MINISTRY OF WATER RESOURCES & IRRIGATION

Egypt

Regional Training Sector for Water Resources & Irrigation

Training Programs Guide

Topics of Regional Training Courses

Water Resources Management

Training Course	Duration (Days)	Main Topics
Water Resources Management — On Farm Water Management(Irrigation)	15	Integrated Water Resources Management & Hydrological Cycle &Water Balance &Sources of Water in Egypt
		Planning for an Irrigation System& Development of Irrigated Agriculture
		Soil, Water, Plant Relationship & Irrigation Water Requirements & Using Computer in Computing Water Requirements
		Irrigation Scheduling and Water Distribution & Models and Tools for On-Farm Water Management
		Surface Irrigation (Planning, Design and Construction –Operation and Maintenance – Performance Assessment)
		Irrigation Improvement Project & Land Leveling for Surface Irrigation – Canal Lining
		Participatory Irrigation Management (WUA- Gender Issues – Social Aspects In Irrigation) & Economic Aspects In Irrigation - Field Trip
		Micro Irrigation System (Planning, Design, Construction, Operation and Maintenance, Performance Assessment)
		Sprinkler Irrigation Systems (Planning, Design, Construction, Operation and Maintenance, Performance Assessment)- Field Trip
		GIS / Remote Sensing Applications in Irrigation - Environmental Impact Assessment of Irrigation Projects
		Hydraulics of Irrigation Systems & Automation & Irrigation Pumping Plants - Field Trip

Water Resources Management

Training Course	Duration (Days)	Main Topics
On Farm Water Management(Drainage)	15	Need for Land Drainage – General Aspects of Land Drainage – Types of Land Drainage
		Soil Physical, Chemical, and Biological Properties Relevant to Land Drainage
		Methods Used to Measure Soil Hydraulic Conductivity & Soil and Water Investigation Techniques
		Drainage Criteria of Drainage Systems in Problematic Soils + Case Studies
		Surface Drainage System (Planning, Design, Construction, Operation and Maintenance, Performance Assessment) - Field Trip
		Subsurface Drainage System (Planning, Design, Construction, Operation and Maintenance, Performance Assessment)
		Construction Techniques of Surface and Subsurface Drainage Systems
		Drainage Materials Used for Construction of Subsurface Drainage System + Case Study - Field Trip
		Application of Controlled Drainage System + Case Study
		Drainage Water Quality Management and Reuse - Economic Assessment of Land Drainage Projects
		Role of Farmer Participation in the Operation and Maintenance of Surface and Subsurface Drainage System + Case Study - Field Trip
Water Crisis Management	10	Concepts of Crisis Management - Classification of Crisis - Crisis Management Approaches and Disasters Management Approaches
		Types of Water Crisis - Management of Water Crisis - Monitoring of the Crisis Stages
		The Importance of Information in Crisis Management - Forecasting of Water Crisis
		Early Warning Systems in Water Field - Proactive Behavior Against Expected Water Crisis - Decision-Making Theories
		The Importance of Planning in Crisis Management - Building Scenarios - EIA of Water Crisis

Water Resources Management

Training Course	Duration (Days)	Main Topics
Water Resources Management — New Irrigation Schemes	10	Conventional and Non-Conventional Water Resources &Hydrological Cycle &Water Balance
		Models in Irrigation Water Management - Crop and Irrigation Water Requirements
		Perspectives of Irrigation Characteristics of the Different Irrigation Methods
		Surface Irrigation and Land Leveling - Sprinkler and Drip Irrigation systems
		Performance Assessment - Strategies for Water Resources Management &Integrated Water Resources Management
		Challenges in Water Sector +Case Study - Economics of Water Management
Sprinkler and Drip Irrigation Systems	10	Planning for an Irrigation System - Soil , Water, Plant Relations
		Irrigation Water Requirements - Irrigation Scheduling
		Hydraulics of Pressurized - Flow rate, Friction & Minor Losses -Sprinkler Systems Fundamentals - Sprinkler Systems Design
		Visit of The System Components Testing Laboratory, Agricultural Engineering Research Institute (field trip)
		Visit of the Irrigation and Hydraulics Laboratory of the Faculty of Engineering, Cairo University(field trip)
		Drip Irrigation Systems Fundamentals - Drip Irrigation Systems Design - Performance Evaluation
		Green-house & Nursery Practices - Chemigation & Filtration
		Field Visit of Sprinkler and Drip Irrigated Farm (field trip)
		Salinity and Water Quality Aspects - Irrigation Systems Economics -

Water Resources Management

Training Course	Duration (Days)	Main Topics
Water Resources Management — Integrated Water Resources Management	10	Environmental Sustainability -Managing the System logical Units - Water as Human Right
		Concept of Economic - Value of Water Measurement for Implementation - Options for Implementation
		Water Needs versus Water Demand - Introduction to Engineering Water Shed Hydrology
		Frequency Analysis- Precipitations Losses - Guide for the use of the Decision Support System (DSS)
		Highway Hydrology -Peak Discharge Estimation Methods - Geospatial Hydrologic
		Modeling Extension - Tropical Rain Fall Measuring Mission - Digital Evaluation Model Based
		Water Shed and Stream Network Delineation - Flood Routing
		Urban Hydrology for Small Water Sheds - GIS Tools for Support of HEC-RAS using Arc GIS
Cultivation of Rice	10	Rice water management - Computer models for computing the water consumption of the crop (CROP WAT)
		Improved farm delivery systems & automation of farm delivery systems - Cultivation methods for rice
		Water Harvesting - Soil Salinity and water logging - Breading for salinity in rice
		Surface and subsurface drainage systems (design- construction- operation and maintenance-performance assessment)
		Rice disease management - Rice weed management - Technology transfer system for rice
		Physiological aspects for rice plant -Fertilizer management in rice - Rice harvesting

