SREE VIDYANIKETHAN ENGINEERING COLLEGE
(AUTONOMOUS)
Sree Sainath Nagar, Near Tirupati – 517102
Department of Electronics and Communication Engineering

Report on One week Refresher Course on
Digital Design Workshop
(22-27February, 2021)

The digital nature of electronic signals offers a convenient, compact and noise-free representation of information. Digital signals can be easily stored in an electronic memory and can be easily understood by digital microprocessors. Examples of engineering problems in digital electronics are: how to efficiently perform arithmetic operations with digital signals on a microprocessor, how to communicate data without losing information, and how to design a reusable reconfigurable digital processor.

The analog nature of electronic signals is of importance as the real world is analog, and because in modern microchips even digital circuits exhibit analog behaviour. Examples of engineering problems in analog electronics are: how to efficiently represent an analog signal such as an image recorded by a digital camera in a digital format so that it can be stored in a digital memory or processed by a microprocessor; how to send large amounts of information such as high-definition video data from one microchip to another quickly; how to send data such as a text message to a cell phone wirelessly in the presence of interference; and how to design a pacemaker or neural implant to function inside a human body.
Career choices are abundant with locations around the world. Commonly advertised positions include: electronic engineer, circuit design engineer and analog/mixed-signal integrated circuit design engineer. Some major employers are: Intel, AMD, Analog Devices, Micron, and National Semiconductor.

In the glow of these developments, ECE Dept.of SreeVidyanikethan Engineering College, Tirupati, has organized a Refresher Courseon **Digital Design Workshop**as a forum on new and emerging applications in handheld and portable devices.

The intention of the RefresherProgramme is to make the faculty and Research scholars understanding the analysis of Digital Design using Proteus tool to capture the electronic circuits and research challenges posed by electronic design industry

The Refresher course on **Digital Design Workshop**using Proteus tool proved their efficiency to

- Design and analyze the schematics
- Proteus is quite lenient in circuit designing and it works on ideal conditions i.e. if you don't add pull up resistors in Proteus simulation, then it won't give garbage value.
- Proteus is also used for PCB designing, we use Proteus ARES for that. (We will discuss later)
- Proteus is also used for designing/testing programming codes for different Microcontrollers i.e. Arduino, PIC Microcontroller, 8051 etc.
- Learn Printed Circuit Board (PCB) design from Scratch With Zero Experience in Electronics, No Effort and a Free Software

This Course is to bring together leading Faculty members in order to create a new laboratory of PCB design for B,Tech Students.

Advantages of Simulation using Proteus:

1. It gives the proper idea and implementation of our code and circuit before implementing hardware.
2. The configuration of the system model is so simple.
3. The process of simulation is safe to handle.
4. The simulation process is mostly used for knowing about the performance of the system
5. Without going into the construction of the system we can able to study the behavior of the system.
6. New hardware devices modeling, layout, and other areas of the system can perform the testing operation without committing the resource for their attainment.
7. It reduces the time on creating hardware and testing your errors directly on hardware. You can analyze your circuit and code both on Proteus and find the errors encountering before implementing it on hardware.

Objective of RefresherProgramme

The RefresherProgramme has been considered to envelop the following objectives

- To upgrade the knowledge of faculty to create schematics and electronic prints for manufacturing printed circuit boards.
- To strengthen the electronic design activities among the faculty and researchers by giving hands on experience on the usage of Proteus design suite tool.
- To emphasize the pedagogy of learning by analyze and apply the experience on the various methodologies and techniques in PCB design.
- To Orient the teaching and research community to solve the critical research issues in the field of PCB design.
- To helps to identify the thrust areas and developing new applications and enhance the curriculum development of quality teaching.

Session 1:
Demonstration of Proteus 8 Design Suite

Proteus Design Suite is used for teaching electronics, embedded design and PCB layout. Circuit simulation gives students a fast and fun practical learning tool.A software solution allows instructors to prepare and re-use virtual labs.Flexible licensing gives freedom for classes and assignments to be completed anywhere.
In this section participants learned on

- Why Proteus
- Introduction to proteus design Suite 8.0 professional
- ISIS
- Design Draw & Test your First Sample using ISIS
- Introduction to some techniques needed to master ISIS
- Create your own electric circuit element and add it to ISIS library
- ARES

- Important Facts in PCB Designing

Session 2: This tool is widely used across various industry sectors as a cost-effective solution for professional PCB design and as a rapid prototyping tool for R&D.Virtual Prototyping enables system Testing before the first physical PCB is ordered.Shape based auto-routing as standard saves time with non-critical routing.
In this section participants has done the following experiments on hands on

1. RC Filter.
2. Half Wave Precision Rectifier.
3. Zener Regulator.
4. Diode Clamper.
5. Transistor as a Switch.
6. CMOS Inverter.

