

BANKURA CHRISTIAN COLLEGE

ACADEMIC PLANNER & UNITIZATION OF SYLLABUS

DEPARTMENT OF ELECTRONICS

ACADEMIC YEAR 2024-'25 (4th Semester) (January to July)

Prepared by: Dr. Arindam Sen, Associate Professor, Dept. of Electronics

Course Title: Design and Fabrication of Printed Circuit Boards

Course Learning Objectives

The main objective of the course is to introduce the students to the industrial tools, Protocols and Design Specifics used in PCB Designing, so that students are able to design an electronic printed circuit board for a specific application using industry standard software after going through the complete procedural steps of developing circuit schematic, board files, image transferring, assembly, soldering and testing.

Course Learning Outcomes: At the end of this course, students will be able to

- CO1: Familiarize with the type of devices/components that may be mounted on PCB
- CO2: Understand the PCB layout techniques for optimized component density and power saving.
- CO3: Perform design and printing of PCB with the help of various image transfer and soldering techniques
- CO4: Understand the trends in the current PCB industry

MONTH/YEAR	WEEK	TOPICS TO BE TAUGHT
March 2023	2	a. What is PCB? b. Advantages and Disadvantages of PCB c. Components of PCB
	3	a. Electronic components, b. Microprocessors and Microcontrollers, IC's c. Surface Mount Devices (SMD)
	4	a. Classification of PCB- b. Single, double, multilayer and flexible boards
	5	a. Manufacturing of PCB b. PCB standards
MONTH/YEAR	WEEK	TOPICS TO BE TAUGHT
April 2023	1	a. Schematic diagram of PCB, b. General, Mechanical and Electrical design considerations of PCB
	2	a. Placing and Mounting of components in PCB b. Conductor spacing and routing guidelines
	3	a. Heat sinks and package density of PCB b. Net list c. Creating components for library,
	4	a. Tracks, Pads, Vias b. Power plane and grounding of PCB
	5	a. Design automation, Design Rule Checking b. Class Test

MONTH/YEAR	WEEK	TOPICS TO BE TAUGHT
May 2023	1	a. Exporting Drill and Gerber Files b. Footprints and Libraries Adding and Editing Pins c. Copper clad laminates materials
	2	a. Electrical & Physical Properties of laminates b. Types of laminates
	3	a. Soldering techniques b. Image transfer
	4	a. Photoprinting, b. Screen Printing,
	5	a. Film master preparation b. Plating techniques
MONTH/YEAR	WEEK	TOPICS TO BE TAUGHT
June 2023	1	a. Etching techniques b. Lead cutting
	2	a. Soldering Techniques b. Testing of PCB
	3	a. Quality controls of PCB
	4	Trends in PCB Industries
	5	a. Environmental concerns in PCB industry b. Class Test
MONTH/YEAR	WEEK	TOPICS TO BE TAUGHT
July 2023	1	
	2	
	3	
	4	
	5	

Suggested Books:

1. Printed Circuit Board – Design, Fabrication, Assembly & Testing, R.S. Khandpur, Tata McGraw Hill Publisher
2. Printed circuit Board – Design & Technology, Walter C. Bosshart, Tata McGraw Hill.