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Organizing Chair

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Associate Prof & HOD, CSE, BMSCE

Dr. Arathi R Shankar,
Associate Prof & HOD, ECE, BMSCE

FDP Coordinators:

1. **Prof. Saritha A. N**
Assistant Professor, CSE, BMSCE
Mob: 91080-07506
Email-ID: saritha.cse@bmsce.ac.in
2. **Prof. Sanjana T**
Assistant Professor, ECE, BMSCE
Mob: 99641-13686
Email-ID: sanjanat.ece@bmsce.ac.in

Registration is Free!!!

E - Certificates for all participants

Last date to register: 25th July 2020

Kindly confirm your participation by registering in the following link:

<https://forms.gle/Rrepv5MbHvAXX8fNA>

ABOUT THE INSTITUTION

B.M.S College of Engineering (BMSCE) is the first private sector initiative in Engineering Education in India. BMSCE has completed 75 years of dedicated service in the field of Engineering Education. BMSCE was founded by late philanthropist Shri B. M. Sreenivasiah (B.M.S) in the year 1946 foreseeing the urgent need for Technical Education in India even before Independence. He was honoured with the title "Raja Karya Prasaktha" by Maharaja of Mysore. After the demise of Shri B.M. Sreenivasiah, the founder's dynamic and enterprising son Shri B. S. Narayan took over the reins of the College.

The college maintains high academic quality standards, the certification by the National Assessment and Accreditation Council (NAAC) and National Board of Accreditation (NBA) bearing testimony for the same. In fact it is the first few institutions in the India to be bestowed with NBA in Tier-I Format (Washington Accord) in the year 2013. The institute is accredited by National Assessment and Accreditation Council (NAAC) with highest grade of A++ in the second Cycle with a CGPA of 3.83 on a scale of 4.0. The institution is a proud recipient of TEQIP (World Bank Funded Project).

BMSCE is the only partner institution in the country with the Melton Foundation, USA which promotes cross-cultural learning for selected students along with peers from five other countries and is one of the most preferred higher educational destinations for students all across the country and also attracts students from South Asian and African countries.



**B.M.S COLLEGE OF
ENGINEERING, Bengaluru-19**
(Autonomous College under VTU)



**One week Online FDP
on**

**"IoT and Data Analytics:
An End-to-end
Perspective"**

From 27th July to 1st August 2020

Organized by
**Department of Computer Science and
Engineering**
&
**Department of Electronics and
Communication**
B.M.S College of Engineering
Bangalore-560019

ABOUT CSE DEPARTMENT

Department of Computer Science & Engineering started in the year 1983 with an intake of 60 students for the undergraduate programme. The intake was increased to 90 seats in 2000, to 120 in the year 2011 and to 180 in the year 2019. UG programme of the Department was accredited from Jun-2004 to May 2007 for 3 years, Jul-2008 to Jun-2011 for 3 years, Jul-2014 to Jun-2017 for 3 years and Jul-2017 to Jun-2020 for 3 years. The department of Computer Science & Engineering also has PG programme, M.Tech (CSE) established in 1992 with an intake of 18. PG programme of the Department was accredited during Jul-2017 to Jun-2022 for 5 years. The Research Centre, Department of Computer Science & Engineering started in the year 2010 under VTU, Belgaum. The research areas of the center cover Machine learning, Cloud computing, Big data analytics, Wireless networks, Social networks analysis, Network Security, etc. Currently, there are Nine registered guides, accelerators, etc who are experts in fields like artificial intelligence, wireless networks, medical imaging accelerators, etc. There are 27 research scholars working in the research center.

ABOUT ECE DEPARTMENT

The department of Electronics and Communication Engineering was established in 1971 with an initial intake of 60 students to the UG program and later enhanced to 180. The department offers three PG programs in the field of Electronics, Digital Communication Engineering and VLSI & Embedded Systems and is recognized as a Research Centre by Visveswaraya Technological University and for the QIP Research programs. The department has been accredited by NBA for a period of 6 years under Tier-I in 2017. With these, various programs are being offered at the UG, PG and the doctoral level. The overall objective of the department is to contribute, significantly, to the realization of the Vision and Mission of BMSCE.

