

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
1	<p>Online/Offline Circuit Labs</p> <p>Model-EMONA-netCircuit</p> <p>Country of Origin-Australia</p> <p>(1) netCircuit Main Unit</p> <p>(2) REL 1.0 Build Your Own Circuits Breadboard</p> <p>(3) REL 2.0 Electrical Circuit Thoery Experiments Plug-in Board</p> <p>(4) REL 2.1 Basic Analog Circuit Experiments Plug-in Board</p> <p>(5) REL 2.2 Op-Amp Circuit Experiments Plug-in Board</p> <p>(6) REL 3.0 Combinational & Sequential Logic Experiments Board</p> <p>(7) Teacher Monitor Unit : 5 Units (Laptop Computer)</p> <p>(8) Cisco RV160 VPN Router and RV160W Wireless -AC VPN Router</p> <p>(9) Cisco SG500X-48 48-Port GB with 4-Port 10-GB Stackable Managed Switch</p> <p>(10) Webcam</p> <p>(11) Network Test Kit Accessories Box</p>

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
2	<p>DSP-Digital Signal Processor TIME Electronic Board</p> <p>Model-De Lorenzo DL 3155E26</p> <p>Brand: De Lorenzo</p> <p>Country of Origin-Italy</p> <ul style="list-style-type: none">-High-Performance Static CMOS Technology-150 MHz (6.67-ns Cycle Time)-Built-inFLASH 256kB Built-in RAM 36kB- Low-Power (1.8-V Core at 135MHz, 1.9-V Core at 150MHz, 3.3 -V I/O)-Design JTAG Boundary Scan Support IEEE Standard 1149.1-1990 IEEE Standard Test Access Port and Boundary-Scan Architecture <p>-1 unit of base Frame with Power Supply and Interface to PC</p> <p>-CAI Software: Complete with a student Navigator Software that allows students to perform their learning activities through a personal computer, without the need for any other documentation.</p>

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1	2
3	<p>Optical Fiber Test Kits</p> <p>Brand: Fluke Network & Sumitomo</p> <p>Country of Origin-USA</p> <p>(1) SFPOWERMETER: Fluke Networks SimpliFiber Pro Optical Power Meter, Fiber Optic Tester, SC Fiber Optic</p> <p>(2) VISIFault Visual Fault Locator: Fluke Networks</p> <p style="padding-left: 20px;">*Wavelength:650nm (visible wavelength)</p> <p>(3)Fluke Networks NFA-FC-SINGLE</p> <p style="padding-left: 20px;">* For testing FC connections</p> <p style="padding-left: 20px;">* One FC input adapter</p> <p>(4) Cable Cutter: Sellery</p> <p>(5) Fiber Optic Cable Stripper: Miller</p> <p style="padding-left: 20px;">* For stripping 250 and 900 micron buffer coating in one operation to expose 125 micron cladded fiber.</p> <p style="padding-left: 20px;">* Second hole for stripping 2-3 mmm fiber jackets.</p>
	<p>(6) Optical Fiber Cleaver: Sumitomo FC-6S</p> <p>* Cleave Length- 5~20mm (.25)/10~20mm(0.9)</p> <p>* Cleave Angle-0.5 Degree with Single Fiber</p> <p>*Cladding Diameter-125um</p>

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SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
4	<p>The Study of Microcontrollers</p> <p>Model-DL 3155BRS-M24</p> <p>Brand: De Lorenzo</p> <p>Country of Origin-Italy</p> <ul style="list-style-type: none"> -Sub-module with PIC16,PIC18,PIC24,PIC32 -Sub-module with Digital In/OUT, LCD Display -Sub-module with Sensors, Motor Control -Sub-module with D/A-A/D Converters -Sub-module with memory (EEPROM & RAM) -Sub-module with IN/OUT Optoisolator -Sub-module with SPI+UART Interfaces -Sub-module with TTL IN/OUT <p>The kit is complete with the DL 3155BRS development module, the Debugger/Programmer and the application programs suggested in the manual.</p>
5	<p>Vector-Network Analyzer 5kHz to 6 GHz</p> <p>Model: ZNLE6</p> <p>Brand: Rohde & Schwarz</p> <p>Country of Origin-Germany</p> <ul style="list-style-type: none"> * R&S ZNLE6 <p>2 ports 1 MHz to 6 GHz, N(f) connectors</p> <ul style="list-style-type: none"> * R&S ZNLE-B100 <p>Extension of the lower end of the frequency range to 100 kHz</p> <ul style="list-style-type: none"> * included Optional Accessories <p>Calibration Unit- R&S ZN-Z150</p> <p>Calibration Unit 50 ohm, 5kHz to 6 GHz, 2 Ports, N(f), for R&S ZNLE</p>

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1	2
6	<p>Omron Industrial Electronics and Electrical Training Desk with Omron PLC Control</p> <p>Model: MSD-101-PL</p> <p>Brand: Omron</p> <ul style="list-style-type: none">(1) Omron Inductive Proximity Board (E2E-X5E1 NPN NO)(2) Inductive Proximity Board (E2E-X10ME1 NPN NO)(3) Omron Capacitive Proximity Board (E2K-X8ME1 NPN NO)(4) Liquid Level Sensor Board (E2K-L13MC1)(5) Omron Photoelectric Sensor Board (Through-beam)(6) Photoelectric Sensor Board Retro-reflective(7) Photoelectric Sensor Board Diffuse-reflective(8) Photoelectric Sensor Board Diffuse-reflective-Relay Output(9) Photoelectric Sensor Optical Fiber(10) Omron Photoelectric Sensor Optical Fiber (Laser)

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1	2
7	<p>Mini Production Unit Drilling Work Training System controlled with Omron 40IO PLC training Kit (MDW-A-PL)</p> <p><u>Details Product Parts</u></p> <ol style="list-style-type: none">1. Can be used with 220VAC 50Hz 1Phase.2. Six workpieces can packed in a magazine.3. Six reed switches.4. Six flow control valves.5. One cylinder for push the workpiece from magazine.6. One 24 VDC motor for drilling workpieces.7. One cylinder for move motor for drilling workpieces.8. One cylinder for push the workpiece.9. Three pushbutton switches.10. Three control valves for control cylinder.11. One air control valve12. Power supply 24 VDC with a short-circuit protection.

