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RCTWS



Ministry of Water Resources and Irrigation

Regional Center for Training and Water Studies

THE ANNUAL TRAINING PLAN OF REGIONAL TRAINING

FOR THE YEAR 2024/2025





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RCTWS



Hydrology



Hydraulic



Green Skills



Survey



Mechanics &Electricity



Soft skills and Comput-



General



Diplomas

Hydrology

Uses and Management of Non-conventional Sources of Water

Course description:

This course provides an in-depth exploration of non-conventional sources of water and their applications in addressing water scarcity and promoting sustainable water management practices. Participants will learn about various non-conventional water sources, including rainwater harvesting, greywater reuse, stormwater management, desalination, and wastewater recycling. The course will cover the technical, economic, and regulatory aspects of utilizing non-conventional water sources, as well as best practices for their efficient management and integration into water supply systems.

Course duration:

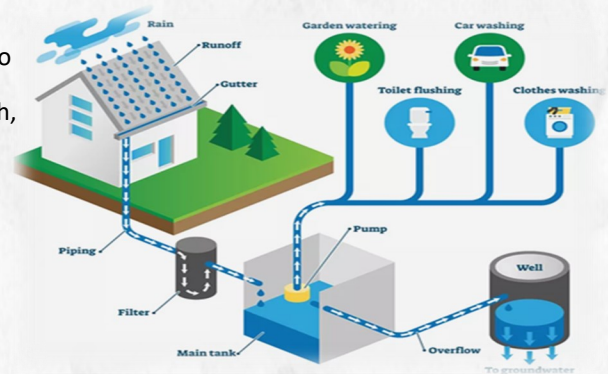
5 days online

Course participants:

Water resource managers, Civil engineers, Environmental engineers, Urban planners, Policy makers and government officials involved in water management, Water utility professionals, Researchers and academics in related fields

Course learning outcomes:

- Integrate non-conventional water into water supply planning and management strategies to enhance water security
- Develop policies, regulations, and incentives to promote the sustainable use and management of non-conventional water sources at the local, regional, and national levels.
- Engage stakeholders and communities in participatory approaches to non-conventional water management, including education, outreach, and capacity-building initiatives.



Integrated land and Water Resources Management

Course description:

The main objective of the training program is to support the strengthening of the institutional capacity and decision-making process for agriculture, livestock, and natural resources sectors. As well as to promote the coordinated development and management of water, land, and related resources, to maximize the resultant economic and social welfare equitably without compromising the sustainability of vital ecosystems, and to exchange knowledge to explore the case of Egypt regarding the ILWRM..

Course duration:

20 days / 4 weeks

Course participants:

The course is designed for trainees from (irrigation, agriculture, and environmental) engineering in national and private sectors

Course learning outcomes:

At the end of the course, the participants will have sufficient information, practices/applications, and field visits on the following:

- Geographic Information Systems and remote sensing.
- Efficient use of land and water resources
- Sustainable pasture land management
- Producing high economic value crops with limited resources.
- Flash flood/water harvesting.
- Water footprint assessment in the agriculture sector
- Smart irrigation
- Solar-powered Irrigation and on farm production



Shared water Resources Management

Course description:

The purpose of the course is to Supporting capacity building for decision-makers, planners, specialists, managers and professionals involved in water resources management issues, gained more negotiation skills, managing transboundary water resources, and getting acquainted with all international agreements that govern this, developing strategies and how to apply

Course duration:

15 days / 3 weeks

Course participants:

Decision makers, planners, specialists, managers and professionals involved in water resources management issues, representing the following types of organizations, Ministries and government departments ,International water commissions,Research organizations

Course learning outcomes:

- Up-to-date knowledge about the basics and concepts of transboundary water cooperation and management and the common conventions in the regions.
- The communities in different geographical and socio-economic settings benefit from both political/technical/managerial solutions for reducing vulnerability to the impacts of droughts and floods.
- Proposed Capacity Building for the African Countries RCTWS
- Inclusive dialogues for enhancing coordination mechanisms and fostering synergies conducive for both effective transboundary IWRM; and improvements in Water Governance.
- Improved M&E of the state of the quantity and quality of the water resources
- The unique sub-regional dynamics and contexts internalized into the political, social, economic and administrative systems for transboundary water resources management and development at all levels.



Groundwater and Artificial Recharge

Course description:

This course offers an in-depth exploration of groundwater resources and artificial recharge techniques aimed at replenishing aquifers and sustaining water supplies. Participants will delve into the hydrogeological principles governing groundwater occurrence, movement, and quality, as well as the various methods and technologies used to enhance groundwater recharge artificially. Topics covered include aquifer characterization, infiltration mechanisms, recharge basin design, and management strategies for sustainable groundwater use.

Course duration:

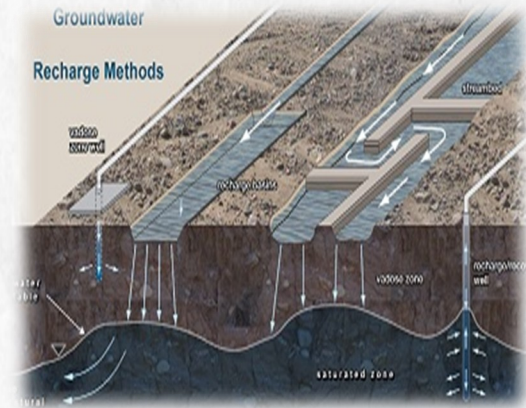
5 days online

Course participants:

Hydrogeologists, Water resource managers, Environmental engineers, Civil engineers specializing in water resources, Geologists, Government officials involved in water management

Course learning outcomes:

- Describe the principles and benefits of artificial recharge for refilling depleted aquifers and enhancing -groundwater supplies.
- Explore various artificial recharge techniques, including recharge basins, injection wells, percolation ponds, and recharge trenches.
- Analyze factors influencing the effectiveness of artificial recharge methods, such as soil properties, land use, hydrogeological conditions, and climate.
- Design and implement artificial recharge projects, considering site-specific conditions, water availability, and project objectives.



Rural Water Supply Training for Geophysicists, Hydrogeologists, and Geologists

Course description:

This training program is designed to equip geophysicists, hydrogeologists, and geologists with the knowledge and skills necessary to address the challenges of rural water supply projects. Participants will gain insights into the principles of hydrogeology, groundwater exploration, and water resource management specific to rural settings. The course will cover topics such as geological mapping, geophysical surveying techniques, groundwater assessment, well drilling, and community engagement strategies.

Course duration:

5 days online

Course participants:

Geophysicists ,Hydrogeologists ,Geologists ,Water resource engineers ,Rural development, Government officials involved in rural water supply projects

Course learning outcomes:

- Understand the hydrogeological principles underlying rural water supply systems, including groundwater occurrence, flow dynamics, and aquifer characteristics.
- Apply geological mapping techniques to identify potential groundwater sources and delineate favorable drilling locations in rural areas.
- Design and implement well drilling programs, considering geological and hydrogeological conditions, drilling techniques, and well construction standards.
- Analyze factors influencing the effectiveness of artificial recharge methods, such as soil properties, land use, hydrogeological conditions, and climate.
- Design and implement artificial recharge projects, considering site-specific conditions, water availability, and project objectives.



Modern Irrigation Schemes

Course Description:

This course will give the knowledge and practice communicating about Modern Irrigation Schemes. Hence of the importance of applying modern irrigation schemes due to their returns such as saving irrigation water and reducing the power consumption as well, conserving irrigation equipment and extend their longevity, reducing irrigation time, efforts, and labor costs, obtaining high yield and income, conserving soil from deterioration and preserving the value of land, preventing drainage problems and soil salinity due to rise of water table.

