RAJ KUMAR GOEL INSTITUTE OF TECHNOLOGY

5TH K.M. STONE , DELHI -MEERUT ROAD ,GHAZIABAD(U.P.)-201003

UDGHOSH

THE VOICE OF ECE DEPARTMENT

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What's Inside?

WELCOME OF NEW FACULTY MEMBERS

Recently two new faculty members joined the ECE department. We whole heartly welcome them to be a part of us. Here is a brief introduction of them.

1. Mr. Rajneesh Patel is an Assistant Professor in the Department of Electronics and Communication Engineering of Raj Kumar Goel Institute of Technology, Ghaziabad. He has M.Tech. from R.G.P.V., Bhopal and B.Tech from U.P.T.U., Lucknow. He has taught many courses such as Signals and Systems, Digital Signal Processing, Control Systems, Digital Electronics etc. He possess more than 8 years of teaching experience with leading institutions/organizations. He has published four papers in International Journal and two papers in National Journal.

2. Ms. Leena Sharma graduated in Electronics and Communication from Jaipur Engineering College and completed her M.Tech in Digital Communication from Swami Keshwanand Institute of Technology, Jaipur. She is having 4 years of teaching experience. Other than academics she is a Silver Medalist in State Panel Athletics(1500 m race). Her areas of interest are Electronic Devices, Microcontrollers and Antenna Filter.

INTERACTION OF STUDENTS WITH ALUMNI

*As it is rightly said "**An organization's alumni are the reflection of its past, representation of its present and a link to its future."***

Alumni are the brand-ambassadors of the institution they graduated from. We have seen many institutions declaring the list of their notable alumni as a way of connecting their successes with what the college has provided them. However, in this era of social networking, the connect with their past students doesn't stop with this. Institutions have realized how a strong and a positive relationship with their alumni can benefit them socially, academically and professionally. Likewise even the alumni community have realized that it's not just a mere nostalgia that they associate their alma-mater with, but it's much beyond that.

Mr. Akshat Joshi, our Alumni student (2015 pass out) visited the department on 2nd April 2019. He is currently pursuing Ph.D from Kyushu Imperial University, Japan. In his visited he interacted with the students of 2nd Year on several topics. Mr. Akshat motivated the students towards developing excellent academics and apprised them about various exams related to studying abroad like TOEFL, GRE etc. Students found the interaction to be very beneficial and requested that such interactions must be organized frequently.

MOTIVATIONAL TALK BY PROF. A K VERMA

A motivational pep talk by Prof. A.K. Verma Adjunct Professor, Maquare University in Australia, Ex. Professor. South Campus, University of Delhi was organized in the Department on 2nd April 2019. In this interactive talk session Prof. Verma discussed the importance Teaching Methodology with the faculty members.

A teaching method comprises the principles and methods used by teachers to enable student learning. These strategies are determined partly on subject matter to be taught and partly by the nature of the learner. For a particular teaching method to be appropriate and efficient it has to be in relation with the characteristic of the learner and the type of learning it is supposed to bring about.

After taking inputs from various faculty members Prof, Verma summarized that :

Every teacher develops a particular way of going about the complex task of teaching.

The way one introduces a topic, raises question, makes assignments- all these and hundreds of other behaviors together make up a teacher's classification by researchers, colleagues, and students. Traditional teaching style is described as a teacher-directed approach while in transitional style, both teacher and students are expected to assist each other during the teaching and learning process .

The logical and proper relationship and friendship of teachers' ratio with their students' achievement and retention of learning should be considered too.

THREE DAYS ENTRPRENEURSHIP AWARENESS

The entrepreneurs are considered ‘change agents’ in the process of industrial and economic development of an economy. The premium mobile role that entrepreneurs play in promoting industrial and economic development of an economy is well adduced across the countries.

Within India itself, Gujarat and Punjab are developed because of their entrepreneurial development and Bihar and Odisha are backward or underdeveloped because of the lack of entrepreneurial development. Thus, with entrepreneurs societies prosper, without them they are poorer.

EDTIC,IIC, cell of RKGIT under the aegis of MHRD, India organized the 3 days Entrepreneurship Awareness Camp on 8th to 10th April 2019 which was sponsored by the Department of Science & Technology, Government of India. Around 58 students participated in this camp. The objective of the program was to provide an insight and exposure about the entrepreneurship and self employment amongst the participants and promote business development as an alternative career. During the three day span various guest lectures on business development and working modules were organized, participants were also apprised about various promotional schemes etc.

INDUSTRIAL VISIT TO ASSOMC MACHINES

To provide a live exposure of the industry to the students, the industrial visit to Assomac Machines Ltd was organized on 8th February 2019 for the students of 3rd Year. 50 students of the department participated in this visit. The Assomac Group is one of India's leading names in the field of Wire Drawing Machines, Wire Cutting Machinery, Wire Making Machinery with promise of quality products that stay ahead of time. The Assomac Group of Companies is an integrated conglomerate of engineering companies engaged in manufacturing all types of equipment and the accessories used in making Alloy Steel, Carbon Steel, Mild Steel, Stainless Steel and other Non-Ferrous Wires. The students found the visit very beneficial. Mr, Rohit Kumar coordinated the visit.

INAUGURATION OF INNOVATION CENTRE AND 3 DAYS WORKSOP ON ADVANCE ELECTRONIC CIRCUIT AND IoT DESIGN

Department of Electronics and Communication inaugurated **Innovation Centre** and organized three days workshop on **Advance Electronic Circuit & IOT Design** from 21st February to 23rd February 2019. Dr. Laxman Prasad, Group director R&D inaugurated by cutting the ribbon of innovation centre. An expert from TI, Mr. Jeeva apprised students about various recent technologies. He also told the students how to use TI equipments.

