KG REDDY
College of Engineering
& Technology

Department of Electronics and Communication Engineering

Report of

Certification course

On

"PCB Design & Fabrication"

From 11/09/2017 to 15/09/2017

Organized

in association with Armtronics

by

Mr.Bavusaheb. B. K

COORDINATOR **HOD** **PRINCIPAL**

HEAD
DEPT. OF ELECTRONICS & COMMUNICATIONS ENGINEERING
K.G. REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
CHILKUR (V), MOINABAD, R.R. DIST.501 504.

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 2017

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 Bavusaheb. B. K**. 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 12th 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 13th students learnt working with Generating Net list from schematic. It includes Annotation schemes, matching schematic symbols to footprints.

Introduction to PCB Schematic

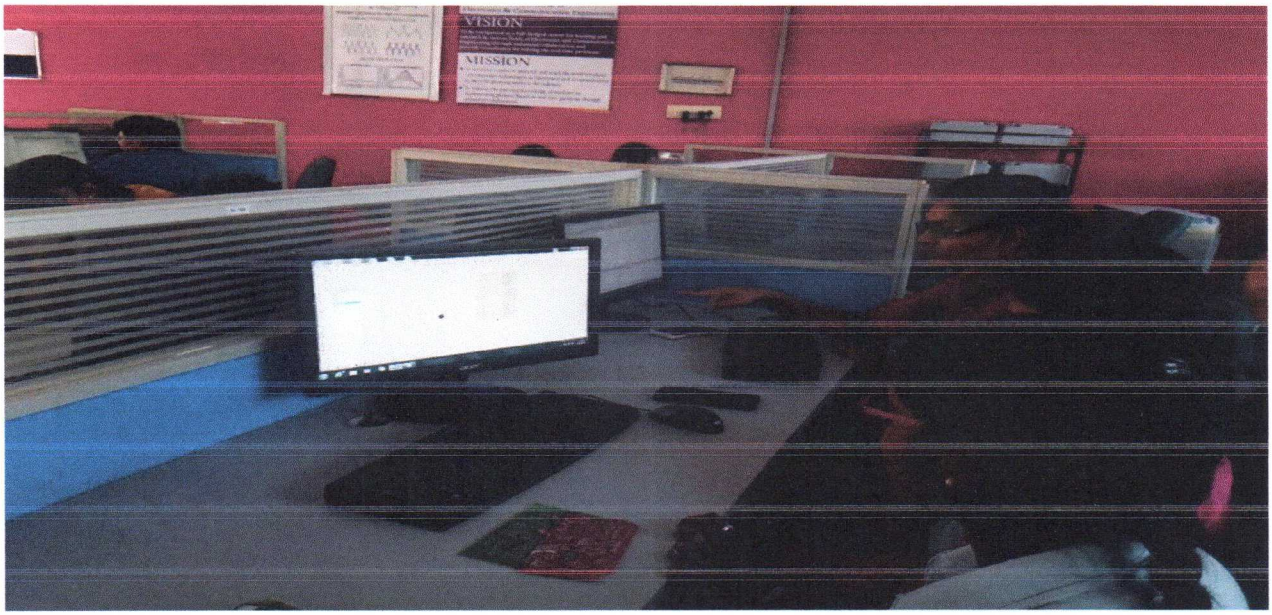
DAY- 4

On the 14th 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 15th 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/2017-18/

CIRCULAR Date: 08/09/2017

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 11/09/2017 to 15/09/2017. Interested students are instructed to meet respective Coordinator

HOD

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Department of Electronics and Communication Engineering
Certification course on PCB Design & Fabrication

