

# KATHMANDU UPATYAKA KHANEPANI LIMITED



Annual Training Program (FY- 2082-2083)

Submitted By: Training & Research Section

## Mission

The mission of the Training and Research section is to develop highly competent human resource necessary for smooth operation, maintenance and expansion of water supply service network.

## Goal

1. Develop and conduct training course to meet the requirement of human resource for smooth operation and maintenance of water supply and sewer network and service of KUKL
2. Develop the training as a continuous learning center through enhancement of its resources and facilities.
3. Disseminate new ideas, methodologies and technology in the field of water resource utilization and conservation.
4. Create conducive atmosphere to enhance skills and expertise of KUKL Staffs in general.
5. Develop cooperation with national and international human resource development agencies.

## Organizational Analysis of KUKL

The organization structure is based on **Critical Job and Core Functions Principles, International experiences and Possible Future scope of Activities.**

A hybrid concept considering the service product (water and sanitation) and functions (Engineering, Technical, Administration, Finance) has been applied in the proposed organization structure. It is because these services have distinct features and should have to be looked differently. KUKL has three major areas (i) Operations (Water and Wastewater) (ii) Planning and Support, and (iii) Administration and Finance. On this basis further divisions of work have been proposed. Production and distribution functions of water and wastewater management have been considered under Operations Department. The performance of KUKL is aggravated by the non-fulfillment of human resources. The unfulfilled human resources are mostly filled by contract and daily wages. There is possibility that these human resources may not be continued in future.

The number of technical human resources are comparatively less than administrative ones. It is generally seen in the technical service industry that there are relatively a greater number of technical human resources than administrative and accounting personnel.

The personnel retiring within coming 5 years shows that officers (technical level 6 and above) are 26 and officers (administrative level 6 and above) are 30. This will create a gap of experienced and skilled human resources and will hamper the overall performance of KUKL. This scenario is more serious in case of higher-level technical staffs. KUKL has adopted universal system and mechanism without making any differences between well-performer and non-performer, which ultimately de-motivates the performer. Performance based management practice seems urgent as most of the successful organizations have demonstrated positive results through it.

Most employees are doing their jobs other than what they have been recruited for. This practice may help to do job in amateur or ad-hoc basis but could not continue this practice longer. This may erode the professional aptitude.



There is an acute need of strategic plan for KUKL for its future courses of actions. In its absence, the activities will remain mostly towards problem solving without direction for future.

KUKL is uncertain about its working areas. Whether it will be involved in post-Melamchi activities or not. Similarly, it is not clear on operation of new sewerage system constructed by PID. Such uncertainties have created confusion among its employees about their career.

Due to absence of accountability centers, the internal accountability system of KUKL which is responsible in making management and staff accountable for effectiveness and efficiency is lacking. There is also a need for proper reporting mechanism within KUKL for its smooth operation.

Capacity development of staffs is not being paid proper attention in KUKL. Skilled staffs are a critical asset of the company which will in turn improve the overall performance of the organization.

## **Capacity Development Program**

The objective of this assignment is to provide expertise for the overall organizational development of the Kathmandu Upatyaka Khanepani Limited (KUKL) to improve their capacity to operate and manage their systems, improve operational efficiency and provide better customer service. In particular, the Consultants will assist KUKL in their transformation efforts to help ensure they have a strong foundation to keep up with the various infrastructure improvements



around Kathmandu Valley, and deliver quality services.

Theme	Objective
Strategic planning	To support the development of a strategic plan, vision statement, mission statement, and key performance metrics based on the agreed plans and statements.
Leadership Development Program	To broaden managers' perspective on basic management, and interpersonal skills for effective leadership. To assess managers leadership styles and provide guidance for further development. To develop a long-term program to develop leadership of KUKL's current and future leaders.
Strengthening the human resources function	To develop job descriptions for key staff and improve the performance management system by introducing metrics that may be used for evaluation (e.g. key objectives, results areas, indicators). To prepare a succession plan program to help KUKL to identify critical positions and a pipeline of talent, and training requirements. To train managers on key human resources function.
Strengthening internal and external communications	To establish a communications plan and standard operating procedures (SOPs) for priority internal and external communications (e.g. reports required by management for decision-making; methods to cascade information throughout the organization; external information dissemination and consultations with key stakeholders). The plan and SOPs should handle routine and crisis communications. To train identified staff on KUKL 'values' to act as spokesperson for the organization, while building their capacity for public speaking.
Streamlining and documenting branch processes	To map the main processes followed in branch operations, and recommend measures to streamline operations. Support documentation of the main processes and develop SOPs for main branch functions.
Improving customer service and collection efficiency	Train staff on optimization and standardization of water meter management and develop meter management policy covering meter calibration, basics of water meters (i.e. technologies, meter reading, meter set assembly, etc.). Train staff on protocols for dealing with customers, including difficult customers and develop a customer handbook. Develop strategy for billing and revenue collection improvement.

- **Needs Assessment:**

Regularly evaluating the current skills and knowledge gaps within the workforce to identify specific training needs across different departments, including engineering, operations, customer service, and administration.

- **Technical Skill Development:**

- **Water Treatment Training:** In-depth training on water treatment processes, quality control, and compliance with water quality standards.
- **Distribution Network Management:** Training on leak detection, pipe maintenance, and infrastructure repair techniques.
- **GIS and Data Analysis:** Training on Geographic Information Systems (GIS) to effectively manage water distribution networks and analyze data for informed decision-making.