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	<p>13. Workpieces for experiment.</p> <p>14. Terminal size 4 mm for connect with PLC inputs/outputs.</p> <p>15. The overall structure of the training set made of aluminum profiles.</p> <p>Omron PLC 40 IO CP1L Training Kit</p> <p>Details Product Parts</p> <p>1 Omron PLC CP1L 40 IO(24 IN/16 OUT) Relay Output (CP1L-M40DR-A)</p> <p>2 RS232C Port (CP1W-CIF01)</p> <p>3 RS232C Cable 9-PIN 2M(PLC-PC) (XW2Z-200T)</p> <p>4 Text Book</p> <p>5 Training Kit Case</p> <p>6 USB Cable</p>

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8	<p>Mini Production Unit Automatic Material Belt Sorting Omron Training System controlled (MBS-B-PL)</p> <ol style="list-style-type: none"> 1. Can be used with 220VAC 50Hz 1Phase. 2. One conveyor belt length 600 mm control with a 24VDC motor for drive the conveyor belt. 3. One inductive proximity sensor. 4. One capacitive proximity sensor. 5. One photoelectric sensor. 6. Four reed switches. 7. Three pushbutton switches. 8. One emergency switch. 9. Two double acting cylinder. 10. Two control valves for control cylinder. 11. Power supply 24 VDC with a short-circuit protection. 12. Terminal size 4 mm for connect with PLC inputs/ outputs.
9	<p>NS5 Omron HMI Training Kit(MPL-NS5-SQ) Details Product Parts;</p> <ol style="list-style-type: none"> 1. Omron Programmable Terminal 2. Omron Touch Screen NS5 Series 3. Operate a screen size 5.7 inches 4. Power Supply Voltage Output 24VDC 5. Switch ON/OFF 220VAC 6. OMRON NS Operation Manual 7. USB Connecting PC with PT 8. RS232C Cable connecting PLC with PT 9Kit Base & Case

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10	<p>PLC Training Kit</p> <p>S7-1500 Series CPU 1511-PN (6ES7511-1AK01-0AB0) Input Module (6ES7521-1BH00-0AB0)</p> <p>Output Module (6ES7522-1BH01-0AB0)</p> <p>HMI KTP 700 (6AV2123-2GB03-0AX0) Conveyor Module</p>
11	<p>Function/Arbitrary Waveform Generator</p> <p>Rigol 200MHz, 2 Channels DG4202</p> <p>Supplied with:</p> <ul style="list-style-type: none"> (a) USB cable P/N CB-USBA-USBB-FF-150 (b) BNC cable, 1m P/N CB-BNC-MM-100 (c) AC Power cord (d) Quick Guide <p>Accessories:</p> <ul style="list-style-type: none"> 1. BNC cable, 1m P/N CB-BNC-MM-100 2. 10W power amplifier module P/N PA1011 3. DG PC Software (Advanced function software) P/N Ultra Station-adv

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12	<p>Standard Digital Signal Processing Trainer</p> <p>Model : HBE-DSPLAB II</p> <p>Brand : Hanback</p> <p>Country of origin : Korea</p> <ul style="list-style-type: none">- Mounted TI's TMS320F28335- Code Composer Studio program Development <p>Environment</p> <ul style="list-style-type: none">- Various Signal Processing Experiments of Voice and Bio signal- Built in Functiongenerator- Built-in 2 Channel PC Based Oscilloscope for signal measurement- Provide Sample program source for experiments- Available DSP application programming through Matlabsimulink- Provide Emulator

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13	<p>Basic Electronic/Logic/Electric/Communication Trainer (for basic communication system)</p> <p>Model : HBE-Basic-iLAB (Comm)</p> <p>Brand : Hanback</p> <p>Country of Origin : Korea</p> <p>- Built-in basic measuring equipment (DMM, F/G, OSC and DAQ) - Available to study a electric, electronic, communication and digital logic circuit themes with one platfrom - Supply various experiment themes - Training a skills of troubleshooting - Design to protect from misuse using power protection circuit - Set up a module based verified circuit - Available application experiment with built-in bread board</p>

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14	<p>ADVANCED DIGITAL COMMUNICATION</p> <p>ANG-800: Console</p> <p>Analog Communications (3 boards)</p> <p>1. Amplitude Modulation (ANG800-AM)</p> <ul style="list-style-type: none"> ☐ AM double sideband (DSB) with full carrier ☐ Generation of single sideband (SSB) with a filter <p>2. Frequency Modulation (ANG800-FM)</p> <ul style="list-style-type: none"> ☐ Generation of FM with a voltage controlled oscillator ☐ Modulation Index, narrow and wideband FM <p>3. Phase Modulation (ANG800-PM)</p> <ul style="list-style-type: none"> ☐ Generation of PM with phase index from 0 to +/- 360 degrees <p>Digital Communications (4 boards)</p> <p>1. Baseband digital encoding. (ANG800-BDE)</p> <p>2. Advanced digital keying. (ANG800-ADK)</p> <p>3. Digital sampling. (ANG800-DS)</p>
	<p>Fiber Optics trainer (1 board)</p> <p>1. Fiber optics (ANG800-OPT).</p> <p>AM, SSB, DSB, FM, PLL, Quatrature Detector, PM with index 0 to 360 degree Digital Shift Keying, BPSK, QPSK, 8-PSK, 16-PSK, 16-QAM, PCM with 24 bit frame, 3 channel TDM A to D, D to A, PWM, Delta Modulation and Demodulation, Fiber Optic System</p>
15	<p>Splicer</p> <p>Model - SAT-17T</p> <p>Brand - Aitelong</p>