Session 3: Simulation is the process of designing a model of a real system and conducting experiments with a model for the purpose either of understanding the behavior of the system or of evaluating various steps to achieve the system operation.PROTEUS is one of the most famous PCB design software. It is integrated with the simulation and basic SPICE simulation capability to make a complete electronics design system. It reduces development time when compared with other embedded design process.

In this section participants has done the following experiments on hands on

- Create a PCB project sourcing schematic design and targeting a specific PCB layout.
- Placing the components.
- Component reference: This is assigned automatically. Component value: EditableSource selection
- Wire connection, click on the wire auto-router and connect the component terminal as required by topology.
- Output could be voltage/current of any element in the circuit. Measurements in PROTEUS mostly the voltage/current probes.
- Synthesize and implement the design for simulations: Interactive simulation – Mostly used for digital signals. Graph-based simulation – Mostly used for analog signals.
- Finally checking the GERBER files.

COURSE OUTCOMES: After successful completion of the Event, the participants will be able to:

CO1. Demonstrate knowledge in creatingPCB project sourcing schematic design and targeting a specific PCB layout. (PO1)

CO2. Analyze Placing the Components. (PO2)

CO3. Design different electronic circuits like filter design, precision rectifier and regulator. (PO3)

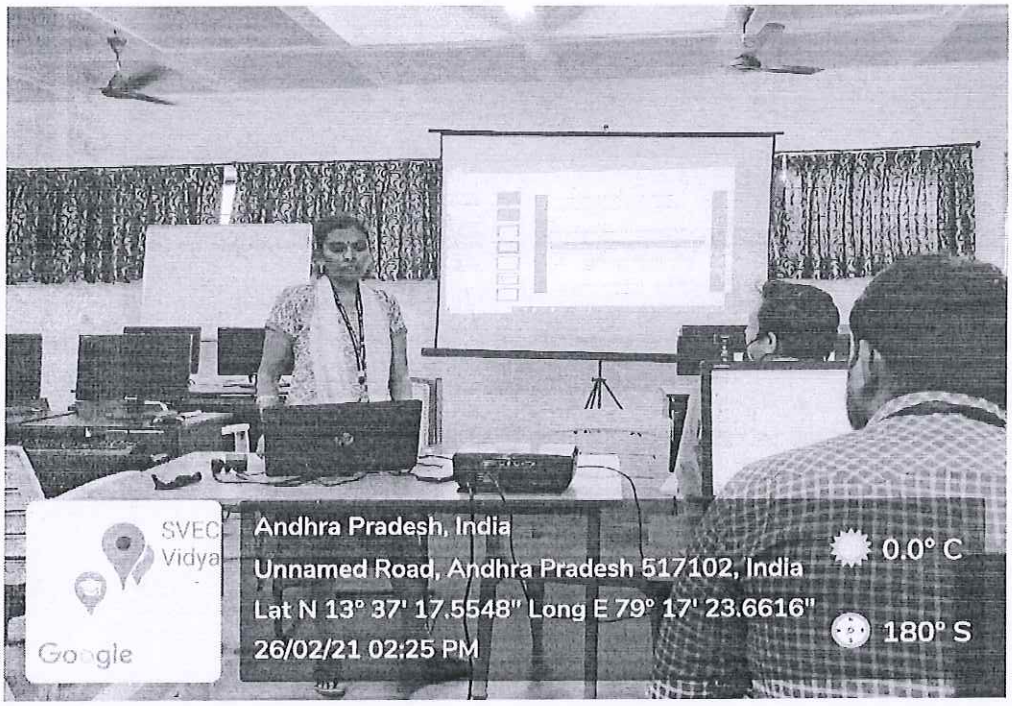
CO4. Conduct of experiments, analysis and interpretation of data, and synthesis of the information toprovide valid solutions. (PO5)

CO5. Model,Synthesize and implement the design for simulations aelectronic circuits using Proteus. tools. (PO9)

CO6. Communicate effectively on complex engineering activities with the engineering community and with society (PO10)

CO7. Demonstrate knowledge of engineering and management principles and apply these to one's own work, as a member and leader in a team.(PO11)

CO8. Able to engage in life-long learning in the field of Electronics and embedded system design.(PO12)



MsM.Bharathi, Assistant Professor, ECE Department(Resource Person) addressing the participants andexplaining the Proteus tool usageto faculty of ECE,EIE & EEE.