PROGRAM SCHEDULE

Program of Workshop on **"Advance Electronic Circuit and IoT Design"** from 21st to 23rd February 2019.

Days	Session 1 (09:45AM-11:15AM)	Session 2 (11:30AM-01:00PM)		Session 3 (01:45PM-03:15PM)	Session 4 (03:30PM-04:45PM)
1 Thu.	**MSP430** * Introduction * Architecture MSP430F5529	**CCS Framework** Over View of CCS Working of CCS **Lab:** GPIO, Timers etc		**TIVA** * Introduction * Architecture TM4C123GHP6M	**TM4C123GHP6M** **Lab :** GPIO, DC motor Control etc
2 Fri.	**Energia Framework** * Overview of Energia **Lab:** Led, switch, UART, ADC, Labs using Energia	**Intro to Boosterpack& Launchpad** **Lab:** CC2650 Booster pack CC1125 Booster pack CC3220 Launchpad	L U N C H	**CC110L Boosterpack** **Lab:** Implementation of RF Communication Between Two Launchpads	**Internet of Things** * What is IOT? * TCP/IP, internet terminologies CC3100 Booster-Pack overview
3 Sat.	**Overview of Energia** **Wi-Fi Libraries** **Lab:** Wi-Fi Connection, acquiring IP, Gateway	**TCP Protocol** **Lab:** Establish Communication between Two Launch		**HTTP web Server** **Lab:** IO manipulation on LaunchPad using Web	**Wi-Fi Server Monitor** **Lab:** Design of Simple Web Server to monitor sensors

WORKSHOP ON LABVIEW AT AKGEC, GHAZIABAD

On 27/02/19 a workshop was held on LabVIEW & Industrial IOT at AKGEC, Ghaziabad. Mr. nuj Kumar and Mr. Jassu Kumar accompanied by 25 students participated in this workshop. Students were introduced with the real concept of LabVIEW and it's application in different fields. Laboratory Virtual Instrument Engineering Workbench is a system-design platform and development environment for a visual programming language from National Instruments. Students were introduced to different lab facilities in the campus. Here is a short summary report of the workshop provided by the students:

From 2:30PM to 2:50PM, we visited AKGEC-KUKA Centre. AKGEC jointly with KUKA Robotics (India), has set up India's first Industrial Robotics Training Centre for Educational Institutions at AKGEC, Ghaziabad.

From 2:50PM to 3:10PM , we visited AKGEC-NI LabVIEW Academy. AKGEC jointly with National Instruments (India) has set up AKGEC-NI LabVIEW Academy for Educational Institutions. The academy offers courses for all levels of LabVIEW proficiency and on various hardware platforms.

From 3:10PM to 3:30PM, we visited AKGEC-BOSCH REXROTH CENTRE. AKGEC Ghaziabad has Centre of Competence in Automation Technologies in collaboration with Bosch Rexroth AG, Germany.The Centre has world class infrastructure with state of the art technologies, equipments, training kits, hardware, software and teaching aids with excellent faculty trained by Rexroth Germany. The centre has six laboratories at par with international standard on Hydraulics, Pneumatics, Sensory, PLCs, Drives & Control and Mechatronics.

From 3:30PM to 3:50PM, we visited AKGEC-AIA CENTER FOR INTEGRATED AUTOMATION. AKGEC, to promote Industry oriented teaching learning, has setup

Centre for Integrated Automation in association with Automation Industry Association.

From 3:50PM to 4:10PM, we visited AKGEC-SIEMENS ADVANCE MANUFACTURING CENTRE. AKGEC, jointly with industry partners, has set up Advance Manufacturing Centre for SMEs and Educational Institutions at Ghaziabad. The AKGEC- Siemens Training Centre is setup to produce highly skilled technical manpower in the field of Advance Manufacturing.

From 4:10 PM to 4:30PM, we visited AKGEC-FABLAB . A Fab lab is an initiative of Prof. Neil Gershenfeld from MIT, USA which is typically equipped with an array of flexible computer-controlled tools .AKGEC has established Fab Lab in response to the need arising from students requiring a dedicated space and appropriate equipment to develop their projects.

SRIJAN 2K19

SRIJAN-2K19 – Project Exhibition was organized on 20th April 2019. In this mega event around 22 projects were showcased by the students of ECE Department. The mentor of these projects was Mr. Abhinav Bansal. He also received the best project mentor award for the same. The details of some of the teams and projects are illustrated below:

1. TEAM TECHNOCRATS : DRONE

- Shubhangi Gupta
- Imran Khan
- Akarshit Kumar Agrahari
- Aditya Chawla
- Rishab Umrao
- Rupal Srivastava
- Shaswat
- Sumit Raj

Unmanned aerial vehicles have been around for decades, but they have achieved the greatest popularity in recent years with small commercial drones. The technology gave us a unique experience of flying and the advancement of GPS systems in drones opened a whole new world for passionate individuals. Today, there is a wide range of drones on the market, and they differ in size, design, and properties. This project is using KK2.1.5 flight controller board.

2. TEAM GIGABITERS : MOTION CONTROLLED HOME LIGHTING

- Kinjal Sinha
- Himanshu Chaudhary
- Kanika Rawat
- Abhinav Singh

In this project the room lights of the gallery will be switched on when the PIR sensor detects any motion nearby. The PIR sensor can detect the infrared rays released by Human body. The light or any other electrical appliances can be activated automatically by the presence of a human body within the detection range & when there is no presence the light will be deactivated automatically .This will help save energy to a great extent. It uses an Atmega 328p and a PIR sensor to detect the motion.