- **Leadership Development:**



- **Leadership Programs:** Developing leadership skills for mid-level and senior management to enhance strategic planning and decision-making abilities.
- **Mentorship and Coaching:** Pairing experienced staff with newer employees to foster knowledge transfer and career progression.
- **Customer Service Training:**
  - **Customer Relationship Management:** Training on effective communication, complaint handling, and customer service standards to improve customer satisfaction.
  - **Billing and Revenue Collection:** Training on billing systems and procedures to ensure accurate revenue collection.
- **Capacity Building for New Technologies:**
  - **Smart Water Metering:** Training on the installation, operation, and data analysis of smart water meters to optimize water usage.
  - **Water Loss Management:** Training on advanced techniques to identify and minimize water losses within the distribution network.
- **Collaboration with External Partners:**
  - **Professional Development Opportunities:** Partnering with water utilities, industry associations, and educational institutions to access specialized training programs and workshops.
  - **Knowledge Sharing:** Facilitating knowledge exchange with other water utilities to learn best practices and implement innovative solutions.

#### Key Challenges and Considerations:

- **Budget Constraints:** Allocating sufficient funds to implement comprehensive training programs while managing operational costs.
- **Staff Turnover:** Developing retention strategies to minimize loss of skilled personnel.
- **Adapting to Changing Technology:** Continuously updating training programs to incorporate new technologies in the water sector.

Training is crucial for Kathmandu Upatyaka Khanepani Limited (KUKL) because it enhances staff skills, improves operational efficiency, and ultimately leads to better customer service and organizational performance. Specifically, training helps KUKL staff better manage and operate water and wastewater systems, maintain water quality, and handle customer interactions effectively.

#### Objectives of Trainings:

- **Improved Skills and Efficiency:**

Training equips KUKL staff with the necessary skills to operate and maintain water treatment plants, manage distribution networks, and handle various tasks related to



water supply and sanitation. This leads to increased operational efficiency and reduced errors.

- **Better Customer Service:**

Training on customer relations and communication helps KUKL staff build better rapport with customers, address their concerns effectively, and improve overall customer satisfaction.

- **Organizational Development:**

Training on KUKL's values and public speaking helps staff represent the organization effectively and communicate its message to the public.

- **Addressing Water Scarcity:**

KUKL faces challenges related to water scarcity and unequal distribution in the Kathmandu Valley. Training can play a vital role in improving water management practices, optimizing resource allocation, and ensuring equitable access to water.

- **Adapting to Change:**

Training helps KUKL staff adapt to new technologies, procedures, and challenges, ensuring the organization remains relevant and effective in a dynamic environment.

- **Meeting Commitments:**

KUKL is committed to providing reliable and quality water services to the residents of Kathmandu Valley. Training is essential for fulfilling these commitments by improving the skills and knowledge of its workforce.

- **Financial Sustainability:**

By improving efficiency and service quality, training can contribute to KUKL's financial sustainability, helping it compete effectively in the market and meet its financial obligations.

- **Specific Training Examples:**

KUKL has conducted training programs on various aspects, including water quality and treatment plant operation, valve operation, and basic plumbing skills. These programs are designed to address specific needs and enhance the skills of different staff categories.

To achieve above objective, training should be conducted under following categories,

1) **Internal Trainings:** Trainers of this training will be from KUKL and location will be inside Kathmandu Valley.

2) **External Trainings:** Trainers will be outsourced; Individual person expert, office like LDTA, NWSTC, Staff Collège, Consulting services etc. Location will be within Nepal



3) **International Training:** This type of training can be organized through G2G, University, water Authority company/service provider, consulting service

#### 4) Research Works:

**Here are potential research works that can be carried out by (KUKL) to improve its services and contribute to water sector development in Nepal:**

- Water Quality Monitoring & Health Impact Studies
- Non-Revenue Water (NRW) and Leakage Control
- Customer Satisfaction and Service Delivery Research
- Water Supply Resilience to Climate Change
- Digitalization and Smart Water Management
- Inclusive Water Access and Social Equity
- Sludge and Wastewater Treatment Efficiency
- Tariff Design and Willingness to Pay etc

Details of each type of training is described below.



## Summary of the Proposed Internal Training for FY 2082/83

Training Course	Training Module	No of Training	No of Participants
Water Distribution Management	GIS Operation & Management	3	45
	GIS Field Data Collection	3	45
	Hydraulic Analysis	3	45
	Water Distribution Management (Water Pressure & Water Flow Measurement)	3	45
NRW Management	Basics of Commercial Losses in NRW (Theoretical)	3	45
	Accuracy Test of Water Meter	3	45
	Meter Reading Skill	3	45
	Customer Data Input & Check Skill	3	45
	Illegal Connection Reduction Measures	3	45
Water Quality Management	Water Quality Control	3	45
	Water Treatment	3	45
Customer Service	Customer Care (Communication)	3	45
	Complaint/Request Information Processing	3	45
	Public Relations/Awareness-Raising Activities	3	45
<b>TOTAL</b>		<b>42</b>	<b>630</b>



## 1. Water Distribution Management

List of Trainings Proposed for FY 2082/83

S. No	Training Course	Target Level	Number of Participants	Tentative month for the Training	Remarks
1	GIS Operation & Management	5,6,7	45	Ashad/ Kartik/Baisakh	
2	GIS Field Data Collection	4,5	45	Sharwan/Mangsir/Jestha	
3	Hydraulic Analysis	5,6,7	45	Bhadra/Poush/Ashad	
4	Water Distribution Management (Water Pressure & Water Flow Measurement)	4,5	45	Ashwin/Falgun/Shrawan	
<b>Total</b>			<b>180</b>		



## Course Title 1. GIS Operation & Management

<b>Number of Batches:</b>	3
<b>Target Level:</b>	5,6,7
<b>Duration in days:</b>	3
<b>Number of Trainees per Batch:</b>	15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Manage the data collected by supervisors who collected data from the field.
- Monitor the works of the supervisors
- Problem solving of the tasks of supervisors regarding usage of Android devices
- Share the GIS data between the branch GIS PC and GIS server installed at the Tripureshwor Branch

