • Training the collectors on how to read and drawing maps. • Training the collectors on how to draw and edit routes. • Training the collectors on how to deal with modern devices and digital maps. • Training the collectors on how to exchange data with the billing system. **Manage the routes using GIS (for Collectors Administrator):** • Design the distribution of routes among the collectors. • Analyze the routes. • Administration and supervision on add, modify and document the routes with the billing system. **Benefits of routes using GIS:** • Evaluate the collectors work. • The ability to distribute and exchange work areas between collectors. • Efficiency of distributing the bills. • Improve the quantity and quality of meters' readings. • Improve the performance of the collector's work. • Better follow-up for the new subscriptions. • Improve the methods of replacing the damaged and broken counters. • Easy and quick access to the subscriber address. • Improve the mechanism of add/modify the areas of collection. • Improve the way of assigning the appropriate collection area for the new subscribers.

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