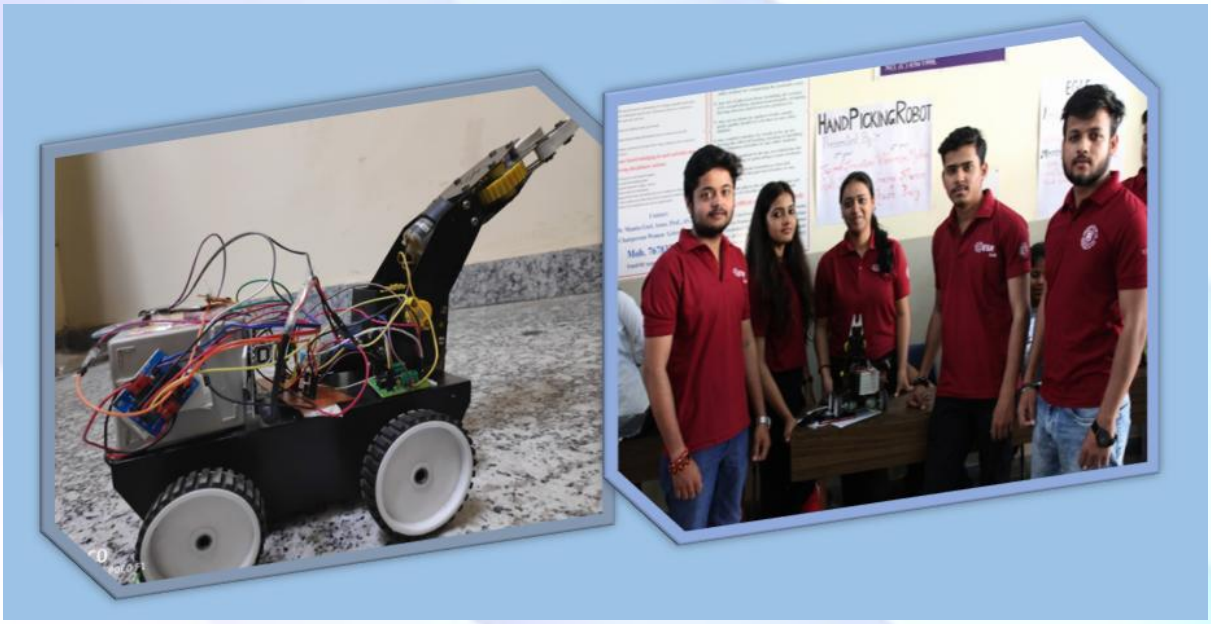
3. TEAM RAPTOR : OBSTACLE DETECTOR

- Abhinav Tiwari
- Ayushi Pandey
- Disha Srivastava
- Sachin Patel

An Obstacle Detector is an intelligent robot, which can automatically sense and overcome the obstacle on its path. It consists of ATmega 16 microcontroller to process the data, ultrasonic sensor to detect the obstacle on its path.

4. TEAM CONNECT TECH : HAND PICKING ROBOT

- Swapnil Srivastava
- Tripti Singh
- Vibhanshu Mishra
- Ananya Sharan
- Ayush Pandey



The project deals with a hand picking robot that is controlled through Bluetooth and can function to pick up things from one place and drop it out. This is an Atmega 328p based project controlled through a Bluetooth module.

5. TEAM EGLE : HAND GESTURE AUTOMATED INDUSTRIAL STUFF CARRIER

- Aditya Sharma
- Anuj Kumar Singh
- Khushi Saxena
- Shrayansh Gupta
- Vishal Tiwari

A gesture controlled vehicle is controlled by using hand in place of any other method like buttons or joystick. Here one only needs to move hand to control the robot. A transmitting device is used in your hand which contains RF Transmitter and accelerometer. This will transmit command to robot so that it can do the required task like moving forward, reverse, turning left, turning right and stop. All these tasks will be performed by using hand gesture.

6. TEAM CONTACTLESS REVOLUTIONARY TACHOMETER

- Aditi Narayan
- Nirbhay Mishra
- Shreya Soni
- Nikita Upadhyay

In this project, a simple Non – Contact or Contactless Digital Tachometer using Atmega 328p Microcontroller have been developed, which can measure speed with an accuracy of 1 rev/sec. The basic principle behind the Contactless Digital Tachometer involves a simple embedded system with a sensor, a controller and an actuator.

NBA VISIT

The experts of NBA Team for ECE Department visited on 26th to 28th April 2019. The Department was well prepared in terms of infrastructure, lab equipments, departmental library and vast documentation which includes all the proofs of each and every practices being adopted in the department.

Since last three years department is strictly following the process which supports OBE system.

The team appreciated the efforts of the department towards its working through various committee. They also appreciated the team work of faculty and staff members and the discipline among the students. They also mentioned that the research related works needs considerable improvement.

FOR MORE INFORMAION & UPDATES GET

Email- ecemagazine.rkgit@gmail.com

PEP TALK ON TQM- TOTAL QUALITY MANAGEMENT

RKGIT, ECE department had organized a Pep talk on TQM- Total Quality Management for all faculty member of college in CRC Center on 11th May 2019. The speaker for the talk was Dr. S.C. Kapoor, who is graduated from IIT Kharagpur in Electrical Engineering in 1957, Post graduated from IIT Kharagpur in Control systems in 1961, Ph.D from Imperial College , London in Power Systems in 1967.

Dr. Somashekar , Director RKGIT felicitated Dr.S.C. Kapoor for the invaluable talk, Dr. Dhirendra Kumar,HOD,ECE –RKGIT, presented the memento for welcome & Dr. Himani Mittal, Associate Professor ECE introduced the speaker & the topic of lecture to the audience.