Water Resources Management

Training Course	Duration (Days)	Main Topics
Water Resources Management — Aquatic Weed Management	10	Plant Identification - Ecological Problems Related To Aquatic environment
		Management of Aquatic Weeds - Characteristic of irrigation weeds
		The integrated weed control cycles - Evaluating the equipment of the controlling aquatic weeds
		Natural Areas Weed Management - Climatic change impacts and growth of aquatic weeds
		Vegetation survey and assessment – Maintenance the vegetated waterways
		Scientific expedition to visit different infected water ways with aquatic weeds.
Dam Safety	10	Dam Safety Programs - Dam Surveillance - Emergency Action Plans
		Environmental Aspects in Dam Projects - Dam Construction
		Hydro mechanical Equipment - Rehabilitation of Dams - Classification of Dams -
		Hydraulic Design of Dams - Structural Design - Earthquake Effects on Dams - Dam Failure Mode
		Dam Instrumentation -Hazards Facing Dams - Risk of Dam Failure

Water Resources Management

Training Course	Duration (Days)	Main Topics
Water Resources Management — Dams and Hydraulic Structures	10	General Hydrology of the Nile - Data Collection Processing and Publication
		Introduction to Remote Sensing -Flood Forecasting, Egyptian Case
		Application of Remote Sensing in Water Resources Management (Weed Control, Flash Flood, Toshka Project)
		Dams, Introduction and Definitions - Dams, Classification and Requirements
		Dams Elements - Advantages & Disadvantages of Dams
		Visit to Construction Research Institute & Hydraulic Research Institute
		Embankment Dams, Zoning - Embankment Dams, Seepage analysis
		Seepage underneath Concrete Dams -Hydrologic Design, Operation and Modeling of Dams
		Flood Frequency Analysis –Reservoir modeling and flood frequency analysis
		Visit to Shared Water Resources Diploma, Irrigation and Hydraulics Department, Faculty of Eng., Cairo University
		Embankment Dams, Stability of Slope - Concrete Gravity Dams, geometrical and loads
		Concrete Gravity Dams, Seismic loads and stress analysis- Weirs, types, shapes and hydraulics
		Weirs, design for percolation and uplift - Regulators, types, elements, hydraulics - Hydrology of Storage
Design, Construction, and Rehabilitation of Small Dams	10	Introduction to Dams- Dam Components - Dam Site Selection
		Drainage Area - Drainage Area Properties Calculations - Rainfall Data- Rainfall Statistical Analyses
		Introduction to GIS - GIS Based Analysis - Flood Computations
		Dam Type Selection - Reliability Analysis - Dam Height Selection
		Spillway Types - Spillway Design
		Energy Dissipation - Dam Stability Analysis

Water Resources Management

	Training Course	Duration (Days)	Main Topics
Water Resources Management	**Rain Harvesting Dams, and Valley tanks**	10	Rainfall Analysis – Frequency Analysis- Dams Introduction
			Watershed Characteristics - Dam Site Selection - Flood Computation
			Dams Design Consideration - Design of Spillways - Valley Tanks
			IHD Flood Software - Watershed & Reliability Analysis
			Design of Energy Dissipation - Hands on Training Dams
	Flash Flood Management from theory to Practice	15	Integrated Water Resources Management - Flash Floods management
			GIS Application in Hydrology - Precipitation and Design Storm
			Hydrologic Analysis - Estimation of the Sediment Load - Hydrologic Modeling
			Rainfall Forecasting and Remote Sensing - Hydrologic Modeling - Field Trip
			Flood Protection Structures - Water Harvesting - Hydrologic Modeling
			Geotechnical aspects of Flash Flood Management - Hydrologic Modeling
			Egypt's Experience in Flash Floods - Hydro-Metrological Network
	Water Structures and Environmental Impact Assessment	10	Review of Open Channel Hydraulics - Design of Canals and Drains
			Dams (Design, Modeling, and Construction) - Barrages (Design, Modeling, and Construction)
			Regulators (Design, modeling, and Construction)
			Environmental Impact Assessment of Water structures
			Locks (Design, Modeling, and Construction) – Offtakes (Design, Modeling, and Construction)
			Culverts (Design, Modeling, and Construction) – Syphons (Design, Modeling, and Construction)
			Short Span Bridges - Escapes (Intermediate and Tail Escapes) – Weirs (Design, Modeling, and Construction)
			Pipe Systems Hydraulics - Pipelines and Pipe Networks - Pumping Stations

Water Resources Management

Training Course	Duration (Days)	Main Topics
Water Resources Management — Conventional and Non-conventional Water Resources	10	Conventional & Non-Conventional Water Resources -An Overview: Watershed Characteristics - Application for Catchment Delineation Workflow
		Flood Control and Flood Management - Tools for Flood Modeling and Flood Mapping -Flood Frequency Analysis - Frequency Software - Application on Flood Control
		An Overview of Rainfall Harvesting - Agricultural Approach for Rainwater Harvesting - Rainfall Analysis - Design of Rainfall Harvesting Facility - Dimensioning of Rainfall Harvesting Facility
		Fundamentals of Groundwater Flow - Groundwater Flow Equations and Flow to Wells - Groundwater Monitoring and Well Drilling - Wells Design
		Desalination technology & Cloud seeding
		Reuse of Waste water - Reuse of Drainage Water
		Environmental Impact of Water Resources Projects Application
Water Transboundary Issues	10	Water Transboundary Definition
		International Agreements and Laws
		Transboundary Aquifers - Monitoring and Assessment of Transboundary Waters
		Water Conflicts between Countries- -Institutions and Tools for Cooperation - Instruments and Areas for Action-
		Riparian Rights International Law - Water Sharing Law Definition
		Experiences from around the world
Water Diplomacy	5	Water Connects - A Short Guide to Preventive Water Diplomacy
		Water and Climate Diplomacy
		Integrative Approaches for Adaptive Action in Transboundary River Basins
		Linking Water and Climate Diplomacy
		The Rise of Hydro-Diplomacy – Strengthening Foreign Policy for Transboundary Waters

