KG REDDY
College of Engineering
& Technology

Department of Electronics and Communication Engineering

Report of

***Certification course on* "PCB Design & Fabrication"**

From 17/09/2018 to 21/09/2018

Organized

in association with Armtronics

by

Mr. Bavusaheb B Kunchanur
Asst.Prof, ECE, KGRCET

COORDINATOR **HOD** **PRINCIPAL**

HEAD
DEPT. OF ELECTRONICS & COMMUNICATIONS ENGINEERING
K.G. REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
CHILKUR (V), MOINABAD, R.R. DIST.

Principal
KG Reddy College of Engineering & Technology
Chilkur (V) Moinabad (M).
R. R. Dist.

Certification Course on "PCB Design" from 11th to 15th of September 2018

Electronics and Communication department of K G Reddy College of engineering and technology organized Certification course on **"PCB Design & Fabrication"** in association with Armtronics. Course was conducted by expert, **Mr Arjun Modi, Sr Technical Associate, Armtronics**. 52 students from 2nd year ECE branch took part in this Course. Main focus of the Course was to do hands on practical with PCB board and designing. A **Printed Circuit Board (PCB)** mechanically supports and electrically connects electronic components using conductive tracks, pads and other features etched from copper sheets laminated onto a non-conductive substrate. PCBs can be single sided (one copper layer), double sided (two copper layers) or multi-layer. Conductors on different layers are connected with plated-through holes called vias. Advanced PCBs may contain components – capacitors, resistors or active devices – embedded in the substrate.

DAY-1:

In the first session students got familiar with various development boards of PCB and Learnt the development environment for PCB design. Working with PCB design was Interesting. The expert explained Schematic Design of Circuit on software KiCAD, benefits of using KiCAD, and pointers to make precise schematic design. Each &every steps and processes involved in PCB design Process has been explained by the expert.

Students listening to expert lecture

DAY- 2

On 18th the working of the PCB Design Schematic, auto and manual Routing of the Circuit has been performed.; a small PCB like a 4 led breakout, or a 555 timer etc, right from schematic to layout. This gives a complete flow on how to build a PCB with KiCAD. Following it we take up a advanced tutorial and do a hands on session with following topics in detail The afternoon session of Hands-on started at 1:30. P.M.,the participants are provided with laboratory sessions on Schematic design & PCB layout design on KiCAD. The participants also tried various demo circuits provided.

