

Department of Electrical Engineering
School of Engineering, Gautam Buddha University

Electrical Technology lab: Professor in-charge : Dr. C.B.Vishwakarma Technical Assistant : Mr. Indrapal Singh		
S.No.	Name of Instruments with specifications	Quantity
1.	House wiring training kit	2
2.	1-phase transformer kit (1KVA)	1
3.	Advance DC shunt motor kit (230 V,5A)	1
4.	Network theorem trainer kit (type DC)	4
5.	Kirchhoff's law training kit (type DC)	2
6.	Electronic work bench	2
7.	CRO and digital oscilloscope (30 MHz)	5
8.	DC supply (0-30 V)	3
9.	Function Generator (50 Hz)	4
10.	Digital multimeter	5
11.	Cut section of DC motor	1
12.	Auto transformer (0-260 V)	2
13.	Tachometer (5000RPM)	3
14.	Inductive load (5KVA)	2
15.	Resistive load(5KVA)	1
16.	Rheostat 50ohm, 10 A,300ohm, 3A, 500ohm ,1A,1700ohm, 1A	10
17.	Desktop with windows operating system	2

Measurement and Instrumentation Lab : Professor-in charge: Dr. C. B. Vishwakarma Technical Support: Mr. Faheem Ahmed		
S.No.	Name of Instruments	Quantity
1	Setup for measurement of resistance by Kelvin's Double Bridge	1
2	Setup for measurement of self inductance by Maxwell's Bridge	1
3	Setup for measurement of self inductance by Hay's Bridge	1
4	Setup for measurement of capacitance by Schering Bridge	1
5	Setup for measurement of frequency by Wein's Bridge	1
6	Setup for measurement of capacitance by Wein's Bridge	1
7	Setup for measurement of temperature using Resistance Temperature Detector(RTD)	1
8	Setup for study and plot of LDR Characteristics	1
9	Setup to verify characteristics of LVDT	1
10	Setup for measurement of temperature using Thermocouple	1
11	Setup for measurement of displacement using Strain Gauge type Displacement Transducer	1
12	Setup to study and measurement of Pressure using Pressure Transducer	1
13	Setup for measurement of humidity using Capacitive Transducer	1
14	Setup for measurement of liquid level	1
15	<div>Compact data acquisition system platform</div> <div>a. Measurement of Flow b. Measurement of various digital quantities by using universal counter</div>	1
16	Ammeter/Voltmeter	1
17	CT Testing by Silbee's Method	
18	PT testing by Comparison	1
19	Measurement of power in a Three phase system	1
20	Measurement of Power and Power factor of single phase using Three Ammeter and Three Voltmeter Method	1

Network Theory Lab : Professor-in charge: Dr. Nidhi Singh Pal Technical Support: Mr. Faheem Ahmed		
S.No.	Name of Instrument and Specifications	Quantity
1	Superposition Theorem kit with digital meters and AC-DC supply	2
2	Thevenin's and Norton's Theorem kit with digital meters and AC-DC supply	4
3	Tellegen's Theorem kit	2
4	Transient and Frequency response kit of an RLC circuit	2
5	Two port network parameters kit with digital meters	4
6	LC Filter kit	3
7	Digital Multimeters	5
8	50MHz Digital Oscilloscope	3
9	LCR Meter	2
10	Clamp Meter	1
11	Programmable DC Power Supply	4
12	Function Generators	2

MATLAB Programming Lab: Professor in -charge : Dr. M.A. Ansari Technical Assistant : Mr. Devi Singh		
S.No.	Name of instruments with specification	Quantity
1.	MATLAB software concurrent Lic.	30 user
2.	Computer system	27
3.	Desktop with windows operating system	1

