

**Course code VA-BTI 04**

**Course title: Basic Mechatronics in coordination with Siemens**

Target Group: Diploma / Degrees students in Electrical / Electronics/Instrumentation/Electronics and Telecommunication/ Biomedical/ Mechanical/Production Mechatronics Engineering

Course Duration: 96 hours

Prerequisite: Basic knowledge of electrical, electronics & mechanical

Training Methodology: Explanation, demonstration and hands-on practice.

COURSE CONTENTS:

<b>Module</b>	<b>Details</b>
1	<b>Introduction</b> What is Mechatronics?, Material, Energy and Signal flow diagram, Brief Introduction to Electrical Components, Power supply, Fuses, Circuit breakers, Relays, Contactors, Solenoids, Switches, Indicators, Sensors: Inductive, Capacitive, Photoelectric, Ultrasonic, Reed type, Brief Introduction to Mechanical Components, Motor Drives, Belts and Pulley, Chain and Sprocket, Gears, Clutch, Shaft & Axle, Bearings & Threaded Fasteners
2	<b>Brief Introduction to Pneumatic Components</b> Air generation and Distribution, Directional Control Valve (2/2, 3/2, 4/2, 5/2, 5/3way etc.), Flow Control Valves, Pneumatic Actuators
3	<b>Reading and Interpretation of Technical Documents</b> Sequential Function Flow Chart Displacement-Step Diagrams, Displacement-Time Diagrams, Assembly diagrams, E-Pneumatic Diagrams, Electrical wiring diagrams
4	<b>Digital Fundamentals and PLC</b> · Number systems and Logic Gates, Introduction to PLC Troubleshooting Strategies
5	<b>General introduction to Industry 4.0</b> Introduction to Industrial revolutions – 1.0, 2.0, 3.0 & 4.0, Introduction to general concepts of Cloud and IOT Gateways, Various Siemens solutions to cloud connectivity, Siemens PLC's and SCADA Portfolio with Information Regarding Licensing of Software with TIA Portal V15.X, Brief discussions on communication protocols for connecting devices, Profinet, Demonstration of communication with PLC