Explaining about KiCAD

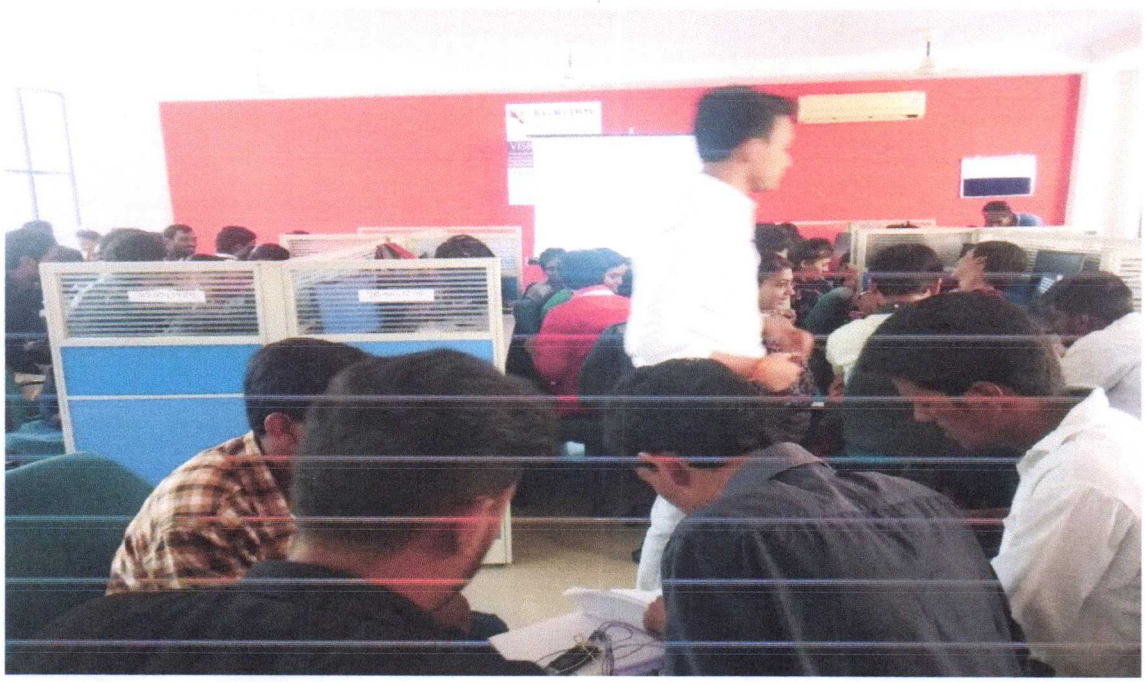
DAY- 3

On the 19th students learnt working with Generating Net list from schematic. It includes Annotation schemes, matching schematic symbols to footprints.

Introduction to PCB Schematic

DAY- 4

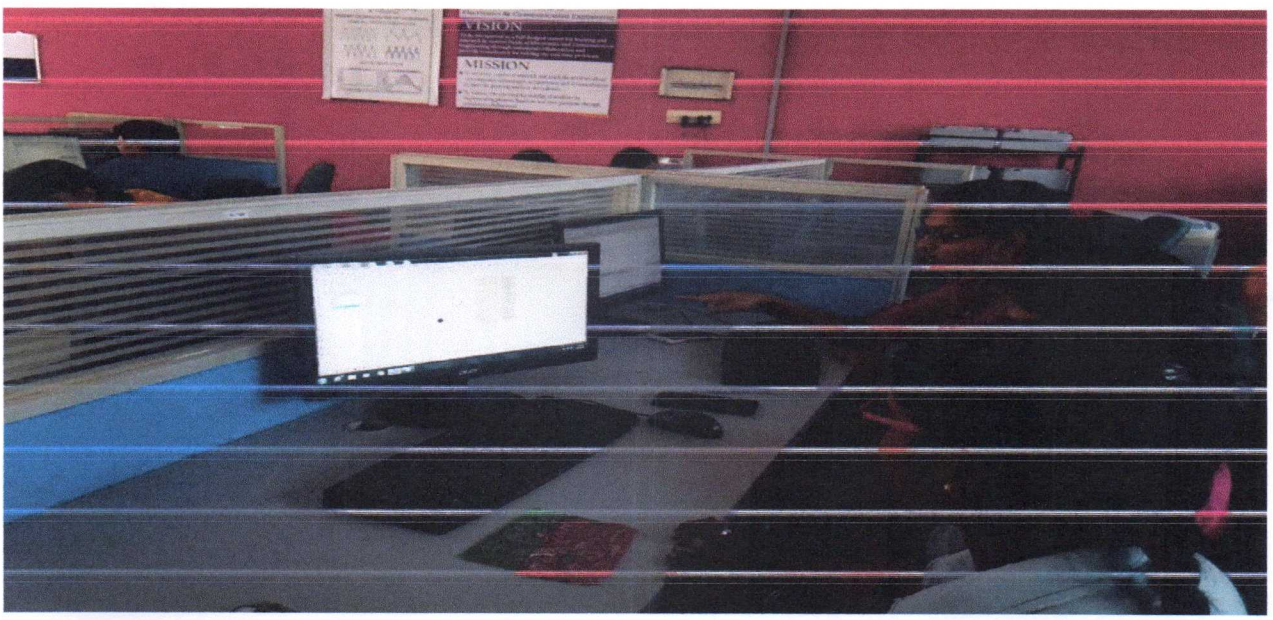
On the 20th students learnt working of **Footprints & Board layout**. It includes component packages, Measurement units & standards. Library footprints, importing footprints, Creating custom footprints. Tools for footprint generation.