### Course Content:

- Preparing the QField Project
- Creating QField Project
- Field Data Collection and Synchronization
- Exporting and Merging Supervisors' Data
- Extracting the Customer Information from the BSmart Database
- Appending Data to the Master Database
- Backup and Automation



## Course Title 2. GIS Field Data Collection

<b>Number of Batches:</b>	3
<b>Target Level:</b>	4,5
<b>Duration in days:</b>	3
<b>Number of Trainees per Batch:</b>	15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Operate the GIS application software for fieldwork

### Course Content:

1. QField App, Installation of QField App, Open QField App in the TAB
2. Steps for preparing the Qfield Project for each Supervisor
3. Interact with the map, Map legend, Adding point features, Identify features
4. Fieldwork
5. Miscellaneous Features in the QField Application, Taking the Photograph, Measuring tool, Lock Screen, Tracking, Navigation
6. Email The Customer's Location Screen Shot
7. Preparing the Customers House Location Map



## Course Title 3. Hydraulic Analysis

<b>Number of Batches:</b>	3
<b>Target Level:</b>	5,6,7
<b>Duration in days:</b>	3
<b>Number of Trainees per Batch:</b>	15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Understand the basic knowledge required for water distribution management in the distribution networks
- Understand the practicalities of hydraulic analysis and use the results to study pipe renewal plans, water distribution blocking plans, etc. on the distribution pipe network.

### Course Content:

1. Pipe Network Calculation
2. Hardy-Cross method
3. Hydraulic Head Correction Method
4. Hydraulic Analysis of Pipeline Networks
5. How to use the "EPANET2" programme
6. Achievement Test



## Course Title 4. Water Distribution Management (Water Pressure & Water Flow Measurement)

<b>Number of Batches:</b>	3
<b>Target Level:</b>	5,6
<b>Duration in days:</b>	3
<b>Number of Trainees per Batch:</b>	15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Understand the basic knowledge required for water pressure control in the distribution networks.
- Understand the practicalities of water pressure measurement and analysis of the results, and the negative effects of water pressure fluctuations on the distribution pipe network.

### Course Content:

1. Basics of Water Pressure Control
2. Definition of Pressure
3. Understanding of Water Pressure
4. Control of Water Supply Pressure
5. Radwin V4 84 Installer
6. Standard Operating Procedure Lolog 450
7. Protection of Water Hammer
8. Achievement Test



## 2. NRW Management

List of Trainings Proposed for FY 2082/83

S. No	Training Course	Target Level	Number of Participants	Tentative month for the Training	Remarks
1	Basics of Commercial Losses in NRW (Theoretical)	4,5,6,7	45	Ashad/ Kartik/Baisakh	
2	Accuracy Test of Water Meter	4,5,6	45	Sharwan/Mangsir/Jestha	
3	Meter Reading Skill	4,5,6	45	Bhadra/Poush/Ashad	
4	Customer Data Input & Check Skill	4,5,6,7	45	Ashwin/Falgun/Shrawan	
5	Illegal Connection Reduction Measures	4,5,6	45	Kartik/Magh/Chaitra	
<b>Total</b>			<b>225</b>		



## Course Title 1. Basics of Commercial Losses in NRW (Theoretical)

<b>Number of Batches:</b>	3
<b>Target Level:</b>	4,5,6,7
<b>Duration in days:</b>	1
<b>Number of Trainees per Batch:</b>	15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Understand what commercial losses and effective measures are (role, plan, etc.).
- Raise theoretical base/knowledge

### Course Content:

1. NRW commercial losses in KUKL supply area
2. Methodology and actual calculation of NRW ratio
3. Role and responsibilities to reduce NRW commercial losses
4. Group discussion (NRW and my role, how to contribute to reduce it)



## Course Title 2. Accuracy Test of Water Meter

**Number of Batches:** 3  
**Target Level:** 4,5,6  
**Duration in days:** 1  
**Number of Trainees per Batch:** 15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Understand the importance of accuracy check and regular replacement, and to obtain the skill.

### Course Content:

1. Importance of accurate meter and regular replacement
2. How to measure an accuracy of water meter
3. Group work (practice to use a test meter: Demonstration, accuracy measurements of meters at test field by groups (for each small, middle, large flow rate)
4. Calculation of errors



## Course Title 3. Meter Reading Skill

<b>Number of Batches:</b>	3
<b>Target Level:</b>	4,5,6
<b>Duration in days:</b>	1
<b>Number of Trainees per Batch:</b>	15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Understand the importance of precise and quick reading
- Obtain the skills of meter reading

### Course Content:

1. Importance of precise meter reading
2. How to read customer water meters
3. Paper test of meter reading
4. Field contest of meter reading (Competition of meter reading concerning accuracy and quickness)



## Course Title 4. Customer Data Input & Check Skill

**Number of Batches:** 3  
**Target Level:** 4,5,6,7  
**Duration in days:** 1  
**Number of Trainees per Batch:** 15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Understand the importance of precise and quick data input and checking
- Obtain the skills of customer data input

### Course Content:

1. NRW commercial losses and the countermeasures (a summary of a lecture of Basic training)
2. Importance of precise and quick data input and checking
3. Issues on customer data
4. Data input & check practices (Time and accuracy of data input with PC)
5. Data input / check competition



## Course Title 5. Illegal Connection Reduction Measures

**Number of Batches:** 3  
**Target Level:** 4,5,6  
**Duration in days:** 1  
**Number of Trainees per Batch:** 15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Control illegal connections
- Understand the importance of reduction measures