Water Resources Management

Training Course	Duration (Days)	Main Topics
Hydrological Modeling of Drainage Basins	10	Drainge Basins and Watersheds(Hydologic cycle)
		Drainge Basins
		Drainge Basins Characteristics
		Analysis and calcaulation of drainage basins Characteristics
		Applications
Flow 3D	10	The flow 3D Interface - 2- Model setup
		Global setting - Physics models
		Fluid properties - Geometry
		Meshing procedure - Boundary intial conditions
		Project
Rock Ware	10	Introduction - Output Dimensions & Preferences
		Creating, Opening, Managing Projects - EarthApps& Utilities - Entering Data - EarthApps - Creating Diagrams
		Utilities - Modeling & Diagrams - Borehole Manager - Entering Data - Borehole Manager - Modeling & Diagrams
		RockPlot2D - 2D Graphic Display - RockPlot3D - 3D Graphic Display
		ReportWorks - Page Layout Program - RockWorks Tables & Libraries
Monitoring and Modeling of Water Quality	10	Introduction to WQ Monitoring & Physical meaning of the water quality data
		Methods of quality assurance and quality control - Regulations & standards for various water use purpose
		Design of water quality monitoring programs
		WQ data interpretation, reporting and prediction
		statics in water quality monitoring

Ground Water Management

	Training Course	Duration (Days)	Main Topics
Ground Water Management	Ground Water and Artificial Recharge	15	Hydrologic Cycle - Groundwater and Aquifer Systems - Groundwater Exploration - Rockworks Software
			Geophysical Studies - Groundwater Potential - Well Hydraulics - Analytical Models
			Step Test and Pumping test Analysis (Aquifer Test Software) - Groundwater Chemistry
			Monitoring Groundwater Abstraction and Quality - Groundwater vulnerability
			Groundwater Modeling, Surfer Software - Arc-GIS Software
			Water Harvesting and Groundwater Modeling (Applications using MODFLOW).
	Geophysical Methods for Exploration of Groundwater	15	General Introduction to Geo-Hydrogeology - Hydro-Geophysical Properties Of Aquifers
			Electric Method (Theory & Measurements)
			Field Measurements of Electric Method (Field Trip)
			Interpretation of Geoelectric Measurements - Magnetic Method (Theory & Measurements)
			Field Measurements of Magnetic Method (Field Trip)
			Interpretation of Geomagnetic Measurements - Electromagnetic Method (Theory & Measurements)
			Measurements of Electromagnetic Method (Field Trip)
			Electromagnetic Interpretation - Ground Penetrating Radar (Gpr) (Theory & Measurements)
			Field Measurements of GPR (Field Trip)
			Gpr Interpretation - Introduction to Well Logging & General Applications for Different Hydrogeological Problems

Ground Water Management

	Training Course	Duration (Days)	Main Topics
Ground Water Management	Well Logging	10	General Introduction to Geo-Hydrogeology - General Introduction in Well Drilling and Well Logging Tools
			Resistivity Logging (Theory, Measurements & Interpretation)
			Self - Potential Logging (Theory, Measurements & Interpretation)
			Interpretation of Resistivity & Self - Potential Logging Measured From The Field (Field Trip)
			Gamma Ray Logging (Theory & Measurements) - Density & Logging (Theory, Measurements & Interpretation)
			Neutron Logging (Theory, Measurements & Interpretation) - Caliper Logging (Theory, Measurements & Interpretation)
			Interpretation of Gamma, Density Neutron & Caliper Logging Measured From the Field (Field Trip)
	Use of MathematicsModeling as Tool for Groundwater Management	15	Basic Principles - Groundwater Modeling Standards
			Conceptual Model - Mathematical Model / Equations and Numerical Methods
			Model Design / Boundaries and Initial conditions - Calibration & Verification/Validation
			Prediction & Presentation of Results - 2D & 3D Geostatistics
			Sensitivity Analysis - Treatment of Uncertainty - Calibration Tools & Basics
			Parameter Estimation with PEST/UCODE - MODFLOW/MT3DMS Interfacing Issues
			Contaminant Transport with MT3DMS - Cases Studies on Mathematical Modeling as Tool For Groundwater Management

Environment

Training Course	Duration (Days)	Main Topics
Environment — Climate Change	15	Water Resource Management - Pollution Monitoring Network - Environmental Law Enforcement
		Impact of Climate Change on Coastal Zones -Vulnerability of Water Resources in Arab Countries to Climate Change
		Impact of Sea level Rise on Deltas - Climate Change and Energy
		Salt Water Intrusion in Deltas and Potential Implications - Impacts of Climate Change on Agriculture
		Impacts of Climate Change on Water Resources of Nile Basin
		Global Circulation Models- Regional Circulation Models and Results
		Adaptation Policies - Early Warning Systems of Disasters - Climate Change and Extreme Events - Risk Assessment
		Satellite Monitoring of Climate Changes
Water Quality Management	10	Water Quality Management - water quality parameters: physical, Biological and Chemical
		Sampling Methods and Equipment - Laboratory for Water Quality Analysis
		Environmental Pollution, The Egyptian Environmental Legislation
		Water Quality Monitoring - Water Quality Modeling - Water Quality Index Monitoring
		Water Quality Control, Modeling of Control - Water and Wastewater Treatment Operating
		Technical Writing - Application

Environment

Training Course	Duration (Days)	Main Topics
Soil Salinity Management	10	Water Management to Avoid Soil Salinization - Drainage Issues and Management
		Design of Drainage Systems - Land and Water Management
		Crop Management under Salt Affected Soils - Land Management to Avoid Soil Salinization
		Potential Utilization of Halophytes and Salt Tolerant Plants as Animal Feeds
		Water Quality - Non Conventional Water Management
		Cropping Pattern under the Available Irrigation Water
		Egyptian Experience in Land Reclamation Issues and their Solutions
		Field Trip (Land Reclamation Project, Irrigation Improvement Project, Subsurface Drainage Project)
Shore Protection Works	15	Climate Change and its Impaction on Coastal Areas - Natural Factors Affecting Coastal Areas
		Early Warning Systems – Prediction of Water Levels, Sedimentation and Erosion - Hydraulic Models for Coastal Areas and Coasts
		Use of Modeling and Modern Technology in the Field of Coasts (GIS - Google Earth – ERDAS…………)
		Types of Hard and Soft Shore Protection Works-Planning of Shore Protection Works-Selecting of Optimum Solution
		Design, Implementation and Maintenance of Shore Protection Works - EIA of Shore Protection Works -Development of the Coastal Areas
Water Supply and Water Treatment	10	Introduction to Water Supply and Water Treatment - Water Quality Parameters and Standards
		Description of the Treatment Processer -Coagulation – Flocculation
		Ion Exchange -Reverse Osmosis - Aeration Tanks - Stabilization Ponds - Adsorption Principles
		Sedimentation and Flotation - Sand Filtration - Disinfection - Water Treatment Technologies - Water SofteningNutrient Removal - Field Trip
		Basic principles for Drinking Water Quality Parameters - Basic Principles for Evaluating Water Treatment Plant - Field Trip