Course Duration:

90 training hours / 15 days / 3 weeks

Course Participants:

The course is designed for trainees from relevant disciplines including (civil, irrigation, and agriculture) engineering.

Course Outcomes:

Identify different water resources, uses and understand the current challenges water sector

Understand and be able to conduct a water balance/ hydrologic budget for given site

Be familiar with the characteristics of the different irrigation methods to select the

most appropriate method for given project

- Estimate the irrigation water requirements and schedules plan, design and assess the performance of the different on farm irrigation systems



Climate Change and Hydro Diplomacy

Course Objectives and General Description:

The main objective of the course is to describe climate change science and the observed and projected impacts of climate change; explain the international climate change policy framework, including the climate change negotiations to date under the UNFCCC; and define both climate change mitigation and adaptation; analyze international considerations for climate change decision-making,

Course Duration:

10 days / 2 weeks

Course Participants:

Decision makers and diplomats specialized within governmental and non-governmental sectors in the fields of water, environment, and agriculture.

Course Outcomes:

By the end of the course, participants will be able to:

- Understanding climate change and global vulnerabilities.
- Be Aquent to climate change diplomacy.
- Be Aware of the framework convention on climate change.
- Mitigating & adapting climate change.
- Identify the international considerations for climate change decision-making- international climate financing and technology transfer capacity building, education, and research.
- Achieving progress towards future climate agreements.



River Basin Management

Course Objectives and General Description:

Capacity building in sustainable lake and river basin management in a context of climate change including planning, designing policy and adaptation to climate change by Networking with the authorities, policymakers, and academics in the fields of integrated watershed management

Course Duration:

10 days / 2 weeks

Course Participants:

Decision makers and diplomats specialized within governmental and non-governmental sectors in the fields of water, environment and agriculture

Course Outcomes:

- By the end of the course, participants will gain sufficient information on the following topics:
- Introduction to Sustainable Basin Management: current status & future challenges
- Challenges and promising in river basin countries
- Lake Ecology: Physical, Chemical & Biological
- Environmental laws related to basin management
- Climate change impacts on community's livelihood in river basin countries
- River basin management and Policy



Climate Smart Water Management

Course description:

Climate-smart water management training will involve individuals and communities to improve their knowledge and skills on how to manage water resources in climate change disruption. and good irrigation/agricultural practices to optimize energy use, and increase water productivity.

Course duration:

15 days /3 weeks

Course participants:

The course is designed for civil, agriculture engineers and technicians working in the water management

Course learning outcomes:

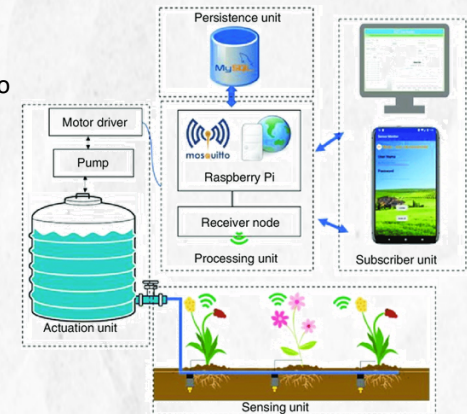
Upon completion of the course, participants will be able to:

Understanding of climate change and its impacts on water resources and main practices and cutting-edge vertical production process that led to CSWM.

Be acquainted with the different approaches to managing water resources in a way that is both resilient to climate change and contributes to climate change mitigation

Use of smart technologies and data to improve the efficiency and sustainability of water use in crop production involving a variety of measures, such as using sensors to monitor soil moisture, weather conditions, and crop health.

Optimize irrigation, fertilization, pest agriculture practices and control, which can lead to significant increases in crop yields.



Water & Climate Change Policies

Course Description:

The main objective of the course is to describe climate change science and the observed and projected impacts of climate change; explain the international climate change policy framework, including the climate change negotiations to date under the UNFCCC; and define both climate change mitigation and adaptation; analyze international considerations for climate change decision-making

Course Duration:

60 training hours / 10 days / 2 weeks

Target Group:

Decision makers and diplomats specialized within governmental and non-governmental sectors in the fields of water, environment and agriculture

Course Outcomes:

By the end of the course, participants will gain sufficient information on the following topics:

Understanding climate change and global vulnerabilities.

Introduction to climate change diplomacy.

Implementation, compliance, and enforcement of the United Nations framework convention on climate change.

Mitigating & adapting climate change.

International considerations for climate change decision making- international climate financing and technology transfer capacity building, education, research.



Flood Risk Management

Course Objectives and General Description:

To understand and apply the main principles of flood risk management; conceptualize and apply the main principles of flood risk assessment, knowing Hydro informatics tools available for flood risk management and the main principles of flood forecasting and warning and uncertainty issues associated with flood forecasts.

Course Duration:

60 training hours /10 days /2 weeks

Target Group:

The course is designed for current and future water professionals (engineers and hydrologists), decision-makers, and others involved in flood modeling and flood management.

Course Outcomes:

At the end of the course, the participants will have sufficient information, practices/ applications, and field visits on the following:

Flood risk management in practice — the different models of FRM

The Role of Uncertainty in evaluating flood risks

Sources of risk and their quantification (including flash floods, flood hazard mapping, and climate change impacts)

Risk pathways (including 2D flood inundation modeling and reliability analysis of flood defense structures)

Vulnerability (consequences on receptors): Risk perception, community behavior, and social resilience



Hydraulic

Internal Water Distribution Systems

Course description:

This course focuses on the planning, design, installation, and maintenance of internal water distribution systems within buildings and structures. Participants will learn about the principles of hydraulics, plumbing codes and standards, pipe materials, fittings, fixtures, and water supply sources. The course will cover various aspects of internal water distribution systems, including sizing pipes, calculating flow rates, pressure considerations, water conservation, and safety regulations.

Course duration:

5 days -online

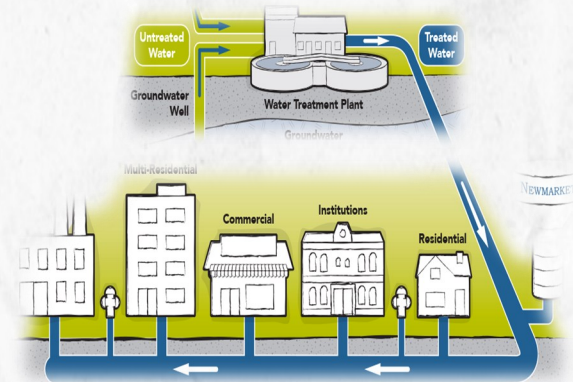
Course participants:

Civil engineers, Mechanical engineers, Construction project managers

Facilities managers, Anyone involved in the design, installation, or maintenance of internal water distribution systems

Course learning outcomes:

- Understand the fundamental principles of water distribution systems, including flow dynamics, pressure losses, and pipe sizing.
- Interpret plumbing codes and standards relevant to the design and installation of internal water distribution systems.
- Select appropriate pipe materials, fittings, valves, and fixtures based on project requirements, budget constraints, and environmental considerations.
- Calculate water demand and flow rates for various fixtures and appliances within a building, considering occupancy, usage patterns, and peak demand scenarios.



Water Treatment and Wastewater Treatment plant

Course Objectives and General Description:

The main objective is to identify the parameters that characterize the constituents found in potable water and wastewater; recognize the common physical, chemical and biological unit operations encountered in treatment processes; and illustrate the fundamentals of water and wastewater treatment to formulate a preliminary design of a water and/or wastewater treatment plant.

