

Water Engineering Module



ESOL
Complete Engineering Solution

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ESOL Engineering Solutions presents a course in water engineering covering basics of water treatment process and equipment.

Goal:

The Water Engineering Training module aims to provide the insight and skills in the field of water treatment by providing knowledge of water treatment process knowhow, equipment design guidelines, operation & troubleshooting information and application of this knowledge in various industries.

Content:

The elements included in the training course are: introduction to water treatment project, basic water chemistry, conventional water treatment plant, membrane filtration and desalination, ion exchange systems.

Please refer below for the detail course content.

Prerequisites:

A graduate degree in science or engineering is must for this training course. Final year students can also undertake this course.

DAY	TOPIC OF TRAINING	TIME IN HOURS
Section - 1	Project Classification and Building	
1	Agencies involved in Projects, Their Roles and Responsibilities and the flow chart of a project.	5
1	Projects Classification viz. Residential, Commercial, Institutional etc.	5
Section –2	Basic Water Chemistry	
3	Water Cycle	15
3	Detailed Water Analysis & Terminologies	
3	Basic Water Impurities	
3	Definition of Important Terminologies & Terms	
Section –3	Filtration Spectrum	
4	Treatment Process Overview and Selection	5
Section –4	Water Treatment Plant (Design, Operation & Troubleshooting)	
4	Coagulation	20
5	Sedimentation	
5	Filtration	
6	Disinfection	
Section –5	Pre Treatment Unit Process (Design, Operation & Troubleshooting)	
6	Pressure Sand Filter	10
7	Activated Carbon Filter	
7	Iron Removal Filter	
8	Softener	

DAY	TOPIC OF TRAINING	TIME IN HOURS
Section – 6	Membrane Filtration Process (Design, Operation & Troubleshooting)	
8	Basics of Ultra Filtration	20
9	Design Fundamentals of UF	
9	Design of UF	
10	Basics of Reverse Osmosis	
10	Design Fundamentals of RO	
11	Design of RO	
Section –7	Pre Treatment To UF& RO (Design, Operation & Troubleshooting)	
11	Silica Removal by Solid Contact Clarifier	10
11	Turbidity Removal Tube Settler	
11	Cartridge Filter	
Section – 8	Demineralization Plant (Design, Operation & Troubleshooting)	
12	Basics of DM	10
12	Design of Cation Exchanger	
13	Design of Anion Exchanger	
13	Design of Degasser System	
14	Design of Mixed Bed Exchanger	

DAY	TOPIC OF TRAINING	TIME IN HOURS
Section – 9	Sea Water Desalination (Design, Operation & Troubleshooting)	
14	Seawater Quality	20
14	Different Desal Process	
15	Seawater Desal by Membrane Process	
15	Pre Treatment selection for Desal Plant	
15	Desal Pre Treatment - DAF	
15	Desal Pre Treatment - Dayana Sand Filter	
16	Desal Pre Treatment - RGF	
16	Desal Pre Treatment - UF	
Section – 10	Industrial Applications	
17	Boiler Feed Water	10
18	Cooling Tower Water	
19	Process Water	
Section – 11	On Site Training	
20/21/22	Factory / Plant Visits	10
Section – 12	Exam & Placement Guide	
23	Exam	5
24	Certificate& Placement Guide	5
	Total Hours	150