### Course Content:

1. Introduction of measures to reduce illegal connection
2. Importance of controlling illegal connections (How to detect illegal pipes)
3. Sharing knowledge and experience of the illegal connection reduction program conducted by Tripureshwor Branch
4. Group Workshop (Planning a field trip to detect illegal connection and practicing using an electric leak detection)



### 3. Water Quality Management

List of Trainings Proposed for FY 2082/83

S. No	Training Course	Target Level	Number of Participants	Tentative month for the Training	Remarks
1	Water Quality Control	4,5,6,7	45	Mangsir/ Jestha	
2	Water Treatment	4,5,6,7	45	Poush/Ashad	
<b>Total</b>			<b>90</b>		



## Course Title 1. Water Quality Control

<b>Number of Batches:</b>	<b>3</b>
<b>Target Level:</b>	<b>4,5,6,7</b>
<b>Duration in days:</b>	<b>3</b>
<b>Number of Trainees per Batch:</b>	<b>15</b>

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Understand how to control the water quality

### Course Content:

1. Sampling and Preservation
2. Turbidity
3. Turbidity Monitoring for Branch Office
4. Ph
5. Ph Measurement
6. Electrical Conductivity
7. Multiparameter
8. EC Meter
9. Total Iron
10. Total Ammonia
11. Total Hardness
12. Total Chloride Download
13. Total Alkalinity
14. Residual Chlorine Meter DR300
15. Residual Chlorine Meter PTH027
16. Residual Chlorine Meter Pocket Photometer
17. Multipul Tube Fermentation for Total Coliforms
18. Membrane Filter Method for Coliforms and Escherichia Coli
19. Jar Testing
20. Chlorine Demand Test



## Course Title 2. Water Treatment

**Number of Batches:** 3  
**Target Level:** 4,5,6,7  
**Duration in days:** 3  
**Number of Trainees per Batch:** 15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Understand the process of water treatment
- Operate the water treatment plant

### Course Content:

1. Overview
2. Flocculation/Sedimentation
3. Rapid filtration
4. Chemical
5. Integrated version



## 4. Customer Service

List of Trainings Proposed for FY 2082/83

S. No	Training Course	Target Level	Number of Participants	Tentative month for the Training	Remarks
1	Customer Care (Communication)	4,5,6,7	45	Bhadra/Poush/Baisakh	
2	Complaint/Request Information Processing	4,5,6,7	45	Ashwin/Magh/Jestha	
3	Public Relations/Awareness-Raising Activities	4,5,6,7	45	Kartik/Falgun/Ashad	
<b>Total</b>			<b>135</b>		



## Course Title 1. Customer Care (Communication)

**Number of Batches:** 3  
**Target Level:** 4,5,6,7  
**Duration in days:** 3  
**Number of Trainees per Batch:** 15

**Learning Objectives:** After the completion of the course, the trainees are expected to-

- communicate with customers properly and smoothly
- improve bad services and/or to introduce good services

### Course Content:

1. Group Discussion
2. Exercise of Case Study - Complaint for higher bill and staff's behavior
3. Exercise of Roleplaying - How to implement his/her work efficiently with good customer care
4. Exercise of Debate - Pros and Cons for wearing uniform



## Course Title 2. Complaint/Request Information Processing

<b>Number of Batches:</b>	3
<b>Target Level:</b>	4,5,6,7
<b>Duration in days:</b>	3
<b>Number of Trainees per Batch:</b>	15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- understand and handle the Standard Operation Procedure for KTM-WIP

### Course Content:

1. Basic Database Structure
2. Data Process of Customer Satisfaction Survey
3. Data Process of Grievance Records
4. Report Preparation



## Course Title 3. Public Relations/Awareness-Raising Activities

**Number of Batches:** 3  
**Target Level:** 4,5,6,7  
**Duration in days:** 3  
**Number of Trainees per Batch:** 15

**Learning Objectives:** After the completion of the course, the trainees are expected to:

- Understand and implement awareness of water services
- Communicate with customers and communities
- Influence policy and regulations

### Course Content:

1. Identify the target audience
2. Choose communication channels
3. Design campaign materials
4. Implement the campaign
5. Evaluate effectiveness
6. Monitor and revise



## Summary of the Proposed External Training for FY 2082/83

S. No.	Department	Training	
		Program	Participants
1	Administration and Finance	2	50
2	Information Technology	1	40
4	Operation and Maintenance	3	70
5	Waste Water Management	1	15
6	Electromechanical	1	20
7	Water/ Waste Water Quality Assurance	2	20
8.	In Service Training	2	60
9	Service entry Training	2	50
<b>Total</b>		<b>12</b>	<b>221</b>



## 2. Administration and Finance

List of Trainings Proposed for FY 2081/82

S. No	Training Course	Target Level	Number of Participants	Tentative month for the Training	Remarks
1	Digital Literacy	4,5,6	25	Ashoj/ Kartik	
2	Nepal Financial Reporting Standards	5,6,7,8	25	Sharwan/Bhadra	
<b>Total</b>			<b>50</b>		



## Course Title: Digital Literacy

<b>Number of Batches:</b>	1
<b>Target Level:</b>	4,5,6
<b>Duration in days:</b>	3
<b>Number of Trainees per Batch:</b>	25

**Learning Objectives:** After the completion of the course, the trainees are expected to-

- Prepare reports, create and format documents using advanced features of MS- Word
- Design worksheet in MS- Excel
- Analyze data, create charts, graphs using MS- Excel
- Design presentation slides using MS- PowerPoint
- Be able to use Unicode for writing official letters

## Course Content:

1. Preparation of Documents and reports, formatting using MS- Word
2. Worksheet design using MS Excel
3. Data entry, analysis, creating charts, graphs using MS Excel
4. Design presentation slides, use of animation and presentation using MS -PowerPoint
5. Use of emails and internet
6. Use of Unicode and selection of fonts for formal reports and official letters



**Course Title: Nepal Financial Reporting Standards (NFRS)**

**Number of Batches:** 1  
**Target Level:** 5,6,7,8  
**Duration in days:** 3  
**Number of Trainees per Batch:** 25

**Learning Objectives:** After the completion of the course, the trainees are expected to gain basic understanding of Auditing and NFRS/NAS.

