



INTRODUCTION TO INDUSTRIAL HYDRAULICS

Model Curriculum: NM-04-AU-03306-2024-V1-IASC

Version: 1.0

NSOF Level: 4.0

Instrumentation, Automation, Surveillance & Communication Sector Skill Council

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Training Parameters

Course	INTRODUCTION TO INDUSTRIAL HYDRAULIC
Duration	30 Hours
Occupation	Manufacturing
Country	India
Minimum Educational Qualification & Experience	<p>10th Grade pass + 2 years NTC/NAC in relevant field*</p> <p>OR</p> <p>10th + 2nd year of 3 years Engg. Diploma*</p> <p>OR</p> <p>12th Grade Pass (PCM) with 1 Year Related Industry Experience</p>
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Minimum Duration of the Course	30 Hours, 0 Minutes
Maximum Duration of the Course	30 Hours, 0 Minutes

Module Details

Module 1: Introduction to Industrial Hydraulics

Terminal Outcomes:

- Gain a comprehensive understanding of hydraulic systems, including fundamental principles, industrial applications, fluid properties, and essential safety measures.

Duration: 03:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none">● Introduction to Hydraulics: Basics, Principles and Applications● Importance of Hydraulics in Industrial Applications● Hydraulic Fluids: Properties and Selection Criteria● Introduction to Hydraulic Systems and their Safety Measures	
Classroom Aids	
Whiteboard/blackboard marker/chalk, duster, computer, or Laptop attached to LCD projector	
Tools, Equipment, and Other Requirements	
Laptop, projector, communication cable, Hydraulic Trainer Kit, Hydraulic components cut sections, etc.	

Module 2: Hydraulic Systems Components and Circuits

Terminal Outcomes:

- Gain comprehensive knowledge of hydraulic pumps, valves, accumulators, filters, cylinders, motors, and the operation of different hydraulic circuits.
- Acquire practical skills in the operation, maintenance, installation, troubleshooting, and testing of hydraulic pumps, valves, accumulators, filters, cylinders, motors, and circuit design and simulation.

Duration: 04:00	Duration: 07:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Hydraulic Pumps: Types, Working Principles, and Selection ● Hydraulic Valves: Types, Functions, and Applications ● Accumulators and Filters in Hydraulic Systems ● Hydraulic Cylinders and Motors: Types and Operation ● Hydraulic Circuits: Open, Closed, and Semi-Closed 	<ul style="list-style-type: none"> ● Pump Operation and Maintenance ● Valve Installation and Troubleshooting ● Accumulators and Filters Installation and Troubleshooting ● Cylinder and Motors Installation and Testing ● Circuit Design and Simulation
Classroom Aids	
Whiteboard/blackboard marker/chalk, duster, computer, or Laptop attached to LCD projector	
Tools, Equipment, and Other Requirements	
Laptop, projector, communication cable, Hydraulic Trainer Kit, Hydraulic components cut-sections, Simulation software, etc.	

Module 3: Maintenance and Troubleshooting

Terminal Outcomes:

- Develop expertise in preventive maintenance and troubleshooting of hydraulic systems, addressing common issues and solutions.
- Gain hands-on skills in inspection, maintenance procedures, and troubleshooting exercises for hydraulic systems.

Duration: 02:00	Duration: 04:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Preventive Maintenance of Hydraulic Systems ● Troubleshooting Hydraulic Systems: Common Issues and Solutions 	<ul style="list-style-type: none"> ● Inspection and Maintenance Procedures ● Troubleshooting Exercises
Classroom Aids	
White board/ black board marker/chalk, duster, computer or Laptop attached to LCD projector	
Tools, Equipment and Other Requirements	
Laptop, projector, communication cable, Hydraulic Trainer Kit, hydraulic components cut sections, etc.	

Module 4: Application and Integration

Terminal Outcomes:

- Develop proficiency in the design, operation, optimization, and integration of hydraulic power units, alongside exploring industrial applications through case studies and integration with other industrial systems.
- Gain practical expertise in system optimization through exercises and simulations, and master integration techniques in hydraulic systems through hands-on sessions.

Duration: 03:00	Duration: 07:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Hydraulic Power Units: Design and Operation ● Hydraulic System Optimization Techniques ● Systems Industrial Applications of Hydraulic Systems: Case Studies ● Integration of Hydraulic Systems with other Industrial Systems 	<ul style="list-style-type: none"> ● Practical Exercises on System Optimization ● Integration Exercises and Simulations
Classroom Aids	
Whiteboard/blackboard marker/chalk, duster, computer, or Laptop attached to LCD projector	
Tools, Equipment, and Other Requirements	
Laptop, projector, communication cable, Hydraulic Trainer Kit, PLC, Sensors, etc.	