In his lecture Dr. S.C. Kapoor identifies TQM as the mention of every enterprise toward excellence .He demonstrates various methodologiesto understand quality concept .He also take into consideration the TQM imperative changing the way we work with the help of control charts. He narrated various success stories mentioning BHEL.

GUEST LECTURE ON OBE

"Outcome-Based Education" (OBE) model is being adopted at a fast pace at Engineering colleges in India at the moment. It is considered as a giant leap forward to improve technical education in India and help Indian Engineers compete with their global counterparts.

The induction of India in the Washington Accord in 2014 with the permanent signatory status of The National Board of Accreditation (NBA) is considered a big leap forward for the higher-eduction system in India. It means that an Engineering graduate from India can be employed in any one of the other countries who have signed the accord. For Indian Engineering Institutions to get accredited by NBA according to the pacts of the accord, it is compulsory that engineering institutions follow the Outcome Based Education (OBE) model. So, for an Engineering Institution to be accredited by NBA it should compulsorily follow the OBE model.

RKGIT, ECE department had organized an expert Lecture on Outcome Based Education for all faculty members of college in Seminar Hall on 20th May 2019. The speaker for the talk was Prof. (Dr.) Asok De , Ex- Director, NIT Patna & Professor Delhi Technical University, Delhi. Around 85 faculty members attended this lecture. Prof Asok De explained the necessity of OBE and enhanced the knowledge of the faculty members towards OBE. The faculty members found the session very fruitful and interactive.

GUEST LECTURE ON IPR

A Guest lecture on Intellectual Property Rights (IPRs) was organized in the institute for all the faculty members on 21st May 2019. The resource persons for this lecture were Mr. RP Yadav, SR4IPR Partner, Patent & Trademark Attorneys, Vaishali and Ms. Shweta Singh, ENNOBLE,IP, Noida. Around 50 faculty members attended this guest lecture.

Intellectual property is the product of the human intellect including creativity concepts, inventions, industrial models, trademarks, songs, literature, symbols, names, brands,....etc. Intellectual Property Rights do not differ from other property rights. They allow their owner to completely benefit from his/her product which was initially an idea that developed and crystallized. They also entitle him/her to prevent others from using, dealing or tampering with his/her product without prior permission from him/her. He/she can in fact legally sue them and force them to stop and compensate for any damages.

The four types of intellectual property include:

1. Trade Secrets
2. Trademarks
3. Copyrights, and
4. Patents.

This lecture was very interactive and faculty members found it very beneficial. The coordinator of the program was Dr. Dhirendra Kumar, HOD ECE.

STAFF DEVELOPMENT PROGRAM

Staff Development program was organized in the department on 21st May 2019 to 25th May 2019. This SDP included various diverse topics of MATLAB, Signal Processing, Microprocessors, Microcontrollers, Electronic Devices etc.

In this 5 day program hands on session were organised on various simulation tools including MATLAB, TINA , Code Composer studio etc.

A special session was dedicated for the practise on various MS office tools like word,excel,ppt etc. The Staff was very pleased by this SDP and suggested that such programs must be organised frequently in the department. The schedule, resourse persons and some glimpses of this SDP are shown below:

Raj kumar Goel Institute of Technology, Ghaziabad
(ISO 9001:2008 Certified)
Department of Electronics & Communication Engineering

SCHEDULE FOR STAFF DEVELOPMENT PROGRAM

Date	Program	
	9:00 AM - 9:30 AM	
21.05.2019	Inauguration (Director, Dean Academic, Dean (SW), Dean (2nd Shift), HODs, All Faculty members, All Staff)	
	9:30 AM to 12:30 PM	01:30PM to 4:30PM
21.05.2019	MATLAB (Signal, Matrix Manipulation, Multiplication Convolution) (Mr. Vaibhav Sharma/Mr. Kunal Lula/Mr. Vikas Rajput)	
22.05.2019	Electronics Devices (Tina Software, Operation on various component Like CRO, Function generator, Power Supply, Bread board Connection) (Ms. Renu Rani/Mr. Jasse Kumar/Mr. Sandeep Bhatia)	
23.05.2019	Microprocessor & Microcontroller(8085,MSP) (Ms. Riju Jindal /Mr. Manoesh kumar Srivastava/Ms. Anamika Gupta)	
24.05.2019	VLSI/PCB (Ms. Neha Goel/Mr. Anil Verma/Mr. Rakesh Kumar)	
25.05.2019	Practice on word, excel, ppt etc.(9:30 AM to 12:30 PM) (Mr. Deepak Kumar/Ms. Leena)	

Dr. Dhirendra Kumar
HOD, ECE

Copy to:
Director
for kind information

DEPARTMENTAL ACHIEVEMENTS

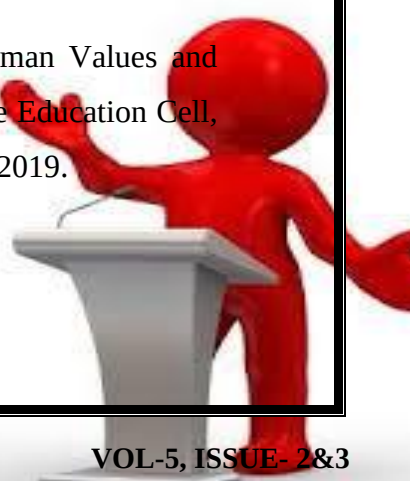
1. Dr. Dhirendra Kumar & Dr. Himani Mittal published a paper titled " *Smart Semi Bufferless Heterogeneous Router for Mesh NOC"* in the International Conference held at IIMT Greater Noida. This paper also received the best paper award .