Electrical Machine I&II Lab: Professor in-charge : Dr. C.B.Vishwakarma Technical Assistant : Mr. Devi Singh		
S.No.	Name of instruments with specification	Quantity
1.	DC Machine trainer-1 3 hp dc shunt motor CG make with loading arrangement and Lamp load 2kw	1
2.	DC Machine trainer-II MG Set 2.2 kw , 3 hp dc shunt motor ,Lamp load 2kw	1
3.	Open lab: Dissectible experimental rotating machine	1
4.	Single Phase transformer trainer -1 1 Phase variac 15A,1-Phase transformer, 3KVA	1
5.	Single Phase transformer trainer -II 1 Phase variac 15A,1 Phase variac 8A,1-Phase transformer, 3KVA,1- Phase resistive load 2KW	1
6.	Synchronus Machine Trainer-I MG Set, DC Shunt Motor 3 HP, Generator 5KVA	1
7.	Slip Ring Induction Motor trainer Slip Ring Induction Motor with loading, 5HP 3-phase Autotransformer 415V,15A	1
8.	Synchronization of 3-Phase Alternators MG Set, DC Shunt Motor 3 HP, Generator 5KVA	1
9.	Single phase induction motor trainer 1 phase induction motor with loading , 2 HP Variac 1- phase ,8 A	1
10.	3 phase transformer trainer -1 Variac 3 phase , 8 A,3 phase T/F, 3 KVA with temperature sensor,3- Phase resistive load 5KW	1
11.	3 phase transformer trainer -II Variac 3 phase , 15 A,3 phase T/F, 3 KVA ,4.2 A, 3- Phase resistive load 5KW	1
12.	3-phase induction motor trainer -1 3 phase I/M with loading, 3 HP , Variac, 415V, 10A	1
13.	3-phase induction motor trainer -II 3 phase I/M with loading, 3 HP	1
14.	Desktop with windows operating system	1

Control System Lab : Professor-in charge: Dr. Nidhi Singh Pal Technical Support: Mr. Faheem Ahmed		
S.No.	Name of Instrument and Specifications	Quantity
1	PID Control Trainer and Processes – Master Control Panel	3
2	Process Simulator Panel	1
3	Thyristor Actuator Panel	1
4	Servo Interface Panel(DC &AC position control)	1
5	Stepper Motor Panel	1
6	Process Control Trainer(Pressure, Flow and Temperature)	1
7	Servo Voltage Stabilizer Kit	1
8	P, PI, PID Control Simulator Trainer	3
9	Linear System Simulator	3
10	Temperature Controller Kit	2
11	Synchro-Transmitter Receiver Unit	1
12	Digital Storage Oscilloscope 50MHz, 2-Channel	3
13	3 ³ / ₄ digit Digital Multimeter	3

Power Electronics Lab: Professor in-Charge: **Dr. M.A. Ansari**
Technical Support : **Neeraj**

S.No.	Name of Instruments	Quantity
1	Characteristic study Trainers - IGBT, MOSFET ,SCR , TRIAC, DIAC	01
2	Single phase AC Voltage controller Using SCR & TRIAC with Load	01
3	Single Phase (Half & Full) Converter With R, RL loads	01
4	Forced Commutation circuits class A, class B, class C, class E	01
5	Single phase cyclo-converter R & RL loads	01
6	Single phase Bridge Inverter with DC supply power circuit triggering circuit	01
7	Morgen Chopper Circuit Trainer with DC power supply	01
8	Three Phase Half & fully Controlled Bridge Converter	01
9	Single Phase MC- Murray bed ford Full Bridge Inverter	01
10	Three phase Cyclo- Converter with Power supply input 440V	01
11	SCR based AC/ DC drives trainer	01
12	Speed Control (V/F Control) of Three phase AC induction Motor	01
13	DSP Based AC Induction Motor Control, Input :230V AC	01
14	FPGA Kit, 288k Block Ram USB interface	01