Survey

Training Course	Duration (Days)	Main Topics
Survey		
Hydrographic Survey	10	Uses of Hydrographic Survey & Principles of Echo-Sounders and Navi Sound215
		Type of Map Projection and Leveling Contour Maps - HYPACK 2014 - Preparation and Data Collection
		Creating Planned Lines in the Line Editor, Border Files , Objective File & Background File
		Practical Exercise for Land Survey & Map Production - Single Beam Processing
		Background on Measuring Flow Velocity & Discharge
		Sound Velocity &Tide Corrections Sounding Selection Programs For Single Beam Surveys
		Sort Program & Running The Export Program - Field Measurement Using ADCP (field trip)
Geographic Information Systems(GIS)	10	GIS Power (data behind) & Geography meets Geometry - Query Data & Analyzing Spatial Relationships
		Symbolizing Categorical Data & Investigating Geographic Data
		Use Coordinate System, Managing Table & Edit Features And Attribute, Create Database and Feature Class
		Getting Data Into Geodatabase & Editing GIS Data - Aligning Spatial Data & Preparing For Analysis
		Analyzing GIS Data & Using Model Builder For Analysis -Types of Geodatabases & Creating Geodatabase Schemas
		Relating Spatial and Attribute Data & Geodatabase Annotation, Geodatabase Topology
		Geometric Network & Geodatabase Workflow

Survey

Training Course	Duration (Days)	Main Topics
Survey		
Remote Sensing Using ERDAS	10	Fundamentals of remote sensing review - the Erdas imagine viewer
		Enchance and visualize your data
		Creating image maps
		Change detection and update features
		Gis analysis - general revision for whole course topics
Google Earth & Arc Map	5	Google Earth Pro - Overview - Learning Objective
		Historical Imagery - Creating a Place Mark - Describe a Place Mark
		Add Your own Photo - Create a Walking Tour - Create a Narrated and Animated Tour
		Add a Legend or other Screen Overlay - Recording AudioCommentary- Re-Record a Tour to Add New Actions
		Measuring Area- Final Touches:-Text & Saving - Additional Tips
Survey Works	10	Transformation the Coordinates from WGS84 to Local Coordinates- WGS84- Helmert 1906
		Transformation Model -the Distribution of Points-
		Quality Measures-Establishing Contour Map and Computing the Volume by Using Surfer Software
		Total Station – GPS
		Remote Sensing - Mapping .
		ArcGIS Software Basic Structure, Building a Project Geodatabase

Survey

	Training Course	Duration (Days)	Main Topics
Computer Skills	**Arc GIS**	**20**	Intruduction to GIS and Attribute and Create Map layout
			Date model, Query and Analysis
			Symobology, Map layout,Label and Annotation
			Coordinate System.Manage table and Editing Feature
			Creating Geodatabase, Geocoding and Project
			Geodatabase,types of Geodatabase,Creating Geodatabase
			Domains and subtypes, Relating spatial and attribute data, Editing using attribute validation
			Geodatabase topology,Geometric networks, Geodatabase workflow
			Basic editing workflow, Preparing to edit, Editing geometry, Editing attributes
			Data integration and quality control, Data integration and data alignment techniques, Sharing and editing, Implementing the editing workflow
			Getting started with surface analysis, Interpolating surfaces, Introduction to kriging, Calculating density, Analyzing surfaces, Conclusion
			Getting started with spatial analysis, Planning and preparing for analysis, Performing proximity analysis, Performing overlay analysis with vector data
			Performing overlay analysis with raster data, Analyzing spatial patterns Analyzing temporal patterns,
			Using 3D GIS, Working with 3D data, Visualizing GIS data in 3D, Editing features in 3D
			Analyzing data using 3D tools, Solving problems with 3D GIS

Construction

Con struc	Training Course	Duration (Days)	Main Topics
	Quality Control in Construction Field (Concrete & Soil Tests)	10	Engineering Soil Classification – Problematic Soil – Solving Problems of Soil
			Subsurface Soil Investigation Program – Laboratory Tests
			Specification of Concrete Material – Laboratory Tests
			Concrete Mixture Design and Analysis – Concrete Properties
			Concrete Quality Control – Testing of Fresh and Hard Concrete
	Design and Analysis of structural elements using Excel	10	Elements Design
			Design and Analysis of Slabs and Beams by Excel
			Design and Analysis of Columns and Walls by Excel
			Design and Analysis of Walls and Stairs by Excel
			Design and Analysis of Foundations by Excel
	Bridge Design using CSI Bridge	10	Modeling of Bridge Systems
			Loading and Analysis
			Design and Output
			CSI Bridge Tutorials
			CSI Bridge Test Problems