Course Duration:

10 days / 2 weeks

Target Group:

The course is designed for trainees in (civil, mechanical, and chemical) engineering

Course Outcomes:

By the end of the course, participants will be acquainted with:

- Status of water resources internationally
- Microbial and chemical contamination sources and pathways
- The international regulations pertaining to water and wastewater systems
- Water quality and related parameters of significance
- Mechanical, biological, and chemical treatment processes for water and wastewater
- Selection of appropriate treatment process and combination
- Decentralized wastewater treatment (infiltration systems, constructed wetland etc.)
- Modeling and simulation of water and wastewater treatment processes.



Climate Changes and Relationship to Irrigation needs & Crop Productivity

Course Objectives and General Description:

To clarify the interlinkages between climate change and agricultural productivity and present the simple adaptation practices that could reduce climate change effects on the quality, quantity, and cost of crop production. Resource and a review of current policy on the use of non-conventional water resources

Course Duration:

10 days / 2 weeks

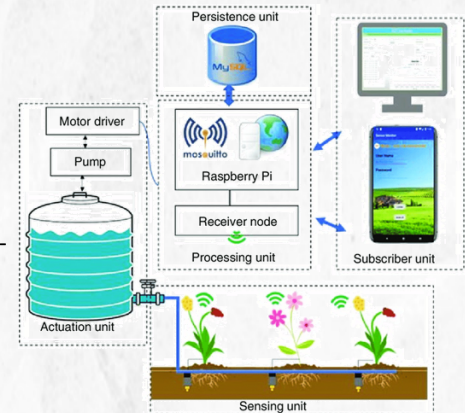
Course participants:

The course is designed for trainees from relevant disciplines including (hydrology, civil, water resources, agriculture & environmental) engineering.

Course Outcomes:

After completing this course, participants will be able to:

- Distinguish between climate change and climate variability.
- Describe the greenhouse effect and global warming.
- Explain the effects of climate change on agro-ecosystems livestock, fisheries, and forestry: crops,
- Know some of the agricultural practices to adapt to the climate such as using climate-ready crops or thermal stress-tolerant varieties, adjusting planting dates...etc.
- Describe how different agricultural practices contribute to greenhouse gas emissions



Rain Water harvesting & Early Warning system

Course Description:

The course is designed to enhance the capacity of engineers and technicians on the deployment of water harvesting techniques and to provide knowledge to technicians, who are considering developing a water source for agricultural, or domestic purposes. Various options are discussed

and the development of ponds and small earth dams through design, construction, maintenance resource and a review of current policy on the use of non-conventional water resources

Course Duration:

120 training hours / 20 days / 4 weeks

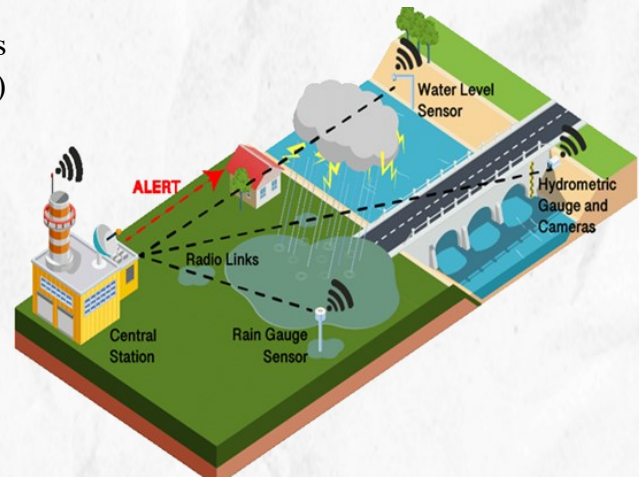
Target Group:

The course is designed for trainees from relevant disciplines including (hydrology, civil, water resources, environmental) engineering

Course Outcomes:

The participants will have sufficient information on the following:

Strengthen policy, a legal and regulatory framework for improved water harvesting coordination and management



Dam Safety

Course Description:

The course is designed to enhance the capacity of engineers and technicians on the deployment of water harvesting techniques and to provide knowledge to technicians, who are considering developing a water source for agricultural, or domestic purposes. Various options are discussed and the development of ponds and small earth dams through design, construction, maintenance resource and a review of current policy on the use of non-conventional water resources

Course Duration:

120 training hours / 20 days / 4 weeks

Target Group:

The course is designed for trainees from relevant disciplines including (hydrology, civil, water resources, environmental) engineering

Course Outcomes:

- Strengthen policy, a legal and regulatory framework for improved water harvesting coordination and management
- Increase rainwater harvesting infrastructures for effective multiple us.
- Design and construct with programs software and maintenance the rainwater harvesting dams and valley tanks
- Introduction to End-to-End Early Warning System Hazard Detection, Monitoring, Forecasting & Information for Warning



Green Skills

Meteorological Mathematical Modeling

Course description:

This course delves into the principles and applications of mathematical modeling in meteorology, focusing on the simulation and prediction of atmospheric processes and phenomena. Participants will explore various mathematical techniques, numerical methods, and computational tools used to develop and analyze meteorological models. The course will cover topics such as atmospheric dynamics, thermodynamics, radiation, and boundary layer processes, as well as the integration of observational data and model outputs for weather forecasting and climate studies.

Course duration:

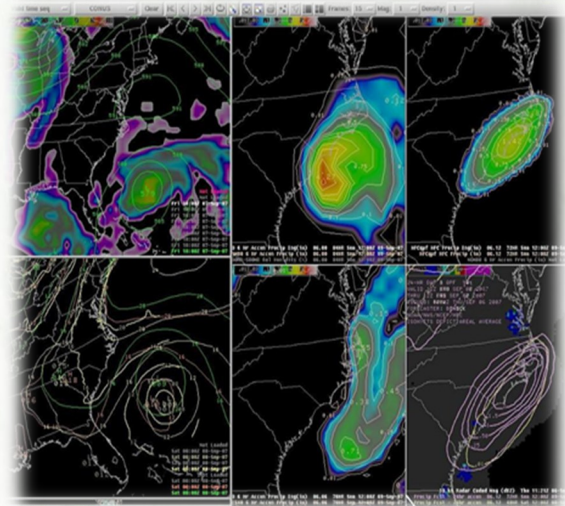
5 days -online

Course participants:

Meteorologists, Climate researchers, Environmental scientists, Graduate students in meteorology or related fields, Professionals interested in advancing their knowledge of meteorological modeling

Course learning outcomes:

- Understand the fundamental principles of atmospheric physics and dynamics underlying meteorological processes.
- Familiarize themselves with various mathematical models used in meteorology, including numerical weather prediction (NWP) models, climate models, and mesoscale models.
- Apply numerical methods and computational techniques to solve the governing equations of atmospheric motion, energy transfer, and moisture transport.



Managing Irrigation schemes and adaptation to water scarcity in African agriculture

Course description:

This Build capacity of irrigation and Agricultural water (Agwater) professionals in Africa in the design, implementation and management of modern Irrigation schemes

Update knowledge of professionals on use of different management solutions and decision support tools across the continent.

Provide opportunity for the young experts to network and promote the culture of peer learning among African professionals

Course duration:

10 days / 2 weeks

Course participants:

The training exclusively targets irrigation professionals such as researchers, technical and field staff, planners and national irrigation projects' support staff.

Course learning outcomes:

- utilize the knowledge acquired during the training to improve on their on-the-job performance in their countries and promote Agwater management especially among small holders
- support knowledge delivery in participatory planning, infrastructure design, operation and maintenance (O&M) and efficient water use under different irrigation schemes to increase crop productivity per drop
- Communicate about climate and climate change in a meaningful way make informed and responsible decisions with regard to actions that may affect



Forecasting, Climate Change, and Integrated Water Resources Management

Course description:

This course offers a comprehensive exploration of forecasting techniques, climate change impacts, and integrated water resources management (IWRM) strategies to address water-related challenges in a changing climate. Participants will learn about the principles of hydrological forecasting, climate modeling, and the interactions between climate change and water resources. The course will cover topics such as rainfall forecasting, drought and flood prediction, climate adaptation measures, and the implementation of IWRM approaches for sustainable water governance.