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16	<p>Optical Power Meter</p> <p>Model - SAT-4EX</p> <p>Brand - Aitelong</p>
17	<p>Visual Fault Locator</p> <p>Model - SAT- 3C04</p> <p>Brand - Aitelong</p>
18	<p>Fiber Test Cable & Related Accessories</p> <p>Included: Fiber Cable (1 Core Drop Cable) - 1Km Fiber Joint Closure Patch Cord Splitter Termination Box Fast Connector</p>
19	<p>Telecommunication Lab including CAI Software</p> <p>DL 3155M60 - ANALOGUE SIGNAL TRANSMISSION</p> <p>DL 3155M61- DIGITAL MODULATION-DEMODULATION</p> <p>DL 3155M62 - DIGITAL SIGNAL TRANSMISSION 1 Unit of Base frame with power supply and interface to pc CAI Software : Complete with a Student Navigator software that allows students to perform their learning activities through a Personal Computer, without the need for any other documentation.</p>

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20	<p>Fibre Optics TIME Electronics Board DL 3155E63, : De Lorenzo</p> <p>Base frame with power supply</p> <p>CIRCUIT BLOCKS</p> <ul style="list-style-type: none"> -Clock signal generation -Serial interface -ST fibre -Analogue input / output -POF fibre -Printer interface <p>Complete with theoretical and practical manual.</p>
21	<p>Wide Area Network (WAN) And Internet, DL TC75</p> <ul style="list-style-type: none"> - De Lorenzo <p>TC75-MS:</p> <p>Structure of a WAN</p> <p>The block diagram of the structure of a WAN.</p> <p>The diagrams of the levels of the OSI model used in internetworking.</p> <p>The connectors for the connection of the routers to the WAN.</p> <p>TC75-DR: Router</p> <p>Serial type WAN interface V24/RS232.</p> <p>10BaseT LAN interface.</p> <p>RJ-45 or RS-232 port.</p> <p>Internetworking Operating System.</p>

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22	<p>Basic Robotic Trainer for 4 axis with vision Dobot Vision</p> <p>Number of axis : 4</p> <p>Maximum payload : 500g</p> <p>Maximum reach : 320mm</p> <p>Position accuracy : 0.2mm</p> <p>Communication : USM,Wifi & BluetoothRobot</p>
23	<p>Dobot Mooz 2 3D Printer</p> <p>Nozzle Diameter : 0.4 mm</p> <p>Layer Resolution 10/23/202: 0.05~0.3 mm</p> <p>Nozzle Temperature: 190~260°C</p> <p>Heated bed Temperature: 50~100°C</p> <p>Forming Size: X130 * Y130 * Z130mm</p> <p>Applicable Materials :PLA, ABS , PC ,</p>
24	<p>NI FPGA A Multisim programmable logic device (PLD) Design and Xilinx ISE Tools</p> <p>Model : NI Digital Electronics FPGA Board Brand : NATIONAL INSTRUMENTS</p>
25	<p>Arduino Uno Rev3</p> <p>14 digital input/output pins</p> <p>6 analog inputs, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), a USB connection, a power jack, an ICSP header and a reset button.</p>

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26	<p>Antenna and Propagation Communications</p> <p>Antenna transmitter and receiver modules</p> <p>Radiation Pattern Plotting (RadPat 3D) software</p> <p>Lab sheets & model answers</p> <p>Problem-based assignments</p> <p>Covers 24 hours of labs</p>
27	<p>Source Measure Unit</p> <ul style="list-style-type: none"> • V-Ranges: 20 mV – 200 V • I-Ranges: 10 nA – 1 A • 0.012% Basic Accuracy • Wideband Noise: 2 mVrms Typ. • Sweep Types: Linear, Log, Dual Linear, Dual Log, Custom, • Source-Memory (SCPI 2400 Mode) • >250,000 Point Reading Buffer • >3000 Readings/Second • SCPI (2400 + 2450) + TSP Programming • GPIB, USB, Ethernet (LXI) • Front: Banana Jacks, Rear: Triax

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28	<p>Horn Antenna Measurement System</p> <p>"Frequency Range 1GHz – 8GHz</p> <p>Max. Input Power 400W (peak), 200W (CW) ,Gain (typ.) 4 to 13dBi</p> <p>Nominal impedance</p> <p>VSWR (typ) < 2,5:1 ,RF-Connector N (female) ,Operating Temperature</p> <p>-40°C to +85°C -Dimensions (L/W/D) 235 x 252 x 175 mm Weight</p> <p>1400g</p> <p>Tripod Heavy (Heavy Duty)</p> <p>"• 3/8"" tripod mount</p> <ul style="list-style-type: none"> • Incl. Adapter plate (only Twin Tube versions) for maximum stability • Allows any rotation and swiveling <p>SMA Cable 5m LowLoss</p> <p>"• Length: 5m</p> <ul style="list-style-type: none"> • Outer diameter: 5,5mm • Plug: 2 x SMA plug (male)