Construction

Training Course	Duration (Days)	Main Topics
Surfer	10	Map Features
		Gridding Features -Drawing and Boundary Editing Features
		Data Features - Data Transform.
		Import and Export Improvements
		(Automation - (Projections, Coordinate Systems, and Datums
Autodesk Infraworks	10	Exploring the InfraWorks Environment (User Interface-Navigating the model-Creating and using Bookmarks)
		Generating a Base Model (Understanding Coordinate Systems-Creating a New Model via Model Builder-Importing terrain data-Importing vector data)
		Creating New Design (Working with Proposals-Modeling and editing new Roads-Importing and configuring Buildings-Modeling and editing new Bridges)
		Adding Detail to Model (Working with Point of Interest-Modeling trees and water features-Modeling barriers and street furniture-Modeling underground services and utilities)
		Presenting the Model (Working with Visualisation Options-3D Graphics Settings-Working with Visual Effects)
		Presenting the Model (Working with Sun and Sky settings-Creating snapshots and model rendering-Applying Camera Path animations)
		Analysing the Design (Generate simple profile/long-sec for proposed roads -Terrain statistics and themes)
		Analysing the Design (Analyzing Light and Shadow-Generating simple project costing)
		Sharing the Model via Cloud Services (InfraWorks Groups-Publishing and synchronizing models0
		Sharing the Model via Cloud Services (Sharing model/design scenarios- Collaborating with AutoCAD Civil 3D)

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Construction

	Training Course	Duration (Days)	Main Topics
Construction	**PLAXIS 2D**	10	Site Investigation
			Introduction on plaxis 2D
			Footing Modelling
			Embankment and Slopes
			Shoring systems
	Revit structure	10	Introduction to Building Information Modeling (BIM) - Exploring the Autodesk Revit Software
			Basic Drawing and Editing Tools -Setting up Levels and Grids
			Working with Views -Starting a Structural Project Based on a Linked Architectural Mode
			Adding Structural Columns and Adding Foundations and Structural Slabs Walls.
			project
			Building information modeling - viewing the structure modeling - datum elments
			creating structural (columns - walls - floors)
			creating annotations - working with views - managing the project
			working ith schedules -construction documents
			project - test
	Robot	10	Introduction
			Frame 2D Design
			Truss 2D Design
			Frame 3D Design
			Truss 3D Design
			Plate Design
			Shell Design
			Section Design
			Building Design
			R.C Elements

Construction

Construction	Training Course	Duration (Days)	Main Topics
Construction	Sap2000	10	Introduction - beams(analysis&design)
			Analysis& Design (2D&3D truss - 2D&3D frames -multistory)
			Analysis& Design solid slab , check deflection - design of column excel
			Analysis & design (flat slabs - raft - stairs) -check deflection
			High elvated tanks - underground tanks
			Redesign of RC columns - 3D modelling ceiling
			Elevated tank - equivalent static method
			Response Spectrum method - time history method
			Influence line - Underground tanks
			Post torsion beam -revision - test
	Structural Design Using Etabs	10	Introduction to Etabs Program-Introduction to Finite Element Analysis - Difference Between
			Basics of Dynamics and Seismic - Define Lateral Loads by Static Force
			Lateral Loads by Response Spectrum Analysis - Define Lateral Load Factors for Elements - Wind Loads
			3D Model For Complete Project - Using Egyptian Code Limitation
			How to use Sap Results in Design Elements - Import DXF Into ETABS
	Using Applications of AutoCAD Civil 3D Program	10	Getting Started with Autocad - Basic Drawing & Editing Commands & Drawing Precision in AutoCAD
			Making Changes in Your Drawing & Organizing Your Drawing with Layers
			Advanced Object Types & Advanced Editing Commands - Getting Information from Your Drawing
			Setting Up a Layout- Text & Hatching -Working Effectively with AutoCAD
			Parametric Drawing & Accurate Positioning - Creating Templates - Advanced Layouts & Printing and Publishing
			Miscellaneous Topics - Creating Solids & Surfaces from 2D Objects
			Simple Solids & Advanced Solid Editing & Visualization - Working Drawings from 3D Models - Final project

Mechanics and Electricity

Training Course	Duration (Days)	Main Topics
Mechanics and Electricity / Operation and Maintenance of Pump Stations	15	Specification and Classification f Pumps - Structure of Main Pump Parts - Performance Evaluation of PSs
		Installation, Maintenance and Operation Instructions for PSs - Water Hammer
		Auxiliary Equipment for Pumping Station - Planned Maintenance for PSs
		Vibration Problems in Pumps - Predictive Maintenance for PSs - Lubricant &Lubrication for PSs.
		Control of Irrigation System - Preventive Maintenance for PSs – Field Trip
		Computerized Maintenance System for PSs - Programmable Logic Controller (PLC) - Supervisory Control & Data Acquisition System (SCADA) – Field Trip
		Electro Chemical Properties of Metals Used in PSs
		Electro Chemical Corrosion - Emergency Electrical System - – Field Trip
Design of Mechanical and Electrical Works Using Revit MEP	10	Introduction to Building Information Modeling (BIM)
		Exploring the Autodesk Revit Software Basic Drawing and Editing Tools -
		Starting MEP Projects - Working with Views
		Performance Analysis -Understanding MEP Systems -Spaces and Zones
		Mechanical HVAC Modeling
		Mechanical Pipe Modeling - Electrical Systems Modeling
		Creating Construction Documents- Annotating Construction Documents
		Tags and Schedules – Detailing
Using Solar Energy in Water Pumping	5	Review About Power System Component- Generating StationTypes
		Introduction of solar cell – PV Solar Station Component
		Application of PV Solar Station – Design of PV Solar Station
		Water Pump Construction – Water Pump Specifications
		Application

Mechanics and Electricity

Training Course	Duration (Days)	Main Topics
Programmable Logic Controllers (PLC)	10	Introductions to the Purpose, Functions, and Operations of The PLC in Industrial Applications
		Identification of Various Components of The PLC
		Introduction to PLC Ladder Logic and Basic Programming Concepts
		Establishing Communications with the PLC
		Definitions of Allen-Bradley Conditional Inputs and Outputs - Electrical Continuity Versus Logical Continuity - Applications of Discrete Inputs with PLC's
		PLC Programming Applications and Software - I/O Configuration and Downloading PLC Programs
		Installation and Troubleshooting Sensors Wired as Sinking or Sourcing Current
		PLC Timer and Counter Concepts and Programming Applications - Programming Applications Using Sequencers
SCADA control systems softwarE	5	Components of a SCADA control system -Software - design of SCADA packages
		Configuration of SCADA control systems - Building the user interface
		Connecting SCADA and PLC controls to other hardware
		SCADA control system design
		The Twelve Golden Rules
Revit MEP	10	Introduction to Building Information Modeling (BIM)
		Exploring the Autodesk Revit software Basic Drawing and Editing Tools -
		Starting MEP Projects - Working with Views
		Performance Analysis -Understanding MEP Systems
		Spaces and Zones
		Mechanical HVAC Modeling
		Mechanical Pipe Modeling - Electrical Systems Modeling
		Creating Construction Documents- Annotating Construction Documents
		Tags and Schedules
		Detailing

