

# **“PCB DESIGN”**

ADD ON COURSE REPORT

*Conducted by*

**Department of Electrical & Electronics Engineering**



**SCMS School of Engineering and Technology**

**Karukutty - 683576**

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## Course Details

<b>Name of the course</b>	Add on course
<b>Conducted by</b>	Department of Electrical & Electronics Engineering
<b>College</b>	SCMS School of Engineering & Technology, Karukutty
<b>Eligibility</b>	U.G Students
<b>Title of the course</b>	PCB Design
<b>Duration of the course</b>	5 days (30 hours)
<b>Class</b>	S3 EEE
<b>Course dates</b>	25 <sup>th</sup> Nov 2023, 26 <sup>th</sup> Nov 2023, 30 <sup>th</sup> Nov 2023, 01 <sup>st</sup> Dec 2023, 07 <sup>th</sup> Dec 2023
<b>Sessions</b>	Forenoon session: 8:45 am-11:45 am (3 hours)  Afternoon session: 12:30 pm - 3:30 pm (3 hours)  Total: 30 hours (6 hours per day)
<b>Course Co-ordinator</b>	Ms. Megha Jasmin Benny, Assistant Professor
<b>Head of department</b>	Dr. Jayanand B

# **“Printed Circuit Board (PCB) Designing”**

## **Objective of the Course**

This is a basic course for designing of PCB using software. PCB (Printed Circuit Board) designing is an integral part of each electronics products and this program is designed to make students capable to design their own projects PCB up to industrial grade.

## **Topics Covered:**

1. Introduction to PCB designing concepts
2. Component introduction and their categories
3. Introduction to Development Tools
4. Detailed description and practical of PCB designing
5. Lab practice and designing concepts

## **Objectives**

- Identifying Electronic Components Symbols & Footprints
- Constructing your Component libraries & use them effectively
- Schematic creation & interpretation
- Effective use of design rules & interfacing between schematic & PCB
- Component placement & routing techniques for various technologies Outcomes
- Students are able to design a schematic of their circuit
- Students are able to design PCB layout of their design
- Students are capable to produce PCB of their own circuit
- The course is intended to give the students the necessary knowledge and of PCB design steps, starting from a simple schematic, through creating new components, and all the way to down a final PCB layout
- Recognize the technologies used in electronic industry through the practical experience gained in the course.

## **Software used**

- LTSpice

## **Purpose of the Course**

The gap in syllabus for the subject “EET205 – Analog Electronics” was identified. An add on course titled “PCB Design” for a duration of 30 hours is planned to overcome the gap in syllabus.

## Detailed syllabus

Sl no	Unit Name	Content
1	<b>Introduction to PCB designing concepts</b>	<b>Introduction &amp; brief history</b> <ul style="list-style-type: none"> <li>• What is PCB?</li> <li>• History</li> <li>• Types of PCBs: Single Sided (Single layer), Multi- Sided (Double layer)</li> <li>• PCB Materials</li> </ul> <b>Introduction to Electronic Design Automation (EDA)</b> <ul style="list-style-type: none"> <li>• Brief History of EDA</li> <li>• Latest Trends in Market</li> <li>• How it helps &amp; why it requires</li> <li>• Different EDA tools</li> </ul> Introduction to LTSpice Environment
2	<b>Component Introduction &amp; their categories</b>	<b>Types of components</b> <ol style="list-style-type: none"> <li>1. Active Components               <ul style="list-style-type: none"> <li>• Diode</li> <li>• Transistor</li> <li>• MOSFET</li> <li>• LED</li> <li>• SCR</li> <li>• Integrated Circuits</li> </ul> </li> <li>2. Passive Components               <ul style="list-style-type: none"> <li>• Resistor</li> <li>• Capacitor</li> <li>• Inductor</li> <li>• Transformer</li> </ul> </li> </ol>
3	<b>PCB make</b>	<ul style="list-style-type: none"> <li>• What is PCB made of?</li> <li>• PCB Base</li> <li>• FR-4</li> </ul>
4	<b>PCB Characteristics</b>	<ul style="list-style-type: none"> <li>• Through hole technology</li> <li>• Through surface mount technology</li> </ul>
5	<b>Introduction to development tools</b>	<ul style="list-style-type: none"> <li>• Introduction to PCB design using LTSpice software</li> </ul>
6	<b>Detailed description &amp; practical of PCB designing</b>	<b>PCB Fabrication</b> <ul style="list-style-type: none"> <li>• Set-up</li> <li>• Imaging</li> <li>• Etching</li> <li>• Drilling</li> <li>• Masking</li> <li>• Silk screening</li> <li>• Route</li> </ul>