2. Mr. Rohan Sharma, student of EC 4th year has developed Smart Drip Irrigation System using IoT. This device stores the water which is coming out of thew RO systems and uses it for irrigation purposes. Mr. Rohan has received a grant of Rs 12000/- for this innovative project by the Honourable Chief Minister of UP, Yogi Adityanath Ji. His mentor is Mr. Abhinav Bansal, (Asst Prof. ECE).

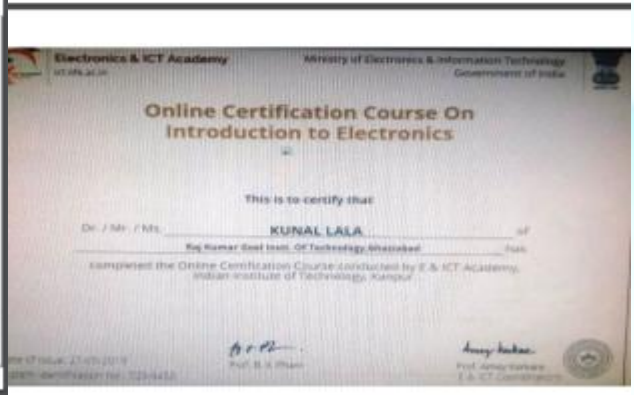
3. Ms. Neha Goel completed her Ph.D on " Mathematical Modelling of 3D Fully Depleted Double Gate Silicon of Gate Bias" from SRM Institute of Science and Technology**.**
4. Ms. Neha Goel published a paper title "*Modelling of Threshold Voltage for 3D Double Gate Fully Depleted SOI MOSFET"* in 6th International IEEE Conference on Signal Processing and Integrated Conference.
5. Dr. Dhirendra Kumar, HOD ECE has been appointed as a coordinator for UP, Delhi and Haryana in VVM. Vidyarthi Vigyan Manthan (VVM) is a national program for educating and popularizing science among school students of VI to XI standards. Vidyarthi Vigyan Manthan (VVM) is initiated by Vijnana Bharati (VIBHA) in collaboration with Vigyan Prasar, an autonomous organization under the Department of Science and Technology, Government of India and National Council of Education Research and Training (NCERT) an institution under the Ministry of Human Resource Development, Govt. of India.

   Dr. Dhirendra visited the VVM camp held at Hyederabad on 18th-19th April 2019. In this camp 325 students participated and 18 were finally short listed for future support.

6. Dr. Himani Mittal attended the 8-day Workshop on Universal Human Values and Professional Ethics Organized by TEQIP-III and conducted by Value Education Cell, AKTU Lucknow at ABESEC Ghaziabad from 21st May – 28th May 2019.



7. The following Faculty members have successfully completed the online certification from Electronics & ICT Academy, IIT Kanpur.

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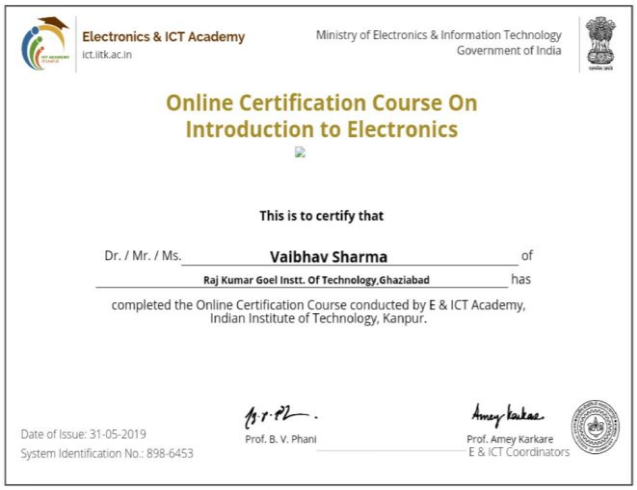
Online Certification Course On
Introduction to Electronics

This is to certify that

Dr. / Mr. / Ms. RAJNEESH of
Raj Kumar Goel Instt. Of Technology,Ghaziabad has
completed the Online Certification Course conducted by E & ICT Academy,
Indian Institute of Technology, Kanpur.

Prof. B. V. Phani
Prof. Amey Karkare
E & ICT Coordinators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Dr. / Mr. / Ms. Vaibhav Sharma of
Raj Kumar Goel Instt. Of Technology,Ghaziabad has
completed the Online Certification Course conducted by E & ICT Academy,
Indian Institute of Technology, Kanpur.

Date of Issue: 31-05-2019
System Identification No.: 898-6453

Prof. B. V. Phani
Prof. Amey Karkare
E & ICT Coordinators


Electronics & ICT Academy
Ministry of Electronics & Information Technology
Government of India

Online Certification Course On
Introduction to Electronics

This is to certify that

Dr. / Mr. / Ms. RAKESH KUMAR of
Raj Kumar Goel Instt. Of Technology,Ghaziabad has
completed the Online Certification Course conducted by E & ICT Academy,
Indian Institute of Technology, Kanpur.


Electronics & ICT Academy
Ministry of Electronics & Information Technology
Government of India

Online Certification Course On
Antennas Part 1 - Fundamentals of Antennas

This is to certify that

Dr. / Mr. / Ms. Deepak Kumar of
Raj Kumar Goel Instt. Of Technology,Ghaziabad has
completed the Online Certification Course conducted by E & ICT Academy,
Indian Institute of Technology, Kanpur.

