Mechatronics Laboratory

Location: Room No: MBA I Floor

Floor area of the lab: 1000sqft

Faculty:
Dr. V.Vasu (Lab I/c)

Contact:
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Laboratory staff: xxxxx

Objective:

- Measure load, displacement and temperature using analogue and digital sensors.
- Develop PLC programs for control of traffic lights, water level, lift and conveyor belt.
- Develop P89V51RD2 microcontroller program to guide a robot in a given arena.
- Simulate and analyse PD, PI and PID controllers for a given physical system using MATLAB.
- Develop pneumatic and hydraulic circuits using Automaton studio.

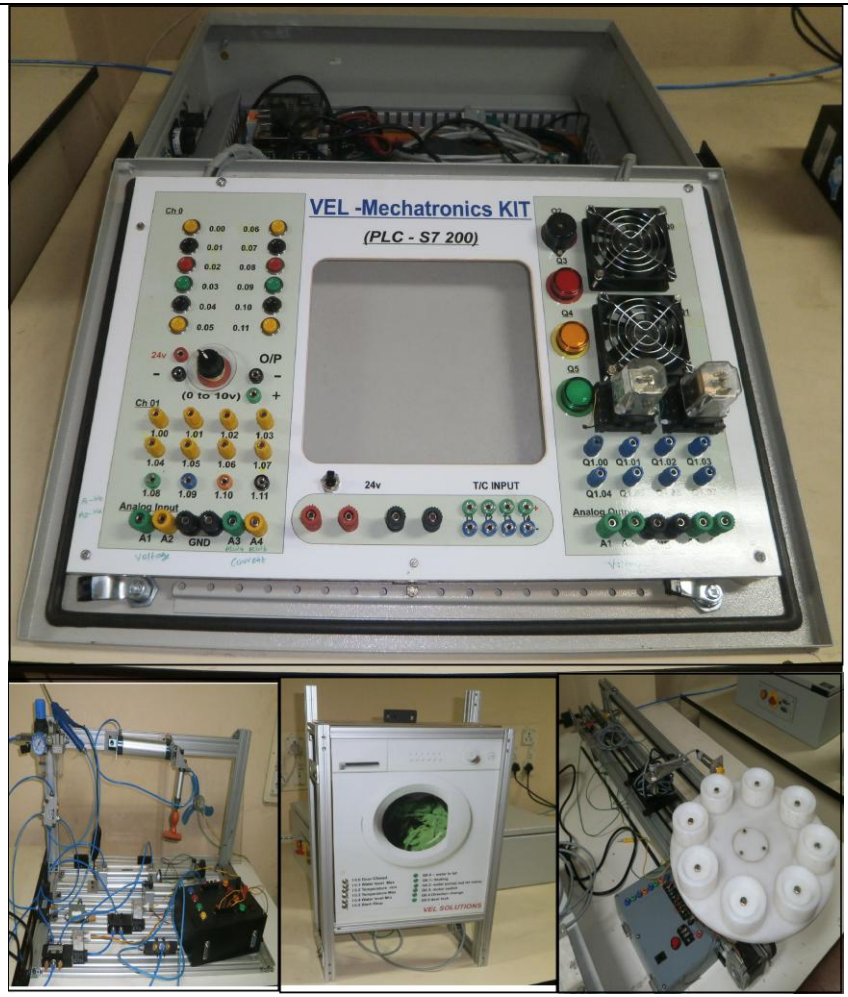
Lab Coverage:
Load Measurements, Displacement Measurements, Frequency Measurements, Pump Control, Traffic Light system, Lift Control System, Position Control, Motor Direction Control, White Line Following & Hydraulic Circuits using Automation Studio.

Lab Manual(s) (DOC/PDF/Hard Copy)

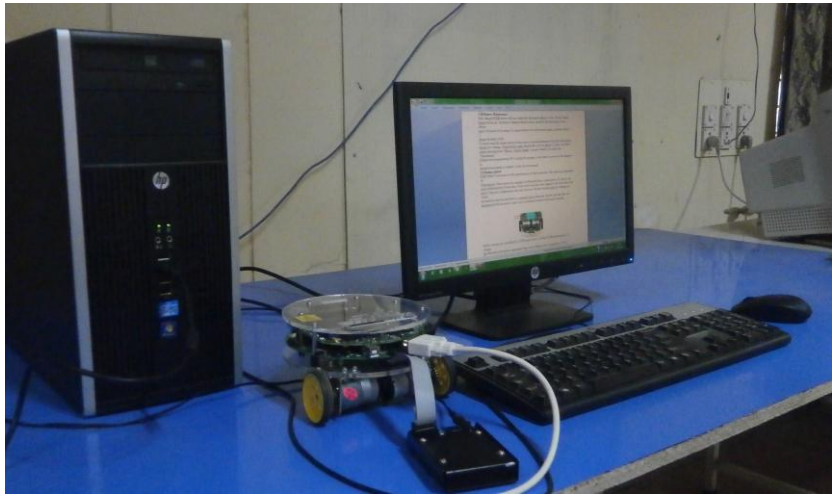
Services Offered to:

