



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
Plot No.1 (A), CNI Complex, Patia, Bhubaneswar – 751024, Odisha, India.
[AFFILIATED TO BPUT, ODISHA]
www.coeb.ac.in

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

ADD-ON COURSE : PCB Design

[Programme: B.Tech, ETC]

Course Objectives:

To introduce some basic fundamental ideas of printed circuit board (PCB) design, Packages of electronic components, Rule for design for manufacturing, PCB Manufacturing Techniques, Wet film and Dry film.

SYLLABUS

Total Lecture Hours : 40

MODULE-I:

[10 Hours]

Printed circuit Board Design: Study of Packages of Electronic Components . History of Printed Circuit Boards . Various types of Printed Circuit Boards-Single Sided Boards, Double Sided Plated through Hole Boards, multilayer Boards.

MODULE-II

[14 Hours]

Printed Circuit Board Design Methods : Rules for single and Double Sided Board. Schematic diagram Entry in PCB Design tool/S/W. Layout Design , Routing methods .Guideline for Artwork Generation. Generation of various Manufacturing Documents/ Output file generation. Component Library management in PCB Design tool.

MODULE-III

[16 Hours]

PCB Manufacturing Techniques: Film Master generation methods : Study of photographic Film, Exposing and Developing Process, Cleaning Method of base materials before pattern transfer-Manual and Mechanical Cleaning Methods, Mechanical methods required in manufacturing of PCBs like punching, drilling ,milling and routing.

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Course Outcomes: After completion of the course, the students will be able to

- CO1: Explore different aspect of Printed Circuit Board Design and fabrication.
- CO2: Design various types of PCBs. Schematic Design, entry Rules for Schematic Entry, Component Layout methods
- CO3: Implement the placement Rules, routing techniques for single sided.
- CO4: Explore processing of design and fabrication documents.
- CO5: Design and fabricate their own PCB for their Project and can also work in PCB Designing and Fabrication area.

Evaluation Process:

1. Attendance for the course is 75%, which is mandatory.
2. Minimum qualifying marks percentage for the course is 50.
3. Certificate will be issued after successful completion of course and assessment processes.

Learning resources:

Suggested Books:


1. Printed Circuit Boards: Design, Fabrication, and Assembly by R. Khandpur.
2. Fundamentals of Layout Design for Electronic Circuits by Jens Lienig, Juergen Scheible.
3. Electronic Product Design by SD Mehta
4. Pcb Design & Fabrication by Ramesha Talawar, Mustaq Kunnur

Other Sources:


e-Learning Resources:

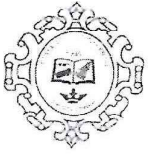
1. <https://www.youtube.com/watch?v=o4zeeEwG7gw&list=PLbRMhDVUMngcwN9HHIOALFj1HYs9T64BF&index=3>
2. <https://www.youtube.com/watch?v=D7DJkdLdbh8&list=PLbRMhDVUMngcwN9HHIOALFj1HYs9T64BF>

Design and Developed by: Prof. Subrat Kumar Mohanty and Prof. Snehasis Dey


Principal
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H.O.D. ETC Engg.
H.O.D.
Dept. of ETC Engg.
COEB, Bhubaneswar



DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

COLLEGE OF ENGINEERING BHUBANESWAR

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NOTICE

ADD-ON/CERTIFICATE COURSE

Ref No: COEB/ETC/2020//1

Date: 05/09/2020

It is for the information of all the students of 3rd/5th/7th semester that the classes for the Add-On/Certificate Courses will commence in ON LINE Mode as per the time table given below.. The registration process for the course will start from **05/09/2020**. The interested students to enroll themselves for the course are advised to contact the concerned Course Coordinators for the details.

Semester	Course Title	Course Coordinator	Date of Commencement
3rd	PCB Design	Prof. Snehasis Dey	14/09/2020
5th	Advances and challenges in telecommunication	Prof. Subrat Kumar Mohanty	14/09/2020
7th	Machine Learning Algorithms for Communication	Prof. Debarchana Jena	14/09/2020

The class timing will be from 5.30 pm to 7.30 pm.