SPEAKERS

From Cypress Semiconductor Technology India Pvt. Ltd., Bangalore

Mr. Dheeraj D Kamath, Sr. Applications Engineer
Mr. Rakshith M B, Applications Engineer

From HPE Solutions, Bangalore

Mr. Arup Neogi, Sr. Manager,
Mr. Sailesh Patra, Expert System Management,
Mr. Ravi J, Data Scientist,
Ms. Shruthi K, Software Engineer

From B.M.S College of Engineering, Bangalore

Dr. Sudhindra K R, Associate Professor, Dept of ECE, BMSCE
Dr. Geetishree Mishra, Assistant Professor, Dept of ECE, BMSCE
Mr. Vikranth B. M, Assistant Professor, Dept of CSE, BMSCE

FDP Schedule

Date	Timings	Topics
27 th July 2020	10:00 AM to 1:00 PM	Introduction to IoT and its Architecture, Radio standards for IoT
28 th July 2020	10:00 AM to 1:00 PM	Key Challenges to consider in IoT, Cloud Platforms and Protocols, Introduction to ARM CPU Power Modes, Low Power IoT System Design with Cypress MCUs and Wi-Fi (with Hands-on session)
29 th July 2020	10:00 AM to 1:00 PM	Introduction to Security in IoT, Securing Embedded Systems using Threat Based Analysis Methodologies, Securing the IoT from Chip to Cloud (With Hands-on session)
30 th July 2020	10:00 AM to 1:00 PM	Overview of HPE strategy , HPE Solutions on IoT, AI/ML, Introduction to Smart Workplace , IoT & Edge Computing, Machine Learning vs. Deep Learning, application use case, Data Science, application of Data Science and road map to learn AI/ML
31 st July 2020	10:00 AM to 1:00 PM	HPE Solutions on IoT, AI/ML(Hands-on session)
1 st August 2020	10:00 AM to 1:00 PM	Data Analytics using R-tool, Data Analytics using Python (Google CoLab/ IBM Watson/Kaggle)

A Report One Week online FDP on “MATLAB for Mechanical Engineers”

By: Devaraj K

Date: 20th July to 24th July 2020

Venue: Online mode using Google Meet

Objectives:

1. To give brief introduction to MATLAB
2. Basics of mathematical operations using MATLAB
3. Applications of Mechanical Engineering courses such as SOM, Kinematics, Fluid Mechanics, Design of Machine Elements using MATLAB as a tool.

Proceedings:

The program was inaugurated by honourable Principal, BMSCE, Dr. B V Ravishankar on 20th of July at 9:45 am. We had 122 participants from all over the india ranging from Arunachal Pradesh, Dehradun, Hyderabad, Mangalore, Coimbatore etc.,. As the FDP was on online mode, we had two sessions per day 10:00 am to 11:30 am and 12:00 Noon to 1:30 pm. The first three days was devoted covering the Matrix operations, Logical operations, Plotting, Solving ODE's and Numerical analysis, Symbolic math using MATLAB as a tool. The last two days, we discussed applications of Mechanical Engineering such as Shear Force and Bending moment diagrams, Engineering Mechanics, Kinematics, Fluid Mechanics and Design of Machine Elements. The participants have to take the quiz and submit course journal on daily basis to improve the quality of the learning.



One week Online FDP
on
"IoT and Data Analytics: an End to End Perspective"
From 27th July to 1st August 2020

Organized By,
Department of Computer Science & Engineering
and
Department of Electronics & Communication Engineering

B.M.S. College of Engineering, Bull Temple Road, Basavanagudi, Bangalore-19

REPORT

One week online Faculty Development Program on “**IoT and Data Analytics: an End to End Perspective**” from was conducted by the Department of Computer Science & Engineering & Department of Electronic & Engineering B.M.S. College of Engineering, Bangalore, from 27th July to 1st August 2020 (duration of 6 days). The speakers were from Industry & Academia.