S.NO	DAY 1- 11/09/2017	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 -12/09/2017	
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- 13/09/2017	**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- 14/09/2017	**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- 15/09/2017	**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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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	16QM1A0401	BALUSANI MANOJ KUMAR					
2	16QM1A0402	BUYYAKER TARUN KUMAR					
3	16QM1A0403	CHANDRAGIRI CHIRANJEEVI					
4	16QM1A0404	CHEGURI SAI TEJA					
5	16QM1A0406	DIDDE MERCY NIHARIKA					
6	16QM1A0407	GAJJALA CHARITHA REDDY					
7	16QM1A0408	GANGULA SANDEEP REDDY					
8	16QM1A0409	GAVVALA PAVAN KUMAR					
9	16QM1A0410	GONGATI RASHMITHA					
10	16QM1A0411	GORLA SHASHANK KUMAR					
11	16QM1A0412	GURRALA GAYATHRI PADMA KUMARI					
12	16QM1A0413	JANGALI GANESH					
13	16QM1A0414	K SRIVIDHYA					
14	16QM1A0415	KAILASA PRIYANKA					
15	16QM1A0416	KAKULAPATI SESHA SRIVALLI					
16	16QM1A0417	KONDA AVINASH GOUD					
17	16QM1A0418	KONIJETI VENKATESH					
18	16QM1A0419	KOTHAPALLI SRIKANTH REDDY					
19	16QM1A0420	KUPPALA VENKATA SAI CHAITANYA					
20	16QM1A0421	M MANIKANTA REDDY					
21	16QM1A0422	MACHABHAVANA					
22	16QM1A0425	MULAKALA BHUVANA SATYA SAI					

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23	16QM1A0426	P SAMARA SIMHA REDDY	SIMHA	SIMHA	SIMHA	SIMHA	SIMHA
24	16QM1A0427	PALNATI CHAITANYA	Chaitanya	chaitanya	chaitanya	chaitanya	chaitanya
25	16QM1A0428	PANGANURU NARESH PHOKRAN	Naresh	Naresh	Naresh	Naresh	Naresh
26	16QM1A0429	PANTHAM KEERTHI	Keer	Keer	Keer	Keer	Keer
27	16QM1A0431	R SIMRAN	Simra	Simra	Simra	Simra	Simra
28	16QM1A0432	RAJPUT ADITYA SINGH	Aditya	Aditya	Aditya	Aditya	Aditya
29	16QM1A0433	RAMAIAH SUPRIYA	Supriya	Supriya	Supriya	Supriya	Supriya
30	16QM1A0434	RANGAREDDY SAHITHI	Sahithi	Sahithi	Sahithi	Sahithi	Sahithi
31	16QM1A0435	S SAI SRIVASTHAVA NAIDU					
32	16QM1A0436	SARVIGARI YESHWANTH SIMHA REDDY					
33	16QM1A0438	TALAKANTI MADHURI	Madhuri	Madhuri	Madhuri	Madhuri	Madhuri
34	16QM1A0439	TANISHQ CHOUDHARY					
35	16QM1A0440	TIPPANI KRANTHI KUMAR REDDY	Kranthi	Kranthi	Kranthi	Kranthi	Kranthi
36	16QM1A0441	TOTA NARENDRA					
37	16QM1A0442	VOOTKURI SUDHIR GOUD					

Coordinator **HOD** **PRINCIPAL**

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Examination for certification course on "PCB Design"

Roll no: 16QM1A0425
Name of the student: Buvana.

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?			[B]
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'?			[C]
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?			[D]
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 _____			[A]
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?			[A]
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?			[D]
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?			[C]
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?			[B]
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)			[C]

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?		[A]
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?		[D]
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?		[C]
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
a. Coupling capacitor	b. Decoupling capacitor	c. Snubber circuits	d. All of the above

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CERTIFICATE

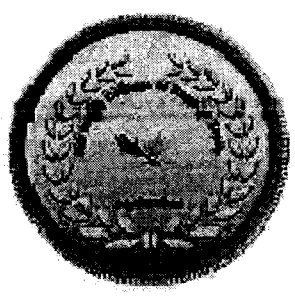
Name: RANGAREDDY SAHITHI

Registration No: 16QM1A0434

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 11/09/2017 to 15/09/2017 in the academic year 2017-2018.

Date: 15/09/2017

Course Coordinator



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CERTIFICATE

Name: SARVIGARI YESHWANTH SIMHA REDDY

Registration No: 16QM1A0436

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 11/09/2017 to 15/09/2017 in the academic year 2017-2018.

Date: 15/09/2017

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