# Raj Kumar Goel Institute Of Technology

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# WEBINAR ON VLSI DESIGN USING VERILOG HDL

ECE department organized a workshop (webinar) on VLSI design using Verilog HDL on 10/07/2019 in DS-09/1(CAD LAB), with collaboration with MAVEN SILICON, Banglore for 2nd and 3rd year students.

Maven Silicon always leads the VLSI Training industry, as a top class VLSI finishing school in India, by setting new standards in VLSI training. The students were apprised about various online courses.

VLSI Design Methodologies course is a front end Online VLSI course which imparts the VLSI Design Flow, Digital Design and RTL programming using Verilog HDL. This online VLSI course starts with an overview of VLSI and explains the Very Large Scale Integration technology, SoC - System On Chip design, Moore's law and the difference between Application Specific Integrated Circuits, ASIC and Field Programmable Gate Arrays, FPGA. With this overview, it walks through all the steps of complete VLSI Design flow and explains every step in detail. Then it covers the complete digital design, combinational, sequential and FSM designs. And finally this online course trains the individual extensively on Verilog HDL programming.







This workshop was helpful to get industrial exposure and knowledge about the latest development of electronic industries. The program was coordinated by Ms Anamika and class counselors of 2nd and 3rd year classes.

# VALUE ADDED COURSES IN THE DEPARTMENT

Department has started Value Added Courses on every Saturday from 13<sup>th</sup> July 2019. The courses included two core subjects i.e. Sensors & Transducers and Embedded System with Microcontroller Programming.

#### Knowledge and Understanding after completion of this Program:

- Knowledge and understanding fundamentals of embedded system, architectures, possibilities and challenges, both with respect to software and hardware.
- Understand different RISC & CISC Microcontrollers and associated development tools.
- A wide competence from different areas of technology, especially from electronics engineering, robotics, computer, intelligent systems.
- Acquainting assembly programming fundamentals and Developing Embedded C programming with 8051 resources.
- Interface I/O devices and peripherals with Microcontroller for real time applications.
- The basic usage of the Arduino environment for creating your own embedded projects at low cost.
- How to connect your Arduino to your Android phone.
- Learn the basics of Internet of Things and its applications.

#### **Course content for Embedded Sytem with Microcontroller Programming**

	What is the difference between		
INTRODUCTION : Embedded system		Embedded system and real time	
and its architecture, How embed	dded	system, the app	olication of
system differ from General pur	rpose	Embedded system,	the issues in
system		implementing	Embedded
		System.	
]	INTRODUCTION : Embedded sy and its architecture, How embe system differ from General pur system	INTRODUCTION : Embedded system and its architecture, How embedded system differ from General purpose system	What is the differe INTRODUCTION : Embedded system and its architecture, How embedded system differ from General purpose system system System System.

Module-2	The different design flows in Embedded system Design. The different types of Processors and how functions can be implemented, How functions can be implemented in Application Specific Processor.	Hands on practice on 8051
Module-3	Arduino Uno PLATFORM : What is Arduino Uno and its hardware specifications. How to do input and output in Arduino.How pulse width modulation is done to achieve Analog Output.How to do serial communication.	Hands on practice on 8051(Part- 2)
Module-4	Programming Fundamentals: Basic Of C Language Setup And Installation And Sample Program	Hands on C compiler
Module-5	LED Program For ARDUINO : Blinking LED ,FADING LED, Led With Button,Adjusting LED Brightness Using LDR	Hands on Arduino kit
Module-6	Arduino Programming & Interface of sensorsInterfacing sensorswith Arduino, Programming Arduino, Reading from Sensors, Temperature sensor, Serial communication, Wireless communication using Bluetooth, Led brightness control using PWM, SEVEN SEGMENT DISPLAY	Assessment
Module-7	Introduction to IoT, basics of sensors and actuators ,basic of IoT architecture	Project Distribution