There were total of 9 speakers for this FDP. Two speakers from the organization **Cypress Semiconductor Technology India Private Limited**, 4 speaker from the company **HPE Solutions** and 3 speakers were from BMSCE. The speakers from **Cypress Semiconductor Technology India Private Limited** were **Mr. Dheeraj D Kamath**, Sr. Applications Engineer, **Mr. Rakshith M B**, Applications Engineer. The speakers from **HPE Solutions** were **Mr. Arup Neogi**, Sr. Manager, **Mr. Sailesh Patra**, Expert System Management, **Ms. Shruthi K**, Software Engineer and **Mr. Ravi J**, a Data Scientist. The speakers from BMSCE were **Dr. Sudhindra K. R** Associate Professor, Dept of ECE, **Mr. Vikranth B. M.**, Assistant Professor, Dept of CSE, and Dr. Geetishree Mishra, Assistant Professor, Dept of ECE.

A total of 76 faculty participated in this online FDP from various Engineering Colleges across India. A total of 35 participants from various colleges in Bangalore, 20 participants from B.M.S. College of Engineering, 4 from Tamil Nadu, 2 from Agra college, 1 from Odisha, 1 from Ludhiana, 6 from various colleges across Karnataka, 1 from UP, 1 from Tripura, 5 from Andhra Pradesh.

Outcome of the Workshop:

- Faculty members were able to understand the fundamentals of IoT & its Architecture.
- Faculty members gained practical knowledge of Low Power IoT System Design with Cypress MCUs and Wi-Fi.
- Faculty members were able to analyse applications using R-tool.

Schedule of the FDP:

Date	Session	Timings	Topics Covered	Resource Person
27 th July 2020 Monday	1	10:00 AM to 11:00 AM	Introduction to IoT and its Architecture	Dr. Sudhindra K R Associate Professor, Dept of ECE, BMSCE
	2	11:00 AM to 1:00 PM	Radio standards for IoT	Dr. Sudhindra K R Associate Professor, Dept of ECE, BMSCE
28 th July 2020 Tuesday	1	10:00 AM to 11:30 AM	Key Challenges to consider in IoT, Cloud Platforms and Protocols, Introduction to ARM CPU Power Modes	Mr. Dheeraj D Kamath Sr. Applications Engineer Cypress Semiconductor Technology India Private Limited An Infineon Technologies Company
	2	11:30 AM to 1:00 PM	Low Power IoT System Design with Cypress MCUs and Wi-Fi (with Hands-on session)	Mr. Dheeraj D Kamath Sr. Applications Engineer Cypress Semiconductor Technology India Private Limited An Infineon Technologies Company
29 th July 2020 Wednesday	1	10:00 AM to 11:30 AM	Introduction to Security in IoT, Securing Embedded Systems using Threat Based Analysis Methodologies	Mr. Rakshith M B Applications Engineer Cypress Semiconductor Technology India Private Limited An Infineon Technologies Company
	2	11:30 AM to 1:00 PM	Securing the IoT from Chip to Cloud (With Hands-on session)	Mr. Rakshith M B Applications Engineer Cypress Semiconductor Technology India Private Limited An Infineon Technologies Company
30 th July 2020 Thursday	1	10:00 AM to 11:30 AM	Overview of HPE strategy , HPE Solutions on IOT, AI/ML Introduction to Smart Workplace , IoT & Edge Computing	Mr. Arup Neogi Sr. Manager, HPE Solutions Mr. Sailesh Patra Expert System Management , HPE Solutions

	2	11:30 AM to 1:00 PM	Machine Learning vs. Deep Learning, application use case Data Science, application of Data Science and road map to learn AI/ML	Ms. Shruthi K Software Engineer, HPE Solutions Mr. Ravi J Data Scientist, HPE Solutions
31 st July 2020 Friday	1	10:00 AM to 1:00 PM	HPE Solutions on IoT, AI/ML (Hands-on session)	Mr. Ravi J Data Scientist, HPE Solutions Ms. Shruthi K Software Engineer, HPE Solutions Mr. Sailesh Patra Expert System Management , HPE Solutions
1 st August 2020 Saturday	1	10:00 AM to 11:30 AM	Data Analytics using R-tool	Mr. Vikranth B. M Assistant Professor, Dept of CSE, BMSCE
	2	11:30 AM to 1:00 PM	Data Analytics using Python (Google CoLab/ IBM Watson/Kaggle)	Dr. Geetishree Mishra Assistant Professor, Dept of ECE, BMSCE