Course duration:

5 days online

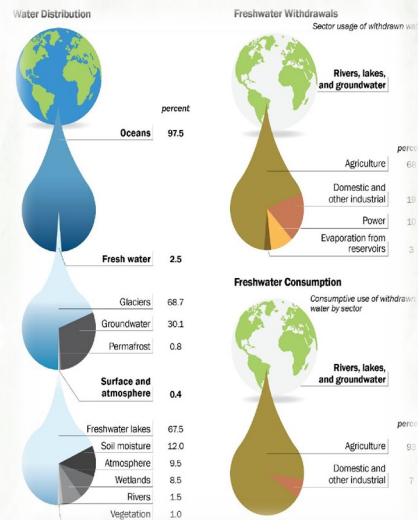
Course participants:

Water resource managers, Hydrologists, Climate scientists, environmental engineers, policy makers and government officials involved in water management, Researchers and academics

Course learning outcomes:

By the end of the course, participants will gain sufficient information on the following topics:

- Analyze climate data, trends, and projections using climate models and statistical techniques to assess future water resource scenarios.
- Develop and implement climate adaptation strategies and measures to enhance resilience to climate change impacts on water resources.
- Utilize forecasting tools and models for predicting rainfall



Management of Soil Salinity

Course description:

This course focuses on the management of soil salinity, addressing the causes, effects, and mitigation strategies for saline soil conditions. Participants will learn about the processes contributing to soil salinization, including irrigation practices, waterlogging, and natural factors. The course will cover techniques for assessing soil salinity levels, implementing effective management practices, and restoring saline-affected soils to improve agricultural productivity and environmental sustainability.



course duration:

5 days online

course participants:

Soil scientists, Agricultural extension officers, Environmental consultants ,Researchers and academics in related fields, Government officials involved in land and water management

course learning outcomes:

- Integrate remote sensing and GIS technologies for monitoring soil salinity levels and assessing the effectiveness of management interventions.
- Develop holistic soil salinity management plans tailored to specific site conditions, climate, and cropping systems.
- Engage stakeholders and communities in participatory approaches to addressing soil salinity issues and promoting sustainable land management practices.

IWRM as a tool for climate change adaptations

Course Description:

This course will give the knowledge and practice communicating about climate change effects, impacts and adaptation. The purpose of this course is to develop an understanding of Earth's climate system and climate change, including historical perspectives.

Course Duration:

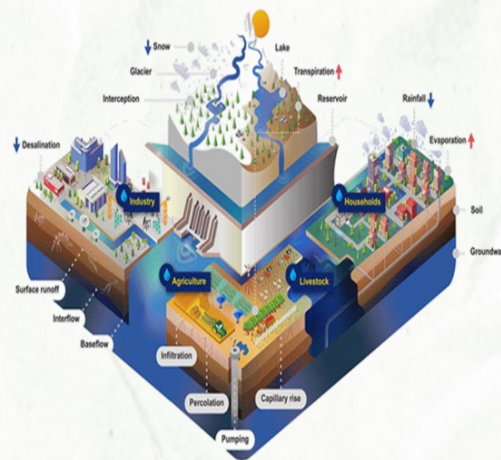
15 days / 3 weeks physical

Course Participants:

Civil, and agriculture engineers and technicians working in national ministries, provincial departments and local authorities; Environmental managers in private sector and civil society organizations; Researchers.

Course Outcomes:

- Engage in informed reflection about their personal role in Earth's climate system and make evidence-based decisions on how to react to future climate change.
- Become a Climate science literate citizen.
- Understand the essential principles of Earth's climate system
- Know how to assess scientifically credible information about climate
- Communicate about climate and climate change in a meaningful way make informed and responsible decisions with regard to actions that may affect practices.
- Evaluate the socio-economic and environmental impacts of soil salinity



Rainfed Agriculture

Course Description:

The main objective is to increase/stabilize the production of crops in rainfed areas by introducing improved soil and moisture conservation measures, to learn basic knowledge of rain-fed agriculture and watershed management. The crop adaptation and mitigation strategies, crop planning and crop management techniques.

Course Duration:

10 days / 2 weeks

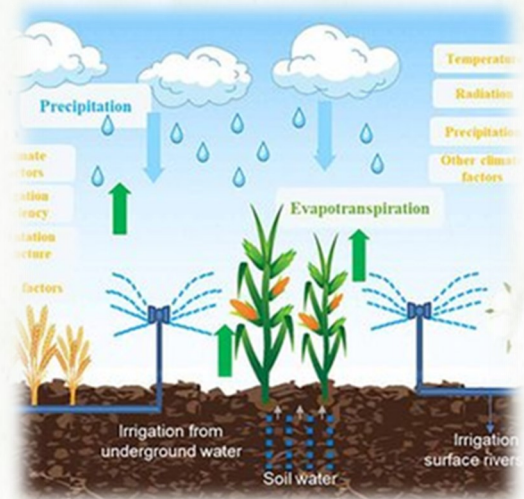
Course Participants:

The course is designed for trainees in (irrigation, agriculture, and environmental) engineering.

Course Outcomes:

By the end of the course, participants will gain sufficient information on the following topics:

- Rainfed agriculture: Introduction and its types and history of rain-fed agriculture & watershed
- Problems and prospects of rain fed agriculture
- Soil and climatic conditions prevalent in rain fed areas
- Drought importance and its types
- Effects of water deficit on physic-morphological characteristics of the plants
- Mechanism of crop adaptation under moisture deficit condition
- Management of crops in rainfed areas.



Water-Energy-Food Nexus and Circular Economy

Course Description:

The course focuses on sustainable development and global change-vital issues for humanity. There is specific attention paid to the challenges in developed and developing countries and their transition from unsustainable to sustainable practices.

Course Duration:

10 days / 2 weeks

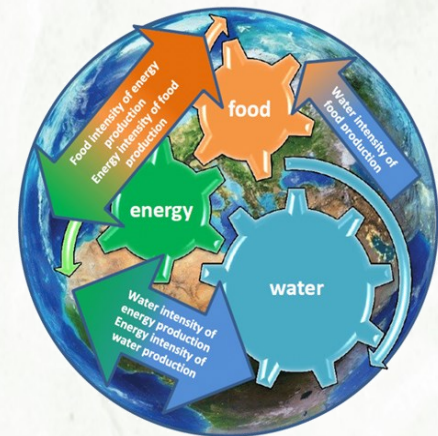
Course Participants:

The course is designed for trainees from relevant disciplines including (hydrology, civil, water resources, and environmental) engineering.

Course Outcomes:

Upon completion of the course, participants will be able to understand:

- Global challenges and their limited resources
- How human activities can affect climate change
- The concept of sustainable development and global Sustainable Development Goals
- Scarcity of water, virtual water, and water footprint
- How to deal with energy challenges and opportunities
- The 'nexus' between water, energy, and food and their security
- Desalination in the framework of the water, energy, and food nexus



Water Quality and Salinity Management for Agriculture

Course Description:

The course is designed to provide a framework and knowledge of the issues, aspects, and principles of water quality management and uses (domestic, environmental, industrial, recreational, and agricultural uses) including the physical, chemical, biological, salinity prevention and hydrological characteristics of water systems and water quality management issues.

Course Duration:

15 days /3 weeks

Course Participants:

This course will design for Supervisors, engineers, chemists, and technicians responsible for water quality in labs and plants.