		<ul style="list-style-type: none"><li>• Electrical test</li></ul>
7	<b>Practical work</b>	Hardware/Software designing on PCB

## Assessment pattern

<b>Sl no</b>	<b>Name</b>	<b>Marks</b>
1	Assignment	30
2	Examination	50
3	Viva	20



## Attendance

Sl no	Name of Student	Day 1 (8:45 am – 3:30 pm)	Day 2 (8:45 am – 3:30 pm)	Day 3 (8:45 am – 3:30 pm)	Day 4 (8:45 am – 3:30 pm)	Day 5 (8:45 am – 3:30 pm)	Final Marks (100)
1	ABHINAV RAJ	☒	☒	A	☒	☒	
2	ABHISHEK ACHUTHAN	☒	☒	☒	☒	☒	
3	AGIN K SIMON	☒	☒	☒	☒	☒	
4	AJMAL SHAJI	A	☒	☒	☒	☒	
5	AKSHAY BABU	☒	☒	☒	☒	☒	
6	ASHFIYA SALEEM C S	☒	☒	☒	☒	☒	
7	KEERTHANA P MENON	☒	☒	☒	☒	☒	
8	MUHSINA O M	☒	☒	☒	☒	☒	
9	NIJON ALEX	☒	☒	☒	A	☒	
10	NISSIN C P	☒	☒	☒	☒	☒	
11	PARVATHY RAMACHANDRAN	☒	☒	☒	☒	☒	
12	PRATUL RAMAKRISHNAN	☒	☒	☒	☒	☒	
13	REVANTH C S	☒	☒	☒	☒	☒	
14	SABARINATH S	☒	☒	☒	A	☒	
15	SANJO JAJI	☒	A	☒	☒	☒	

## Course Summary

### PCB Design (30 Hours)

Five Days-30 hours Add On Course on “*PCB Design*” was organized by the EEE dept of SCMS School of Engineering & Technology during November/December 2023. This course aims to provide opportunities to students to enrich their technical knowledge in the field of PCB and its applications. The resource person was Ms. Megha Jasmin Benny, Assistant Professor, EEE dept. The Programme is also designed to make students capable to design their own projects PCB up to industrial grade. The course was opened to S3 EEE students. Fifteen students attended the program. The feedback of the sessions received by the participants was excellent.



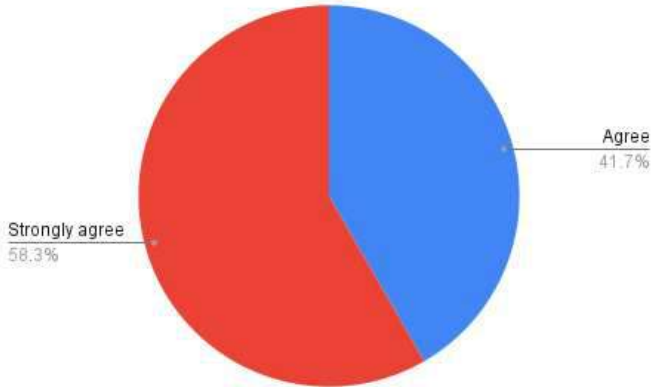
Fig (a): Talk on PCB design



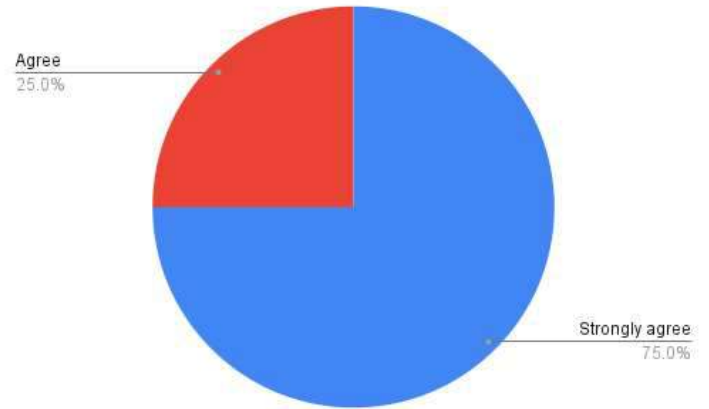
Fig (b): Hands on training on PCB design

# Feedback

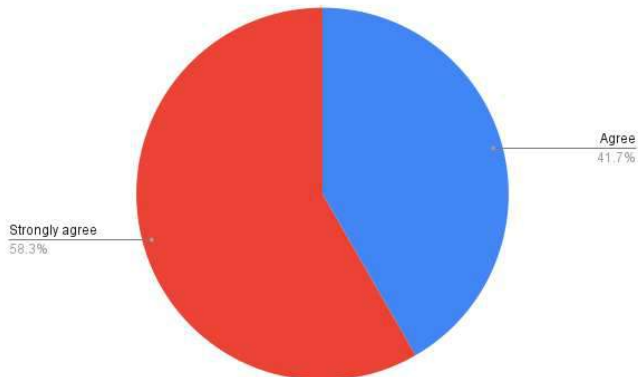
## 1. I achieved the training objectives