Module-1	Introduction of various sensors Sensors & Transducer: Definition, Classification & selection of sensors,	Measurement of displacement using Potentiometer, LVDT & Optical Encoder, Measurement of force using strain gauge, Measurement of pressure using LVDT based diaphragm & piezoelectric sensor.
Module-2	Introduction and role of Lab-VIEW in industry & Graphical system design model of Lab-VIEW (Part-1) Virtual Instrumentation: Graphical programming techniques, Data types, Advantage of Virtual Instrumentation techniques	Hands on practice on Lab-VIEW (Part-1)
Module-3	Graphical system design model of Lab- VIEW (Part-2) Concept of WHILE & FOR loops, Arrays, Clusters & graphs,	Hands on practice on Lab-VIEW (Part- 2)
Module-4	Introduction to Data Acquisition Data Acquisition Methods: Basic block diagram, Analog and Digital IO, Counters, Timers, Types of ADC: successive approximation and sigma- delta, Types of DAC: Weighted Resistor and R-2R Ladder type	Connection with DAQ card
Module-5	TemperatureandlevelsensorMeasurementoftemperatureusingThermistor, Thermocouple & RTD	Temperature and level control using Lab-VIEW
Module-6	MotionandproximitysensorMeasurement of position using Hall effectsensors,Proximitysensors:Inductive &	Lab-VIEW tool and GSD application in various fields

### **Course Content for Sensors and Transducers**

	Capacitive, Use of proximity sensor as	
	Accelerometer and vibration sensor, Flow	
	Sensors: Ultrasonic & Laser, Level	
	Sensors: Ultrasonic & Capacitive.	
Module-7	Test	Open discussion on interview based questions on Lab-VIEW

#### **Outcome of the value added course:**

- Students will be able to understand the basic concept of Embedded System and Sensor and Transducers.
- Students will be able to understand the basic concept of microcontroller programming.
- 3) Hands on practice on lab view, MSP430 kits, Arduino kits.
- 4) Demonstrate the ability to build up the projects.
- 5) Students will be able to understand the basic concept of different type of sensors.
- Students will be able to understand the basic concept of utilisation of sensors and its application in different projects.

#### **Future Scope:**

- Latest Robotics Industries required the knowledge of motor control, programming language skills and solution on real time problems.
- 2) It is very useful in the latest trends of automation and very helpful in industry 4.0.

Total number of registered students of 2nd year and 3<sup>rd</sup> year : 50

# TECHNICAL & MOTIVATIONAL TALK ON RECENT TRENDS IN TELECOMMUNICATION INDUSTRY

A motivating and technical talk on recent trends and demands in telecommunications industry was organized on 18<sup>th</sup> July 2019 in seminar hall for the students of third year. The keynote speaker was Mr. Abhishek Srivastava, MD & CEO of TELENOETICA.

Telenoetica is duly registered in Nigeria as per Nigerian Laws as fully foreign company with its directors and promoters from India and the UK. It has a valid business permit and expatriate quota. Primarily two business verticals . System Integrator/Value Added reseller vertical and Services Vertical.

Services vertical further categorized under Technical Services and Business Consulting. Technical service includes RF Planning Optimization ,Telecom Installation & commissioning and O&M services as the primary business. Business Consulting is designed at increasing organizational effectiveness through specialized interventions like Lean and Six Sigma deployment and balanced scorecard implementation. Our partners include well known & respected manufacturers from across the globe.

Mr. Abhishek Srivastava apprised the students about the fundamental needs of Telecom Industry and what set of skills are required by the telecommunication sector. He also focused on the recent 5G Technologies. The students found th session very interesting and motivating. The coordinator of the program was Mr. Kunal Lala.

