



# Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India  
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned				
		L	T	P	L	T	P	Total	
Course EXL603a	Advanced Instrumentation System	--	--	2	--	--	1	1	
		Examination Scheme							Total
		ISE		ESE		10			
		40(50%weightage)		Practical	Oral				
							30		

Pre-requisite Course Codes	
After successful completion of the course, student will be able to	
Course Outcomes	CO1   Make use of Virtual Instrumentation software (LabVIEW) in process control applications.
	CO2   Differentiate Pneumatic and Hydraulic components
	CO3   Make use of simulator to build Pneumatic and Hydraulic control circuit
	CO4   Design PID control circuit

Exp. No.	Experiment Details	Ref.	Marks
1	To construct a VI to convert Fahrenheit to Celsius, $c = (f - 32)/1.8$ and convert into sub-VI by selection.	1	5
2	To construct a VI to add 8 numeric pressure input values and light up LED if sum <25	1	5
3	To constructs a VI to monitor industry temperature and display warning text and glow warning LED if: 1) Current temperature > max temperature. warning text: Heat stroke warning 2) Current temperature < min temperature. warning text: Freeze warning 3) min. temperature < current temperature <max temperature. warning text: no warning text.	1	5
4	To construct a VI to generate a sine wave using Simulate signal express VI. Add uniform white noise then use suitable filter to filter signal and show filtered and unfiltered signal.	1	5
5	To construct a VI to create a table to display pressure values P, $P$ , $\sqrt{P}$	1	5
6	To demonstrate and understand different types of Pneumatic	2	5



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	Components: i) 5/3 way hand lever valve, ii) 5/2 way pushbutton valve, iii) 5/2 way single solenoid valve, iv) 5/2 way double solenoid valve, v) 5/2 way direction control valve, vi) Double acting cylinder, vii) Compressor, viii) FRL unit.		
<b>7</b>	To design a PLC based pneumatic system which will operate double acting cylinder using 5/2 way double solenoid valve and pushbutton	2	<b>5</b>
<b>8</b>	To design and simulate PID controller for process control application of plant using MATLAB	3	<b>5</b>
<b>Total Marks</b>			<b>40</b>

## References:

[1] [www.ni.com](http://www.ni.com)

[2] **Electro-pneumatic manual**

[3] [www.mathworks.com](http://www.mathworks.com)