Course Outcomes:

Upon completion of the course, participants will be able to:

- Build a comprehensive awareness of the physical, chemical, and biological characteristics of various water systems.
- Learn ways to improve water quality through the treatment and management of chemically and biologically polluted waters
- Learn how to run accurate water quality tests and determine how the parameters relate to each other
- Recognize the role of water quality guidelines and legislation in water quality management
- Analytical technologies covered in the course will be microbiology, particle monitoring, colorimetric, and testing parameters associated with a quality system.
- Understand how salt-affected soils and keys causes of salinity



Desalination

Course Description:

This course provides an in-depth exploration of desalination technologies, covering the principles, processes, and applications of converting saline water into freshwater. Participants will examine various desalination methods, including thermal distillation, membrane filtration, and hybrid systems, and their suitability for different water sources and environmental conditions.

Course Duration:

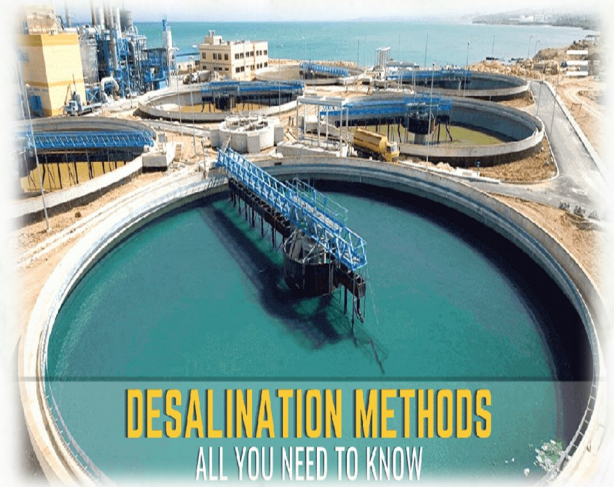
15 days /3 weeks

Course Participants:

Civil engineers specializing in water resources
Environmental scientists and researchers
Water treatment plant operators and technicians
Government officials responsible for water infrastructure

Course Outcomes:

Understand the principles and processes involved in desalination, including thermal and membrane-based technologies.
Evaluate the suitability of different desalination methods for various water sources, considering factors such as salinity levels, water quality, and energy requirements.
Analyze the economic, environmental, and social implications of desalination projects, including costs, energy consumption, and brine disposal.



Survey

Fundamentals of Surveying

Course description:

This course provides a comprehensive introduction to the fundamentals of surveying, covering essential concepts, techniques, and tools used in the field of land surveying. Participants will learn about different surveying methods, equipment, and data collection techniques, as well as the principles of mapping, boundary determination, and land development. The course will also address surveying ethics, standards, and regulations governing the profession.

Course duration:

5days-Online

Course participants:

Surveying students, Civil engineers, Construction professionals, GIS technicians, Urban planners, Anyone interested in pursuing a career in surveying or related fields.

Course learning outcomes:

- Conduct field surveys and accurately record field data using appropriate surveying methods and techniques.
- Understand the principles of error analysis and adjustment in surveying measurements.
- Comply with surveying standards, regulations, and ethical principles governing the profession.
- Collaborate with other professionals, such as engineers, architects, and urban planners, in land development projects and construction activities.



Hydrographic Survey

Course description:

This course provides comprehensive training on hydrographic surveying techniques used for mapping and charting bodies of water, including oceans, rivers, lakes, and reservoirs. Participants will learn about the principles of hydrographic surveying, equipment and technologies used, data collection methods, and data processing techniques.

Course duration:

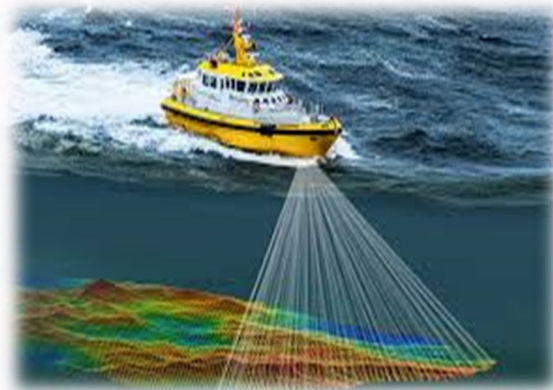
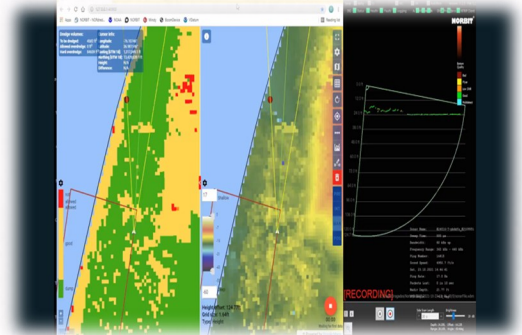
5 days online

Course participants:

Hydrographic surveyors, Marine scientists, Coastal engineers, Government agencies responsible for maritime safety and navigation, Researchers and academics in related fields

Course learning outcomes:

- Plan and execute hydrographic surveying missions, considering factors such as survey area, water depth, tidal conditions, and survey objectives.
- Conduct bathymetric surveys to measure water depths and map the seafloor morphology
- Interpret hydrographic survey data, including bathymetric charts, depth contours, and seabed features, using specialized software tools.
- Utilize side-scan sonar and sub-bottom profilers to identify submerged objects, underwater structures, and geological features.



ERDAS Software

Course description:

This course provides an introduction to ERDAS software, a leading platform for remote sensing, image processing, and geospatial analysis. Participants will learn how to effectively utilize ERDAS software tools to manipulate, analyze, and visualize various types of geospatial data, including satellite imagery, aerial photographs, and LiDAR data. The course will cover fundamental concepts, workflows, and techniques for extracting valuable insights from geospatial data.

Course duration:

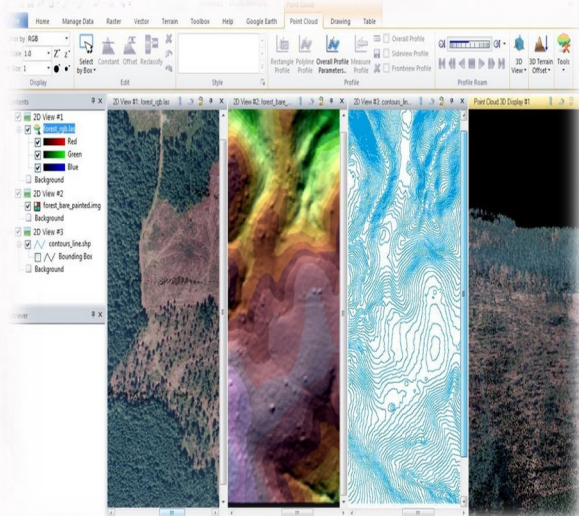
10 Day Physical -Hybrid.

Course participants:

GIS professionals, Remote sensing analysts, Environmental scientists, Geospatial researchers, Forestry and agriculture professionals, Urban planners, Students pursuing degrees in geography, geology, environmental science, or related fields.

Course learning outcomes:

- Navigate the ERDAS software interface and understand its key components and functionalities.
- Import, preprocess, and manage different types of geospatial data within the ERDAS environment.
- Perform basic and advanced image processing techniques, such as image enhancement, classification, and change detection.
- Utilize remote sensing algorithms and tools to extract meaningful information from satellite imagery and other geospatial datasets.
- Conduct spatial analysis and geoprocessing tasks to analyze relationships and patterns within geospatial data.



Remote Sensing (RS) and Geographic Information System

Course description:

This course aims to provide both a solid theoretical understanding and a comprehensive practical introduction to the use of geographic information systems and remote sensing technologies for the analysis and solution of different agricultural, water, and environmental problems.