Day 1- 27th July 2020:

Day 1 of the FDP we had Chief guest from **Nokia Ms. Suma Kandkur**-Technical Product Manager on Cloud Technology, under Nokia Software Business Group. She briefed about association of Nokia with BMSCE and the contribution of Nokia in the field of IoT. First session of the FDP was on Introduction to IoT including requirements, 5G, examples, applications and use cases by **Mr. Srinivasan Ganapathy from Nokia**. Later a session on Radio standards for IoT was delivered by **Dr. Sudhindra K R** working as Associate professor in B.M.S College of Engineering.

Link of Recording:

<https://drive.google.com/file/d/1DgBzpxgh5EcFAC4W1P1sINksCjg2rTag/view?usp=sharing>

meet.google.com/jpb-bmos-wcc?authuser=0

REC S Suma Kandkur is presenting

University Collaboration

NOKIA Bangalore

"Learn with Nokia"

LINK for 1 week Online FDP on "I..."

Turn on captions

Suma Kandkur is presenting

People (36)

LOHIT JAVALI

Madhavi Rp

Mangai Velu

Munisankar Nagugari

Nalina V

Namratha M

PREETI GUPTA

Rajeshwari Bs

Ranganath KS

Ranganath KS

10:02 AM 27-07-2020

meet.google.com/jpb-bmos-wcc?authuser=0

REC S Srinivasan Ss is presenting

DRIVERS OF INTERNET of THINGS

Key Drivers

- Emergence of new Technologies
- Edge Computing
- AI and Machine Learning
- New Vehicles

Participants please mute yourself and turn off video

LOHIT JAVALI 9:52 AM
Very good morning to all

Mangai Velu 9:53 AM
Good Morning to all

john kasubi 9:57 AM
Good morning every one

gowthami bhuwana 10:06 AM
good morning reg id:76

Send a message to everyone

10:20 AM 27-07-2020

Internet of Things – Diverse Requirements

From a few dozen of bits/s UL (e.g. smart metering) to > several Mb/s UL (e.g. security cameras). Peak Data Rate		From ~1 ms (e.g. Vehicles management) up to >1 s, (e.g. smart metering). Latency
From "infrequent" (<1 event/day, e.g. intrusion alarm) to "continuous" (e.g. security cameras). Usage	From "none" (e.g. outdoor devices) to +20 dB (e.g. indoor devices located in basements). Extended Coverage	From "none" (e.g. remotely-powered devices) to 10 years (e.g. smart meters located in basements). Battery lifetime

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Public

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NOKIA

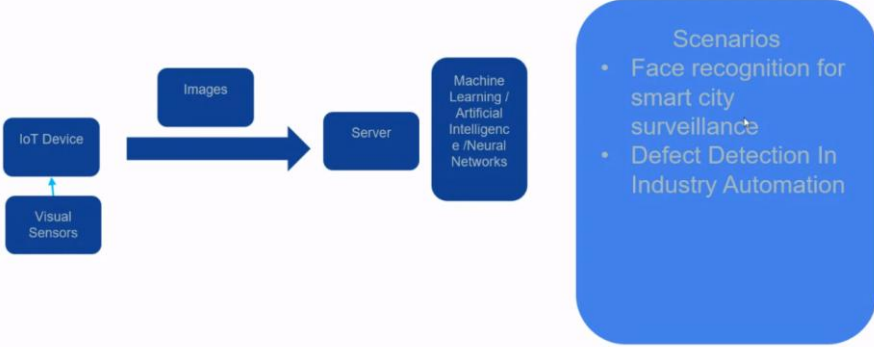
REC S Srinivasan Ss is presenting S Sheetal Va and 37 more 49 10:28 AM You

S Srinivasan Ss K Krishna Suchetha P S. Krishna Murthy Parimala Prabhakar S Suma Kandkur R Ranganath KS R kp.shashikala Shashi... Ranganath KS Syed Akram