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29	<ul style="list-style-type: none"> • Damping 6GHz: 3,5dB (0,700dB/m) • Max. power capacity: 126W CW (900MHz) • Temperature range: -40°C to 85°C" <p>Horn Antenna Connector and Accessories</p> <p>"Adapter, N-MALE to SMA-F</p> <p>Adapter, N-MALE to SMA-M</p> <p>Adapter, SMA-FEM to SMA-FEM</p> <p>Adapter, SMA-F to SMA-M</p> <p>Adapter, SMA-M to SMA-M</p> <p>50Ω DC to 18 GHz</p> <p>Maximum Ratings, Operating Temperature -55°C to 100°C</p> <p>Storage Temperature -55°C to 100°C"</p> <p>Integration Setup</p> <p>2D Antenna Measurement</p>

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30	<p>Modern Control System Trainer</p> <p>"DC Servo At 12 V: No-load speed: 200 rpm, No-load current: 0.15 A Stall current: 5.5 A Stall torque: 21 kg-cm Max output power: 10 W metal gearbox. Pump Motor voltage: 12VDC, Motor current: 200-300mA Flow rate: up to 100 mL/min Flow sensor Hall Effect, Pulse output 1, Distance Sensor Resolution: 1 mm Maximum range: 400 cm Minimum range: 4 cm Minimum operating voltage: 2.6 V Encoder 64 CPR quadrature (Magnetic/Optical) 1 Temperature Sensor 3 to 5V power and I/O 2.5mA max current use during conversion -40 to 80°C temperature readings $\pm 0.5^{\circ}\text{C}$</p>
31	<p>DE 10 Standard FPGA board</p> <ul style="list-style-type: none"> · FPGA Device: Cyclone V SoC 5CSXFC6D6F31C6N · FPGA Logic Elements: 110K · Processor: ARM Cortex-A9 Dual-Core · HPS <p>SDRAM: 1GB DDR3</p> <ul style="list-style-type: none"> · FPGA SDRAM: 64MB SDRAM · Flash: EPCS128, · USB: Hostx2

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32	<p>NVIDIA Jetson Nano Board</p> <ul style="list-style-type: none"> -Maxwell GPU :128-core GPU OpenGL ES Shader Performance(up to): 512 GFLOPS (FP16) Maximum Operating Frequency:921MHz·CPU: ARM®Cortex® -A57 MPCore (Quad-Core) L1 Cache: 48KB L1 instruction cache (I-cache)per core;32KB L1 data cache (D-cache) per core L2 Unified Cache:2MB Maximum Operating Frequency:1.43GHz· Memory: Dual Channel System MMU Memory Type: 4ch x 16-bit LPDDR4 Frequency:1600MHz Peak Bandwidth:25.6 GB/s Memory Capacity: 4GB·,Storage: eMMC 5.1 Flash Storage Bus Width: 8-bit Maximum Bus Frequency: 200MHz (HS400) Storage Capacity: 16GB
33	<p>Raspberry Pi 4 (8GB) + Case</p> <ul style="list-style-type: none"> -Broadcom BCM2711, Quad core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz· 2GB, 4GB or 8GB LPDDR4-3200 SDRAM -2.4 GHz and 5.0 GHz IEEE 802.11ac wireless, Bluetooth 5.0, BLE·
34	<p>Raspberry Pi camera</p> <p>12 megapixel </p>

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1	2
35	Touch LCD Display 7" Touch LCD Display Kit (1024×600) ☐
36	Power Supply Unit "AC 230V single-phase 3 wire 230 VAC +/- Variable DC Supply
37	43 inch LCD color display, USB communicatio port", Wifi Connection
38	Optical Fiber Communicaiton Training/Learning Lab 1.Biskit ETT-101 Add-on Boards 2.Optical Time Domain Reflectometer (DEVISER AE3100) and Fiber Optic Splicer (Fujikura 28S) 3.Fiber optic 4 core drop (1000m) 4.Fiber optic 24 core OH Cable (100m) 5.SFP module (1G) and (10G) Single mode with sc to sc patch cord (6Nos) 6.4Core termination box with SC-SC patch cord (4Nos:)7.24 core termination box with SC-SC patch cord (2Nos:) 8.Fiber took Kit (5in1) 9.Patch cord sc-sc and Lc-sc (20Nos:) 10. media converter gigabit single mode (SC) Type (2 Pairs)

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39	<p>Mixed Signal Oscilloscope</p> <p>70 MHz to 350 MHz, 4 Analog Channels, 16 digital Channels , 8GSa/s, Real-time sampling Maximum waveform capture rate of 500,000 wfms/s Hardware Real-time Waveform Recording and Playing : ≥450,000 wfms (single-channel) A variety of serial protocol triggers and decodes , Bode plot for loop test analysis Digital Voltmeter : 3-digit DC/AC, RMS/AC+DC RMS voltage measurement High-precision Frequency Counter and Totalizer : 3 to 6-digit (selectable)</p>
40	<p>Siemens Industrial 4.0</p> <p>Simatic IOT2040</p> <p>Include node red, Arduino, 64GB micro sd card</p> <p>With training 1. SIMATIC IoT2040, 2x 10/100 Mbit/s Ethernet RJ45; 1x USB 2.0, 1x USB client; SD card slot;</p> <p>24 V DC industrial power supply, 2. Arduino and microsd card (64GB) Profinet cable 3. Lab table with drawer and stand 4. MiKroTik CRS 125-24G-1S-2HNDIN 24x Gigabit Ethernet layer 3 Smart Switch</p>

