



**GOVERNMENT POLYTECHNIC KORAPUT  
DEPARTMENT OF ELECTRICAL ENGINEERING**

**Pr.2 POWER ELECTRONICS & PLC LAB**

<b>Name of the Course: Diploma in Electrical Engineering</b>			
<b>Name of the Faculty: S.Bichiballi W.E.F.:14.09.2022</b>			
<b>Course code:</b>	Pr.2	<b>Course code:</b>	5 <sup>th</sup>
<b>Total Period:</b>	45	<b>Total Period:</b>	3 hrs
<b>Lab. periods:</b>	3 P / week	<b>Lab. periods:</b>	25
<b>Maximum marks:</b>	75	<b>Maximum marks:</b>	50

**VISION:**

To create competent & industry ready Electrical Diploma Engineers with professional and social values to meet future challenges.

**MISSION:**

- To prepare diploma holders through “qualitative competency based education system” to compete with national requirement along with core values.
- To produce dynamic Electrical Engineers to serve the society and industry.
- To develop leadership qualities, communication skills, critical thinking and attitude for lifelong learning.

**PROGRAM EDUCATIONAL OBJECTIVES:**

<b>PEO1</b>	Apply technical knowledge and skills learned in the field of Electrical Engineering to excel in Professional and/or higher education.
<b>PEO2</b>	To provide students an excellent academic environment and make them aware the needs of Society and Industry to become a successful Professional/Entrepreneur.
<b>PEO3</b>	To engage in lifelong learning, career enhancement to adopt emerging technologies

**COURSE OUTCOMES:**

<b>CO1</b>	Analyze characteristics of power electronic devices.
<b>CO2</b>	Design basic power electronic circuits.
<b>CO3</b>	Explore usage of power converters in commercial and industrial applications.
<b>CO4</b>	Demonstrate programmable logic controller and execute basic ladder diagrams.



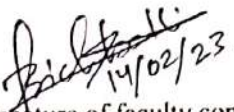
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LESSON PLAN

Week	Day	Experiment
1 <sup>st</sup>	1 <sup>st</sup>	Study of switching characteristics of a power transistor.
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
2 <sup>nd</sup>	1 <sup>st</sup>	Study of V-I characteristics of SCR.
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
3 <sup>rd</sup>	1 <sup>st</sup>	Study of V-I characteristics of TRIAC.
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
4 <sup>th</sup>	1 <sup>st</sup>	Study of V-I characteristics of DIAC.
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
5 <sup>th</sup>	1 <sup>st</sup>	Study of drive circuit for SCR & TRIAC using DIAC.
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
6 <sup>th</sup>	1 <sup>st</sup>	Study of drive circuit for SCR & TRIAC using UJT.
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
7 <sup>th</sup>	1 <sup>st</sup>	To study phase controlled bridge rectifier using resistive load.
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
8 <sup>th</sup>	1 <sup>st</sup>	To study series Inverter.
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
9 <sup>th</sup>	1 <sup>st</sup>	Study of voltage source Inverter.
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
10 <sup>th</sup>	1 <sup>st</sup>	To perform the speed control of DC motor using Chopper.
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
11 <sup>th</sup>	1 <sup>st</sup>	To study single-phase Cyclo-converter
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
12 <sup>th</sup>	1 <sup>st</sup>	Introduction/Familiarization PLC Trainer & its Installation with PC I. Learn the basics and hardware components of PLC II. Understand configuration of PLC system III. Study various building blocks of PLC IV. Determine the No. of digital I/O & Analog I/O
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
13 <sup>th</sup>	1 <sup>st</sup>	Execute the different Ladder Diagrams I. Demonstrate PLC and Ladder diagram-Preparation downloading and running II. Execute Ladder diagrams for different Logical Gates III. Execute Ladder diagrams using timers & counters
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	

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14 <sup>th</sup>	1 <sup>st</sup>	Execute the Ladder Diagrams with model applications I. DOL starter II. Star- Delta starter
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	
15 <sup>th</sup>	1 <sup>st</sup>	Execute Ladder diagrams with model applications I. Stair case lighting II. Traffic light controller
	2 <sup>nd</sup>	
	3 <sup>rd</sup>	

  
Signature of faculty concerned

  
H.O.D. Electrical