Prof. B. V. Phani
Prof. Amey Karkare
E & ICT Coordinators


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Date of Issue: 27-05-2019
System Identification No.: 715-6453

Prof. B. V. Phani
Prof. Amey Karkare
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Online Certification Course On
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This is to certify that

Dr. / Mr. / Ms. Richa Gupta of
Raj Kumar Goel Instt. Of Technology,Ghaziabad has
completed the Online Certification Course conducted by E & ICT Academy,
Indian Institute of Technology, Kanpur.

Date of Issue: 24-05-2019
System Identification No.: 683-6453

Prof. B. V. Phani
Prof. Amey Karkare
E & ICT Coordinators

ONE WEEK WORKSHOP ON SYSTEM DESIGNING USING MICROCONTROLLERS

The department organized a one week workshop on "System Designing Using Microcontroller" on 27th May 2019 to 31st May 2019.This workshop was organized online in collaboration with NITTTR Chandigarh. This workshop was very beneficial for the faculty members. Various topics were covered during this workshop including Embedded system, Real time OS, Implementation of IoT using Node Red, Mechatronics, PLC's, General Purpose computing system, Finite state machines etc.

सिस्टम डिवाइस यूजिंग कंट्रोलर्स कार्यक्रम आयोजित

–आईना संवाददाता–
गाजियाबाद। आरकेजीआईटी के इलेक्ट्रॉनिक्स एवं कम्युनिकेशन विभाग में सिस्टम डिवाइस यूजिंग कंट्रोलर्स पर पांच दिवसीय फैकल्टी डेवलपमेंट कार्यक्रम का आयोजन किया गया। यह कार्यक्रम आरकेजीआईटी एवं एनआइटीटीटीआर चंडीगढ़ द्वारा संयुक्त रूप से किया जा रहा है। उपर्युक्त विषय आज के प्रगतिशील समय की महत्वपूर्ण तकनीकों के ज्ञान के लिए अत्यावश्यक है। विभागाध्यक्ष डॉ. धीरेंद्र कुमार ने बताया कि शिक्षकों की तकनीकी ज्ञान की वृद्धि के लिए इस कार्यक्रम का अहम योगदान है। इस कार्यक्रम का संचालन वैभव शर्मा व अनामिका गुप्ता ने किया। इसमें इलेक्ट्रॉनिक्स डिपार्टमेंट के सभी फैकेल्टी मेंबर्स ने भाग लिया।

FACULTY TECHNICAL CORNER

Did Scientists just break the record for highest temperature superconductor? Maybe.

Mr. Kunal Lala
A.P. ECE

A superconductor lets electricity flow through it perfectly, without using any of it.

Now, scientists have discovered a superconductor material that works at a possibly record breaking high temperature, moving a step closer to the goal of achieving such perfection t room temperature.

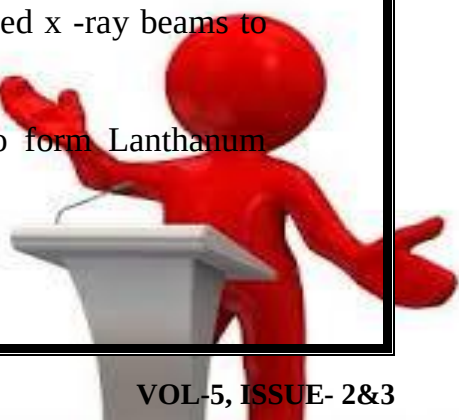
Make things cold enough, an electron zip through metals without generating any resistance, meeting up, or slowing down. But this phenomenon, known as superconductivity, as historically worked only at extremely cold temperatures that are just a tiny bit above absolute zero. That have made them useless for applications like extremely efficient electric wiring or incredibly fast supercomputers. In the past several decades, scientists have created newer superconducting materials that work at even higher temperatures..

In the new study, a group of researchers inched even closer to their goals by creating a material i.e., superconductive at -9 degree Fahrenheit (-23 degree celcius)- one of the highest temperatures ever observed.

The team examined the class of materials called superconducting hydrides that theoretical calculations predicted would be superconducting at higher temperatures.in order to create these materials, they used a small device called a diamond anvil cell that is made up of two small diamonds that compress materials to extremely high pressures.

They placed a tiny – a couple microns long – sample of a soft, whitish metal called Lanthanum inside a hole punched into a thin metal foil that was filled with liquid hydrogen. The setup was connected to thin electrical wires. The device squeezed the sample to pressures between 150 & 170 giga pascals, which is over 1.5 million times the pressure at sea level, according to the statement. They then used x -ray beams to examine its structure.

At this high pressure, the Lanthanum and hydrogen combine to form Lanthanum hydride.