Participants clarifying their doubts with Resource person

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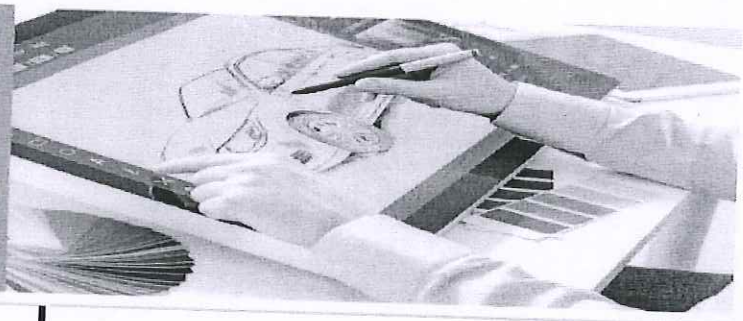
OneWeekRefresherCourseon

SREE VIDYANIKETHAN
EngineeringCollege
(Autonomous)

Digital Design Workshop

Coordinator
Ms. M. Bharathi,
Department of ECE, SVEC



Duration
22-02-202lto27-02-2021

Venue
ECADLab(202-B)

COURSE OUTCOMES:

- Enhance the designing and programming skills in electronic design using proteus.
- Analyze and apply the experience on the various methodologies and techniques in PCB design.
- Reduce the PCB dimension by choosing proper routing.
- Deliver the research contribution towards the societal needs using PCB design.
- Explore fundamentals of new device structure and new material availability in the technology transformation.

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ResourcePerson

Ms.M. Bharathi,&MsK.Neelima

DepartmentofECE,SVEC

WHOCANPARTICIPATE?

FacultyofECE,EIEandEEE

E-certificates willbegiventoallt heparticipants

Organized By
Department of ECE, SVEC

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Sree Sainath Nagar, A. Rangampet – 517 102

Department of Electronics and Communication Engineering

One Week Refresher Course on "Digital Design Workshop"

(22-27 February, 2021)

Registration Form

Sl. No.	ID No.	Name of the Faculty	Department	Signature of the Faculty
1.	[illegible]	A. Yashwanth Rayalu	E.C.E	
2.	SVECECE134	P. L. Lahari	E.C.E	
3.	SVECECE146	M. Venkata Mahesh	ECE	
4.	19PH1A0459	S. Javid Basha	ECE	
5.	SVECECE132	M. Divya	ECE	
6.	SVECECE125	D. Hasiva	ECE	
7.	SVECECE137	K. Praveena	ECE	
8.	SVECECE118	S. P. Sivasakthi	ECE	
9.	SVECECE121	B. ASHREETHA	ECE	
10.	SVECECE113	P. Madhu Kumar	ECE	
11.	SVECECE110	M. Balaji	ECE	
12.	SVECECE150	Koustuch Kumar Sahoo	ECE	
13.	SVECECE145	M. B. Sentil Kumar	ECE	
14.	SVECECE120	M. Lenin Babu	ECE	
15.	SVECPH100	S. Pratima	ECE	
16.	20UEPHDECE03	C. Sushma	ECE	
17.	SVECECE131	B. Subba Reddy	ECE	
18.	SVECECE137	G. Sreenivasulu	ECE	
19.	SVECECE107	B. Hari Charana	ECE	
20.	SVECECE10	M. Madhura K.	ECE	
21.	SVECECE119	M. Vikram Teja	ECE	

Sl. No	ID No.	Name of the Faulty	Department	Signature of the Faculty
22	[illegible]	SATYA M	ECE	Satya
23	[illegible]	A. D. Praveena	ECE	
24	[illegible]	C. Sandeep kumar Reddy	ECE	
25	[illegible]	G. Ramesh	ECE	
26	[illegible]	M. Venkata Murthy	ECE	
27	[illegible]	[illegible]	ECE	
28	[illegible]	T. Ravi Sekhar	ECE	
29	[illegible]	Mahesh Babu	ECE	
30	[illegible]	[illegible]	ECE	
31	[illegible]	Dr. N. Pilakkumar	ECE	
32	[illegible]	Dr. P. Gopathi	ECE	
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Coordinator

HOD, ECE