आरकेजीआईटी ने टेलीनॉएटिका के साथ एमओयू किया साइन

गाजियाबाद।टेलीकम्युनिकेशन तकनीकी के क्षेत्र में आरकेजीआईटी कॉलेज ने एक बेहट सराहनीय कटम उठाते हुए अंतरराष्ट्रीय टेलीकॉम कंपनी टेलीनॉफ्टिका के साथ एमओयू साइन किया। टेलीनॉएटिका के मैनेजिंग डायरेक्टर एवं सीईओ अभिषेक श्रीवास्तव आरकेजीआईटी के सभी टेलीकॉम इलेक्ट्रॉनिक्स एंड कम्युनिकेशन इंजीनियरिंग के छात्रों को आज के समय की टेलीकॉम की जरूरतों के बारे में बताया। उन्होंने छात्रों को इस क्षेत्र में एक सफल उद्यमी बनने की प्रेरणा दी एवं यथासंभव मदद करने का आश्वासन भी दिया । इसी दिशा में उन्होंने अपनी नाइजीरियन कंपनी



टेलीनॉएटिका के साथ आरकेजीआईटी की गतिविधियों के लिए एक करार किया। आरकेजीआईटी के छात्रों को अब अंतरराष्ट्रीय स्तर पर भी अपनी प्रतिभा दिखाने का मौका मिलेगा । टेलीनॉएटिका कंपनी एक बहुराष्ट्रीय टेलीकॉम की अग्रणी नाइजीरियन कंपनी है जो लागोस में स्थित है ।मख्यतः टेलीकॉम प्रोडक्टस कई देशों को निर्यात किया जाते हैं। आरकेजीआईटी के डायरेक्टर डॉ डीआर सोमशेखर ने अभिषेक श्रीवास्तव के साथ इस अनुबंध पर साइन किए। आज के इस कार्यक्रम में एलटीटीसी के असिस्टेंट डायरेक्टर टेक्निकल ओमपाल सिंह ने भी छात्रों के साथ आज के समय के टेलीकम्युनिकेशन गतिविधियों को साझा किया।

संस्थान के इलेक्ट्रॉनिक एंड कम्युनिकेशन विभाग के विभागाध्यक्ष डों धोरेन्द्र द्विवेदी एवं प्रोफेसर डों पवन कुमार शुक्ला ने इस अनुबंध के लिए सराहनीव प्रवास किए। संस्थान के डीन एकंडमिक डों अनिल सार, डीन स्टूडेंट वेलफेयर एच जी गर्ग, डीन स्टूडेंट वेलफेयर एच जी गर्ग, डीन द्वितीय पाली डॉं पुनीत चंद्र श्रीवास्तव ने विभाग को बभाई दी। इस कार्यक्रम का संचालन विभाग के सहायक प्राध्यापक कुणाल लानो ने





आज के इस कार्यक्रम में एलटीटीस् के असिस्टेंट डायरेक्टर टेक्निकर ओमपाल सिंह ने भी छात्रों के सा आज के समय के टेलीकम्युनिकेश गतिविधियों को साझा किया। संस्थान वे इलेक्ट्रॉनिक एंड कम्युनिकेशन विभा के विभागाध्यक्ष डॉ. धीरेन्द्र द्विवेदी ए प्रोफेसर डॉ. पवन कुमार शुक्ला ने इ अनुबंध के लिए सराहनीय प्रयास किए

संस्थान के डीन एकेडमिक ड अनिल सागर, डीन स्टूडेंट वेलफेय एचजी गर्ग, डीन द्वितीय पाली डॉ. पुनी चंद्र श्रीवास्तव ने विभाग को बधाई दी इस कार्यक्रम का संचालन विभाग वे सहायक प्राध्यापक कुणाल लाला : सफलतापुर्वक किया।

प्रेरणा दी एवं यथासंभव मदद करने का आश्वासन भी दिया। इसी दिशा में उन्होंने अपनी नाइजीरियन कंपनी टेलीनॉएटिका के साथ आरकेजीआईटी की गतिविधियों के लिए एक करार किया। आरकेजीआईटी के छात्रों को अब अंतरराष्ट्रीय स्तर पर भी अपनी प्रतिभा दिखाने का मौका मिलेगा। टेलीनॉएटिका कंपनी एक बहुराष्ट्रीय टेलीकॉम की अग्रणी नाइजीरियन कंपनी है जो लागोस में स्थित है।