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41	<p>Fundamental Omron Sensor & Conveyor Training Kit (Model :MPL- E2E-X5)</p> <p>Designed for the study of fundament control components and sensor in industry. To enhance understanding of the selection and the use of basic sensor such as proximity sensor, capacitive sensor, photoelectric sensor and fiber optics sensor.</p> <p>Details Omron Products Parts</p> <p>1 Proximity Sensor Omron</p> <p>2 Capacitive Proximity Sensor Omron(E2K-X8ME1 2M)</p> <p>3 Diffuse Reflective (E3Z-D61 2M OMS)</p> <p>4 Fiber Obitc Amplifier(E3X-HD11 2M)</p> <p>5 Fiber Obitc Head (E32-CC200 2M)</p> <p>6 Buzzer(M2BJ-BH24E)</p> <p>7 Operating voltage 12 to 24 VAC/VDC</p> <p>8 ,Sensor Conveyor</p>
42	<p>DSP -Digital Signal Processor, De Lorenzo DL 3155E26</p> <p>Complete with accessoriees, theoretical and practical manual 1 pc of Base frame with power supply and interface to PC</p> <p>Brand- De Lorenzo (Italy)</p>

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43	<p>Omron NJ EhterCAT Networking TrainingKit -NJ-101-ECAT</p> <p>This training kit to learn advanced PLCskills, servo motor, driveand HMI. It consists of PLC with Ehternet/ EtherCAT, servo motor and two servo drives & HMI with EhterCAT communication. This trining kit is designed to setup and control multiple drive, PLC, safety controller unit & HMI via EtherCAT</p> <p>Details Products Parts</p> <p>1 Power Supply Unit 100-240 VAC, 50/60 Hz. 2 Omron PLC (NJ series) 3 Omron HMI 5 inch 4 Omron AC servo motor/drive with EhterCAT communication 5 Safety controller unit,6 EtherCAT cable 7 Switches for simulationinput 8 ON/OFF switch 220 VAC 50Hz 1 Phase</p>
44	<p>Number of axis : 4</p> <p>Maximum payload : 500g</p> <p>Maximum reach : 320mm</p> <p>Position accuracy : 0.2mm</p> <p>Communication : USM,Wifi & BluetoothRobot</p> <p>power supply: 100-240VAC 50/60Hz-12VDC 7A</p> <p>Power Consumption: 60W</p>

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45	Nozzle Diameter : 0.4 mm Layer Resolution 10/23/202: 0.05~0.3 mm Nozzle Temperature: 190~260°C Heated bed Temperature: 50~100°C Forming Size: X130 * Y130 * Z130mm Applicable Materials :PLA, ABS , PC , FLEX Printing Speed: 10~80mm/sBrand
46	A Multisim programmable logic device (PLD) Design and Xilinx ISE Tools Model : NI Digital Electronics FPGA BoardBrand : NATIONAL INSTRUMENTS
47	14 digital input/output pins 6 analog inputs, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), a USB connection, a power jack, an ICSP header and a reset button.
48	300MHz, 2 Channels Included Optional Accessories:Passive probe (350MHz)USB-GPIB Interface Converter 56Mpts Deep Memory option

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49	<p>Telecommunication Lab including CAI Software</p> <ul style="list-style-type: none"> - ANALOGUE SIGNAL TRANSMISSION - DIGITAL MODULATION-DEMODULATION - DIGITAL SIGNAL TRANSMISSION <p>(De Lorenzo,)</p> <p>1 Unit of Base frame with power supply and interface to pc</p> <p>CAI Software : Complete with a Student Navigator software that allows students to perform their learning activities through a Personal Computer, without the need for any other documentation.</p>
50	<p>DSP-Digital Signal Processer TIME Electronic BoardDe Lorenzo High-Performance Static CMOS Technology -150 MHz (6.67-ns Cycle Time)</p> <ul style="list-style-type: none"> -Built-in FLASH 256KB o Built-in RAM 36KB -Low-Power (1.8-V Core at 135 MHz,1.9-V Core at 150 MHz, 3.3-V I/O) -Design JTAG Boundary Scan Support IEEE Standard 1149.1-1990 IEEE Standard Test Access Port and Boundary-Scan Architecture <p>1 Unit of Base frame with power supply and interface to pc</p> <p>-CAI Software : Complete with a Student Navigator software that allows students to perform their learning activities through a Personal Computer, without the need for any other documentation</p>

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1	2
51	<p>Microwave Trainer</p> <p>Configuration : Variable attenuator, Crystal detector, Directional coupler, Shorting plate, Matched terminator, Waveguide to coaxial adaptor, Waveguide, Frequency meter, 6dB fixed attenuators, Hybrid tee, Horn antenna, Slotted line, Slide screw tuner, Function generator (with DDS PLL built in), Power meter, SWR meter</p> <p>De Lorenzo</p>
52	<p>PID Controller Controllers–PID De Lorenzo Including Laboratory Software DL ACTSWData acquisition / control unit DL 1893Experiment : Controller P,I,D,PI,PD,PID</p> <p>Controllers–PID</p> <p>De Lorenzo</p>
53	<p>RIGOL Mixed Signal Oscilloscope (logic analyser) 1GHz, 4 Channels 10GSa/s</p> <p>and 16 digital channels MSO8104 (MSO8104 RIGOL)</p> <p>a) Power Cord</p> <p>b) USB Cable</p> <p>c) 4 Passive Probes (500Mhz)</p>

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
54	<p>EC - Department</p> <p>Satellite Communication Trainer</p> <p>Features</p> <ul style="list-style-type: none"> • Simultaneous communication of three different signals • 2.4GHz Band PLL microwave operation • Communication of external broad band digital signal • Choice of different transmitting and receiving frequencies • Built-in Speaker and Microphone for Voice and Audio link • Remote detection of Light intensity and environment temperature • Detachable Dish Antenna at each station • USB port for PC communication <p>Technical Specifications</p> <p>Uplink Transmitter:</p>
	<ul style="list-style-type: none"> • Transmitter with selectable frequency conversion • 2.4GHz Band uplink selectable frequencies • Wide band RF amplifier. No manual matching required. • 16 MHz Bandwidth • Frequency select switch and LED indication. • FM Modulation of Audio and Video.

