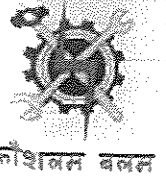




# Gujarat Council of Vocational Training Gandhinagar



1. Name of Course:

Industrial Automation - Mechanical

N.C.O. No. for Skills Covered:  
(Please refer National Classification of  
Occupants -2004 available on  
www.dget.nic.in


2. Engineering OR Non-Engineering:

Engineering

3. No. of Students per Batch:

20

4. Duration in Hours:

304

5. Duration in Month Theory :

2 Months@ 18 hours/week = 8 x 18 = 144 Hours

Duration in Month Practical:

2 Months@ 20 hours/week = 8 x 20 = 160 Hours

6. Examination Scheme:

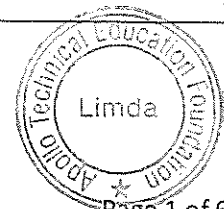
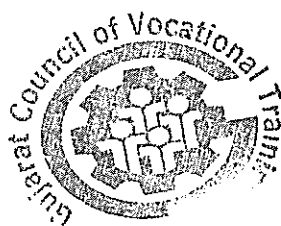
No.	Name of Subject	Teaching Hours During full course	Maximum Marks (Excluding Sessional)	Minimum Marks required for passing (Excluding Sessional)	Sessional Marks if any.
Subject-1	Theory	144	100	40	
Subject-2	Practical	160	150	90	

7. Educational Qualification for Trainee:

Minimum Entry Qualification (Essential):	ITI/Diploma/BE (I & C, Mechatronics), B.Sc. / M.Sc. Instrumentation & Electronics
Desirable:	Basic Engineering skill

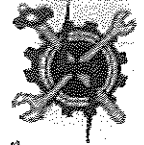
8. Minimum qualification of Trainer:

Minimum Qualification (Essential):	Diploma/Degree in I&C, M.Sc. Instrumentation
Desirable:	Min 2 years' Experience in field of Industrial Automation





Gujarat Council of Vocational Training  
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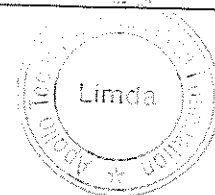
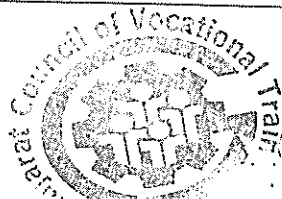
9. Syllabus Committee Member:

No.	Name	Organization	Designation	Tech Qualification	Experience in Years	Signature
1.	MOHAMMAD TANVEER SAIED	APOLLO TYRES LTD.	GROUP MANAGER -HR	MASTERS IN HRM	10	
2.	MR. M. RAVIKUMAR	APOLLO TYRES LTD.	Divisional Head	B.E. Electrical	33	
3.	MR. P. G. PARMAR	ITI Waghodia	Principal	Diploma in Plastic Eng.	30	
4.	MR. B. R. VYAS	RDP Vadodasa	Technical Officer	Diploma in Tools Eng.	33	
5.	JATIN TRIVEDI	APOLLO Technical Edu. For.	Regional Manager	B.SC, MBA	17	
6.	MR. H. G. SINDHA	ITI Waghodia	Supervisor Instructor	B.E. Electrical	02	
7.	MR. J. S. BERDIYA	ITI Waghodia	Supervisor Instructor	B.E. Electrical	01	

10. 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. Will be able to understand the control system architecture
2. Will become confident in industrial wiring aspects of control system
3. Will be able to design the Control panel with automation components
4. Will be able to apply different control scheme using different media like air & fluid
5. Understand & design pneumatic control architecture
6. Understand & design hydraulic control architecture
7. Good at Maintenance, troubleshooting & safety aspect of different control scheme
8. Upgraded Interfacing skill between field & System





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11. Approximate cost of Tools /Equipment/Machinery for starting one batch of the course:

12. Area required for practical/ workshop for one batch:

13. Minimum Power Connection required:

14. No. of Items in Standard List of Machinery:   
14.1. Page No from 04 to 04

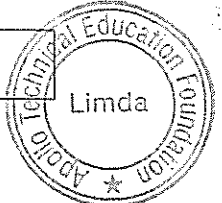
15. No. of Items in Standard List of Shop Outfit:   
15.1. Page No from 04 to 04

16. No. of Items in Standard List of Trainee Toolkit:   
16.1. Page No from 04 to 04

\*\*\*\*\* FOR OFFICE USE \*\*\*\*\*

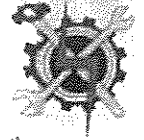
Approved by GCVT in Governing Body meeting on :

Syllabus implemented w.e.f. admission session :





## Gujarat Council of Vocational Training Gandhinagar



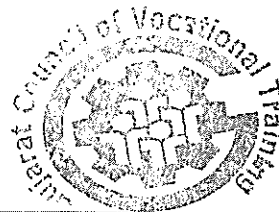
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Revision History : 1. Revision No..... Revision Date.  
2. Revision No..... Revision Date.  
3. Revision No..... Revision Date.