Type here to search

10:28 AM 27-07-2020

5G IoT Scenarios – M2M for shared Intelligence



Scenarios

- Face recognition for smart city surveillance
- Defect Detection in Industry Automation

15 Public © Nokia Solutions and Networks 2014

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NOKIA

REC S Srinivasan Ss is presenting Mangai Velu and 42 more 54 10:45 AM You

S Srinivasan Ss K Krishna Suchetha P S. Krishna Murthy Parimala Prabhakar R Ranganath KS R Ranganath KS S Syed Akram sangeetha jayavelu D Dr.Sridevi S

Type here to search

10:45 AM 27-07-2020

Day2-- 28th July 2020:

Mr. Dheeraj D Kamath, Sr. Applications Engineer from Cypress Semiconductor Technology India Private Limited: An Infineon Technologies Company talked about

addressing challenges in IoT, Edge computing, Modus Toolbox, designing solutions, cloud platforms, ARM Mbed and demonstrated several examples on Cypress kits- PSoC6.

Mr. Rakshith M B Applications Engineer from Cypress Semiconductor Technology India Private Limited: An Infineon Technologies Company explained about IoT protocols, lower power aspects, CPU power modes and demonstrated these power modes and current consumed by them on PSoC6. There were hands-on exercises on Sending Sensor data over MQTT to AWS and Switching between the PSoC6 Power Modes Switching between the PSoC6 Power Modes.

Link of Recording:

<https://drive.google.com/file/d/16luXyIAZhpH4qpz14EXpmf0TGJ2e5c1m/view?usp=sharing>

The screenshot shows a Google Meet interface during a presentation. The main window displays a slide titled "Challenges in IoT" with the Infineon logo in the top right corner. The slide is divided into four sections: Security, Privacy, Interoperability, and Latency and Bandwidth. Each section lists specific challenges.

Security	Privacy
Design Practices	Fair Data Collection & Usage
Confidentiality/Authenticity	Transparency
Field Upgradeability	

Interoperability	Latency and Bandwidth
Lack of documented standards	Computing on Cloud
Lack of standard configurations	Edge Computing
Proprietary Ecosystem	Optimization of B/W Usage

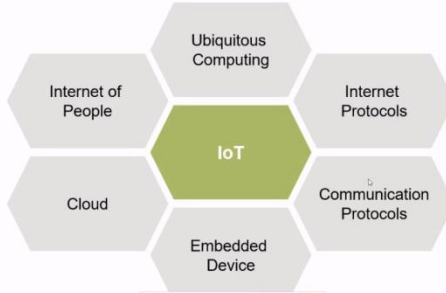
Below the slide, a row of participant avatars is visible, including Nagendra A (who has left the meeting), Ranganath KS, S. Krishna Murti, Hanumantha Ra..., Rafeeka Beham, and Saritha A N. On the right side, a sidebar shows the "People (46)" list, including Sanjana T (You), Antara Roy Choudhury, Anuradha Rajput, Anusha L S, Asha Gr, BHARATESH K., Bilvika K M, DENVAR PRAVIN JOY T, and Dheeraj D Kamath (Presentatio...). The bottom of the screen shows the Windows taskbar with the search bar and various application icons.

One week FDP on "IoT and Data" | Attendance form and feedback | My Drive - Google Drive | dnnndetector.py:nb - Collaborator | Meet - LINK for 1 week Online

meet.google.com/jpb-bmos-wcc?authuser=0

REC Dheeraj D Kamath is presenting

Architecting IoT

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Participants: Dheeraj D Kama..., Parimala Prab..., Ranganath KS, S. Krishna Murt..., BHARATESH K., Rafeeka Beham, Saritha A N

LINK for 1 week Online FDP ...

