

Faculty of Electrical Engineering
B.E. Electronics and Instrumentation Engineering
(R 2021) Semester – II

Course Code: EE3271		Course Title: Electric Circuits Laboratory	
Sl. No.	Description of Equipment	Required numbers (for batch of 30 students)	
1	10 Nos of PC loaded with Pspice/ Matlab/e-Sim / Scilab/ Equivalent Software Package	Minimum 10 Users	
2	Printer	1	
3	Regulated Power Supply (0-30V)	15 Nos	
4	Function Generator (MHz Range)	5 Nos	
5	Oscilloscope (20 MHz)	10 Nos	
6	Digital Storage Oscilloscope (20 MHz)	2 Nos	
7	AC/DC – Voltmeters of required rating	10 Nos	
8	AC/DC -Ammeters of required rating	10 Nos	
9	Multimeters	10 Nos	
10	Decade Resistance Box, Decade Inductance Box, Decade Capacitance Box	6 Nos each.	
11	Single Phase Wattmeter of suitable rating	5 Nos	
12	Circuit Connection Boards -	20 Nos	
13	Connecting Wires	Necessary Quantity	
14	Three phase star& delta connected load / Single phase load bank of suitable rating	3 Nos	
15	Necessary Quantities of Resistors, Inductors, Capacitors of various capacities (Quarter Watt to 10 Watt)		

Name of the Course: B. E. ELECTRONICS AND INSTRUMENTATION ENGINEERING

Degree: UG

**Course Code:EI3361 Course Title: SEMICONDUCTOR DEVICES AND CIRCUITS LABORATORY
(R 2021) Semester : III**

Sl. No.	Description of Equipment	Required numbers (for batch of 30 students)
1	Regulated Power Supply – Dual, 0-30V, variable	10
2	Cathode Ray Oscilloscope, 0-30 MHz	8
3	Digital Multimeter	10
4	Function Generator, 0 – 20 MHz	8
5	Breadboard	10
6	Computer with PSIM/SIMULINK	1(Licensed)
7	PN Junction diode – 1N4007	20
8	Zener diode – FZ5.6 / FZ9	10
9	BJT – BC107 / BC547	10
10	JFET – BFW10 / BFW11	10
11	UJT – 2N2646	10
12	Step-down transformer – 230V/12-0-12V	10
13	Capacitors, assorted	10 each
14	Resistors 1/4W, assorted	10 each
15	Single-strand wires, different colours	10 each

Faculty of Electrical Engineering
B. E. ELECTRONICS AND INSTRUMENTATION ENGINEERING
(R 2021) Semester – III

Course Code: CS3362 Course Title: C PROGRAMMING AND DATA STRUCTURES LABORATORY		
Sl. No.	Description of Equipment	Required numbers (for batch of 30 students)
1.	INTEL based desktop PC with min. 8GB RAM and 500 GB HDD, 17" or higher TFT Monitor, Keyboard and mouse	30
2.	Windows 10 or higher operating system / Linux Ubuntu 20 or higher	30
3.	Standalone desktops PC	15 Nos.

Name of the Course: B. E. ELECTRONICS AND INSTRUMENTATION ENGINEERING		
Degree: UG		
Course Code:EI3461		
Course Title: DIGITAL AND LINEAR INTEGRATED CIRCUITS LABORATORY		
(R 2021) Semester: IV		
Sl. No.	Description of Equipment	Required numbers (for batch of 30 students)
1.	Variable Power Supply (Dual Output), Range (0 - 30V)	6
2.	Variable Power Supply (Single Output) Range (0 - 5V)	6
3.	DSO with function generator/CRO (30MHz)	6
4.	Function generator (1MHz)	5
5.	Digital Multimeter	10
6.	Bread Board	10
7.	IC Tester (Analog & Digital)	2
8.	Variable Auto transformer (Single phase)	1
9.	Step-down transformer 230V/12-0-12V	1
10.	Personal computer	2
11.	Xilinx Software	Single user(Licensed/Open source)
12.	OrCAD Software	Single user(Licensed/Open source)
Consumables (Sufficient quantity)		
1.	IC 741	
2.	LM317/LM723	
3.	IC NE555	
4.	Digital IC's (7400,7402,7404,7408,7432,7486)	
5.	Digital IC - 7474 (D-FlipFlop)	
6.	Digital IC - 7476 (JK-FlipFlop)	
7.	Digital IC - 74153 (Multiplexer) & Digital IC - 74155 (Demultiplexer)	
8.	Digital IC - 74147/ 74148 (Encoder) & Digital IC - 74138 (Decoder)	
9.	Seven segment decoder IC - 7447	
10.	Seven segment display/LED	
11.	Capacitor	
12.	Potentiometer (10 k Ω)	
13.	1/4 Watt Fixed Resistor	
14.	Zener diode	
15.	4mm Banana Plug patch cords	