**Course Content:**

8. Introduction to NFRS
9. Regulatory Framework
10. Conceptual Framework
11. NAS1- Presentation of Financial Statements
12. NAS16- Property, Plant and equipment
13. NAS 19- Employee Benefits
14. NAS 2- Inventories
15. NAS 38- Intangible Assets
16. NAS 37- Provisions, Contingent Liabilities and Contingent Assets
17. NFRS15- Revenue from Contracts with Customers
18. NFRS 9- Financial Instrument
19. NAS 20- Accounting for Government Grants, and Disclosure of Government Assistance
20. NAS 12- Income Taxes



### 3. Information Technology

List of Trainings Proposed for FY 2081/82

S. No	Training Course	Target Level	Number of Participants	Tentative month for the Training	Remarks
1	Data Management and Analytics	5,6,7,8,9	20	Kartik/ Mangsir	
<b>Total</b>			<b>40</b>		



## Course Title: Data Management and Analytics

<b>Number of Batches:</b>	1
<b>Target Level:</b>	7, 8, 9
<b>Duration in days:</b>	3
<b>Number of Trainees per Batch:</b>	20

**Learning Objectives:** After the completion of the course, the trainees are expected to gain basic knowledge on monitoring system, data security, assisting users troubleshoot problems and fix errors and make predictions to drive informed decision making.

### Course Content:

5. Data Analysis
6. Data visualization
7. Data management
8. Statistical programming
9. Exploratory data analysis
10. Data structure
11. Python programming
12. Relational database design
13. Data warehousing
14. Big data technologies and cloud data



## 4. Operation and Maintenance

List of Trainings Proposed for FY 2081/82

S. No	Training Course	Target Level	Number of Participants	Tentative month for the Training	Remarks
1	Design of Water Supply Systems	5,6,7,8	20	Mangsir/ Poush	
2	Public Procurement and Contract Management including eGP	6,7,8	25	Sharwan/ Bhadra	
3	Vehicle/ Heavy Equipment operation and Maintenance	5	25	Kartik/ Mangsir	
<b>Total</b>			<b>70</b>		



## Course Title: Design of Water Supply Systems

**Number of Batches:** 1  
**Target Level:** 5,6,7,8  
**Duration in days:** 6  
**Number of Trainees per Batch:** 20

**Learning Objectives:** After the completion of the course, the trainees are expected to gain basic knowledge on Water Supply Systems which shall support in precise and timely decision-making during operation and maintenance of the system.

### Course Content:

21. Water Systems, Water Quality, Water Collection and distribution
22. Water quality management, Water Treatment Plants
23. Continuity, momentum and energy equations
24. Friction and minor loss expressions, flow through single pipes, pipes in series and parallel
25. Pipes networks
26. Pipes, valves and pumps
27. Pump design and selection, pump systems

## Course Title: e-GP System- Goods and Services

**Number of Batches:** 1  
**Target Level:** 6,7,8  
**Duration in days:** 4  
**Number of Trainees per Batch:** 25

**Learning Objectives:** After the completion of the course, the trainees are expected to be able to understand the Electronic Government Procurement (e-GP) system, carryout overall work procedures on e- GP system for procurement of services and goods.

### Course Content:

1. Introduction to e—Procurement
2. Registration in e- GP System
3. Procurement Planning for Goods and Works-I
4. Procurement Planning for Goods and Works-II
5. Bid document Preparation NCB Goods- I



6. Bid document Preparation NCB Goods- II
7. Bid document Preparation NCB Works- I
8. Bid document Preparation NCB Works- II
9. Bid document preparation sealed quotation
10. Bid documents preparation Uploadable
11. Bid Addendum and Pre-Bid Queries
12. Expression of Interest Publication
13. Bid Opening
14. Bid Evaluation
15. Contract awarding and Complain handling
16. Contract Management

**Course Title: Vehicle/ Heavy equipment Operation and Maintenance- Basic**

**Number of Batches:** 1  
**Target Level:** 4,5  
**Duration in days:** 3  
**Number of Trainees per Batch:** 25

**Learning Objectives:** After the completion of the course, the trainees are expected to keep all the vehicles and heavy equipment in good condition to extend their lifespans to get the most out of these machines.

**Course Content:**

1. Heavy equipment Operation principles
2. Safety Practices in Equipment Operation
3. Maintenance strategies for Heavy Equipment
4. Troubleshooting and Repair Techniques
5. Hydraulic Systems in Heavy Equipment
6. Electrical Systems in Heavy Equipment
7. Engine Maintenance and Overhaul
8. Industry standards and Regulatory Compliance
9. Hands -on exercises and demonstrations



## 5. Waste Water Management

List of Trainings Proposed for FY 2081/82

SNo	Training Course	Target Level	Number of Participants	Tentative month for the Training	Remarks
1	Waste Water Operation and Maintenance, including Waste water Treatment Plants	6,7,8,9	15	Poush/ Magh	
<b>Total</b>			<b>15</b>		



## Course Title: Waste Water Operation and Maintenance

**Number of Batches:** 1  
**Target Level:** 6,7,8,9  
**Duration in days:** 6  
**Number of Trainees per Batch:** 15

**Learning Objectives:** After the completion of the course, it is expected to enhance the knowledge of participants on operation of waste water and waste water treatment plants and processes to enhance the waste water operation activities within the company.