Head of the Department

H.O.D.
Dept. of ETC Engg.
COEB, Bhubaneswar

Copy to:

1. Office of the Chairman/ Vice-Chairman for kind information.
2. Office of the Executive Director for kind Information.
3. Office of the Registrar for kind Information.
3. Office of the Principal for kind information.
4. Departmental Notice Board.
5. Guard File

Head of the Department


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**COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
ADD-ON COURSE ENROLLMENT SHEET**

ON-LINE MODE

Name of the Department: Electronics and telecommunication engineering	
Course Title: PCB Design	
Semester : 3rd	Academic Year: 2020-21
Duration: 40 hours	

Student's Declaration/Undertaking

1. I do hereby undertake to participate in the above mentioned add on course.
2. I do hereby, promise to abide by the admissible rules and regulations, concerning discipline, attendance, etc. of the department, and also to follow the Code of Conduct prescribed for the students of the Institute, as in force from time to time.

Sl. No.	Registration No.	Name of the Student	Remarks by the Course Coordinator
1	1901219124	ANAND KANHAR	Certified that the Enrollment Sheet is prepared by taking the consents of the students to enroll themselves in this Certificate Course (Add-On) to be conducted in Virtual Mode (ON-LINE) during the Pandemic COVID'19 through the link provided by the Department. They have also gone through the declaration/undertaking to be strictly abided by them during the course period.
2	1901219125	APOORBA KUMAR JENA	
3	1901219126	BARISA SOREN	
4	1901219127	BHUPEN PRABASH SURJULIA	
5	1901219128	CHANDAN KUMAR PANIGRAHI	
6	1901219129	INDRABATI MINZ	
7	1901219130	JAGANNATH SANTA	
8	1901219131	MANSI MAYURI	
9	1901219132	OMPRAKASH ROUT	
10	1901219133	PRIYABRATA ROUT	
11	1901219134	RAKESH KUMAR JENA	
12	1901219135	ROSHAN KUMAR KAR	
13	1901219136	SAHEL SUMAN PATTANAYAK	
14	1901219137	SANGRAM NAYAK	
15	1901219138	SHREEBATSIA PONDU	
16	1901219139	SISIR KUMAR DALAI	
17	1901219140	SOUBHAGYA KUND	
18	1901219141	SOURAV RANJAN SAHOO	
19	1901219142	SRIKUMAR BIBEKANANDA DAS	
20	1901219143	KARAN JENA	
21	1901219144	SURAKSHYA SWAIN	
22	1901219254	ABHISHEK DASH	
23	1901219255	AYESHA SWAIN	
24	1901219256	MILAN RAY	
25	1901219257	PRASIT KUMAR SATAPATHY	
26	1901219258	PREETISUDHA MOHANTY	
27	1901219259	SUBHAM PRADHAN	
28	1901219260	SUBHRANSU RANJAN BISWAL	
29	1901219261	SUKRITI PRADHAN	

S. Dey
Course Coordinator
(Signature with Seal)



A. B. Singh
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COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
 ADD ON / CERTIFICATE COURSE

STUDENT ATTENDANCE

ON-LINE MODE

Programme: B.Tech in Electronics and telecommunication engineering

Semester: 3rd

Academic Year: 2020-21


Name of the Course: PCB Design

Course Code (if any):

Duration : 40 hours

Remarks by the Course Coordinator (P-Present, A-Absent)

