

# Wastewater Engineering Module



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

## Goal:

The Wastewater Engineering Training module aims to provide the insight and skills in the field of wastewater and effluent treatment by providing knowledge of 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 wastewater treatment project, basic wastewater chemistry, conventional sewage and effluent treatment plant, advance wastewater treatment and sludge handling 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.

# ESOL


Complete Engineering Solution

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| Day                | Topic for Training   | Time in Hours |
|--------------------|--|---------------|
| <b>Section - 1</b> | <b>Project Classification and Building</b>   |               |
| 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             |
| <b>Section –2</b>  | <b>Basic Of Wastewater Chemistry</b>   |               |
| 2                  | Waste Water Cycle  | 10            |
| 2                  | Detailed Wastewater Analysis & Terminologies   |               |
| 3                  | Basic Wastewater Pollutant   |               |
| 3                  | Definition Of Important Terminologies & Terms  |               |
| <b>Section –3</b>  | <b>Different Wastewater Treatment Aerobic Process</b>  |               |
| 4                  | Suspended Growth Process   | 20            |
| 4                  | Activated Sludge Process   |               |
| 5                  | Extended Aeration  |               |
| 5                  | SBR  |               |
| 6                  | Attached Growth Process  |               |
| 6                  | Trickling Filter   |               |
| 7                  | SAFF Reactor   |               |
| 7                  | FAB/MBBR Reactor   |               |
| 8                  | RBC  |               |
| <b>Section –4</b>  | <b>Different Wastewater Treatment Anaerobic Process</b>  |               |
| 8                  | Up flow Anaerobic Sludge Blanket Reactor (UASB)  | 8             |
| <b>Section - 5</b> | <b>Sewage Treatment Plant (Design, Operation &amp; Troubleshooting)</b>                          |               |
| 9                  | Intake System  | 10            |
| 9                  | Screens & Grits  |               |
| 9                  | Biological Systems   |               |
| 9                  | Clarifications   |               |
| 10                 | Disinfection   |               |
| 10                 | Sludge Treatment   |               |

| Day                 | Topic for Training  | Time in Hours |
|---------------------|---|---------------|
| <b>Section –6</b>   | <b>Effluent Treatment Plant (Design, Operation &amp; Troubleshooting)</b> |               |
| 11                  | Textile Effluent  | 10            |
| 11                  | Sugar Effluent  |               |
| 12                  | Refinery Effluent   |               |
| 12                  | Pharma Effluent   |               |
| <b>Section –7</b>   | <b>Pretreatment Unit Process(Design, Operation &amp; Troubleshooting)</b> |               |
| 13                  | TPI/API   | 10            |
| 13                  | DAF   |               |
| 13                  | Biotower  |               |
| 13                  | HRSCC   |               |
| <b>Section –8</b>   | <b>Aeration Process (Design, Operation &amp; Troubleshooting)</b>         |               |
| 14                  | Basics of Aeration System   | 10            |
| 14                  | Design of Aeration System   |               |
| 14                  | Air Diffusers & Blower Sizing   |               |
| <b>Section –9</b>   | <b>Sludge Dewatering Process(Design, Operation &amp; Troubleshooting)</b> |               |
| 15                  | Thickener   | 20            |
| 15                  | Centrifuge  |               |
| 16                  | Filter Press  |               |
| 16                  | Belt Thickener & Filter Press   |               |
| 17                  | Sludge Drying Bed   |               |
| <b>Section - 10</b> | <b>Advance Wastewater Process (Design, Operation)</b>                     |               |
| 17/18               | SBR   | 20            |
| 19/20               | MBR   |               |



| Day                 | Topic for Training                | Time in Hours |
|---------------------|-----------------------------------|---------------|
| <b>Section – 11</b> | <b>On Site Training</b>           |               |
| 21/22               | Factory / Plant Visits            | 10            |
| <b>Section – 12</b> | <b>Exam &amp; Placement Guide</b> |               |
| 23                  | Exam                              | 5             |
| 24                  | Corticated & Placement Guide      | 5             |
|                     |                                   |               |
|                     | <b>Total Hours</b>                | <b>150</b>    |