Course duration:

20 days /4 weeks

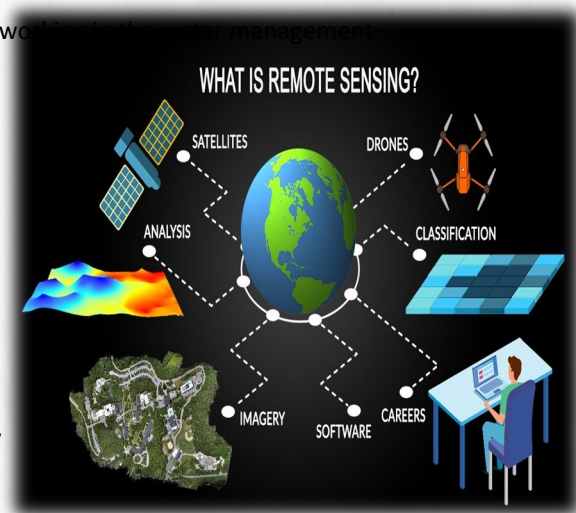
Course participants:

The course is designed for civil, and agriculture engineers and technicians working in the field of land management.

Course learning outcomes:

Upon completion of the course, participants will be aware of:

- Theory, technology, and typical applications of earth observation data in GIS and RS
- Geographic information system feature model, capabilities & components
- Geo-reference and projection geometric correction
- Application Acquiring and preprocessing high-resolution satellite data.
- How crop types can be mapped using time series of satellite data and machine learning algorithms on cloud-based platforms.
- Conducting irrigation performance assessment using remote sensing data, to identify gaps, diagnose issues and propose improvements



Mechanics and Electricity

Design and Maintenance of Solar Panels in Water Projects

Course description:

This specialized course focuses on the design, installation, and maintenance aspects of solar panels specifically tailored for water projects. Participants will delve into the intricate details of solar panel technology as it relates to powering water infrastructure, including pumps, purification systems, and distribution networks. Through a blend of theoretical lectures, case studies, and practical exercises,

Course duration:

5 days -online

Course participants:

Mechanical and Electricity engineers ,Solar energy technicians and installers, Water project managers, Sustainability officers, Government officials responsible for water infrastructure

Course learning outcomes:

Analyzing the specific requirements and constraints of water projects to design tailored solar panel solutions.

–Conducting site assessments and feasibility studies to determine the optimal placement and configuration of solar panels within water infrastructure systems.

–Developing detailed design plans for solar-powered water pumping, purification, and distribution systems, incorporating considerations such as load requirements, energy storage, and backup systems.



Design & Operation of Irrigation and Drainage Pumping Station

Course description:

This course seeks to build a perspective among participants on conceptual and analytical issues in Design & Operation of Irrigation and Drainage Pumping Station.

Course duration:

40 online interactive hours (web conference by Zoom).

Course participants:

Mechanical and electrical engineers working in agriculture ,irrigation and water management sectors.

Course learning outcomes:

- To offer participants a comprehensive view of the various aspects of operation and maintenance of pumping stations,
- To create a human resources pool of highly skilled professional in the area of pumping station and irrigation projects with emphasis on applications
- Conduct problem analysis to identify causes and effects
- Adopt policies to improve irrigation projects management.
- Select appropriate methods for design and installation of pumping systems.
- Apply new technologies for testing, operating and maintaining pumping stations.



Soft Skills and Computer

Preparation of Bankable Proposal for Climate Change Projects

Course description:

To support capacity building for decision-makers, planners, specialists, managers and professionals involved in climate change financing issues, gained more negotiation skills, manage project preparation, and get acquainted with all international agreements that govern this, developing strategies and how to apply it to be matching to the climate proposal.

Course duration:

10 days Physical-Hybrid

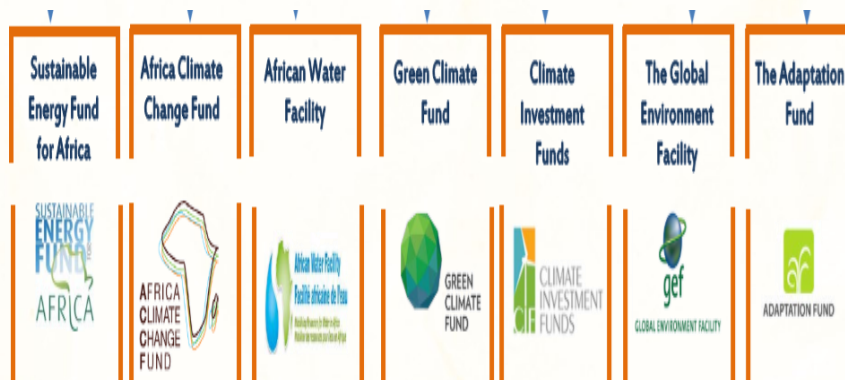
Course participants:

Decision makers, planners, specialists, managers, investors and professionals involved in climate change management issues.

Course learning outcomes:

- Up-to-date knowledge about the basics and concepts of climate change common conventions in the world.
- Recognize the requirements of the different sources and mechanisms of climate finance relevant for financing climate change adaptation;
- Master the project cycle and how to develop bankable project proposals
- Understand the differences between a normal project and a climate project.

Start the preparation of bankable project proposals taking in consideration the obstacles and challenges in their own context.



Application of CAD Programs

Course description:

This course focuses on the practical application of Computer-Aided Design (CAD) programs in various fields such as engineering, architecture, manufacturing, and product design. Participants will learn how to use CAD software effectively to create 2D drawings and 3D models, manipulate geometry, apply materials, and generate technical documentation.

Course duration:

10 days Physical-Hybrid

Course participants:

Engineering students and professionals, Architecture students and professionals

Product designers, Manufacturing professionals, Anyone interested in learning CAD software for design purposes

Course learning outcomes:

-Utilize CAD software proficiently to create 2D technical drawings and 3D models.

-Apply geometric constraints and relationships to enhance design accuracy and efficiency.

-Understand and implement advanced CAD functionalities such as parametric modeling and assembly design.



Rural Water Supply Training for Leaders and Administrators

Course description:

This training program is designed to provide leaders and administrators with the knowledge and skills necessary to effectively manage and support rural water supply initiatives. Participants will gain insights into the planning, coordination, implementation, and oversight of water supply projects in rural areas, with a focus on governance, policy development, and community engagement. The course will cover topics such as stakeholder collaboration, resource mobilization, capacity building, and sustainable management practices.

Course duration:

5 days online

Course participants:

Local government officials, Community leaders, Rural development administrators, Policy makers

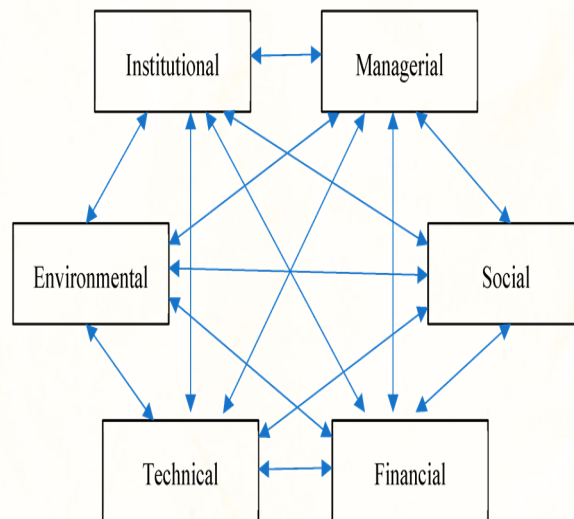
Water utility managers.

Course learning outcomes:

-Coordinate multi-stakeholder partnerships and mobilize resources for rural water supply initiatives, leveraging public, private, and community-based resources.