मुख्यतः टेलीकॉम प्रोडक्ट्स कई देशों को निर्यात किया जाते हैं। आरकेजीआईटी के डायरेक्टर डॉ. डीआर सोमशेखर ने अभिषेक श्रीवास्तव के साथ इस अनुबंध पर साइन किए।

निवाण टाइम्स संवाददाता

गाजियाबाद। टेलीकम्युनिके शन तकनीकी के क्षेत्र में आरकेजीआईटी कॉलेज ने एक कदम आगे बढ़ाते हुए अंतरराष्ट्रीय टेलीकॉम कंपनी टेलीनॉएटिका के साथ एमओयू साइन किया।

टेलीनॉएटिका के मैनेजिंग डायरेक्टर एवं सीईओ अभिषेक श्रीवास्तव ने आरकेजीआईटी के सभी टेलीकॉम इलेक्ट्रॉनिक्स एंड कम्युनिके शन इंजीनियरिंग के छात्रों को आज के समय की टेलीकॉम की जरूरतों के बारे में बताया। उन्होंने छात्रों को इस क्षेत्र में एक सफल उद्यमी बनने की



# INDUSTRIAL VISIT TO TELECOM NETWORK SOLUTIONS, NOIDA

Telecom Network Solutions Private Limited (TNS) is formed by group of professionals in the field of telecommunications & Infrastructure. Incorporated in 2001, TNS offers services and supplies in the field of Project Management, Planning, RF and MW Engineering, Network optimization, Network implementation, Installation & Commissioning of Tower, Manufacturing of Telecom Tower, Transmission Line Towers, Substation Structures, Telecom Infrastructure, Customized ERP Software, Telecom Training.

With 2000 professionals on board, telecom network solutions is one of India's largest supplier of product and services of telecom turnkey solutions.

The traditional telecom market in India has evolved a great deal along with the capability to tap the mood of the industry and a comprehensive suite of products, TNS continues to meet the forever-changing technology and services requirements of our increasingly connected world.

Around 70 students of 3rd year visited the TNS on 13th July 2019. Students were accompanied by Ms.Richa Gupta, Ms. Anamika Gupta and Mr. Anil Verma.

The students learnt about following :

- **PLANNING-**The basic planning about the particular area for planting the tower.
- **SURVEY-** The survey consist the counting of population of the particular area where planning of tower is going on.
- **RFI SURVEY** This is the final survey after this tower is ready for installation.
- **INSTALLATION** Process of installing the tower.
- **COMMISSIONING** software (signal start).
- EMF SURVEY
- SCFT- Single cell function test
- **CLUSTER** Group of cell function test.
- LAUNCH The tower is finally launched after all the successful tests.







# **TECHNICAL TALK BY PINE TRAINING ACADEMY**

A technical talk on Embedded System Design, Multi-Layer PCB design was organized for the students of 3rd year by the department on 18th July 2019. The talk was organized in association of PinE Training Academy. The resourse person was Mr. Vaibhav Mishra.

PinE Training Academy was established in 2014 (PinE Training Academy is training division of Aujus Technology Private Limited (www.aujustechnology.com)) by technocrats having expertise and vast work experience in the field of ASIC Design, FPGA, and DSP, ASIC Verification, real-time embedded system design and board PCB. It was started with a motive to impart through training expertise and know-how to students that can help them become a able solution provider. Pine Training Academy has progressed into a training institute with a seamless combination of greatly experienced and expert technical teams in software development and hardware design.

Their Core team members are experts in delivering training for systems or algorithms on programmable chips (FPGA) with chip programming using Hardware Description Language (HDL) and Hardware or Board Level capabilities.

The students found the session very interesting.



## **GUEST LECTURE ON PYTHON**

The department organized a guest lecture on Python on 18th July 2019. The resource person was Mr. Amit Jindal from Candid Cohort Infosolutions Pvt. Ltd.