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
55	PLC Training Kit S7-1500 Series CPU 1511-PN (6ES7511-1AK01-0AB0) Input module DI 16×24 V DC HF (6ES7521-1BH00-0AB0) Output Module DI 16×24 V DC/0.5 A ST (6ES7522-1BH01-0AB0) HMI KTP 700 (6AV2123-2GB03-0AXO) Conveyor Module
56	Modern Control Systems Trainer KALF01 and ATRON Software (windows 10.0 or higher)
57	Standard Telecom Experimenter with Optional Module Biskit ETT-101 Trainer Board <ol style="list-style-type: none"> 1. Multi-experiment Telecommunications & Fiber Optics Experiments 2. 20 stackable patch cords 3. User Manuals 4. Experiments in Modern Analog and Digital Telecommunications Volume 1 & Volume 25. 12 V Plug Pack <ol style="list-style-type: none"> 6. Laptop 7. 5- optional add-ons boards -Emona, - ETT-101

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
58	<p>NI myRIO</p> <p>Portable Embedded Student Design Device</p> <ul style="list-style-type: none"> - Xilinx Zynq System on a Chip - Analog Input (10 Channels) - Analog Output (6 Channels) - Analog Input and Output Also Available Through 3.5mm Audio Jacks - 40 Digital I/O Lines; Wireless Enabled - Accelerometer, LEDs, and Push Button Onboard - 6V to 16V, 14W Power Requirement - Compatible with NI myRIO Module; Powered by Lab VIEW <p>Brand- National Instrument</p> <p>Model- MyRIO-1900(782693-01)</p> <p>Country of Origin-USA</p>
59	<p>CanaKit Raspberry Pi 4 4GB Starter PRO Kit 4GB RAM</p> <ul style="list-style-type: none"> - Includes Raspberry Pi 4 4GB Model B with 1.5GHz 64-bit quad-core CPU(4GB RAM) - Includes 32GB Samsung EVO+ Micro SD Card(Class 10) Pre-loaded with NOOBS, USB Micro SD Card Reader - CanaKit Premium High-Gloss Raspberry Pi 4 Case with Integrated Fan Mount, CanaKit Low Noise Bearing System Fan - CanaKit 3.5A USB-C Raspberry Pi 4 Power Supply(US Plug) with Noise Filter, Set of Heat Sinks, Micro HDMI to HDMI Cable-6 foot(Supports up to 4K 60p) - CanaKit USB-C PiSwitch(On/Off Power Switch for Raspberry Pi4)

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
60	<p>Standard Digital Signal Processing Trainer</p> <p>Model: HBE-DSPLAB II</p> <p>Brand: Hanback</p> <p>Country of Origin: Korea</p> <ul style="list-style-type: none">-Mounted TIs TMS320F28335-Code Composer Studio program Development Enviroment-Various Signal Processing Experiments of Voice and Bio signal-Built in Functiongenerator-Built in 2 Channel PC Based Oscilloscope for signal measurement-Provide Sample program source for experiments-Available DSP application programming through Matlab simulink_Provide Emulator

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
61	<p>Standard Digital Signal Processing Trainer</p> <ul style="list-style-type: none"> -HBE-DSPLAB II - Hanback - Mounted TI's TMS320F28335 - Code Composer Studio program Development Environment - Various Signal Processing Experiments of Voicce and Bio signal - Built in Functiongenerator - Built-in 2 Channel PC Based Oscilloscope for signal measurement - Provide Sample program source for experiments - Available DSP application programming through Matlab simulink - Provide Emulator
62	<p>Virtual labs and projects with matlab simulink</p> <p>Arduino Engineering Kit</p> <p>Rev2,three projects,A hard plastic, stackable toolbox ideal for storage and years of use,</p> <p>A one-year individual license for MATLAB and Simulink,</p> <p>Student e-learning platform with step-by-step guidance,</p> <ul style="list-style-type: none"> -Five laptops(i7,10th gen,HD 4GB, RAM 8GB, DDR4,SSD+1TB HDD)

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
63	<p>Standard Digital Signal Processing Trainer</p> <ul style="list-style-type: none"> -HBE-DSPLAB II, -Hanback, Mounted TI's TMS320F28335, - Code Composer Studio program Development Enviroment - Various Signal Processing Experiments of Voicce and Bio signal - Built in Functiongenerator- Built-in 2 Channel PC Based Oscilloscope for signal measurement - Provide Sample program source for experiments - Available DSP application programming through Matlab simulink - Provide Emulator, -Two laptops(-i7,10th gen,HD 4GB, RAM 8GB, DDR4,SSD+1TB HDD)
64	<p>Omron PLC 40 IO CP1L Training Kit</p> <ul style="list-style-type: none"> -MPL-CP1L-M40
65	<p>LOGO! 8 12/24V ETHERNET-0BA8 with digital modules DM8 12/24R(6ED1057-3SA20-0YA1) (DC 24V Power Supply) Item includes</p> <ol style="list-style-type: none"> 1. 6×LOGO! 12/24 RCE (6ED1052-1MD08-0BA0)(DC 24V) 2. 6×LOGO! DM8 12/24R expansion module (6ED1055-1MB00-0BA2)(DC 24V) 3. 6×LOGO! Soft Comfort V8, programming software (6ED1058-0BA08-0YA1)
66	<p>LOGO! AM2 RTD Expansion Module(Analog) , PS: 12/24 V DC, 2AI-50...+200°/C Pt10 6ED1055-1MD00-0BA2</p>