Sl. NO.	Reg. No./ Enrollment	NAME OF THE STUDENT	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Remarks
1	1901219124	ANAND KANHAR	P	P	P	P	P	P	P	P	P	P	P	Certified that this Certificate course is conducted in virtual mode (ON-LINE) because of the Pandemic COVID-19. The attendance is taken with the remarks P- Present and A-absent for the students.
2	1901219125	APOORBA KUMAR JENA	P	P	P	P	P	P	P	P	P	P	P	
3	1901219126	BARISA SOREN	P	P	P	P	P	P	P	P	P	P	P	
4	1901219127	BHUPEN PRABASH SURJULA	P	P	P	P	P	P	P	P	P	P	P	
5	1901219128	CHANDAN KUMAR PANIGRAHI	P	F	P	A	P	P	P	P	P	P	P	
6	1901219129	INDRABATI MINZ	P	P	A	P	P	P	P	P	P	P	P	
7	1901219130	JAGANNATH SANT'A	P	P	P	P	P	P	P	P	P	P	P	
8	1901219131	MANSI MAYURI	P	P	P	P	P	P	P	P	P	P	P	
9	1901219132	OMPRAKASH ROUT	P	P	P	P	P	P	P	P	P	P	P	
10	1901219133	PRIVABRATA ROUT	P	P	P	P	P	P	P	P	P	P	P	
11	1901219134	RAKESH KUMAR JENA	P	P	A	P	P	P	P	P	P	P	P	
12	1901219135	ROSHAN KUMAR KAR	P	P	P	P	P	P	P	P	P	P	P	
13	1901219136	SAHEL SUMAN PATTANAYAK	P	P	P	P	P	P	P	P	P	P	P	
14	1901219137	ISANGRAM NAYAK	P	P	A	P	P	P	P	P	P	P	P	
15	1901219138	SHREBATS A PONDU	P	P	P	P	P	P	P	P	P	P	P	
16	1901219139	SISIR KUMAR DALAI	P	P	P	P	P	P	P	P	P	P	P	
17	1901219140	SOU BHAGYA KUND	P	P	P	P	P	P	P	P	P	P	P	
18	1901219141	SOURAV RANJAN SAHOO	P	P	P	P	P	P	P	P	P	P	P	
19	1901219142	SRIKUMAR BIBEKANANDA DAS	P	P	P	P	P	P	P	P	P	P	P	

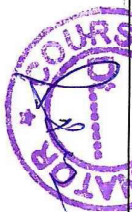

 Course Coordinator
 (Signature with Seal)


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20	1901219143	KARAN JENA	P	P	P	P	P	P	P	P	P	P	P	P	P	<p>Certified that this Certificate course is conducted in virtual mode (ON-LINE) because of the Pandemic COVID-19.</p> <p>The attendance is taken with the remarks Present/Absent for the students</p>
21	1901219144	SURAKSHYA SWAIN	P	P	P	P	P	P	P	P	P	P	P	P	P	
22	1901219254	ABHISHEK DASH	P	A	P	P	P	P	P	A	P	P	P	A	P	
23	1901219255	AYESHA SWAIN	P	P	P	A	P	P	P	P	P	P	P	P	P	
24	1901219256	MILAN RAY	P	P	P	P	P	P	P	P	P	P	P	P	P	
25	1901219257	PRASIT KUMAR SATAPATHY	P	P	P	P	P	P	P	P	P	P	P	P	P	
26	1901219258	PREETISUDHA MOHANTY	P	P	P	P	P	P	P	P	P	P	P	P	P	
27	1901219259	SUBHAM PRADHAN	P	P	P	P	P	A	P	P	P	P	P	P	P	
28	1901219260	SUBHRANSU RANJAN BISWAL	P	P	P	A	P	P	P	P	P	P	P	P	P	
29	1901219261	SUKRITI PRADHAN	P	P	P	A	P	P	P	A	P	P	P	P	P	
Signature of the Course Coordinator			S. Dey	S. Dey	S. Dey	S. Dey	S. Dey	S. Dey	S. Dey	S. Dey	S. Dey	S. Dey	S. Dey	S. Dey	S. Dey	

S. Dey

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DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
 ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE

ON-LINE MODE

Programme: B.Tech in Electronics and telecommunication engineering
 Name of the Course: PCB Design

