MARTHANDAM COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CONTROL & INSTRUMENTATION LABORATORY

Equipments Available in the Lab

Sl.No	EQUIPMENTS
1	Semiconductor devices like Diode, Zener Diode, NPN Transistors, JFET, UJT, Photodiode, PhotoTransistor
2	Resistors,Capacitors and inductors
3	Necessary digital IC
4	Function Generators
5	Regulated 3 output Power Supply 5±15V
6	CRO
7	Storage Oscilloscope
8	Breadboards
9	Single phase house wiring setup.
10	Three phase house wiring setup
11	Staircase wiring setup
12	Fluorescent lamp wiring setup
13	Emergency lamp wiring setup
14	Iron box wiring setup
15	Soldering Iron, Lead
16	Multi meter
17	Continuity tester
18	Laptop
19	Desktop computer
20	LED TV
21	DC Multi-output power supply (0-5V),(0-30V)(+15V,- 15V)

22	Resistors Capacitors Diodes Transistors
23	AC Servomotor Control Kit With Motor Setup
24	DC Servomotor Control Kit With Motor Setup
25	Rigged Up Module For Type 0,Type 1 System Kit
26	Lead Lag Compensation Network Kit
27	Design of PID controller Kit
28	Stability Analysis of Linear systems Kit
29	Speed Control Of DC Servomotor Kit
30	DC Servomotor Position control Kit
31	Synchro Transmitter & Receiver Kit
32	Digital Simulation of Linear Systems Kit
33	Temperature Control of DC Servomotor Kit
34	Displacement Measurement Trainer
35	Pressure Measurement Trainer
36	Instrumentation Amplifier Module
37	Iron Loss and permeability of Ring Specimen
38	Wheatstone Bridge
39	Kelvin’s Double Bridge
40	Maxwell’s Inductance Bridge

41	Schering Bridge
42	Digital to Analog Converter
43	Analog to Digital Converter
44	Series AC & DC circuit Trainer
45	AC Servomotor Position Controller Kit
46	Stepper Motor Control Kit
47	Single Phase Auto transformer

COURSES OFFERED

Sl.No	Odd Sem (Course code & Name)	Class	Even Sem (Course code & Name)	Class
1	EC3311- Electronic devices and circuits laboratory	II Year EEE	GE3271 & Engineering Practices Laboratory (Electrical)	I Year-EEE, ECE, CSE, IT, Mech, Civil
2			GE3271 & Engineering Practices Laboratory (Electronics)	I Year-EEE, ECE, CSE, IT, Mech, Civil

MARTHANDAM COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

2023-2024 ODD SEMESTER

EC3311- ELECTRONIC DEVICES AND CIRCUITS LABORATORY

COURSE OBJECTIVES:

- To enable the students to understand the behavior of semiconductor device based on experimentation.
- Be exposed to active and passive circuit elements.
- Familiarize the operation and characteristics of transistor like BJT and FET.
- Explore the characteristics of amplifier gain and frequency response.
- Learn the required functionality of positive and negative feedback systems

COURSE OUTCOMES:

Upon successful completion of the course, the students will be able to:

CO1: Analyze the characteristics of PN, Zener diode and BJT in CE,CC,CB configurations experimentally

CO2: Analyze the characteristics of JFET and UJT experimentally

CO3: Analyze frequency response characteristics of a Common Emitter amplifier experimentally

CO4: Analyze the characteristics of RC phase shift and LC oscillators experimentally

CO5: Analyze the characteristics of half-wave and full-wave rectifier with and without filters experimentally

CO6: Analyze the characteristics of FET based differential amplifier experimentally

CO7: Calculate the frequency and phase angle using CRO experimentally

CO8: Analyze the frequency response characteristics of passive filters experimentally

LIST OF EXPERIMENTS

1. Characteristics of Semiconductor diode, Zener diode , photo diode , and photo transistor

2. Characteristics of NPN Transistor under common emitter , common collector and common base configurations

3. Characteristics of JFET and draw the equivalent circuit

4. Characteristics of UJT and generation of saw tooth waveforms

5. Design and frequency response characteristics of a Common Emitter amplifier

6. Characteristics of light activated relay circuit

7. Design and testing of RC phase shift and LC oscillators

8. Characteristics of Single Phase half-wave and full wave rectifiers with inductive and capacitive filters

9. Design of Differential amplifiers using FET

10. Measurement of frequency and phase angle using CRO

11. Realization of passive filters

2023-2024 EVEN SEMESTER

GE3271 ENGINEERING PRACTICES LABORATORY (ELECTRICAL)

OBJECTIVES:

1. The main learning objective of this course is to provide hands on training to the students in Wiring various electrical joints in common household electrical wire work.

OUTCOMES:

CO1: Upon completion of this course, the students will be able to Wire various electrical joints in common household electrical wire work.

LIST OF EXPERIMENTS

1. Introduction to switches, fuses, indicators and lamps - Basic switch board wiring with lamp, fan and three pin socket
2. Staircase wiring
3. Fluorescent Lamp wiring with introduction to CFL and LED types.
4. Energy meter wiring and related calculations/ calibration
5. Study of Iron Box wiring and assembly
6. Study of Fan Regulator (Resistor type and Electronic type using Diac/Triac/quadrac)
7. Study of emergency lamp wiring/Water heater

GE3271 ENGINEERING PRACTICES LABORATORY (ELECTRONICS)

OBJECTIVES:

MARTHANDAM COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

1.The main learning objective of this course is to provide hands on training to the students in Soldering and testing simple electronic circuits; Assembling and testing simple electronic components on PCB

OUTCOMES:

CO2: Upon completion of this course, the students will be able to Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

LIST OF EXPERIMENTS

1. Soldering simple electronic circuits and checking continuity.
2. Assembling and testing electronic components on a small PCB.
3. Study an elements of smart phone.
4. Assembly and dismantle of LED TV.
5. Assembly and dismantle of computer/ laptop