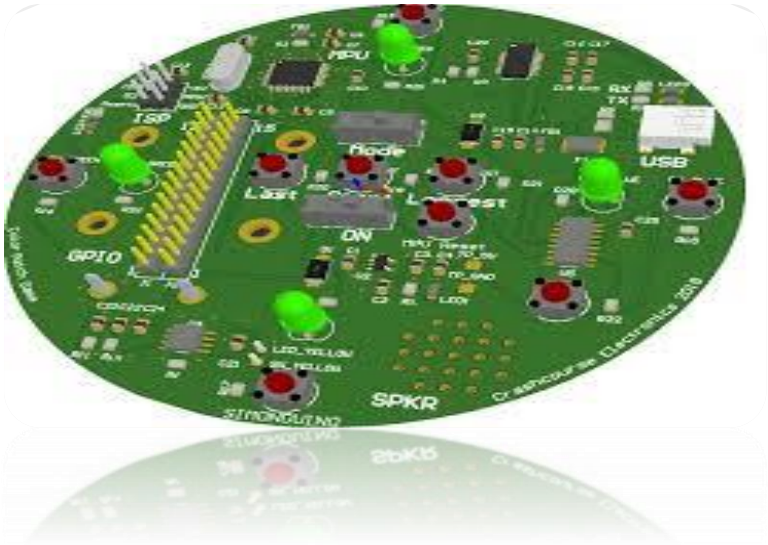
Rayat Shikshan Sanstha's

Annasaheb Awate College Manchar, Pune

Short Term Course on PCB Designing



Conducted by

Department of Electronic Science

Total Duration: 30 Hrs

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Short Term Corse on PCB Designing in Electronic Science

Academic Year 2020-21

Sr No	Unit Name	Allotted Lectures/ Practical
1	Introduction to PCB Designing Concepts	4
2	Component Introduction and their categories	4
3	Component Package Types	8
4	Introduction to Development Tools	4
5	Detailed Description & Practical of PCB Designing	10
	Total Lectures	30

Board of Studies in Electronic Science Members

1] Prof. Dr. Dongare M L, HOD, S. M Joshi College Hadapsar Pune 28

2] Dr. Zadkar V S, Associate Professor, Nowrosjee Wadia College Pune 01

3] Mr. Jade S V, HOD & Associated Professor, Annasaheb Awate College Manchar Pune

4] Mr. Belage S A, Associated Professor, Annasaheb Awate College Manchar Pune

5] Ms. Dange A M, Assistant Professor, Annasaheb Awate College Manchar Pune

Rayat Shikshan Sanstha

Annasaheb Awate College Manchar, Pune

DEPARTMENT OF ELECTRONIC SCIENCE

SHORT TERM COURSE 2020-21

Name of Course	Short-Term Course in Electronics
Conducted By	Department of Electronic Science
College	Annasaheb Awate College, Manchar, Pune
Title of Course	PCB Designing
Duration of Course	One Month
Type Of Course	Elective
Class	F.Y.B.Sc
Intake	30 Students
Fess	_____
Admission Criteria	Specialization in Electronics
Attendance	100%
Course Co-Ordinator	Miss. Afroj M Dange
Head of Department	Prof. Jade S V

Rayat Shikshan Sanstha's

Annasaheb Awate College Manchar, Pune

Department of Electronic Science
Academic Year 2020-21

NOTICE

Date – / /2020

The students of F.Y.B.Sc. are hereby informed that the Short-Term Course on **"PCB Designing"** will commence from **/ /2020**. All the students of this course should remain present for the classes and practical as per time-table. It is mandatory to all enrolled students.

Coordinator **Principal,**

Annasaheb Awate College Manchar, Pune

"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

- Diptrace
- Eagle PCB

Detailed Syllabus of the Course

Sr. No	Unit Name	Content	Lectures
1	**Introduction to PCB Designing Concepts**	**Introduction & Brief History** - What is PCB - Difference between PWB and PCB - Types of PCBs: Single Sided (Single Layer), Multi-Layer (Double Layer) - PCB Materials - **Introduction to Electronic Design Automation (EDA)** - Brief History of EDA - Latest Trends in Market - How it helps and Why it requires - Different EDA tools Introduction to SPICE and PSPICE Environment	**4**

2	**Component Introduction and their categories**	**Types of Components**
		- Active Components
		  - Diode
		  - Transistor
		  - MOSFET
		  - LED
		  - SCR
		  - Integrated Circuits (ICs)
		- Passive Components
		  - Resistor
		  - Capacitor
		  - Inductor
		  - Transformer
			4

3	**Component Package Types**	- Through Hole Packages
		  - Axial lead
		  - Radial Lead
		  - Single Inline Package(SIP)
		  - Dual Inline Package(DIP)
			8

		○ Transistor Outline(TO) ○ Pin Grid Array(PGA) Through Hole Packages ○ Metal Electrode Face(MELF) ○ Small Outline Integrated Circuit(SOIC) ○ Quad Flat Pack(QPF) and Thin QFP (TQFP) ○ Plastic Leaded Chip Carrier(PLCC)	
4	**Introduction to Development Tools**	Introduction to PCB Design using Distress tool Introduction to PCB Design using Eagle tool	**4**
5	**Detailed Description & Practical of PCB Designing**	**PCB Designing Flow Chart** Schematic Entry Net listing PCB Layout Designing Prototype Designing ○ Design Rule Check (DRC) ○ Design for Manufacturing (DFM) PCB Making ○ Printing ○ Etching ○ Drilling Assembly of components	**10**

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Annasaheb Awate College Manchar, Pune

Short Term Course on PCB Designing
For
First Year B.Sc. Electronic Science

Time- Table

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9.30 am to 10.30 am			Theory	Practical	Practical	