Mechanics and Electricity

Training Course	Duration (Days)	Main Topics
Irrigation Embedded system	10	Introduction to Embedded system
		Computer architecture
		Computer Programming coursee
		Data structure course
		Microcontroller interfacing course part 1
		Microcontroller interfacing course part 2
		Software Engineering
		Embedded system tools
		Real time operating system
		Final project
Solidworks	10	Solidworks basics.
		Introduction to Solidworks surface modeling
		Solidworks advanced modeling
		Solidworks advanced modeling
		Solidworks Mold Tools
Basics of Hydraulic Circuit	10	Hydraulic pumps type
		Hydraulic valves type
		Hydraulic tanks type
		Hydraulic oils type
		Hydraulic pipe line

Computer Skills

Training Course	Duration (Days)	Main Topics
Computer Skills / Ms Word	10	Getting Started with Word (Navigate in Microsoft Word - Create and Save Word Documents- Manage Your Workspace - Edit Documents - Preview and Print Documents -Customize the Word Environment) -Formatting Text and Paragraphs (Apply Character Formatting - Control Paragraph Layout - Align Text Using Tabs - Display Text in Bulleted or Numbered Lists - Apply Borders and Shading)
		Working More Efficiently (Make Repetitive Edits - Apply Repetitive Formatting - Use Styles to Streamline Repetitive Formatting Tasks) - Managing Lists (Sort a List - Format a List)
		Adding Tables (Insert a Table - Modify a Table - Format a Table - Convert Text to a Table) - Inserting Graphic Objects (Insert Symbols and Special Characters - Add Images to a Document)
		Controlling Page Appearance (Apply a Page Border and Color - Add Headers and Footers - Control Page Layout - Add a Watermark)
		Preparing to Publish a Document)Check Spelling, Grammar, and Readability - Use Research Tools - Check Accessibility - Save a Document to Other Formats
		Organizing Content Using Tables and Charts (Sort Table Data - Control Cell Layout - Perform Calculations in a Table - Create a Chart - Add an Excel Table to a Word Document (Optional) - Customizing Formats Using Styles and Themes (Create and Modify Text Styles - Create Custom List or Table Styles - Apply Document Themes)
		Inserting Content Using Quick Parts (Insert Building Blocks - Create and Modify Building Blocks - Insert Fields Using Quick Parts) - Using Templates to Automate Document Formatting (Create a Document Using a Template - Create and Modify a Template - Manage Templates with the Template Organizer)
		Controlling the Flow of a Document (Control Paragraph Flow - Insert Section Breaks - Insert Columns - Link Text Boxes to Control Text Flow)
		Simplifying and Managing Long Documents (Insert Blank and Cover Pages - Insert an Index - Insert a Table of Contents - Insert an Ancillary Table - Manage Outlines - Create a Master Document)
		Using Mail Merge to Create Letters, Envelopes, and Labels (The Mail Merge Feature - Merge Envelopes and Labels)

Computer Skills

Training Course	Duration (Days)	Main Topics
Computer Skills — Ms Excel	10	Getting Started with Microsoft Office Excel (Navigate the Excel User Interface - Use Excel Commands - Create and Save a Basic Workbook - Enter Cell Data- Use Excel Help)
		Performing Calculations (Create Worksheet Formulas - Insert Functions - Reuse Formulas and Functions)
		Modifying a Worksheet (Insert, Delete, and Adjust Cells, Columns, and Rows - Search for and Replace Data - Use Proofing and Research Tools) - Formatting a Worksheet
		Printing Workbooks (Preview and Print a Workbook - Set Up the Page Layout - Configure Headers and Footers)
		Managing Workbooks (Manage Worksheets - Manage Workbook and Worksheet Views - Manage Workbook Properties)
		Working with Functions (Work with Ranges - Use Specialized Functions - Work with Logical Functions - Work with Date & Time Functions - Work with Text Functions)
		Working with Lists (Sort Data-Filter Data - Query Data with Database Functions - Outline and Subtotal Data)
		Analyzing Data (Create and Modify Tables - Apply Intermediate Conditional Formatting - Apply Advanced Conditional Formatting)
		Visualizing Data with Charts (Create Charts - Modify and Format Charts - Use Advanced Chart Features)
		Using PivotTables and PivotCharts (Create a PivotTable - Analyze PivotTable Data - Present Data with PivotCharts - Filter Data by Using Timelines and Slicers)

Computer Skills

Training Course	Duration (Days)	Main Topics
MS Power Point	10	Getting Started with PowerPoint - Developing a PowerPoint Presentation - Performing Advanced Text Editing Operations - Adding Graphical Elements to Your Presentation - Modifying Objects in Your Presentation
		Adding Tables to Your Presentation - Adding Charts to Your Presentation - Preparing to Deliver Your Presentation - Modifying the PowerPoint Environment - Customizing Design Templates
		Adding SmartArt and Math Equations to a Presentation - Working with Media and Animations - Collaborating on a Presentation - Customizing a Slide Show - Securing and Distributing a Presentation
MS Access	10	Getting Started with Access (Orientation to Microsoft Access - Create a Simple Access Database - Get Help and Configure Options in Microsoft Access)
		Working with Table Data (Modify Table Data - Sort and Filter Records)
		Querying a Database (Create Basic Queries - Sort and Filter Data in a Query -Perform Calculations in a Query)
		Using Forms (Create Basic Access Forms - Work with Data on Access Forms)
		Generating Reports (Create a Report - Add Controls to a Report - Enhance the Appearance of a Report - Prepare a Report for Print - Organize Report Information - Format Reports)
Basics of Computer Networks	10	what is the anetwork - introduction to anetwork
		network types- logical types- physical types - network cables
		utp cabling - ip addressing - ethernet tecknology - net terus
		network devices - training lab
		windows ip - windowes sharing - sharing resourse
		Network display card properties
		Default share homegroup - install different OS
		Advanced homegroup , advanced sharing ,priorty
		Sharing wizard - net command wireless
		Sharing wizard - net command wireless