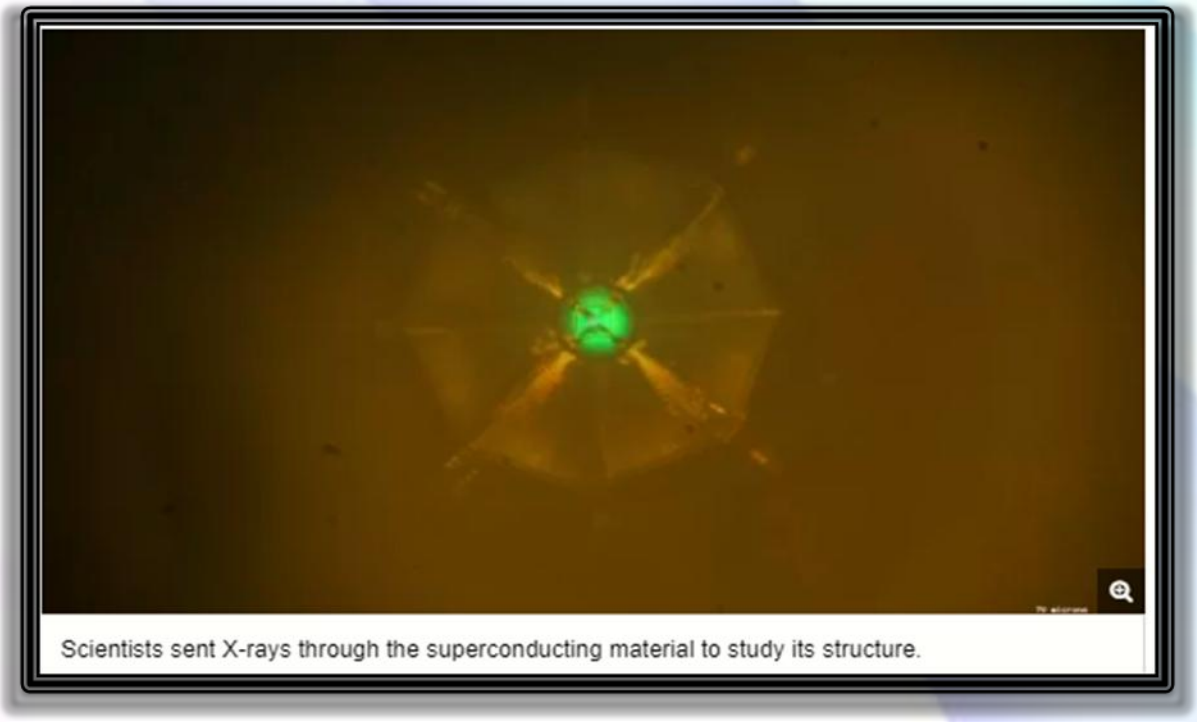
The researchers found that at -9 Fahrenheit (-23 degree celcius), Lanthanum hydride demonstrates two out of three properties of superconductivities. The material showed no resistance to electricity & its temperature dropped when a magnetic field was applied. They did observe the third criterion, an ability to expell magnetic fields while cooling, because the sample was too small, according to an accompanying news and views piece in the same issue of the journal nature.

"From a scientific standpoint, these results suggests that they might be entering a transition from discovering superconductors by empirical rules, institution or luck to being guided by concrete theoretical predictions."- James Hamlin, an associate professor of physics at university of florida, who was not a part of the study, wrote in the commentary

Indeed a group reported similar findings back in january in the journal physical review letters those researchers found that lanthanum hydride could be superconductive at an even highr temperature of 44F (7 C) as long as the sample was taken to higher pressures –around 180 to 220 gigapascals.

But this new group found something very different. At those high pressure, the temperature at which the material displays superconductivity decreases abruptly.

The reason for the discrepancy in the findings is nuclear. "In such cases, more experiments, data, independent studies are needed," senior author Mikhail Eremetes, a researcher of high pressure chemistry and physics at the Max Planck Institute for Chemistry in Germany, told live science. "Now we can only discuss."



Scientists sent X-rays through the superconducting material to study its structure.