Working on Footprints and board layout

DAY- 5

On the 21th students learnt working of Gerber file generation & PCB Fabrication. It includes Finalizing the design, Gerber file format for different layers, Appending multiple boards. Quick Presentation on PCB fabrication, Checking FAB requirements.



Students generating files and Fabricating PCB

In the second session, we have conducted a test to evaluate and certify the students

At 4:15pm Prof. M.N.Narsaiah, HOD,ECE, KGRCET issued the certificates. He concluded by addressing the students and explained the motive behind the Course. He suggested the students to do their mini, major projects using PCB with the help of faculty members.

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Ref No: KGRCET/ECE/2018-19/

CIRCULAR Date: 14/09/2018

All the students of II B.Tech I semester ECE are here by instructed to enroll for the certification course on **"PCB Design & Fabrication"**, which is going to conduct from 17/09/2018 to 21/09/2018. Interested students are instructed to meet respective Coordinator

HOD

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Department of Electronics and Communication Engineering
Five days Certification Course on PCB Design & Fabrication

S.NO	DAY 1- 17/09/2018	TIME
1	Overview of Workshop	9:30-10:30 Am
2	Introduction to PCB design	10:30-12:00 Pm
3	BREAK	12:00 -1:30 Pm
4	Introduction to KiCAD software	1:30Pm-3:00 Pm
5	Introduction to Schematic entry to PCB layout	3:00Pm-4:15Pm
	DAY 2 -18/09/2018	
6	Introduction to different schematic designs	9:30 AM- 11:30 AM
7	Schematic Entry in detail	11:30Am -1:00Pm
	LUNCH BREAK	1:00 Pm -2:30Pm
8	Creating custom component	2:30 -3:15 Pm
9	Importing standard libraries	3:15-3:45 Pm
10	Matching schematic symbols to footprints	3:45 Pm-4:15pm
	DAY 3- 19/09/2018	**TIME**
11	Generating Net list from schematic	9:30-11:00Am
12	Annotation schemes	11:00-12:30 pm
	LUNCH BREAK	12:30 -1:30 Pm
13	Matching schematic symbols to footprints	1:30pm-3:00pm

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14	Tools for creating components	3:00-4:15pm
	DAY 4- 20/09/2018	**TIME**
15	Introduction to Footprints	9:30-10:00Am
16	Component packages.	10:00-12:30 pm
	LUNCH BREAK	12:30 -1:30 Pm
17	Library footprints, Importing footprints.Importing Net list.	1:30pm-3:00pm
18	Layers of design	3:00-4:15pm
	DAY 5- 21/09/2018	**TIME**
19	Introduction to file generation	9:30-10:00Am
20	Finalizing the design	10:00-12:30 pm
	LUNCH BREAK	12:30 -1:30 Pm
21	Introduction to PCB Fabrication	1:30pm-3:00pm
22	Quick Presentation on PCB fabrication	3:00-4:15pm

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PRINCIPAL

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Department of Electronics and Communication Engineering
Attendance for the Certification course on "PCB Design"

S.No	Roll No.	Name of the Student	Signature				
			17/9/17	18/9/17	19/9/17	20/9/17	21/9/17
1	16QM1A0405	CHINNAPEESARI SNEHA					
2	17QM1A0401	A RAMADEVI					
3	17QM1A0402	AADHA KAMALAKAR					
4	17QM1A0403	ADLA PRIYANKA					
5	17QM1A0404	ALLI GOUTHAMI					
6	17QM1A0405	ANUGU MAHENDER REDDY					
7	17QM1A0406	BANDARI DHARANI					
8	17QM1A0407	BOKKA KEERTHI REDDY					
9	17QM1A0408	C SAI DEEKSHA SAGAR					
10	17QM1A0409	D SWETHA					
11	17QM1A0410	DANDIGEY VASAVI RANI					
12	17QM1A0411	DEEPAK KUMAR SETH					
13	17QM1A0412	DHARMISHETTY SAMHITHA					
14	17QM1A0413	DUDDU DILEEP KUMAR					
15	17QM1A0414	J KARTHIK					
16	17QM1A0415	K AJAY REDDY					
17	17QM1A0416	K SAI KRISHNA REDDY					
18	17QM1A0418	KADIRA SAI POOJITHA					
19	17QM1A0419	KALIKOTA MEGHANA					
20	17QM1A0420	KARETI NAGA SURENDRA					