1. 4rd Year B. Tech. Mechanical Engineering – 2nd Semester : **Mechatronics Lab (ME 425)**
2. M.**Tech Manufacturing Engineering – 2nd Semester : Mechatronics Lab (ME5254)**
3. M.**Tech Computer Integrated Manufacturing – 1st Semester : Mechatronics & Automation Lab (ME5304)**
4. B. Tech. Project Works
5. M.Tech. Dissertation Works
6. Ph.D. Works

Equipment Details: (list in the chronological order of purchase. Latest being the first one in the list)

S. No	Equipment, Utility & Specifications	Photograph	Details of Purchase
1	**S7 200 SIEMENS Micro PLC with Programming Software** The S7-200 series is a line of micro-programmable logic controllers (Micro PLCs) that can control a variety of automation applications. Compact design, low cost, and a powerful instruction set make the S7-200 a perfect solution for controlling small applications. **Utility:** • Washing Machine Simulation Module • Bottle Filling Unit • Electro- Pneumatic kit **Specifications:** Digital : 24 Input & 16 Output Analog : 4 Input & 4 Output Operating Voltage : DC 24 V(smps) Ethernet Port : USB		1.2014 2.4,95,600/- 3.PO No : NITW/MED/vvNr grants/2014/849 dated 26/3/2014

2	**CPM1 OMRON PLC with Programming Software** The CPM1A series micro controllers solve both basic and semi-complex applications. The brick style models include DC inputs/transistor or relay outputs to meet your design requirements. The base I/O for the CPUs ranges from 10, 20, 30, and 40 I/O points with maximum expansion to 100 I/O. Specialized expansion modules include mixed analog I/O, temperature sensor inputs and serial communications. **Utility:** • Lift control system (Ground + 2 Floor) • Traffic signal Control • Water Level control • Analog & Digital Sensor Kit **Specifications:** Digital : 24 Input & 16 Output Analog : 4 Input & 4 Output Operating Voltage : DC 24 V(smps) Ethernet Port : USB		1.2012 2.4,75,545/- 3. 4.

3	**Fire Bird Mobile Robotic Kit** Fire Bird V mobile robot platform will give you good exposure to the world of robotics and embedded systems. Its innovative architecture and adoption of the 'Open Source Philosophy' in its software and hardware design, you will be able to create and contribute to complex applications that run on this platform, helping you acquire expertise as you spend more time with them. **Utility:** Buzzer Beep Control Motor Direction Control Position Control **Specifications:** Three white line sensors 2 x 16 Characters LCD Indicator LEDs Buzzer PC as Master and Robot as Slave in wired or wireless mode Wired RS232 (serial) communication Wireless ZigBee Communication (2.4GHZ) Diameter: 16 cm Height: 10 cm Weight: 1250 Gms 9.6V, 2100mAh Nickel Metal Hydride (NiMH) battery pack and external Auxiliary power using battery charger.		1.2012 2.17,675/- 3. 4.

4	**DYNA-1750 Transducer & Instrumentation Trainer** The DYNA-1750 unit provides examples of a full range of input and output transducers, signal conditioning circuits and display devices. The unit is self-contained and enables the characteristics of many individual devices to be investigated, building to form complete closed loop systems. **Utility:** Linear Position or Force Position Rotational Speed or Position Measurements Linear or Rotational Motion **Specifications:** Electromechanical Transducers Heat Transducers Light Transducers Supporting Equipment Wheatstone bridge Oscillator Power Amplifier		1.2012 2.2,02,740/- 3. 4.

5	**Simulation of Pneumatic and Hydraulic circuits using Automation studio Software** Automation Studio is design, animation and simulation software tool. It was created for the automation industry, specifically to fulfill engineering, training and testing requirements. The simulation utility makes Automation studio an efficient tool for the certification of automated processes and programs. **Utility:** Meter-In Hydraulic Circuit Meter-Out Hydraulic Circuit Series & Parallel Hydraulic Circuit **Specifications:**		1.2013 2.33,442 3. 4.

6	**LSM Mechatronics Training Package** LSM controller package is a multi disciplinary, open architecture, general purpose and user-friendly Mechatronics training package.This package includes programmable logic controllers and programmable motion controller, and interfacing with various input and output devices and accessories. **Utility:** Control of D.C Servo Motor in closed loop Control of D.C Servo Motor in open loop **Specifications:** Liner Slide Base 2 Axis X-Y Position Table Linear Conveyor system sensor kit		1. 2. 3. 4.

Projects executed in the lab:

Please include the information related to project (title, investigator/student details, year, awards/patents obtained for the project etc) that utilized the services of this lab.