Computer Skills

Training Course	Duration (Days)	Main Topics
Cisco Certified Network Associate (CCNA)	10	Exploring th functions of network - understanding the host - to -host communication model
		Introducing LANS - opersting cisco IOS software starting a switch
		Understanding ethernet and sitch operation - troubleshooting common switch media issues
		Establishing internet connectivity
		understanding the TCP/IP internet layer
		understanding IP addressing and subnets - understanding the TCP/IP transportation layer
		Exploring the function of router - Configuring a csisco router - exploring the packet delivery process
		Enabling static routing - learning basics of ACL - enabling internet connecting implementing scalable - medium sized network - implementing and troubleshooting vlans and trunks
		Introducing basic IPV6
		Understanding WAN
3D MAX	10	Use the Interface
		Use Selection and Transformation Tools
		Create and Modify Mesh Objects, Create and Modify Poly Objects
		Import AutoCAD 2D Files and Model in Max
		Organize AutoCAD Files Using Layers and Plines, Import Plines from AutoCAD Files to Create 3D Objects in Max
		Use Standard Lights,Create a Night View Using Photomatric Lights,Create Daylight Systems
		Add and Modify Cameras
		Create a Basic Animation
		Create, Get, Modify, and Save Materials
		Import a 3D Hut from AutoCAD to Assign Materials, Add Backgrounds, and Render

Computer Skills

Training Course	Duration (Days)	Main Topics
Statistical Package for Social Sciences (SPSS)	5	Exploring assumptions (Assumptions of parametric data - Normal Probability plots - Kolmogorov–Smirnov test on SPSS - Shapiro test - Testing for homogeneity of variance - Numerical Example using SPSS
		Correlation analysis and its determination methods, and its statistical meaning - Application examples using SPSS.
		Comparing two means (The t-test - Rationale for the t-test - Assumptions of the t-test - What if my data are not normally distributed? - Numerical Example using SPSS
		comparing several means (Analysis of variance (ANOVA) - Assumptions of ANOVA - Multiple comparison (Post hoc: LSD) - Numerical Example using SPSS
		NON-PARAMETRIC TESTS (When to use non-parametric tests - Wilcoxon rank-sum test - Kruskal–Wallis test- Numerical Example using SPSS
Web Design	10	Introduction - what is HTML - Tags - How to save web pages - viewing web pages
		Templates - heading tags - paragraph and breaks tags - bold and italics - basic html tags
		Introduction to CSS - CSS rules - CSS selectors - inline and embedded style - font - font colours - font size
		Dealing with image
		Linking to other pages
		CSS layouts
		HTML 4 and HTML 5 tables (tables - row - column - colour)
		HTML forums
		HTML 5 forums
		websites - domain names
Data Base Using SQL	10	Introduction to T-SQL Querying - Writing SELECT Queries
		Querying Multiple Tables - Sorting and Filtering
		Working with SQL Server Data Types - Using DML to Modify Data
		Using Built-In Functions -Grouping and Aggregating Data
		Using Sub Queries Using Table Expressions - Using Set Operators
		Using Window Ranking, Offset, and Aggregate Functions
		Pivoting and Grouping Sets - Executing Stored Procedures
		Programming with T-SQL
		Implementing Error Handling
		Implementing Transactions

Computer Skills

Training Course	Duration (Days)	Main Topics
Android Application Development	10	Getting Started with Android Programming
		Activities, Fragments, and Intents
		Getting to Know the Android User Interface
		Designing Your User Interface with Views
		Displaying Pictures and Menus with Views
Python	10	Introduction -fundamentals of Python
		python conditions - python loops
		python functions - python data types
		python object oriented programming - python modules
		python projects
C#	10	Items of .Net Framework - How to install visual studio - Using C# console application- Variables - C# Data type
		Statement in C# (Declaration statement - Assignmentstatement - Arithmetic operation - casting)
		Control statements - Attrition statements
		Arrays
		Methods
		Revision
		Enumeration - Enumeration
		Classes - Objects - Overload
		Overload - Abstract - Sealed
		Polymorphism - Static class &method

Computer Skills

Training Course	Duration (Days)	Main Topics
web development	10	What is Asp net - using visual studio .net to make web site - HTML tags
		Cascad style sheet (css) - Java script - using web form - The page life cycle in web form
		ASP.Net controls (Server control) - The deferent between HTML controls and Server controls - Using view state to keep data of variables
		Navigate between web forms
		Transfer data from web form to anther
		Revision
		Sit map - Validation - Master page
		Using data grid control - AJAX Extension controls and AJAX Extender controls
		ADO.Net (Connected mode - Disconnected mode - LINQ)
		Using web.confg - Publishing and deploying your web site (using IIS)
AutoCAD 2D	10	Installing Autocad - Introduction and getting started Autocad
		Drawing Tools - Modify Tools
		Anotations Tools - Layers
		Blocks - Object Properties/plot
		Revision - Exam
AUTO CAD 3d	10	Draw in 3D - How to use 3D
		Using 3D tools - Modifying drawing in 3D
		Additional editing tools
		Working drawing - project
		Revision - exam
Adobe Photoshop	10	Introduction to graphic design - photoshop workspace
		Elemnts and principles of design with photoshop - color theory
		Photo manipulation art
		Poster design
		Social media design - project - general question