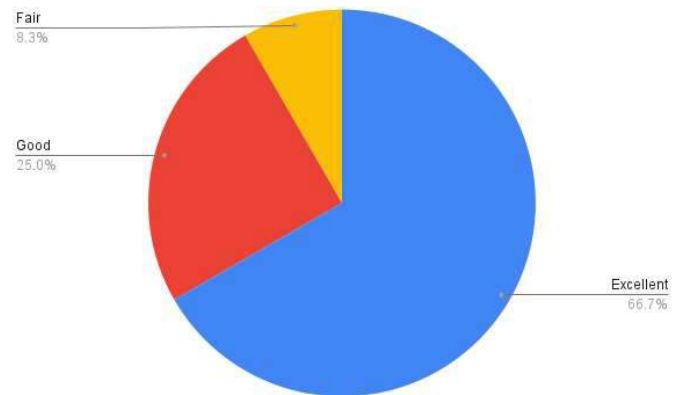
## 4. Gained practical knowledge



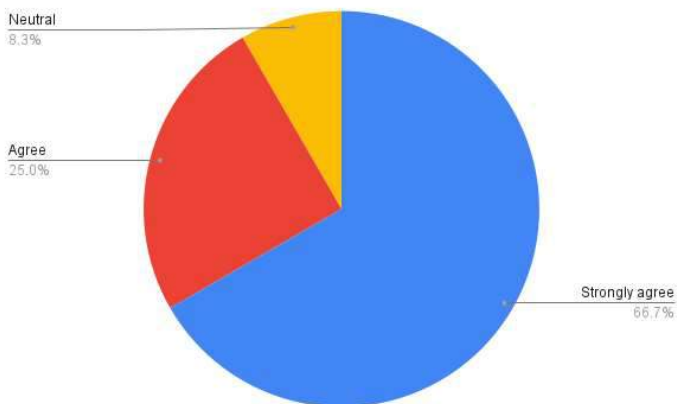
## 2. The instructions were clear & easy to follow



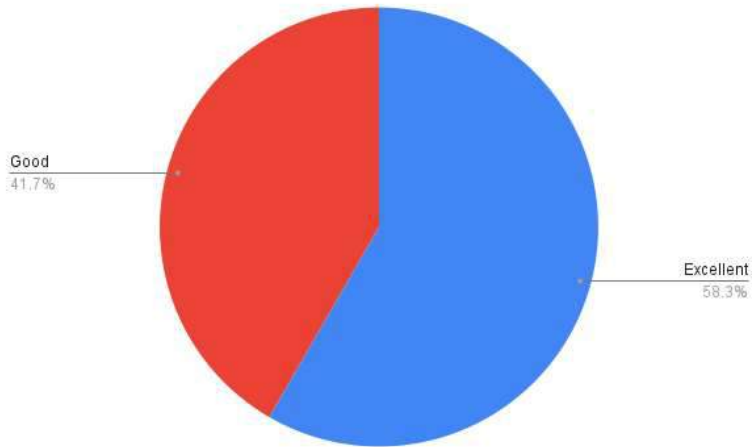
## 5. Trainer made the subject understandable



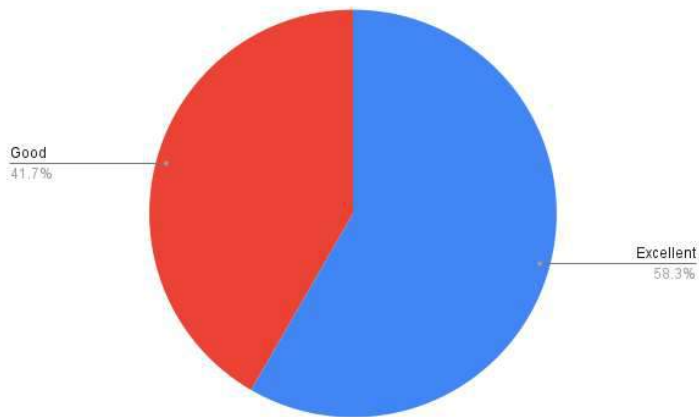
## 3. The presentation slides were clear



**6. Trainer provided technical & practical knowledge**



**7. Overall training**



Ms. Megha Jasmin Benny  
**Course Coordinator**

Dr. Jayanand B  
**HOD**