### Course Content:

1. Wastewater Collection Systems: Purpose, Components, and Design.
2. Safe Procedures.
3. Inspecting and Testing Collection Systems.
4. Pipeline Cleaning and Maintenance Methods.
5. Underground Repair and Construction.
6. Basic biological treatment wastewater characteristics, treatment concepts and principles.
7. Wastewater Treatment Units and Processes.
8. Operation of Activated Sludge System.
9. Trouble shooting Activated Sludge System.



## 6. Electromechanical

List of Trainings Proposed for FY 2081/82

S. No	Training Course	Target Level	Number of Participants	Tentative month for the Training	Remarks
1	Pump and Treatment Plant Operation	4,5,6	20	Magh/ Falgun- After Melamchi resumes	
<b>Total</b>			<b>20</b>		



## Course Title: Pump and Treatment Plant Operation

<b>Number of Batches:</b>	1
<b>Target Level:</b>	4,5,6
<b>Duration in days:</b>	15-20
<b>Number of Trainees per Batch:</b>	20

**Learning Objectives:** After the completion of the course, it is expected to enhance the knowledge of participants on operation of pump and treatment plants.

### Course Content:

1. Safety, marking tools and measuring instruments
2. Basic Fitting
3. Working cycles
4. Engines
5. Cooling and lubricating system
6. Fuel system- Intake, exhaust systems, emission and pollution control
7. Electrical Machines
8. Electrical and electronics system, Accessories
9. Troubleshooting, servicing and maintenance
10. Overhauling of alternator and starting motor



## 7. Water/ Waste Water Quality Assurance

List of Trainings Proposed for FY 2081/82

SNo	Training Course	Target Level	Number of Participants	Tentative month for the Training	Remarks
1	General requirements for the competence of testing and calibration laboratories	5,6,7,8	15	Bhadra	
2	Emerging water contaminants and their detection techniques	5,6,7,8	15	Poush	
<b>Total</b>			<b>30</b>		



## Course Title: General requirements for the competence of testing and calibration laboratories

**Number of Batches:** 1  
**Target Level:** 5,6,7,8  
**Duration in days:** 3  
**Number of Trainees per Batch:** 15

**Learning Objectives:** After the completion of the course, it is expected that the participants will be able to enhance their knowledge and competence on testing and calibration laboratories on the importance of accreditation in global perspective and requirements.

### Course Content:

1. Laboratory accreditation and its global importance
2. Introduction to the laboratory management system as per ISO/IEC17025:2017
3. ISO/ IEC 17025:2017 Requirements
4. Decision Rule, understanding the risk-based thinking and risk-based approach
5. ISO 17025: 2017 Documentation and records requirements
6. Management Review
7. Assessment Process
8. Basic concept and evaluation of Measurement Uncertainty
9. Measurement Uncertainty practical examples- for testing lab
10. Measurement Uncertainty practical examples- for calibration lab

## Course Title: Emerging water contaminants and their detection techniques

**Number of Batches:** 1  
**Target Level:** 5,6,7,8  
**Duration in days:** 3  
**Number of Trainees per Batch:** 15

**Learning Objectives:** After the completion of the course, it is expected that the participants will be familiar on the emerging water contaminants and the techniques for their detection and removal.



Course Content:

1. Introduction to emerging contaminants
2. Removal or treatment method for EC
3. Detection methods



सत्र कार्य दिन	पहिलो सत्र (९० मिनेट)	दोश्रो सत्र (९० मिनेट)	तेश्रो सत्र (९०मिनेट)
१	<ul style="list-style-type: none"> <li>सङ्घीयताको अवधारणा, सिद्धान्त र अन्तर्राष्ट्रिय प्रयोगको अवस्था</li> </ul>	<ul style="list-style-type: none"> <li>नेपालको संविधान मौलिक हक, नागरिक कर्तव्य र राज्यको दायित्व</li> <li>मानव अधिकार र सूचनाको हक</li> </ul>	<ul style="list-style-type: none"> <li>मुलुकी देवानी संहिता, २०७४</li> <li>मुलुकी देवानी कार्यविधि संहिता, २०७४</li> </ul>
२	<ul style="list-style-type: none"> <li>सार्वजनिक कार्यालयको जवाफदेहिता र नैतिकता</li> <li>संस्थागत स्तरमा सुशासनको प्रवर्द्धन</li> </ul>	<ul style="list-style-type: none"> <li>सार्वजनिक जवाफदेहिता र सार्वजनिक जवाफदेहिताका औजारहरु</li> </ul>	<ul style="list-style-type: none"> <li>सार्वजनिक सेवा प्रवाहको सैद्धान्तिक र व्यवहारिक पक्ष</li> <li>प्रभावकारी सार्वजनिक सेवा प्रवाह र नागरिक वडापत्र</li> <li>गुनासो व्यवस्थापन</li> </ul>
३	<ul style="list-style-type: none"> <li>कर्मचारीमा व्यवसायिकता र सदाचारिताको विकास र आयामहरु : समय व्यवस्थापन, पारदर्शिता, समन्वय, पदीय दायित्व, empathy and emotional control, अनुशासन र व्यवहार</li> </ul>	<ul style="list-style-type: none"> <li>संगठनात्मक व्यवहार र संस्कृति : संगठन निर्माण, समूह कार्य र समूह गतिशीलता</li> </ul>	<ul style="list-style-type: none"> <li>व्यवस्थापन सूचना प्रणाली (Management Information System - MIS)</li> </ul>
४	<ul style="list-style-type: none"> <li>सरजमिन मुचुल्का र अभ्यास</li> </ul>	<ul style="list-style-type: none"> <li>टिप्पणी लेखन</li> </ul>	<ul style="list-style-type: none"> <li>टिप्पणी लेखन अभ्यास</li> </ul>
५	<ul style="list-style-type: none"> <li>व्यवस्थापन परीक्षण कार्यविधि र सूचकहरू : अभ्यास, उपलब्धी र चुनौतीहरु</li> </ul>	<ul style="list-style-type: none"> <li>जिन्सी श्रेष्ठाको अवधारणा र उपयोगितागत वर्गीकरण र पार्स सफ्टवेयर</li> </ul>	<ul style="list-style-type: none"> <li>विषयगत मन्त्रालय बजेट सूचना प्रणाली (Line Ministry Budget Information System - LMBIS)</li> <li>NFRS</li> </ul>
६	<ul style="list-style-type: none"> <li>आन्तरिक लेखा परीक्षण र नियन्त्रण</li> <li>अन्तिम लेखा परीक्षण,</li> </ul>	<ul style="list-style-type: none"> <li>सार्वजनिक खरिद ऐन नियमका</li> </ul>	<ul style="list-style-type: none"> <li>बोलपत्रबाट निर्माण कार्य र मालसामान खरिदः विधि र प्रक्रिया</li> <li>परामर्श सेवा खरिद</li> </ul>