People (44) Chat

Add people

- Sanjana T (You)
- Antara Roy Choudhury
- Anuradha Rajput
- Anusha L S
- Asha Gr
- BHARATESH K.
- Bilvika K M
- Dheeraj D Kamath (Presentatio...
- Dheeraj D Kamath

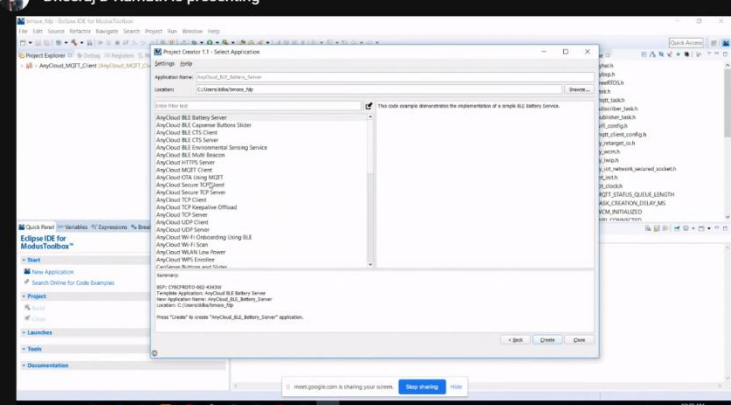
Type here to search

10:26 AM 28-07-2020

One week FDP on "IoT and Data" | Attendance form and feedback | My Drive - Google Drive | dnnndetector.py:nb - Collaborator | Meet - LINK for 1 week Online

meet.google.com/jpb-bmos-wcc?authuser=0

REC Dheeraj D Kamath is presenting



Participants: Dheeraj D Kama..., Parimala Prab..., Ranganath KS, S. Krishna Murt..., BHARATESH K., Rafeeka Beham, Raghavendra Ra...

LINK for 1 week Online FDP ...

People (51) Chat

sheetal koti 10:10 AM
Good morning all

You 10:11 AM
Participants please mute yourself

DENVAR PRAVIN JOY T 10:11 AM

LOHIT JAVALI 10:14 AM
Good morning

Ranganath KS 10:31 AM
what is the definition of internet of people?
what is the difference between internet of things and internet of people?

Rakshith M B 10:34 AM
It is a peer to peer decentralized communication. It is just a subclass of IoT where data from different people is simultaneously shared.

Send a message to everyone

Type here to search

10:40 AM 28-07-2020

One week FDP on 'IoT and Data' x Attendance form and feedback x My Drive - Google Drive x dndetector.py - Collaborator x Meet - LINK for 1 week Online x

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REC Dheeraj D Kamath is presenting

Cloud Platforms – ARM Mbed



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Javeria kulsum has left the meeting

Ranganath KS

S. Krishna Mur...

BHARATESH K.

Rafeeka Beham

Raghavendra Ra...

LINK for 1 week Online FDP ... x

People (51)

Chat

sheetal koti 10:10 AM
Good morning all

You 10:11 AM
Participants please mute yourself

DENVAR PRAVIN JOY T 10:11 AM

LOHIT JAVALI 10:14 AM
Good morning

Ranganath KS 10:31 AM
what is the definition of internet of people?
what is the difference between internet of things and internet of people?

Rakshith M B 10:34 AM
It is a peer to peer decentralized communication. It is just a subclass of IoT where data from different people is simultaneously shared.

Send a message to everyone

Type here to search

10:55 AM 28-07-2020

One week FDP on 'IoT and Data' x Attendance form and feedback x My Drive - Google Drive x dndetector.py - Collaborator x Meet - LINK for 1 week Online x

meet.google.com/jpb-bmos-wcc?authuser=0

REC Rakshith M B is presenting

Case Study: Fitbit Charge 4



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Rakshith M B

Parimala Prabh...

S. Krishna Murthy

Rafeeka Beham

Ramesh Vernag...

Ranganath KS

Dheeraj D Kama...