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
67	SIMATIC HMI, KTP400 Basic, Basic Panel Key/touch operation, 4" TFT display, 65536 colors, PROFINET interface 6AV2123-2DB03-0AX0
68	<p>Spectrum Analyzer RF and communication trainer RF Signal generator</p> <p>-GSP 730+GRS 1300A+USGLS44 Brand GW-INSTEK Key Specification :</p> <p>GSP 730 Spectrum Analyzer Frequency range: 150kHz to 3GHz Autoset function noise level: 5"100dBm RBW range 30kHz , 100kHz, 300kHz, 1MHz ACPR/CHPW/OCPW Measurement GRF- 1300 A RF and communication Trainer wave support sine wave 0.1- 3MHz/ square wave 0.1- 3MHz/ triangle wave 0.1- 3MHz RF frequency 870-920 MHz USGLF44 RF Signal generator 0 frequency range : 345 MHz - 4400MHz Output Power range 30dBm -0dBm</p>
69	<p>Standard Digital Signal Processing Trainer Model HBE-DSP LAB II</p> <p>Brand Hanback country of origin Korea, Mounted TI's TMS 320 F28335 code composer studio program development environment, Various signal Processing Experiments of Voice and Bio Signal, Built-in function Generator, Built-in two channel PC Based Oscilloscope for signal measurement, Provide sample program source for experiments, Available DSP application programming through Matlab simulink, Provide Emulator</p>

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
70	<p>Digital Signal Transmission De Lorenzo</p> <p>(a) DL 3155M62 Digital Signal Transmission</p> <p>(b) DL 3155M62A Auxiliary board</p> <p>(c) Base frame with power supply – 1 Unit</p> <ul style="list-style-type: none"> - NRZ (Non Return to Zero) coding and decoding - RZ (Return to Zero) coding and decoding - Manchester coding and decoding - Bi-phase coding and decoding - Duo-binary coding and decoding - ASK , FSK , PSK modulation and demodulation <p>Complete with theoretical and practical manual.</p>
71	<p>Digital Modulation–Demodulation De Lorenzo DL 3155M61</p> <p>Base frame with power supply</p> <ul style="list-style-type: none"> -PCM, PAM, PWM, PPM and Delta modulator and demodulator -8 bit coding with compression, Mμ or A selectable through bridge - 2 channels for transmission and 2 channels for reception -Passing band from 300 Hz up to 3400 Hz -Two channel time division -PTM Signal Generation -2 analogue filters with 3400 Hz limited band <p>Output amplifier 2 amplifiers able to pilot a small loudspeaker –</p> <p>Microphone amplifier with automatic gain control Channel bandwidth</p> <ul style="list-style-type: none"> -Complete with theoretical and practical manual

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
72	<p>Basic Electronic Trainer</p> <p>Model: EFT-ETX-2 Component and Circuit Based (7 PCB Modules)</p> <p>General Specifications:</p> <p>A. Base Station (EFT-ETX-BS)</p> <p>B. Set of PCB Board Experiment Modules</p> <p>C. Topics of Experiments</p> <p>(1) Experiment Module 1 (EFT-ETX-M1):</p> <p>(2) Experiment Module 2 (EFT-ETX-M2):</p> <p>(3) Experiment Module 3 (EFT-ETX-M3):</p> <p>(4) Experiment Module 4 (EFT-ETX-M4):</p> <p>(5) Experiment Module 5 (EFT-ETX-M5):</p> <p>(6) Experiment Module 6 (EFT-ETX-M6):</p> <p>(7) Experiment Module 7 (EFT-ETX-M7)</p>
73	<p>Function/Arbitrary Waveform Generator - SiFi</p> <p>(Signal Fidelity) for 100% waveform replication</p> <ul style="list-style-type: none"> - Standard 2 full functional independent channels - Maximum Frequency : 25 MHz - Sample Rate : 200 MSa/s - Basic Waveform : Sine, Square, Ramp, Pulse, Noise - Modulation Type : AM, FM, PM, ASK, FSK, PSK, PWM - With very low jitter (200 ps) and the new SiFi (Signal Fidelity) technology. - Arbitrary Waveform : Waveform Length - 2Mpts : Vertical Resolution : 14 bits Frequency Counter : Frequency Resolution - 7 digits/second (Gate Time=1s)

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
	<p>Display : 3.5-inch TFT LCD, 320 horizontal x RGB x 240 vertical resolution, 16 M color</p> <p>Included Accessories : Power Cord , BNC Cable, Quick Guide</p> <p>Model: DG 1022Z, Brand: RIGOL</p>
74	<p>DS1052E Oscilloscope</p> <ul style="list-style-type: none"> -Dual analog channels, 100/50MHz maximum bandwidth, -1GSa/s maximum real-time sample rate and 25GSa/s maximum equivalent sample rate - 1Mpts Record Length -5.6 inch 64k TFT LCD makes the waveform displays - more clear and vivid - Edge, Pulse Width, Video, Slope, Alternate, Pattern and Duration - Unique adjustable trigger sensitivity enables to meet different demands - Enable to measure 22 types of wave parameters and track measurements via cursor automatically
75	External Hardisk (SSD-2TB)