सत्र कार्य दिन	पहिलो सत्र (९० मिनेट)	दोश्रो सत्र (९० मिनेट)	तेश्रो सत्र (९०मिनेट)
	बेरुजु र बेरुजु फर्छ्यौट	<ul style="list-style-type: none"> <li>मुख्य मुख्य प्रावधानहरु</li> <li>सार्वजनिक खरिद: बार्षिक योजना र गुरुयोजना</li> </ul>	<ul style="list-style-type: none"> <li>बोलपत्रबाट निर्माण कार्य र मालसामान खरिद: कागजात तयारी, बोलपत्र मूल्याङ्कन र करार सम्झौता</li> </ul>
७	<ul style="list-style-type: none"> <li>विद्युतीय खरिद प्रणाली</li> </ul>	<ul style="list-style-type: none"> <li>विकास साझेदारको भूमिका</li> </ul>	<ul style="list-style-type: none"> <li>योजनाको अवधारणा : दीर्घकालीन योजना, रणनीतिक योजना, आवधिक योजना, क्षेत्रगत योजना र यसको अन्तरसम्बन्ध</li> <li>आयोजना बैंकको अवधारणा</li> </ul>
८	<ul style="list-style-type: none"> <li>दिगो विकास लक्ष्य अवधारणा</li> <li>दिगो विकास लक्ष्य तथा सूचकहरु र उपलब्धीहरु</li> </ul>	<ul style="list-style-type: none"> <li>लैंडिंग समानता तथा सामाजिक समावेशीकरण</li> </ul>	<ul style="list-style-type: none"> <li>लैंडिंग उत्तरदायी बजेट : अवधारणा, महत्व र नेपालको सन्दर्भ</li> </ul>
९	<ul style="list-style-type: none"> <li>विपद् र विपद जोखिम न्यूनीकरण (नीतिगत तथा संस्थागत व्यवस्था)</li> <li>श्री दिपक थापा</li> </ul>	<ul style="list-style-type: none"> <li>राष्ट्रिय भवन निर्माण संहिता महत्व र प्रयोग</li> </ul>	<ul style="list-style-type: none"> <li>नगरव्यापी समावेशी सरसफाइ: अवधारणा र परिचय</li> </ul>
१०	<ul style="list-style-type: none"> <li>नगरव्यापी समावेशी सरसफाइ: ढाँचा र प्रणाली</li> <li>सरसफाइ सम्बन्धी राष्ट्रिय तथा अन्तराष्ट्रिय सफल अभ्यासहरु</li> </ul>	<ul style="list-style-type: none"> <li>वातावरणमैत्री विकास पूर्वाधार निर्माणका प्रमुख पक्षहरु</li> </ul>	<ul style="list-style-type: none"> <li>योजनाको अनुगमन र मूल्याङ्कन</li> <li>श्री दिपक थापा</li> </ul>
११	<ul style="list-style-type: none"> <li>विविधता व्यवस्थापन (Socially Inclusive, Diversity, Ethnicity,</li> </ul>	<ul style="list-style-type: none"> <li>सकारात्मक सोंच, प्रशंसनीय</li> </ul>	<ul style="list-style-type: none"> <li>योग शिक्षाका आधारभूत पक्षहरु</li> <li>योग र ध्यान अभ्यास</li> </ul>



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	<p>Vulnerable, Disadvantage groups)</p> <p>➤</p>	<p>दृष्टिकोण र खुशी रहने कला</p> <p>➤ श्री</p>	➤
१२	<ul style="list-style-type: none"> <li>आहार बिहार र व्यवहार</li> <li>प्राकृतिक चिकित्सा र प्राथमिक उपचार</li> <li>➤</li> </ul>	<ul style="list-style-type: none"> <li>तनाव व्यवस्थापनका उपायहरु</li> <li>कर्मचारीको तनाव व्यवस्थापनमा कर्मचारी स्वयं, निजको परिवार एवं समुह र संस्थाको भूमिका</li> <li>➤ श्री</li> </ul>	<ul style="list-style-type: none"> <li>विभिन्न निकायहरुको संगठन व्यवस्थापन सर्वेक्षण अध्ययन</li> </ul>
१३	<ul style="list-style-type: none"> <li>व्यक्तित्व विकास र यसका आयमहरु</li> <li>नेतृत्व शैली: आयाम, रणनीति, अवरोध र प्रविधि</li> <li>जनसम्पर्क तथा संचार</li> <li>अन्तर्राष्ट्रीयवित्तक सम्बन्ध</li> </ul>	<ul style="list-style-type: none"> <li>वैकल्पिक विवाद समाधानका उपायहरु</li> </ul>	<ul style="list-style-type: none"> <li>उत्प्रेरणा र मनोवल सिद्धान्त र तरीका</li> </ul>
१४	<ul style="list-style-type: none"> <li>प्रस्तुतीकरण र सहजीकरण सीप तथा अभ्यास</li> </ul>	<ul style="list-style-type: none"> <li>नेपाली भाषा शुद्ध लेखन</li> <li>अभ्यास</li> </ul>	<ul style="list-style-type: none"> <li>अंग्रेजी भाषा शुद्ध लेखन</li> <li>अभ्यास</li> </ul>
१५	<ul style="list-style-type: none"> <li>समस्या पहिचान र समाधानको कार्ययोजना तर्जुमा</li> </ul>	<ul style="list-style-type: none"> <li>समस्या पहिचान र समाधानको कार्ययोजना तर्जुमा अभ्यास र प्रस्तुतीकरण</li> </ul>	<ul style="list-style-type: none"> <li>अध्ययन अनुसान्धन विधि र प्रक्रिया</li> </ul>