Switchgear & Protection Lab: Professor-in charge : Dr. Omveer Singh Technical Assistant : Mr. Devi Singh		
S.No.	Name of Instruments with specification	Quantity
1.	BUCHHOLZ RELAY	1
2.	DIFFERENTIAL RELAY TESTING SYSTEM	1
3.	70 MHZ DIGITAL STORAGE OSCILLOSCOPE (NVIS 207CIT)	1
4.	EARTH FAULT RELAY TESTING SYSTEM(NVIS 7094)	1
5.	ELECTRO MECHANICAL TYPE OVER VOLTAGE RELAY TEST SETUP	1
6.	ELECTRO MECHANICAL TYPE OVER CURRENT RELAY TEST SETUP	1
7.	ELECTRO MECHANICAL TYPE EARTH FAULT RELAY TEST SETUP	1
8.	FUNCTION GENARATOR	1
9.	MCB AND HRC FUSE TESTING SYSTEM(NVIS 7090)	1
10.	MAGGER 250 V/500V AND 1000V INSULATION AND CONTINUITY TESTER	1
11.	MICRO- CONTROLLER BASED OVER/ UNDER POWER FREQUENCY RELAY	1
12.	MICRO- CONTROLLER BASED directional over current RELAY	1
13.	MICRO CONTROLLER BASED REVERSE POWER RELAY	1
14.	MICRO CONTROLLER BASED OVER /UNDER VOLTAGE RELAY(VPL-05)	1
15.	MICRO CONTROLLER BASED OVER CURRENT RELAY(VPL-01)	1
16.	IDMT OVER CURRENT RELAY SETUP(NVIS 7091)	1
17.	OVER/UNDER VOLTAGE RELAY TRAINER	1
18.	PROGRAMMABLE AC POWER SOURCE(VPL-06 ACC3)	1
19.	3 PHASE OVER CURRENT AND EARTH FAULT NUMERIC RELAY TESTING SYSTEM(NVIS 7098)	1
20.	3 – PHASE RELAY TEST OR UNIVERSAL TEST SYSTEM(ME-2000)	1
21.	TRANSFORMER OIL TESTING SETUP	1
22.	UNIVERSAL RELAY TRAINING SYSTEM (NVIS 7099)	1
23.	VARIABLE AC CURRENT SOURCE (VPL-01 ACC)	1
24.	Desktop with windows operating system	1

Power System Lab: Professor in- charge: Dr. Omveer Singh Technical Support: Neeraj		
S.No.	Name of Instruments with Specifications	Quantity
1	Three phase Symmetrical And Unsymmetrical fault analysis.	1
2	To Study and Measurement of Direct Axis and Quadrature And (XP) Reactance by Slip Test & Study & Measurement of Positive & Negative & Zero Sequence Impedance of Three Phase Synchronous Alternator. Input mains; 230 AC, 50Hz Fixed DC output; 200V	1
3	To determine Sub Transient Direct Axis Reactance (X_d'') and Sub Transient Quadrature Axis Reactance (X_q'') of an Alternator.	1
4	To Study Percentage Differential Relay	1
5	To determine location of fault in a cable using cable fault locator.	1
6	To Study Ferranti Effect & Voltage Distribution in H. V. Long Transmission Line using Transmission Model	1
7	To determine A, B, C, D, Parameters of an artificial transmission line	1
8	Test for breakdown strength of a transformer oil	1
9	Power Measurement using CT & PT	1
10	To study Radial & Ring main Distribution System	1
11	Digital Multimeter	5
12	Function Generator	5

Advanced Power Electronics & Drive Lab: Professor in-Charge : Dr. M.A.Ansari
Lab Assistant : Neeraj

S.No.	Name of Instruments	Quantity
1	Advance Machine & Drives – Vector control Of Induction	1
2	Direct Torque Control (DTC) Of Induction Motor Drive	1
3	Permanent Magnet Synchronous Motor (PMSM) Drive	1
4	Switched Reluctance Motor Drive	1
5	Advance converter -3 Phase Cyclo-Converter	1
6	Advance converter -3 Phase Inverter	1
7	Advance converter- Dc-DC Buck Boost Converter	1
8	STATCOM	1
9	Advance PWM Technique-Sinusoidal PWM generation	1
10	FPGA Based Controller	1
11	Training on PLC Based Automation for Motor Control	1
12	Wind/ Solar based Hybrid System with 3-Phase AC Sour	1
13	Power Supply	1
14	UPS	1
15	SMPS	1
16	Digital Storage Oscilloscope	2
17	Three phase half wave cyclo-converter	1