16.	Single Strand Wire	
Degree: UG		
Name of the Course: B. E. ELECTRONICS AND INSTRUMENTATION ENGINEERING		
Course Code:EI3462		
Course Title: SENSORS AND SIGNAL CONDITIONING CIRCUITS LABORATORY		
(R 2021) Semester: IV		
SI. No.	Description of Equipment	Required numbers (for batch of 30 students)
1	Furnace with temperature controller of range (max) 600°C	2
2	Thermocouples Type J,K,E without Thermowell	1 (each)
3	Thermocouples Type J,K,E with Thermowell	1 (each)
4	RTD, Thermistor, LVDT, Hall effect sensor, Sychro transmitter – receiver set, Gang capacitor, Load cell, Pressure cell, seismic type accelerometer	1(each)
5	LVDT, Hall effect sensor, Variable capacitor, Load cell, Pressure cell, seismic type accelerometer signal conditioner unit with analog/digital output.	1(each)
6	Strain Gage bridge with loading arrangement (Separate Quarter, Half and Full bridge units) and signal conditioner unit with analog/digital output	1
7	Standard weight 100g	15
8	Vibration exciter (shaker) (50 Hz – 1 KHz) for accelerometer	1
9	Kelvin bridge, Anderson bridge and Schering bridge unit for resistance, inductance and capacitance measurement	1(each)
10	DSO (20 MHz, 2- channel)	2
11	Signal Generator (1 Hz -1 MHz)	2
12	Regulated power supply (0-30)V, 2A	5
13	Dual power supply (-15 - 0 - +15)V, 2A	3
14	Decade resistance, inductance and capacitance box	2(each)
15	Rheostat (0 - 600)ohms, 1A	1
16	Voltmeter (0-300)V- MC and MI type	1(each)
17	MC Voltmeter (0-15)V	5
18	Flapper-nozzle system with pressure gage (0-30)psi	1
19	Air Compressor with storage tank capacity 50psi and pressure regulator.	1
20	Digital Multimeter	5
21	General purpose Op-amp ICs LM 741/ LM 324/ LM 358/ NE 5532 (or equivalents)	30
22	IC temperature sensors LM 35/ TMP 35, LM 335 (or equivalents)	5
23	Fixed Resistors and Capacitors of wide range	50 (each)
24	Diodes and zener diodes	10 each
25	Auto-transformer (0-270)V	1
26	Data Aquisition Cards(USB 6001/ Equivalent)	6
27	Personal Computer	6

28	Bread board	5
29	Single and multi strand wires	Adequate length
Degree: UG		
Name of the Course: B. E. ELECTRONICS AND INSTRUMENTATION ENGINEERING		
Course Code:EI3561		
Course Title: PROCESS CONTROL AND INSTRUMENTATION LABORATORY		
(R 2021) Semester: V		
Sl. No.	Description of Equipment	Required numbers (for batch of 30 students)
1.	Interacting and non-interacting test rig (2 tank / 3 tank / any experimental setup that facilitates interaction among 2 process variables)	1
2.	Temperature test rig with facility to implement ON/OFF controller	1
3.	Control valve with and without positioner fixed in any test rig	1
4.	Process Control training plant with option for control of Level and Pressure	1
5.	Flow test Rig with Industrial PID controller	1
6.	PC	5
7.	Matlab / Labview software	Minimum 5 (Licensed)
8.	i. Humidity and viscosity measurement system/kit ii. Electromagnetic flow meter mounted on a fluid pipeline	1 Each
9.	i. Speed, Torque and Vibration measurement system kit ii. Multifunction Calibrator/ any Calibrator for measurement of current, voltage and power for calibrating ammeter. voltmeter and wattmeter respectively	1 Each
10.	i. Dead weight tester and a pressure gauge for testing ii. Estimation of discharge coefficient of an Orifice plate	1 Each
11.	i. UV-Visible Spectrophotometer ii. Conductivity and pH measurement system/kit	1 Each
12.	i. Atleast two different types of flowmeters ii. Data acquisition card iii. PC iv. Flow Transmitter v. HART communicator	1 Each
13.	i. ECG and Pulse rate measurement system/ Health monitor system ii. Electrical Safety Analyser	1 Each

Degree: UG		
Name of the Course: B. E. ELECTRONICS AND INSTRUMENTATION ENGINEERING		
Course Code:EI3661		
Course Title: INDUSTRIAL AUTOMATION SYSTEMS LABORATORY		
(R 2021) Semester: VI		
Sl. No.	Description of Equipment	Required numbers (for batch of 30 students)
1.	Industrial PLCs - Siemens / Rockwell Automation / Allen Bradley / Mitsubishi Electric / Schneider Electric / Omron / Equivalent	3
2.	Programming Excercies using CODESYS 3.5 simulation software for IEC 61131-3 standards with visualizations	10 (open source)
3.	PC	10
4.	Distributed Control System (DCS)	1
5.	Pilot plant for Level Process / Flow Process / Temperature Process	2
6.	24V DC Motor with driver unit	2
7.	Filling / Draining kit with driver unit	2
8.	Alarm-Annunciator sequences kit	2
9.	Traffic Light Control kit	2
10.	Data Aquisition Card (DAQ)	2