सत्र कार्य दिन	पहिलो सत्र (९० मिनेट)	दोश्रो सत्र (९० मिनेट)	तेश्रो सत्र (९० मिनेट)
१६	▪ Decision Making Process	▪ Economics of Water Resources Management	▪ Role of Water in Productivities Activities
१७	▪ Legal and Policy Dimensions of Water Management	▪ Integrated Water Resources Management	▪ Power, Authority and History
१८	▪ NRW, Commercial Losses and Prevention Plans	▪ Occupational Health and Safety-Legal Approach and Technical Approach	▪ Pipe materials, Valves and Fittings, other accessories in Water Infrastructures
१९	▪ Trade Union history, role, and responsibilities globally and in context of Nepal (श्रम ऐनःव्यवस्था)	▪ Company Acts and 3P Models in details	▪ Cyber Security: A Case Study of GON Office
२०	▪ Water Supply System: A Study of KUKL W.S.S.	▪ Waste Water Management in Kathmandu Valley: Case Study of Guheswori WWTP	▪ KUKL को आर्थिक व्यवस्थापन
२१	▪ कर्मचारी विनियमावली, प्रवन्ध पत्र, निर्देशिका: सन्दर्भ KUKL	▪ खानेपानी तथा सरसफाई महसुलका चुनौतिहरू; सन्दर्भ KUKL	▪ Ethics in Person and Professionalism
२२	▪ खानेपानी तथा सरसफाई ऐन २०७९ तथा नियमावली-२०८१	▪ पानीको गुणस्तर, नियन्त्रण तथा परिक्षण	▪ IT Works in KUKL
२३	▪ Gender, Water and Social inclusion	▪ Water Leakage Control Works in Pipe Networks	▪ Field Visit and Observation Presentation
२४	▪ संगठन विकास दखल (ODI)	▪ स्थलगत अध्ययन सम्बन्धी छलफल	▪ संगठन विकास दखल (ODI) प्रस्तुतीकरण



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२५	<ul style="list-style-type: none"> <li>संगठन विकास दखल (ODI) प्रस्तुतीकरण तयारी</li> </ul>	<ul style="list-style-type: none"> <li>संगठन विकास दखल (ODI) प्रस्तुतीकरण</li> </ul>	<ul style="list-style-type: none"> <li>अभ्यास स्थलगत अध्ययन</li> </ul>
२६	<ul style="list-style-type: none"> <li>अभ्यास स्थलगत अध्ययन</li> </ul>	<ul style="list-style-type: none"> <li>अभ्यास स्थलगत अध्ययन</li> </ul>	<ul style="list-style-type: none"> <li>अभ्यास स्थलगत अध्ययन</li> </ul>
२७	<ul style="list-style-type: none"> <li>अभ्यास स्थलगत अध्ययन</li> </ul>	<ul style="list-style-type: none"> <li>अभ्यास स्थलगत अध्ययन</li> </ul>	<ul style="list-style-type: none"> <li>अभ्यास स्थलगत अध्ययन</li> </ul>
२८	<ul style="list-style-type: none"> <li>अभ्यास स्थलगत अध्ययन</li> </ul>	<ul style="list-style-type: none"> <li>अभ्यास स्थलगत अध्ययन</li> </ul>	<ul style="list-style-type: none"> <li>स्थलगत अध्ययन प्रतिवेदन र प्रस्तुतीकरण तयारी</li> </ul>
२९	<ul style="list-style-type: none"> <li>स्थलगत अध्ययन प्रतिवेदन र प्रस्तुतीकरण</li> </ul>	<ul style="list-style-type: none"> <li>स्थलगत अध्ययन प्रतिवेदन र प्रस्तुतीकरण</li> </ul>	<ul style="list-style-type: none"> <li>शुभारम्भ</li> </ul>
३०	<ul style="list-style-type: none"> <li>प्रशिक्षण औपचारिकता</li> </ul>	<ul style="list-style-type: none"> <li>सिकाइ परीक्षा मागमा</li> </ul>	<ul style="list-style-type: none"> <li>प्रशिक्षण मूल्यांकन तथा समापन</li> </ul>

3) **International Training:** Such kinds of training can be organized through G2G, University, water Authority company/service provider, consulting service.

## Tentative Budget

S. NO	Types of Training	Tentative estimate NRS	Remarks
1	Internal Training	$42 \times 80000 = 33,60,000$	
2	External Training	$12 \times 500000 = 60,00,000$	
3	International Training	$2 \times 50,00,000 = 1,00,00,000$	
4	Research works	25,00,000	
5	Meeting /Seminar/Discussion/Interaction etc.	$100 \times 25000 = 25,00,000$	



**Total NRs=2,43,60,000**