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21	17QM1A0421	KONDOJU SHIVA SAI CHARAN					
22	17QM1A0422	KOWKUNTLA LOKESH REDDY					
23	17QM1A0423	KUMBAM PAVAN KUMAR					
24	17QM1A0424	KUNTALA CHAITANYA KUMAR					
25	17QM1A0425	LINGALA SHIVA KUMAR					
26	17QM1A0426	MALEKEDI SAI RANI					
27	17QM1A0427	MANDAPAKA DILIP					
28	17QM1A0428	MEGHRAJ BHANU					
29	17QM1A0429	MITTA AKHILA					
30	17QM1A0430	MOHAMMED ZUBAIR KHAN					
31	17QM1A0431	PANTHAM DIVYA					
32	17QM1A0432	PASUPULA MAHESH					
33	17QM1A0433	PUTTA SRAVANTHI					
34	17QM1A0434	RAMAVATH RAKESH NAIK					
35	17QM1A0436	S LILLY MARGRATE MARY					
36	17QM1A0437	S.K GULAM RABBANI					
37	17QM1A0439	SHIVA KUMAR					
38	17QM1A0441	SOMA VIGHNATHA					
39	17QM1A0442	SUNKARI NIKITHA					
40	17QM1A0443	T SAI CHARAN					
41	17QM1A0444	TAMMALI VEERESH					
42	17QM1A0445	THIMMAPURAM MAMATHA					

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43	17QM1A0446	TIRMAL APURVA					
44	17QM1A0447	TODUPUNURI AKASH					
45	17QM1A0448	UPPARI DIVYA					
46	17QM1A0449	VISHWANATH VARANASI					
47	17QM1A0450	YALALA PAVANI					
48	17QM1A0451	MOLTHATI YASHWANTH KUMAR					
49	17QM1A0453	MUHAMMED MUSHARRAF UL HAMEED					
50	17QM1A0454	R YASHWANTH					
51	18QM5A0401	BANDARI DATTUKUMARI					
52	18QM5A0402	T RISHI RAJ					

Coordinator **HOD** **PRINCIPAL**

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Examination for certification course on "PCB Design"