STUDENT TECHNICAL CORNER

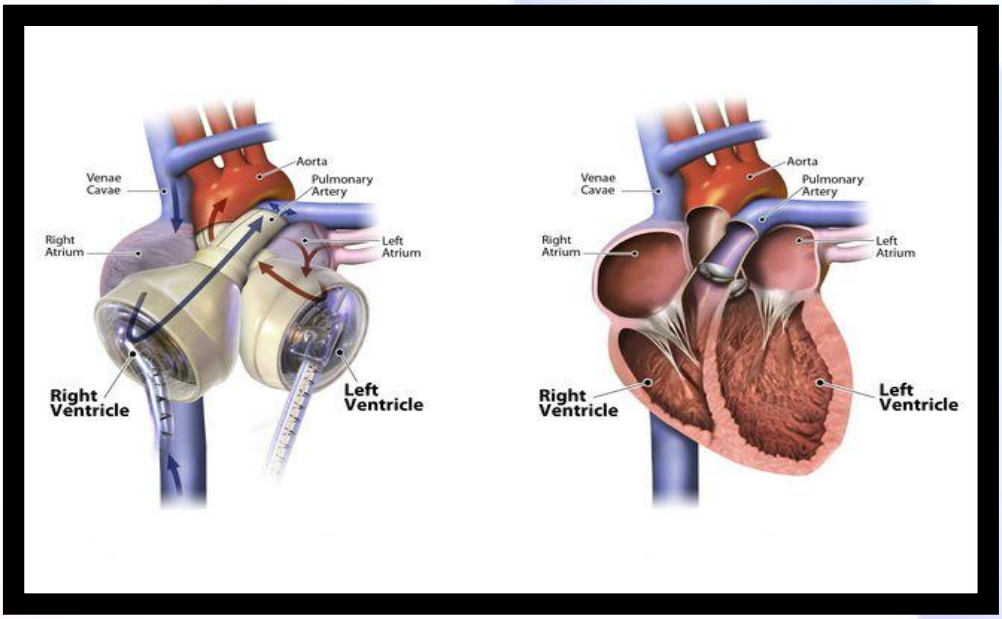
ENERGY TRANSMISSION OF ARTIFICIAL HEART

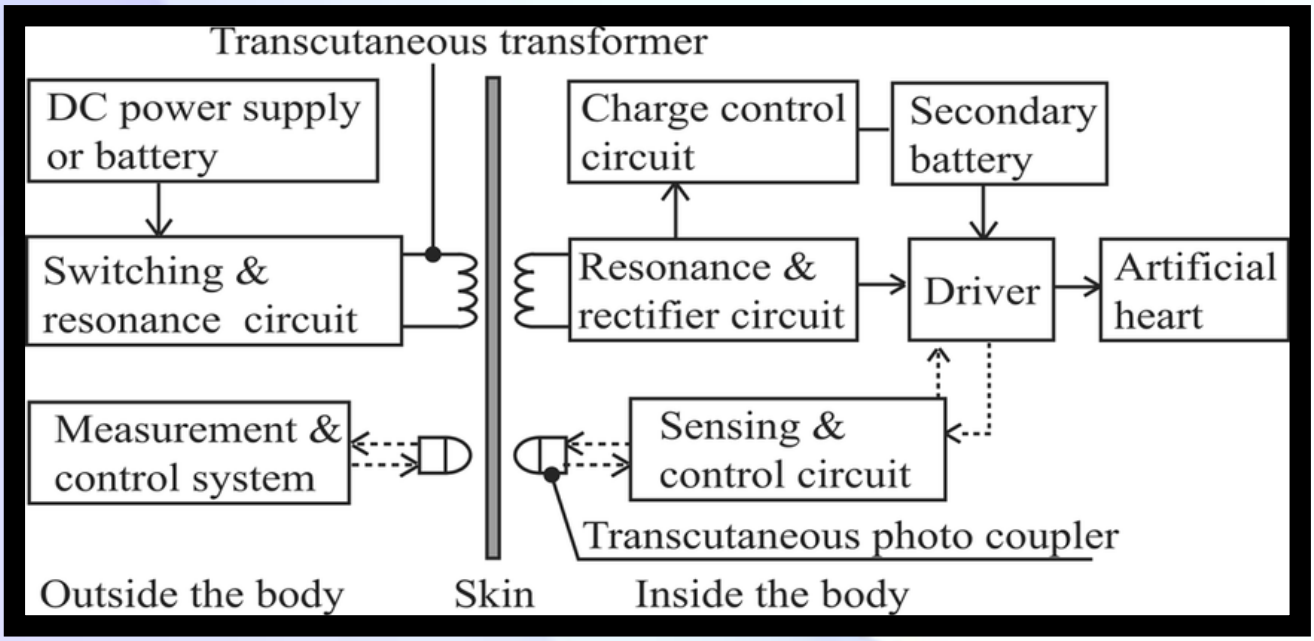
Abstract: A power supply system using a transcutaneous transformer to power an artificial heart through intact skin has been designed and built. In order to realize both high-voltage gain and minimum circulating current, compensation of leakage inductances on both sides of a transcutaneous transformer is proposed. A frequency region which realizes the robustness against coupling coefficient and load variation is identified. In this region, the power converter has inherent advantages such as zero-voltage switching (ZVS) or zero-current switching (ZCS) of the switches, high-voltage gain, minimum circulating current and high efficiency.

Introduction: Electrical circulatory assist devices use brushless dc motor as its pump Electrical energy is transferred to these devices transcutaneously using a transcutaneous transformer Transcutaneous transformer has large leakage inductance which reduce its efficiency. Anatomically and physiologically Extra pumping chamber that can pump blood throughout the body.

Artificial Heart: Mechanical heart which completely substitutes the natural heart Can be used either temporarily or permanently Made up of metal and plastic Has 5 major parts Energy Source Control and driving system Energy conversion system pumpactuator blood handling part.

leakage inductance on both sides of the transcutaneous transformer In this scheme capacitors are added in series to compensate the leakage inductance Voltage gain.





Block diagram of energy transmission in artificial heart

Conclusion: A control region of operating frequency is determined. The converter offers high efficiency. Minimized configuration of the devices in the thorax is experimented High-voltage gain and the reduced circulating current. A control region of an operating frequency is determined, which realizes the robustness the coupling coefficient as well as the load. The minimized configuration of the devices in the thorax is experimented. The converter guarantees many advantages because of ZVS of all active switches and ZCS of the rectifie.d diodes, low devices switching loss and stress, and high efficiency.

Sachin Patel

ECE-2nd Year

ALUMINI SPEAK

I am proud to say that I belong to this wonderful family of RKGIT. I was highly elated , on cloud 9 when I got admission in Electronics and Communication Engineering. This college was nothing less than what I hoped for. Supportive seniors and faculty, beautiful campus, quality education and amazing friends.

The growth I have seen in myself due to RKGIT, is invaluable. I take this opportunity to convey my profound gratitude to RKGIT for the never ending support and commitment towards students. Our college has always worked and helped each one of us to excel in what we are good at. I would like to thank all the faculties of ECE Department for their sincere efforts in bringing out the best of us.

Shubham Chauhan

(Pursuing M.tech from C-DAC, Mohali)

BRAIN QUIZ

1. The below is a number puzzle. It should be read left to right, top to bottom. Question 1: What is the next two rows of numbers? Question 2: How was this reached?

1

1 1

2 1

1 2 1 1

1 1 1 2 2 1

? ? ? ? ? ?

? ? ? ? ? ? ? ?

2. You've got 27 coins, each of them is 10g, except for 1. The 1 different coin is 9g or 11g (heavier, or lighter by 1g). You should use balance scale that compares what's in the two pans. You can get the answer by just comparing groups of coins. What is the minimum number weighing that can always guarantee to determine the different coin.

3. There is a truth teller (always tells the truth), a liar (always lies), and one that sometimes answers truthfully and sometimes lies. Each man knows who is who. You may ask three yes or no question to determine who is who. Each time you ask a question, it must only be directed to one of the men (of your choice). You may ask the same question more than once, but of course it will count towards your total. What are your questions and to whom will you ask them?

4. Teanchi and Beanchi are a married couple (don't ask me who he is and who she is)! They have two kids, one of them is a girl. Assume safely that the probability of each gender is 1/2.What is the probability that the other kid is also a girl?