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
76	<p>DVD drive</p> <p>HP External DVD Writer (Black) Specifications</p> <p>Warranty Summary : 1 year limited warranty</p> <p>Warranty Service Type : On-site Service. Customer needs to call the nearby Authorized Service Center, service engineer will come to the site to get the product repaired or inspected.</p> <p>Covered in Warranty : Warranty of the product is limited to manufacturing defects only</p> <p>Not Covered in Warranty : External Accessories</p>
77	<p>Microphone</p> <p>HyperX Cloud II – Gaming Headset, 7.1 Surround Sound, Memory Foam Ear Pads, Durable Aluminum Frame, Detachable Microphone, Works with PC, PS4, Xbox One – Red</p> <p>Specifications</p> <p>Brand : HyperX</p> <p>Color : Red</p> <p>Connections : Wired</p> <p>Series : HyperX Cloud II</p> <p>Headphones : Closed-back</p>

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
78	<p>Speaker</p> <p>Bose Companion 2 Series III Multimedia Speakers – for PC (with 3.5mm AUX & PC Input) Black</p> <p>Specifications:</p> <ul style="list-style-type: none"> - High quality audio performance, with clear sound at any volume. Use the auxiliary input to bring Bose performance to another audio source such as your iPhone or iPad. Upgrade your sound and your experience with Bose Companion 2 Series III speakers - High quality audio performance, with clear sound at any volume - Play an additional device just connect to the auxiliary input - Volume control/headphone jack on front of right speaker - Operating compatibility : Mac, Windows X
79	<p>Drawing Tablet</p> <p>Creative Pen Tablet (Medium)</p> <ul style="list-style-type: none"> - Wacom Pro Pen 2- Pen Stand - 6 x Standard Nib, - 4 x Felt Nib - 4 x Extra Pen Color Ring, - Texture Sheet Sample Card - USB Type-C to USB Type-A Cable (6.6' / 2m)-Regulation Sheet, - Limited 2-Year Warranty
80	<p><u>Omron PLC Training Kits for Basic Level</u></p> <p>Omron Industrial Electronics and Electrical Training Desk, Omron Vision Sensor (FQ2) Training Kit, Omron Safety Sensor(Light Curtain) Training Kit ,Fundamental Omron Sensor & Conveyor Training Kit.</p>

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
81	<p><u>Omron PLC Training Kits for Intermediate Level</u></p> <p>Omron PLC 40 IO CP1L Training Kit, Omron CJ Networking Training Kit, NS5 Omron HMI Training Kit with Omron PLC 40 IO CP1L Training Kit, Omron PLC & HMI Package Training Kit, Omron Servo Training Kit, Package with Omron PLC & Touch Screen, Omron Servo Training Kit, with EtherCAT Network Application, Omron SCADA Software, Omron CX-One software 1 License</p>
82	<p>Basic Controls Training System consisting of: Basic Controls (Student Manual) Basic Controls (Instructor Guide) Troubleshooting (Student Manual) Troubleshooting (Instructor Guide) Industrial Controls Mobile Workstation Push Buttons Selector Switches Emergency Button Pilot Lights Dual Contactors Lockout Module Three-Phase Manual Starter Contactor Control Relay Overload Relay Time-Delay Relay Three-Pole Fuse Holder Control Transformer Cam Switch Inertia Wheel Starting Resistors Brake Motor Soft Starter AC Power Supply Connection Lead and Accessory Set Fuses Magnetic Labels Digital Tachometer</p>

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
83	<p>Comunication System Trainer</p> <p>Master unit Model- XPO-COM</p> <p>1 channel sampling & Reconstruction 4 channel TDM/PAM & PPM, PWM, PFM experiment Panel/CM2</p> <p>Carrier modulation / demodulation experiment Panel/CM3</p> <p>2 channel Pulse Code Modulation [PCM]/Demodulation with frame and bit error dectection and Synchronization & Correction experiment Panel/CM4</p> <p>Delta, Adapting, Sigma delta, modulation & demodulation experiment Panel (CM5)</p> <p>AM Modulation & Demodulation experiment panel (CM6)</p> <p>FM Modulation & Demodulation experiment panel (CM7)</p> <p>Data formatting/Reformatting experiment panel (CM8)</p> <p>AM demodulator cum AM-FM Receiver expriment panel (P19)</p>

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
84	<p>Online/Offline Circuit Labs Model – EMONA-netCircuit</p> <ol style="list-style-type: none"> 1. netCircuit Main Unit 2. REL 1.0 Build Your Own Circuits Breadboard 3. REL 2.0 Electrical Circuit Theory Experiments plugin board 4. REL 2.1 Basic Analog Circuit Experiments plug-in board 5. REL 2.2 Op–Amp Circuit Experiments plug-in board 6. REL 3.0 Combinational & Sequential Logic Experiments board 7. Teacher Monitor Unit – (5)Pcs (Laptop Core i7 , 10th Gen) 8. Cisco RV160 VPN Router and RV160W Wireless-AC VPN Router
	<ol style="list-style-type: none"> 9. Cisco SG500X-48 48-Port GB with 4-Port 10-GB Stackable Managed Switch 10. Webcam 11. Network Test Kit Accessories Box

4. Electronic Engineering Lab Equipment

SR No	DESCRIPTION OF EQUIPMENT (TECHNICAL DETAILS)
1	2
85	<p>Fibre Optics TIME Electronics Board</p> <p>De Lorenzo DL 3155E63</p> <p>CIRCUIT BLOCKS FEATURES:</p> <ul style="list-style-type: none">-Clock signal generation-Serial interface-ST fibre-Analogue input / output-POF fibre-Printer interface <p>Accessories :</p> <ul style="list-style-type: none">-Base frame with power supply and interface to pc-CAI Software : Complete with a Student Navigator software that allows students to perform their learning activities through a Personal Computer, without the need for any other documentation.