With every inch of time, we move forward, we can observe that Artificial intelligence and Machine Learning are becoming the shine on the eyes of every developer. Which is why, beginner or expert, all are driving the "popularity traffic" towards Python. This is the reason for the increase in Python demand.



Python is an excellent backend programming language for both beginners and experts. It is used for web scraping, scripting, automation, data analysis, web development and creating data sheets. Guido Van Rossum, the creator of Python, wanted to make the indentation meaningful so that the readability and ease of use of Python could increase. Today, Python is used by major MNCs like Google, Facebook, YouTube, Netflix and Dropbox. The students found the lecture very itersetting and desired to organize more such lectures in near future.

# **DEPARTMENTAL ACHIEVEMENTS**

 Dr. Pavan Kumar Shukla successfully completed a leadership workshop on " Management Capacity Buiding Programme on Critical Thinking" for the HOD's of AKTU affiliated institutions at Indian Institute of Management, Lucknow from 23/5/2019 to 26/5/2019.



 Dr. Pavan Kumar Shukla chaired the session titled "Recent Communication Technologies" in 3<sup>rd</sup> National Conference on Recent Trends in Electronics and Electrical Engineering(NCRTEEE-2019) held during 10/6/2019- 11/6/2019 at IPEC, Ghaziabad.



3. Dr. Pavan Kumar Shukla successfully completed a leadership workshop on " Executive Leadership Programme" offered by The Arts of Living from 21/6/2019 to 23/6/2019 at Ved Niketan Ashram, Rishikesh, Uttarakhand organized by AKTU.



4. Mr. Vaibhav Sharma participated in 5 days Management Development Programme on "Managing Start-up Incubation and Ecosystem for the Faculty Mmebers of AKTU affiliated colleges" organized by IIM, Lucknow on 14/7/2019-18/7/2019.



#### 5. Meritorious Students of the Department:

S.NO.	ROLL NO.	NAME	Year	%
1	1703331055	KRATI GUPTA	2 <sup>nd</sup> (M)	91.0
2	1703331037	DISHA SRIVASTAVA	2 <sup>nd</sup> (M)	88.6
3	1703340095	SACHIN PATEL	2 <sup>nd</sup> (M)	86.0
4	1703331012	AKSHAT MITRA	2 <sup>nd</sup> (M)	85.15
5	1703331020	ANMOL KUKREJA	$2^{nd}(E)$	89.5
6	1703331110	SHREYA SONI	2 <sup>nd</sup> (E)	88.9
7	1703331079	PRATIBHA KUMARI	2 <sup>nd</sup> (E)	87
8	1703331065	MRIGA KHANNA	2 <sup>nd</sup> (E)	85.5
9	1603331012	ADITYA TRIPATHI	$3^{rd}(M)$	89
10	1603331026	ANKIT KUMAR MAURYA	$3^{rd}(M)$	85.5
11	1603331144	SOUMYA GUPTA	$3^{rd}(M)$	86.05
12	1603331123	SANDEEP YADAV	3 <sup>rd</sup> (M)	85.15

6. Mr. Rajneesh Patel (Asst. Professor ECE) enrolled his PhD in Antenna Design from SRM University (NCR Campus).

### FACULTY TECHNICAL CORNER

#### NINE PILLARS of INDUSTRY 4.0

The rise of new digital industrial technology, known as Industry 4.0, is a transformation that makes it possible to gather and analyze data across machines, enabling faster, more flexible, and more efficient processes to produce higher-quality goods at reduced costs. This manufacturing revolution will increase productivity, shift economics, foster industrial growth, and modify the profile of the workforce—ultimately changing the competitiveness of companies and regions.

#### Nine Technologies Transforming Industrial Production:

Advanced digital technology is already used in manufacturing, but with Industry 4.0, it will transform production. It will lead to greater efficiencies and change traditional production relationships among suppliers, producers, and customers—as well as between human and machine. Nine technology trends form the building blocks of Industry 4.0.