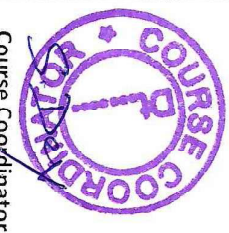
Course Code (if any):

Semester: 3rd

Academic Year: 2020-21

Duration: **40 hours**

Remarks by the Course Coordinator: (P-Present, A-Absent)

SL. NO.	Reg. No./ Enrollment	NAME OF THE STUDENT	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Remarks
1	1901219124	ANAND KANHAR	P	P	P	P	P	P	P	P	P	P	Certified that this Certificate course is conducted in virtual mode (ON-LINE) because of the Pandemic COVID-19. The attendance is taken with the remarks P-Present and A-Absent for the students.  Course Coordinator (Signature with Seal)
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3	1901219126	BARISA SOREN	P	P	P	P	P	P	P	P	P	P	
4	1901219127	BHUPEN PRABASH SURJULA	P	P	P	P	P	P	P	P	P	A	
5	1901219128	CHANDAN KUMAR PANIGRAHI	A	P	P	A	P	P	P	P	A	P	
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7	1901219130	JAGANNATH SANTA	P	P	P	P	P	P	P	P	P	P	
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17	1901219140	SOUBHAGYA KUND	P	P	P	P	P	P	P	P	P	P	
18	1901219141	SOURAV RANJAN SAHOO	P	P	A	P	P	P	P	P	P	P	
19	1901219142	SRIKUMAR BIBEKANANDA DAS	P	P	P	P	P	P	P	P	P	P	

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20	1901219143	KARAN JENA	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Certified that this Certificate course is conducted in virtual mode (ON-LINE) because of the Pandemic COVID-19. The attendance is taken with the remarks P-Present and A-Absent for the student's
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29	1901219261	SUKRITI PRADHAN	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
Signature of the Course Coordinator			S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	S. Debg	

S. Debg

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Certificate of Completion

This is to certify that Mr./Ms. ANAND KANHAR, student of the Department


of Electronics & Telecommunication Engg. semester Third bearing registration number 1901219124

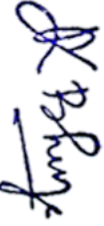
has successfully completed the ADD-ON Course titled PCB Design

conducted at College of Engineering Bhubaneswar in the academic year 2020-21

TRUE COPY


Course-Coordinator


Principal


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Certificate of Completion

This is to certify that Mr./Ms. APOORBA KUMAR JENA, student of the Department

of Electronics & Telecommunication Engg. semester Third bearing registration number 1901219125

has successfully completed the ADD-ON Course titled PCB Design

conducted at College of Engineering Bhubaneswar in the academic year 2020-21

Course-Coordinator

Principal

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Certificate of Completion


This is to certify that Mr./Ms. BARISA SOREN, student of the Department

of Electronics & Telecommunication Engg. semester Third bearing registration number 1901219126


has successfully completed the ADD-ON Course titled PCB Design

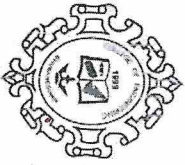
conducted at College of Engineering Bhubaneswar in the academic year 2020-21

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 Course-Coordinator


 Principal


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Certificate of Completion

This is to certify that Mr./Ms. BHUPEN PRABASH SURJUIA, student of the Department

of Electronics & Telecommunication Engg. semester Third bearing registration number 1901219127

has successfully completed the ADD-ON Course titled PCB Design

conducted at College of Engineering Bhubaneswar in the academic year 2020-21

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Course-Coordinator

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Certificate of Completion

This is to certify that Mr./Ms. INDRABATI MINZ, student of the Department

of Electronics & Telecommunication Engg. semester Third bearing registration number 1901219129

has successfully completed the ADD-ON Course titled PCB Design

conducted at College of Engineering Bhubaneswar in the academic year 2020-21

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Course-Coordinator

Principal