Digital & Nonlinear Control Lab: Professor in-charge: Dr. Nidhi Singh Pal Technical Assistant: Mr. Devi Singh		
S.No.	Name of instruments with specification	Quantity
1.	ANALOG CONTROL MODULE Make: Google tech HK modal:GAE1001	1
2.	BALL AND BEAM CONTROL SYSTEM Make: Google tech HK model:GBB1004	1
3.	3 DOF HELICOPTER SIMULATOR Make: Google tech HK modal:GHP2002	1
4.	LINEAR 2 –STAGE INVERTED PENDULAM Make: Google tech HK modal:GLIP2002	1
5.	MAGNETIC LEVITATION SYSTEM Make: Google tech HK modal:GML1001	1
6.	DIGITAL PENDULAM MAKE:FEEDBACK	1
7.	INDUSTRIAL ROBOT MAKE: ABB (ABB IRB 120 ROBOTS IRB M2004 C3HAC031431-001)	1
8.	Computer system	5

Advance Instrumentation and Control Lab: Professor in-charge: Dr. Shabana Urooj Technical Support: Mr. Faheem Ahmed			
S.No.	Name of Instrument	Specifications	Quantity
1	Workbench Platform Hardware	a. 5 DMM (5 $\frac{1}{2}$ digit Digital Multimeter) b. DSO (Multifunction 50MHz Digital Storage Oscilloscope) c. FGEN (1MHz Function Generator) d. Arbitrary Waveform Generator e. +/- 12V Variable Power Supply f. +/-15V, 5V Constant Power Supply g. 5MHz Bode Analyzer h. Dynamic Signal Analyzer i. 1Hz to 35Hz Impedence Analyzer j. Electronic Breadboard System	1
2	Sensors Bundle	a. Temperature Sensors: RTD, Thermocouple, Thermistor b. Single Axis Accelerometer for Vibration	1

		<p>Measurement</p> <p>c. Array Microphone for Real-time Audio Processing</p> <p>d. Bioinstrumentation Sensors Kit – EKG Sensor, Hand-Grip Heart Rate Monitor, Hand Dynamometer, Oxygen Gas Sensor, Surface Temperature, Blood Pressure Monitor, Spirometer</p> <p>e. Green Engineering Sensors Kit – CO2 Gas Sensor, pH Sensor, Temperature Probe, Conductivity Probe, Differential Voltage Probe, Current Probe and Analog Proto board Connector</p>	
3	Data Acquisition, Real-time Analysis and Data Visualisation Software	<p>a. LabVIEW full development system</p> <p>b. LabVIEW Controls and Embedded Software</p> <p>c. LabVIEW Signal Processing and Communications Software</p>	*25
4	DIAdem Professional Edition	Data Visualization Software	1
5	Educational Laboratory Virtual Instrument Suit Multisensor Addon Modules	<p>a. Strain Guage</p> <p>b. Piezo film sensor</p> <p>c. Rotary potentiometer</p> <p>d. Pressure sensor</p> <p>e. Thermistor sensor</p> <p>f. Long range sensors – Sonar and Infrared</p> <p>g. Short range sensors – magnetic field and optical</p> <p>h. Micro switch, push button and optical switch</p> <p>i. Two digital output LEDs</p> <p>j. Encoder</p>	1
6	Compact DAQ based Real-time DAQ platform	a.Multislot Compact Data Acquisition Chassis with USB connectivity with integrated DAQ and signal conditioning modules for temperature, pressure, strain sensors	1
7	Wireless Data Acquisition Platform	ZigBee based programmable WSN platform for measurement of real-time data	1
8	Wi-Fi Data Acquisition Platform	Wireless Data Acquisition modules for strain, temperature etc sensors	1
9	Ethernet Based Data Acquisition Platform	Ethernet Based Compact DAQ module for multisensor input and LabVIEW supported PC based Analysis	1
10	USB Based Data Acquisition Platform	USB based multifunction data acquisition modules for general purpose instrumentation and actuator control applications	1
11	PCIe/PCI Based PC Data Acquisition Platform	PCIe multifunction DAQ modules with support for multichannel analog input/output and digital input/output	1
12	Industrial PXI Based Data Acquisition Platform	PXI Chassis, PXI Controller and PXI based multifunction DAQ module	1
13	Virtual and Remote Lab Platform	Internet Enabled Sensor Input, Signal conditioning and Data Acquisition Platform with support for a variety of sensors	1
14	Embedded	a. Compact Real time Controller with Real time	1