Roll no: 17AM1A0425

Name of the student: Shiva Kumar

12

1.	Which among the below mentioned packages does not belong to the category of 'Small Outline Package'?			[a]
SO	SOP	SOT	SON	
2.	Which type of solderability testing is carried out for the generation of solder sample due to immersion of wire or sheet metal specimen in a bath of molten solder?			[c]
a. Solder Bath Testing	b. Meniscus Rise Testing	c. Solder Iron Testing	d. None of the above	
3.	Which among the below stated soldering methods is also renowned as 'High Frequency Resistance Soldering'?			[b]
a. Iron Soldering	b. Furnace Soldering	c. Torch Soldering	d. Electrical Soldering	
4.	Which among the below mentioned approaches belongs to the category of In-circuit Testing?			[a]
a. Impedance Testing	b. Component Testing	c. Apply Signal and check output	d. All of the above	
5.	High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for _____			[c]
a. Removal of heat	b. Isolation of stray current	c. Reduction of path length	d. All of the above	
6.	What is/are the necessity/ies to provide guarding to precision differential amplifiers?			[d]
a. To increase leakage resistance	b. To reduce capacitance between signal conductors & ground	c. Both a and b	d. None of the above	
7.	Which phenomenon is not reduced by the circuit paths of lowest impedances especially provided by power and return planes for shielding purposes?			[a]
a. Radiation	b. Convection	c. Noise	d. Crosstalk	
8.	Which among the below specified assertions is not a grounding consideration associated with ADC as well as DAC?			[b]
a. Analog side to analog ground	b. Digital side to digital ground	c. Use of separate power supply and connection of their ground leads to single point reference	d. Reduction of inductive loop area between power and return traces	
9.	Which among the below specified condition is precise in the crosstalk verification mechanism using logic flow in opposite direction with the limit of avoiding dangerous interference in digital PCB designing?			[c]
a. $Z_{even} > Z_{odd}$	b. $Z_{odd} \geq 0.5\ Z_{even}$	c. $Z_{odd} \geq 0.8\ Z_{even}$	d. $Z_{odd} = Z_{even}$	
10	What should be the resistance of 0.6 mm wide conductor with 15 cm length and 25 µm thickness of standard copper foil? (Assume $\rho = 1.7241 \times 10^{-6}$(at 20° C)			[d]

a. 118.2 mΩ	b. 138.2 mΩ	c. 172.4 mΩ	d. 192.4 mΩ

11	What effects can be observed if the separate power and ground planes are provided with large conducting surfaces for better decoupling in PCB layouts?			[b]
a. Increase in self-inductance	b. Reduction in self-inductance	c. Stability in self-inductance	d. None of the above	
12	Which type of PCB requires minimum soldering on component side in order to avoid replacement oriented difficulties?			[a]
a. Single-sided PCB	b. Double-sided PCB	c. Both a and b	d. None of the above	

13	Which factors contribute to the occurrence of mechanical stress?			[b]
a. Resonance	b. Cracked Solder Joints	c. Both a and b	d. None of the above	
14	he actual cost of PCB can be evaluated on the basis of _____			[c]
a. PCB size & material	b. Number of layers	c. Vias on PCB	d. All of the above	
15	Which terminology of PCB represents a thin photo-sensitive polymer by supporting photographic pattern of single traces or IC pads for etching?			[c]
a. Prepreg	b. Etching	c. Photo-resist	d. Solder mask	
16	Which among the below mentioned assertions is not a way of cross-talk reduction while designing digital PCBs?			[a]
a. Decrease in the distance between conductors	b. Shielding of clock lines with guard strips	c. Reduction in the loop area of circuits	d. Avoid running of parallel traces for longer distances especially for asynchronous signals	
17	Which among the below stated devices/equipments are preferred for elimination of ground and supply line noise especially in TTL/CMOS / ECL PCB designing?			
a. Coupling capacitor	b. Decoupling capacitor	c. Snubber circuits	d. All of the above	

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CERTIFICATE

Name: C SAI DEEKSHA SAGAR

Registration No: 17QM1A0408

has successfully completed the prescribed requirements for the award of Certification course on **"PCB Design & Fabrication"** conducted by department of Electronics and Communication Engineering held in month of September from 17/09/2018 to 21/09/2018 in the academic year 2018-2019.

Date: 21/09/2018

Course Coordinator

Principal

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CERTIFICATE

Name: D SWETHA

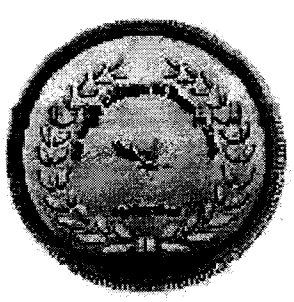
Registration No: 17QM1A0409

has successfully completed the prescribed requirements for the award of Certification course on **"PCB Design & Fabrication"** conducted by department of Electronics and Communication Engineering held in month of September from 17/09/2018 to 21/09/2018 in the academic year 2018-2019.

Date: 21/09/2018

Bavu.

Course Coordinator



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