



**Gujarat Council of Vocational Training  
Gandhinagar**



1. Name of Course:

Advanced Industrial Hydraulic

N.C.O. No. for Skills Covered:  
\*Please refer National Classification of  
Occupations -2004 available  
on www.dget.nic.in)


2. Engineering OR Non-engineering: **Engineering**

3. No. of students per batch: 20

4. Duration in Hours. : 48

5. Duration in Week : 1 (8 Hour/Day)

6. Examination Scheme:

No.	Name of Subject	Teaching Hours during full course.	Maximum Marks. (Excluding Sessional)	Minimum Marks required for Passing (Excluding Sessional).	Sessional Marks if any.
Subject-1	Course Theory	16	50	20	
Subject-2	Course Practical	32	100	60	
Subject-3					
Subject-4					
Subject-5					

7. Entry qualification for Trainee:

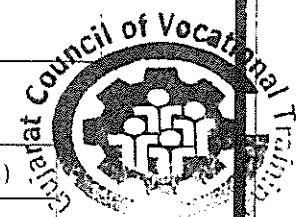
Minimum entry qualification (Essential): 10<sup>th</sup> Pass Diploma B. Tech.

Desirable: Basic Knowledge (Technical Non-Technical)

8. Minimum qualification for Trainer:

Minimum qualification (Essential): Diploma Engg.(Mechanical Electronics)

Desirable: Technical Knowledge



*[Signature]* Head, SDT  
Gandhinagar University

Advanced Industrial Hydraulic



**Gujarat Council of Vocational Training**  
**Gandhinagar**



2. Syllabus Committee Member:

Sr. No	Name	Organization	Designation	Technical Qualification	Experience in Years	Signature
1.	Mr. Chetan Rajdev	Bosch Rexroth India Ltd. Sanand	DGM	BE (Mech.)	20	
2.	Nitin Sapre	Bosch Rexroth India Ltd, Sanand	Sr. Manager	M.Tech, PhD(Pursuing)	23	
3.	Dr. J.P.Patel	Ganpat University	HOD (Mkt.)	PhD	17	
4.	D.I.Patel	ITI, Mehsana	SI	Diploma	20	
5.	C.K.Chauhan	ITI, Mehsana	Principal	Diploma	20	



**Gujarat Council of Vocational Training**  
**Gandhinagar**



0. Terminal Skills of trainee: (Should be well defined and having reference to NCO):

The trainee, after successful completion of training, will have following skills...

1. On successful completion of training one should be able to Design a system  
Trouble shoot the system in Automation.
2. Technical Skill will help to get recruited in a reputed organization.
3. Using this technical expertise he can become an entrepreneur.
4. Technical Skill will help him her to get job across Globe.
5. Technical competence makes one confident & self-dependent.

(please attach separate sheet, if more space is required)

1. Approximate cost of Tools  
Equipments Machinery for  
Starting one batch of the course:

Rupees  
Rs. 0.50 Crore

Reference Year  
2016

2. Area required for practical Workshop for one batch.

50 Sq. Meter

3. Minimum Power connection required

1 KW

4.1 No of items in Standard list of Trainer kit.

1

4.1.1. Page NO from 5 to 5.



**Gujarat Council of Vocational Training  
Gandhinagar**



\*\*\*\*\* FOR OFFICIAL USE \*\*\*\*\*

Approved by GCVT in Governing Body meeting on

: 18-02-2017

Syllabus implemented w.e.f. admission session

: next session

Revision History :

1. Revision No..... Revision Date.
2. Revision No..... Revision Date.
3. Revision No..... Revision Date.



**Gujarat Council of Vocational Training**  
**Gandhinagar**



Standard List of Machinery - Equipment / Shop-outfit / or Trainee Toolkit  
For Trade of Advanced Industrial Hydraulic

Sr. No.	Description of Item with detailed specifications	Item type i.e. Machinery / Equipment OR Shop Outfit OR Trainee Toolkit	Quantity Required per one Batch of Students	Quantity Required per one Batch of Students for Instructor	Total Quantity Required (Total of previous two columns)
1.	Hydraulics WS290 work station WS290 work station, hydraulics, 230V/50Hz, double sided for 4 to 6 trainees, complete - assembled, including packaging	Trainer kit	1 Nos.		1 Nos.
2.	WS200 component carrier for hydraulic components WS200 work station, double sided component carrier - assembled, including packaging	Components	1 Nos.		1 Nos.
3.	Accessories/spare parts for WS290 work station Accessories for WS290:	Accessories	1 Nos.		1 Nos.
4.	On/off hydraulics learning topics Equipment set TS-HS 201- 1X	Equipment set	1 Nos.		1 Nos.
5.	Continuous control valve technology component sets - proportional hydraulics	Accessories	1 Nos.		1 Nos.