#### **Adopting Industry 4.0:**

Companies face formidable challenges in the adoption of these new technologies. To build and sustain a lead in the race to full implementation, they need to broaden and deepen their practical knowledge about digital technologies and the related use cases—and then develop and implement tailored digital manufacturing strategies.

> (Ms. Leena Sharma) Asst. Professor, ECE

# STUDENT TECHNICAL CORNER

#### **APACHE HADOOP**

Hadoop is an open source framework by Apache Software Foundation and known for writing and running distributed applications that process large amount of data. It is well suited for voluminous data processing like searching and indexing in huge data set. Hadoop was created by **DOUG CUTTING**, the creator of Apache Lucene, the widely used text search library.



Apache Hadoop is a core part of the computing infrastructure for many web companies, such as Facebook, Amazon, LinkedIn, Twitter, IBM, AOL and Alibaba. Most of the Hadoop framework is written in Java language, some part of it in C language and the command line utility is written in shell scripts.

The exponential growth of data in latest years presented challenges to cutting-edge businesses such as Google, Amazon and Microsoft. They needed to go through terabytes and petabytes of data to figure out which websites were popular, what books were in demand, and what kinds of ads appealed to people. Existing tools were becoming inadequate to process such large data sets.

Hadoop includes the Hadoop distributed file system(HDFS) and MapReduce. It is not possible for storing large amount of data on a single node, therefore Hadoop uses a new file system called HDFS which spilt data into many smaller parts and distribute each part redundantly across multiple nodes. MapReduce is a software framework for the analysis and transformation of very large sets of data. Hadoop uses MapReduce function for distributed computation.

The key features of Hadoop are that it is accessible, robust, scalable and simple. The Hadoop architecture system consists of the following components: HBase, HDFS, MapReduce, Avro, Hive, Zookeeper, Sqoop.

When big software vendors like Facebook, IBM, Yahoo were struggling to find a solution to deal with the voluminous data, Hadoop is the only technology which offered a moderate solution. Apache Hadoop has become a necessary tool to tackle big data. As the world is turning digital, we would definitely come across more and more data and need to think of a more simplified solution to handle growing big data.

Disha Srivastava ECE-3<sup>rd</sup> Year 1703331037

# **ALUMNI SPEAK**

It was a great time spent in RKGIT. I consider it as a temple and teachers over here as my god. It is a great platform to explore yourself. RKGIT has provided me a wonderful environment and opportunity to learn & grow myself academically.

I won lots of prizes, medals and money in competitions organised by institute. RKGIT is also good in providing facilities like personality development classes.

It has everything one needs from a college, students of RKGIT won at state level in volleyball, cricket, race, shot-put etc. I was also the part of RKGIT girls Volleyball team.

I would like to thank all the faculties of electronics and communication department for their sincere efforts. It is a place where I entered as a person and stepped out as a professional. I am placed in core company of ECE branch beacause of learning I got from my institute.



DIVYA - ECE (2015-19) PCB DESIGNER (MEGHA CIRCUITS)

## **BRAIN TEASERS**

**1.** Which letter is missing from the web?



2. What is the time now if 2 hours later it would be half as long until midnight as it would be if it were an hour later?



3. What does this message say?

#### G T Y O R J O T E O U I A B G T

- **4.** A line of 100 airline passengers is waiting to board a plane. They each hold a ticket to one of the 100 seats on that flight. (For convenience, let's say that the nth passenger in line has a ticket for the seat number n.) Unfortunately, the first person in line is crazy, and will ignore the seat number on their ticket, picking a random seat to occupy. All of the other passengers are quite normal, and will go to their proper seat unless it is already occupied. If it is occupied, they will then find a free seat to sit in, at random. What is the probability that the last (100th) person to board the plane will sit in their proper seat (#100)?
- 5. What does this equal?

12=DD + 11=PP + 10=LL + 9=LD + 8=MM + 7=SS + 6=GL + 5=GR + 4=CB + 3=FH + 2=TD + 1=PPT = ?