	Instrumentation System Design Platform	Controller (Power PC) running on RTOS b. Integrated Signal Conditioning and I/O modules for Analog Input, Analog Output, Custom Sensor input and Programmable DIO	
15	Set-up to Study and Measurement of different BIO_MEDICAL SIGNALS complete system	Bioinstrumentation Sensor Kit	1
		Myoelectric Kit	1
16	LabVIEW Full Development System with 1 year updates	--	1
17	Desktop Computer	Desktop Computers with Windows Operating System	8

Biomedical Instrumentation Lab: Professor in- charge: Dr. Shabana Urooj Technical Support: Mr. Faheem Ahmed			
S.No.	Name of Instruments	Specifications	Quantity
1	Circuit Design Platform for Biomedical Circuit Prototyping with following specifications	a. 5 DMM (5 $\frac{1}{2}$ digit Digital Multimeter) b. DSO (Multifunction 50MHz Digital Storage Oscilloscope) c. FGEN (1MHz Function Generator) d. Arbitrary Waveform Generator e. +/- 12V Variable Power Supply f. +/-15V, 5V Constant Power Supply g. 5MHz Bode Analyzer h. Dynamic Signal Analyzer i. 1Hz to 35Hz Impedence Analyzer j. Two wire current analyzer (+/-10V sweeps) k. Three-wire current-voltage analyzer for NPN, PNP Transistors	1
2	Circuit Design Software for Biomedical Instrumentation Circuit Simulation	--	1
3	PCB software for PCB layout and routing of Bioinstrumentation circuits	--	1

4	Workbench Bioinstrumentation Sensor Addon Bundle consisting of the following sensors	<ul style="list-style-type: none"> a. EKG sensor for 3-lead EKG tracing with 100 disposable electrodes b. Hand-grip Heart Rate Monitor consisting of wireless hand grips and a receiver module for data collection c. Isometric Hand Dynamometer with Force Range 0-600N with an accuracy of +/-0.06N d. Oxygen Gas Sensor e. Surface Temperature Sensor including thermistor sensor f. Non-invasive Blood Pressure Sensor including standard adult size adjustable cuff(27cm-39cm), pump bulb and pressure transducer g. Spirometer including 1 sensor handle, 1 flow head, 5 disposable mouthpieces, 1 disposable bacterial filter and 1 nose clip h. Analog Proto board connector 	1
5	ARM Cortex M3	LM3S962 processor (256KB Flash ROM, 64KB SRAM, 50MHz) with 1CAN interface, SD Card interface, OLED Graphics Display with 128x96 pixel resolution, User LED, Navigation Switches, Pushbuttons, Ethernet connectivity and Analog Input	1
6	ARM 7	MCB2300 featuring NXP LPC2300 processor with 2 serial interfaces, potentiometer, LCD, USB, and Ethernet Connectivity LEDs and Pushbuttons)	1
7	Medical Device Prototyping Platform	sBRIO with Freescale PowerPC Processor, ADC/DAC and Xilinx FPGA for Algorithm Prototyping and Deployment	1
8	Workbench Addon for Digital Electronics	<ul style="list-style-type: none"> a. Spartan 3E based FPGA Training Platform containing 8LEDs, 8DIP Switches, 4 Switch Buttons, 2 seven segment LED displays, breadboarding and prototyping area with 6Pmod Connectors. b. Programmable with LabVIEW FPGA and Xilinx ISE Tools 	1
9	Smart Camera Platform	<ul style="list-style-type: none"> a. Imaging Sensor for Real-time Image Acquisition b. Lenses (12mm, 16mm and 25mm) c. Ring Lighting d. Rotary Stage and Camera Stand e. Ethernet and Power Accessories <p>(An industrial, High quality Sony CCD image sensors, with high performance processors, industrial I/O, lighting control and dual Gigabit Ethernet which works with real time module. Camera supports Programmable Automation Controllers(PAC) and Human Machine Interface systems)</p>	1
10	Desktop Computer	Desktop Computers with Windows Operating System	2