GUJARAT COUNCIL OF VOCATIONAL TRAINING  
GANDHINAGAR

Name of Syllabus: Advanced Industrial Hydraulic

Sector: Automation Sector

Terminal Competency: On successful completion of training one should be able to Design a system Trouble shoot the system in Automation.

Sr. No.	PRACTICAL	THEORY
1	<p>Practical of Advanced Industrial Hydraulic</p> <ul style="list-style-type: none"><li>□ Elements of Hydraulic system, .Hierarchy, Comparison between Pneumatics &amp; Hydraulics.</li><li>- Properties of different Energy Media.</li><li>Function, Construction, Working Principles and Characteristics of Hydraulic Pumps like Gear, Vane and Piston Pumps.</li><li>Installation of Pump.</li><li>Construction of Power pack unit.</li><li>Directional Control Valves, Poppet design concept, Spool design concept.</li><li>- Various switch overlaps &amp; its effect on function of Directional Control Valves.</li><li>Pressure Control Valves.</li><li>Pressure Relief, Pressure sequence etc.</li><li>Concept of Multifunctional</li></ul>	<p>Contents of Advanced Industrial Hydraulic</p> <ul style="list-style-type: none"><li>□ Fundamentals of Hydraulics covering: Basic Laws say Pascal's Law, Brahma's Principle, Reynold's number etc.</li><li>Elements of Hydraulic system, .Hierarchy, Comparison between Pneumatics &amp; Hydraulics.</li><li>- Properties of different Energy Media.</li><li>- Function, Construction, Working Principles and Characteristics of Hydraulic Pumps like Gear, Vane and Piston Pumps.</li><li>Installation of Pump.</li><li>Construction of Power pack unit.</li><li>Directional Control Valves.</li><li>Poppet design concept, Spool design concept.</li><li>Various switch overlaps &amp; its effect on function of Directional Control Valves.</li><li>Pressure Control Valves.</li><li>Pressure Relief, Pressure sequence</li><li>Concept of Multifunctional valves.</li><li>Flow Control Valves.</li></ul>



# Gujarat Council of Vocational Training Gandhinagar



<p>- Meter-in &amp; Meter - out - Understanding various mounting possibilities - Check Valves. - Various types of Check Valve like direct &amp; Pilot operated etc. - Cylinder and its types. - Control of Double Acting Cylinder. - Drawing Basic Hydraulic Circuit . - Using Different components in circuit. - Logical Building Block. - Hydraulic accessories. - Accumulator, Pressure switch, Filters &amp; Gauges. - Importance of Oil cleanliness/ Contamination control in Hydraulics. - Safety Consideration &amp; Troubleshooting. - Latching Circuits. - Properties of Electro - Hydraulics . - Principal &amp; Operation of Solenoid Valve.. - Various Types of Electrical Contacts . - Switching Symbols . - Relay &amp; Its Operation - Logical Building Block (Electrical). - Basic Electro - Hydraulic Circuit Diagram. - Electrical Latching Circuits. - Electrical Circuits using Latch. - Stroke/Pressure Dependent Control</p>	<p>Check Valves. - Various types of Check Valve like direct &amp; Pilot operated etc. - Cylinder and its types. - Control of Double Acting Cylinder. - Drawing Basic Hydraulic Circuit . - Using Different components in circuit. - Logical Building Block. - Hydraulic accessories. - Accumulator, Pressure switch, Filters &amp; Gauges. - Importance of Oil cleanliness/ Contamination control in Hydraulics. - Safety Consideration &amp; Troubleshooting. - Latching Circuits. - Properties of Electro - Hydraulics . - Principal &amp; Operation of Solenoid Valve. . - Various Types of Electrical Contacts . - Switching Symbols . - Relay &amp; Its Operation - Logical Building Block (Electrical). - Basic Electro - Hydraulic Circuit Diagram. - Electrical Latching Circuits. - Electrical Circuits using Latch. - Stroke/Pressure Dependent Control. - Exercises to related topics. - Hydraulic Calculations.</p>
--	---



Gujarat Council of Vocational Training  
Gandhinagar



Signature:

Mr. Chetan Rajdev

*@rajdev*

Nitin Sapre

*Nitin*

Dr. J.P.Patel

*J.P.Patel*

D.I.Patel

*D.I.Patel*

C.K.Chauhan

*C.K.Chauhan*