Standard List of Machinery – Equipment/ Shop outfits/ Trainee Toolkit

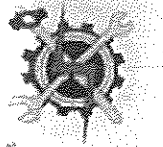
for Trade of **Industrial Automation - Mechanical**

No.	Item with Specification	Item Type (Machinery, Equipment, Shop Outfit or Trainee Toolkit)	Quantity for One Batch	Quantity for One batch for Instructor	Total Quantity required
1	Pneumatic Test Kit Components are like: Compressor Unit, Air distribution arrangement, Panel board for layout, Air FRL, PU tubes for connection, Input sensing elements, Processing elements (Valves), Final control elements (Cylinders)	Equipment	1		1
2	Hydraulic Test Kit Components are like: Oil pumping Unit, Reservoir/Tank, Panel board for layout, Connecting tubes, Input sensing elements, Processing elements (Valves), Final control elements (Cylinders)	Equipment	1		1
3	Electrical & Electronics components like Relays/ Timer/ Counter/ PLC	Equipment	1		1
4	Laptop/PC with Windows XP/7 with Corresponding programming software Like PLC programming software & pneumatic & hydraulic component diagram layout simulation software (e.g. FluidSIM)	Equipment	1		1
5	Communication Cables	Shop Outfits	1		1
6	Screwdriver set	Trainee Toolkit	1		1





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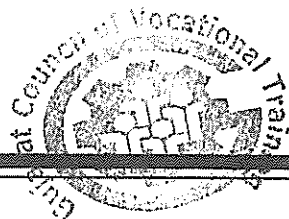
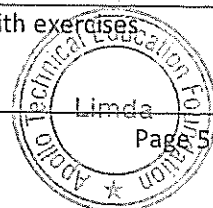


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## SYLLABUS FOR SPECIALISED MODULE

NAME OF MODULE : INDUSTRIAL AUTOMATION – Mechanical  
DURATION : 8 Weeks (304 HOURS)  
ELIGIBILITY CRITERIA : ITI/ Diploma/ Degree (I&C, Mechanical, Mechatronics), B.Sc. / M.Sc.  
Instrumentation

Week	Theory	Practical
1	Introduction to Industrial Automation Different Media to adopt IA Comparison of different means of IA Introduction to Pneumatic Automation Advantages & Disadvantages of Air SI Units & Conversions Theory of Air & Gas Laws Structure of Pneumatic control Overview of compressors, dryers & distribution	
2	Service unit distribution Units & Dimensions Nomenclature symbols & terminologies Actuator types & application	Compressor & Service unit parts Identification Actuator/component identification & testing
3	Valves Construction, Logic & applications Directional & Solenoid operated valves Logic valves (shuttle valve & Dual pressure valve) Pressure valves Speed control using flow control & quick exhaust valve Timing valves	Valve identification & testing with exercises DCV testing Logic valve testing Pressure valve testing Timing valve testing
4	Design of Circuits based on control engineering techniques	Circuit design practice
5	Introduction to Hydraulic automation Basics of Fluid mechanics Drawing symbols Power pack Pump Efficiency Units & Dimensions Nomenclature symbols & terminologies Actuator types & application	Actuator/ components identification & testing
6	Valves Construction, Logic & applications Directional & Solenoid operated valves	Valve identification & testing with exercises DCV testing Logic valve testing







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	<p>Logic valves (shuttle valve &amp; Dual pressure valve) Pressure valves</p> <p>Speed control using flow control &amp; quick exhaust valve Timing valves Design of Circuits based on control engineering techniques</p>	<p>Pressure valve testing Timing valve testing Circuit design practice</p>
7	<p>Basics of Electrical &amp; Electronics related to Automation system Introduction to Industrial Automation</p> <ul style="list-style-type: none"> <li>• Definition of Industrial automation</li> <li>• Benefits &amp; Drawbacks of Industrial automation</li> <li>• History of Control systems</li> <li>• Basic concepts of Relay system</li> <li>• Construction &amp; working of Relay</li> <li>• Circuit diagram using relays</li> </ul> <p>Relay circuit exercises with SLD Architecture of PLC control system Components &amp; Classifications Classification of I/O system Wiring terminologies &amp; diagrams Fundamentals of Sensors</p>	<p>Basics of Wiring &amp; Electrical supply system Relay logic circuit diagram study &amp; wiring Industrial drawing understanding Wiring of I/O System Digital Wiring</p>
8	<p>Wiring concept reviews Programming fundamental &amp; Languages Overview of Industrial communication Basic Software Environment (Festo) Bit level Instructions Timer Instructions</p> <p>Final Evaluation</p>	<p>Communication components Identifications Program basic setup &amp; communication configuration Addressing fundamentals(Festo) Bit Instructions Exercise Timer Exercises</p>

- 1.
- 2.
- 3.
- 4.

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