-Formulate policies, regulations, and guidelines to support the planning, implementation, and management of sustainable rural water supply systems.

-Engage with communities and stakeholders in participatory decision-



Technical Writing

Course description:

This course provides comprehensive training in technical writing skills, focusing on effective communication of technical information in a clear, concise, and accessible manner. Participants will learn essential principles, techniques, and best practices for producing various types of technical documents, including reports, proposals, manuals, and instructions. The course covers topics such as audience analysis, document structure, writing style, grammar and punctuation, and visual communication.

course duration:

5 days online

course participants:

Engineers ,Scientists ,Researchers, Technical professionals ,Project managers ,Consultants
Students ,Anyone involved in producing technical documents

course learning outcomes:

- Structure technical documents logically, using headings, subheadings, and formatting conventions to facilitate navigation and comprehension.
- Develop clear and concise technical descriptions, explanations, and instructions, using appropriate terminology and avoiding jargon or ambiguity.
- Apply principles of grammar, punctuation, and style to ensure readability and professionalism in technical writing.
- Incorporate visual aids, such as tables, charts, graphs, and diagrams, to enhance understanding and illustrate complex concepts or data.
- Use effective techniques for editing and proofreading technical documents, ensuring accuracy, consistency, and adherence to standards

Technical Writing



Delft 3D software

Course description:

This course provides comprehensive training in the use of Delft3D software for modeling coastal, river, and urban water systems. Participants will learn how to utilize the software's capabilities for hydrodynamic, sediment transport, water quality, and morphological modeling, enabling them to simulate and analyze complex hydraulic processes and environmental interactions. The course covers topics such as model setup, boundary conditions, numerical techniques, visualization, and result interpretation.

course duration:

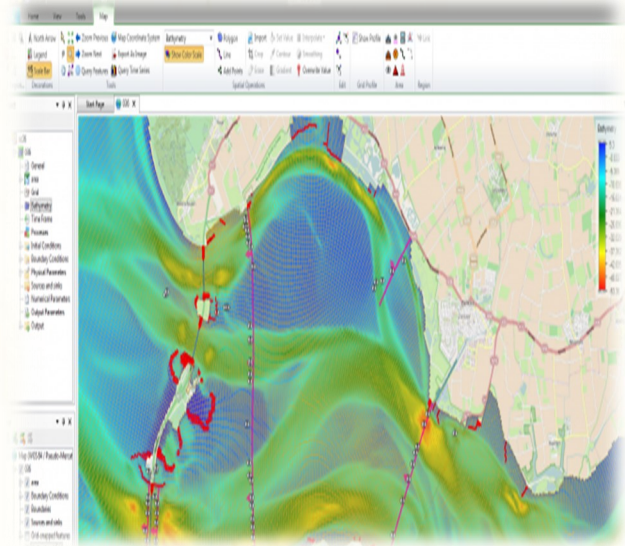
5 days online

course participants:

Hydrodynamic modelers, Coastal engineers, Water resource managers, Environmental scientists, Civil engineers, Researchers and academics in related fields

course learning outcomes:

- Validate and calibrate Delft3D models using observational data, statistical techniques, and sensitivity analyses to improve model accuracy and reliability.
- Visualize model results using built-in visualization tools and third-party software for generating maps, graphs, animations, and other visual aids.
- Apply Delft3D models to address specific engineering and environmental challenges, such as coastal erosion, flood risk management,



General Courses

Design, Construction, Management, and Maintenance of Rain Harvesting Dams and Valley Tanks

Course description:

This course offers comprehensive training on the design, construction, management, and maintenance of rain harvesting dams and valley tanks, focusing on sustainable water management practices in water-scarce regions. Participants will learn about the planning and design considerations for rainwater harvesting structures, construction techniques, water management strategies, and effective maintenance practices to ensure the longevity and efficiency of these water storage systems.

course duration:

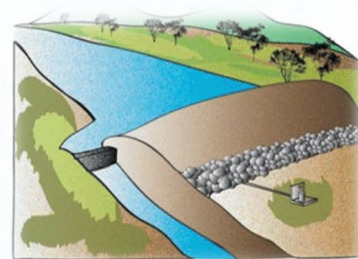
5 days -online

course participants:

Civil engineers, Water resource managers, Environmental engineers, Community development practitioners, Government officials involved in water infrastructure projects, NGOs and humanitarian organizations working on water access and sustainability, Anyone interested in promoting sustainable water management practices

course learning outcomes:

- Understand the principles and benefits of rainwater harvesting for water conservation and sustainable development.
- Identify suitable sites and assess the feasibility of constructing rain harvesting dams and valley tanks in different geographic and climatic conditions.
- Design rainwater harvesting structures, considering factors such as catchment area, rainfall patterns, storage capacity, and water quality requirements.



Civil and Earthworks

Course description:

This course provides comprehensive training on civil and earthworks construction, focusing on fundamental principles, techniques, and best practices in the field. Participants will learn about various aspects of civil engineering and earthworks projects, including site preparation, excavation, grading, embankment construction, and foundation works. The course will cover topics such as surveying, soil mechanics, earthmoving equipment, construction methods, and quality control measures to ensure successful project delivery.

course duration:

5 days online

course participants:

Civil engineers ,Construction managers ,Site supervisors ,Surveyors, Earthworks contractors
Construction workers

course learning outcomes:

- Conduct site surveys, assess site conditions, and prepare construction layouts and plans.
- Interpret engineering drawings, specifications, and project documents related to civil and earthworks projects.
- Select appropriate earthmoving equipment and tools for site preparation, excavation, and grading operations.
- Implement proper excavation techniques, including cut and fill operations, slope stabilization, and trenching for utilities.



Subsurface Drainage Systems

Course description:

This course provides a comprehensive overview of subsurface drainage systems, focusing on the design, installation, operation, and maintenance of systems used to manage excess water in agricultural, urban, and infrastructure settings. Participants will learn about the principles of subsurface drainage, different types of drainage systems, materials used, hydraulic considerations, and environmental impacts. The course will cover topics such as soil-water interactions, drainage system layout, drainage coefficient determination, and water table management.

Course duration:

5 days online

Course participants:

Agricultural engineers ,Civil engineers ,Drainage contractors ,Agricultural consultants

Government officials involved in water management, Researchers and academics in related fields

Course learning outcomes:

- Identify different types of subsurface drainage systems, including tile drains, mole drains, and French drains, and their applications in various contexts.
- Evaluate site conditions, soil properties, and hydrological factors to determine the need for subsurface drainage and design appropriate drainage systems.
- Calculate drainage coefficients, spacing, and depth of drainage pipes based on soil permeability, crop requirements, and drainage goals.
- Design drainage layouts, including main drains, laterals, and collector drains, to efficiently remove excess water from the soil profile.
- Select appropriate drainage materials and installation techniques for different soil types and site conditions.



Rural Water Supply Training for Civil Engineers

Course description:

This training program is tailored to equip civil engineers with the knowledge and skills necessary to address the unique challenges of rural water supply projects. Participants will gain insights into the planning, design, implementation, and management of water supply systems in rural areas, focusing on sustainability, affordability, and community engagement. The course will cover topics such as water source selection, infrastructure design, construction techniques, and operation and maintenance practices suited for rural contexts.

Course duration:

5 days online

Course participants:

Civil engineers ,Water resource engineers ,Infrastructure planners ,
Project managers ,Rural development practitioners

Course learning outcomes:

- Identify appropriate water sources for rural communities, considering factors such as availability, accessibility, quality, and sustainability.
- Design water supply infrastructure, including boreholes, hand pumps, gravity-fed systems, and small-scale distribution networks, tailored to rural contexts and community needs.
- Incorporate principles of sustainability, resilience, and climate adaptation into the planning and design of rural water supply systems.
- Implement effective construction techniques and materials selection for rural water supply infrastructure, considering cost-effectiveness, durability, and local availability.
- Develop operation and maintenance plans for rural water supply infrastructure, emphasizing community participation, capacity building, and ownership.