Computer Skills

Training Course	Duration (Days)	Main Topics
Adobe Illustrator	10	Interface - windows /palettes /menus
		Drawing basics -selection
		Simple drawing -drawing pen tools
		transformations
		Fills and textures
Indesign	10	Adobe InDesign Environment - Preferences and defaults - Navigation and document views
		Basic documents (New documents,Create and position text in a frame) - Using objects (Object positioning , Object positioning)
		Multi-page documents (Master pages , Insert, delete, and move pages , Layers) - Working with text
		Working with graphics and colors (Adjust graphic formatting - Custom colors)
		Preflighting and preparing documents for final output
Microsoft Certified Systems Administrator (MCSA)	15	Installing ,upgrading and mirgating servers and migrating servers and workloads
		Configuring local storage - implementing enterprise storage solutions
		Implementing storage spaces and data seuplication - installing and configuring hyper -v and virtual machines
		Overview of high availability and disaster recovery - implementing failover clustering
		Creating and mnaging deployment images by using MDT
		PInning and implementing an IPV4 network
		Remote access in windos server 2016
		Implementing VPNS
		Implementing network for branch offices
		Implementing software defined network
		Installing and configuring domain controllers
		Advanced AD DS infrastructure management
		Implementing and adminstrating AD DS sites and replication
		Implementing group policy
		Securing active directory domain services

Management and Soft Skills

Training Course	Duration (Days)	Main Topics
Management and Soft Skills		
Leadership Methods & Strategy in Planning and Performance Development	10	The Leader's Personality Profile - Leading others Effectively
		Essential Competencies for the Innovative Leader - Enhancing Creative Thinking Skills for the InnovativeLeader
		Implementing Innovative Leadership for ManagingPerformance in the Workplace
		Strategic Thinking and the Power of VisionaryLeadership
		Developing Leadership Power - Exploring PersonalPurpose and Passion
		Combining Management Skills and LeadershipCompetencies - Motivating, Rewarding and Leading Teams
		Leadership in Action - Maximizing InterpersonalCommunications
Technical Writing	10	The Form of the Report - Writing a Report (Accuracy - Spelling and punctuation - Choice of words- Sentences and paragraphs - Linguistics and grammar –Brevity - Discover an example)
		Illustrating a report(Positioning - Conventions – Clarity -Tables and graphs – Diagrams)
		Completing a report(Summary – Abstracts - Content lists - Forms - Title of pages)
		Writing the Conclusion, Recommendations and Appendices
		Writing a Professional e-mail) Contents of the e-mail.Shape of an e-mail.Priorities in an e-mail)
		Writing an e-mail:(Precision -Spelling and punctuation - Choice of words- Sentences and paragraphs)
		Writing a Technical Report - Writing a proposal

Management and Soft Skills

Training Course	Duration (Days)	Main Topics
Management and Soft Skills — Soft Skills	15	Time Management - Ability to Work in a Team - Stress Management - Multiple Task Management Skills
		Capacity Building and Self Development - Wellness in the Workplace
		Communication Skills - Effective Negotiation Skills - Resolving Conflict Skills
		Interpersonal Skills - Emotional Skills - Body Language - Public Speaking - Etiquette, Protocol and Hosting
		Work Ethics - Positive Behavior -Strong Work Skills
		Presentation Skills - Transform Creative Ideas into a Successful Proposal
Communication & Negotiation Skills	15	Foundation Tools
		The Communication Process - Communication Skills
		Influencing- Challenging Situations Understanding and Managing Conflict
		The Process of Negotiation - Possible Outcomes from Negotiations
		Working Towards Win-Win Solutions - Negotiating Is Not Compromising
		Reading the Styles of Negotiators - The Successful Negotiator
		Mistakes to Avoid When Negotiating - Your Personal Action Plan
Human Resources Management	15	Human Resources (HR) vision - HR Strategy - Organization Development
		Operational Planning - Demand and Capability Analysis
		Design and Delivery of HRD Measure - Learning Analytics (learning transfer Assessment)
		Key Knowledge - performance Management - HR Statistics, Key Figures and Indicators
		Workforce Planning - Functional and Job Analysis - Competence framework
		Career and Succession Planning - Performance Appraisal

Management and Soft Skills

Training Course	Duration(Days)	Main Topics
MS-Project	10	Project Management Principles - Navigatethe Microsoft Project 2016 Environment- Defining a Project
		Creating and Organizing Tasks- Managing Project Plan Resources
		Reporting on Progress - Customizing the Application Measure Performance
		Executing a Project- Controlling a Project Plan- Monitoring a Project ProgressPractical Example Using MS Project Professional
		Create a New Plan, Set Up Resources, Assign Resources to Task
		Course Search for MS Project -Introduction on the Course Directory-. Exchanging Project Plan Data with other Applications
		Updating a Project Plan -Creating Custom Reports -Re-using Project Plan Information
		View and Update a Project Plan -View and Create Custom Reports
Project Management Professional (PMP)	10	introduction-project frame work
		communicaion management - project and project manager
		scape management - stakeholders management
		schedule management
		Applications
		Quality management - time management
		Time management - Cost managment
		Risks management - contracts managment
		Contracts management - Human resources management
		close out phase - revision - question

The leftmost column spans both rows with the label: **Management and Soft Skills**

Management and Soft Skills

Training Course	Duration(Days)	Main Topics
Infographics	5	Introduction and history of infographics
		creative graphs -history of spreadsheets
		spreadsheets graphics (types of chart and choosing the most suitable one)
		more spreadsheets - examples (pivot table - pivot chart - common mistakes)
		more examples (examples of bad graphs - avoiding the disadvantages of original graphes)
Quality Manageme	10	Quality Culture & Customer Satisfaction - Quality Control & Quality Assurance - Quality Management System (QMS) - Iso 9001:2015 -
		Statistical Quality Control & ISO 10009 - Normal Distribution Curve - Variance Analysis & ANOVA Analysis - Process Control Charts - Process Capability - Continuous Improvement approaches - lean six sigma
		Seven Quality Control Tools - Reliability Analysis - Key Performance Indicators (KPIs) - Case Studies
Presentation Skills	5	Effective lesson planning - Microteaching lesson
		Understanding the learner (learner characteristics) - deep learning vs surface learning - active learning
		How to evaluate the audience understanding - how the audience can evaluate their presenter

(Left vertical header: Management and Soft Skills)