Feasibility Studies for Water Project

Course description:

This course provides comprehensive training on conducting feasibility studies for water projects, covering the essential steps and methodologies involved in assessing the viability and sustainability of water supply and infrastructure initiatives. Participants will learn how to systematically evaluate technical, economic, environmental, and social aspects of proposed water projects to inform decision-making and secure funding. The course will cover topics such as project scoping, site assessment, cost estimation, risk analysis, and stakeholder engagement.

Course duration:

5 days online

Course participants:

Engineers, Project managers, Planners, Consultants, Government officials

Course learning outcomes:

- Evaluate alternative project options and technologies, weighing their advantages, disadvantages, and potential impacts.
- Estimate project costs, including capital expenditures, operational expenses, and lifecycle costs, using appropriate methodologies and financial tools.
- Assess the economic viability of proposed water projects through cost-benefit analysis, financial modeling, and risk assessment.
- Analyze environmental and social impacts of water projects, identifying potential risks and mitigation measures to ensure compliance with regulatory requirements and sustainability standards.
- Engage with stakeholders, including local communities, government agencies, NGOs, and private sector entities, to solicit input, address concerns, and build support for proposed projects.



Diplomas

GIS Diploma

Course Description:

The GIS diploma is an intensive long-term training on Geographic Information Systems and applications of ArcGIS from scratch to the professional level. The Diploma contains Eight courses relating theoretical and practical activities to create the GIS project from data acquisition to map production.

Course duration:

7 Courses/modules (online training)+1 Course/Module (physical training) -186 training hours/ 46 days .

Course participants:

Beginners, students, graduates and post graduates, Decision makers, planners, specialists, managers and professionals involved in water resources management issues, representing the following types of organizations:
Ministries and government departments, International water commissions, Research organizations

Diploma Outcomes:

Understand the concept of GIS
Relate GIS with remote sensing technologies
Analyze spatial data, using GIS analysis tools
Apply Statistical analysis in ArcGIS
Environmental analysis using GIS techniques

Diploma modules:

- GIS 1- Introduction to GIS Mapping
- GIS 2- GIS Data Acquisition and Map Design
- GIS 3- Spatial Analysis and Satellite Imagery in GIS
- GIS 4- GIS Statistical and cluster Analysis
- GIS 5- GIS for Environmental analysis
- GIS 6- Introduction to Remote Sensing
- GIS 7- Remote Sensing for Land Cover and land use Mapping
- GIS 8- Using GIS and Remote Sensing in Disaster Risk Management



Water Resources Management

Course Description:

Integrated water resources management is based on the perception of water as an integral part of the ecosystem, a natural resource and a social and economic good, whose quantity and quality determine the nature of its utilization. The integration approach has to incorporate policy options that recognize these elements, develop national water policies and to base the demand for and allocation of water resources on equity and efficient use.

Course duration:

8 Courses/modules (online training)+1 Course/Module (physical training) -186 training hours/ 46 days .

Course participants:

Beginners, students, graduates and post graduates, Decision makers, planners, specialists, managers and professionals involved in water resources management issues, representing the following types of organizations:

Ministries and government departments, International water commissions, Research organizations

Diploma Outcomes:

Good understanding of Integrated Water Resources Management (IWRM).

Strong theoretical background for Policies and National Strategies.

Implementing, Monitoring and Evaluating.

Environmental policy formulation

Diploma modules:

WRM 1- Introduction to water resources management

WRM 2- Water-Food-Energy Nexuses for Proper Sustainability Water Management

WRM3- Design, operation, and maintenance of modern irrigation systems

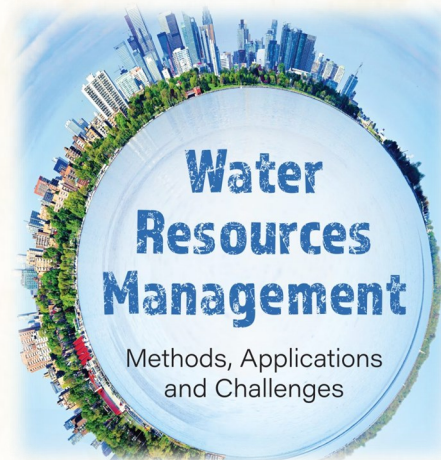
WRM4- Applications of integrated farming programs (fish and crops)

WRM5- Estimation of irrigation water consumption using Remote Sensing Techniques

WRM6- Wastewater Treatment and Reuse

WRM 7- Using GIS and Remote Sensing in Disaster Risk Management

WRM 8- Water Quality Monitoring and Assessment



Hydrological Science Diploma

Diploma Description:

This program aims to equip students with the necessary knowledge and skills to effectively navigate and analyze various water systems, including rivers, lakes, and groundwater.

Upon completion of the Diploma in Hydrological Science, trainees can expect to have a strong foundation in hydrology, water quality, and water resource management.

Diploma duration:

7 Courses/modules (online training)+1 Course/Module (physical training) -186 training hours/ 46 days .

Participants:

Beginners, students, graduates and post graduates, Decision makers, planners, specialists, managers and professionals involved in water resources management issues, representing the following types of organizations:

Ministries and government departments, International water commissions, Research organizations

Diploma Outcomes:

Understanding of Hydrological Systems & Proficiency in Hydrological Analysis.

Hydrological Modeling Skills & Water Resource Management Knowledge.

Effective Communication Skills & Problem-Solving and Decision-Making Skills .

Overall, the outcomes of water hydrology training are multifaceted and can lead to diverse career paths and opportunities for addressing pressing water-related challenges facing society.

Diploma modules:

WH 1 – Introduction to Hydrology

WH 2 – Surface Water Hydrology

WH 3 – Groundwater Hydrology

WH 4 – Strategies for Sustainable Water Management

WH 5 – Environmental Hydrology

WH 6 – Adapting in Water Systems

WH 7- Emerging Technologies in Hydrological Science

WH 8- Advancements in Hydrological Modeling: Enhancing Understanding and Prediction in Hydrological Science



Hydrology and Morphology Diploma

Diploma Description:

This course focuses on the hydrology and morphology of the River Basin, emphasizing sustainable development and resilience building. It covers topics such as water resource management, ecological impact assessment, climate change adaptation, and international cooperation. Participants will engage in discussions, case studies, and fieldwork

Diploma duration:

7 Courses /modules (online training) +1course module (physical training)-200 training hours/40 days

Participants:

Beginners, students, graduates and post graduates, Decision makers, planners, specialists, managers and professionals involved in water resources management issues, representing the following types of organizations:
Ministries and government departments, International water commissions, Research organizations

Diploma Outcomes:

Deep Understanding: Gain comprehensive knowledge of hydrology and morphology principles within river basins.

Practical Application: Develop skills to apply concepts in flood management, drought mitigation, and habitat restoration.

Resilience Enhancement: Learn strategies for bolstering resilience to climate change and other stressors, promoting long-term sustainability.

Stakeholder Engagement: Understand the importance of hydrology modeling to enhance decision making

Diploma modules:

HM 1: River basin Hydrology

HM 2: Morphological Aspects of the River basin

HM 3: Water Diplomacy and Conflict Management

HM 4: Climate Change Adaptation and Resilience in the River Basin

HM 5: Dam Safety.

HM 6: Flash Management, From Theory to Practice

HM 7- Restoration and rehabilitation of rivers

HM 8: Hydrological Modeling With HEC-HMS