LINK for 1 week Online FDP ... x

People (50)

Chat

computing enabled devices is first trying to understand what are the different devices that will be operating together

So, imagine you have a phone, a watch and a tablet

each of these devices have their own set of computing and hardware resources

Dheeraj D Kamath 11:04 AM
So, if a call comes, you have an option of deferring the call to a smart watch since that is something is more close to the user and can be handled by the watch

Pervasive computing is about taking a decision on where the computing is more suitable and makes sense to the user

Dheeraj D Kamath 11:05 AM
Hope this answers the question Ranganath

Ranganath KS 11:08 AM
yes sir thank u

Send a message to everyone

Type here to search

11:09 AM 28-07-2020

Day 3- 29th July 2020:

Mr. Dheeraj D Kamath, Sr. Applications Engineer from Cypress Semiconductor Technology India Private Limited: An Infineon Technologies Company elucidated Securing Embedded Systems using Threat Based Analysis Methodologies, Securing the IoT from Chip to Cloud: A Guide to Applying PSA Certified Principles. There were hands-on exercises on Connecting the Wi-Fi to the AP using BLE. Uses the Arm® Cortex®-M4 (CM4) CPU of PSoC® 6 MCU to communicate with the CYW43xxx combo devices and control the Wi-Fi and BLE functionality, Implementation of Secure TCP Client, OTA demonstration using PSoC6 and Weather stack application.

Mr. Jeetendra Ashok is a Senior Manager in Application Engineering Cypress Semiconductor Technology India Private Limited: An Infineon Technologies Company. He is responsible for managing the MCU division in the corporate application team. He joined the FDP session and addressed the audience.

Link of Recording:

<https://drive.google.com/file/d/1khSd8PMV3nNw9pNySuLtsoQjpTsAQpQR/view?usp=sharing>

The screenshot shows a Google Meet interface. The main window displays a presentation slide titled "WeatherStack Application" with the Infineon logo. The slide contains a flowchart of the application's logic:

```

graph TD
    main["main()<br/>Init hardware (printf)<br/>Create capsense thread<br/>Create weather thread<br/>Start FreeRTOS"]
    capsense_isr["capsense_isr()<br/>Notify scan complete"]
    capsense_task["capsense_task()<br/>Init CapSense<br/>Init TFT<br/>Start scanning<br/>Wait for scan<br/>Read widget state<br/>Notify city name"]
    weather_task["weather_task()<br/>Call wifi_init()<br/>Get remote IP address<br/>Wait for city name<br/>Create socket<br/>Connect socket<br/>Send request<br/>Receive response<br/>Call display_update()<br/>Disconnect socket<br/>Delete socket"]
    wifi_init["wifi_init()<br/>Init Connection Manager<br/>Connect to AP"]
    display_update["display_update()<br/>Update display"]

    main --> capsense_task
    main --> weather_task
    capsense_isr --> capsense_task
    capsense_task --> weather_task
    weather_task --> wifi_init
    weather_task --> display_update
  
```

Below the slide, a list of participants is visible, including Dheeraj D Kama..., Ranganath KS, Saritha A N, Hanumantha Ra..., Rafeeka Beham, Kiran Kumar k.v, department of CA, Geetha Rani.P, Geetishree Mishra, Hanumantha Raju R, Javeria kulsum, jaya lakshmi, Kiran K, Kiran Kumar k.v, kp.shashikala Shashikala, Krishna Murthy K T, and Krishna Suchetha.

This screenshot shows a Google Meet session with a grid of participants. The participants are arranged in three rows:

- Row 1: Bharathesh Balu, Parimala Prabhakar, Swathi Mahesh, MONICA MUNDADA, Ranganath KS, Jeetendra Ashok
- Row 2: Parimala Prabhakar, Kiran Kumar k.v, S. Krishna Murthy, department of CA, Kiran K, Aparna R
- Row 3: sandoepnr raj, comi caroline sundararaj, Sanjana T, Dheeraj D Kamath

A chat message at the bottom left reads: "A lot of people are here. The people list shows them all."

Day 4-- 30th July 2020:

On Day 4 of the FDP we had four speakers from **HPE Mr. Arup Neogi, Mr. Sailesh Patra, Ms. Shruthi K and Mr. Ravi J.** Mr. Arup Neogi gave an overview of HPE strategy, HPE Solutions on IOT, AI/ML in general. Mr. Sailesh Patra introduced Smart Workplace, IOT & Edge Computing. Ms. Shruthi K explained about Machine Learning vs. Deep Learning, application use case. Mr. Ravi delivered a session on Data Science, application of Data Science and road map to learn AI/ML.

Link of Recording:

https://drive.google.com/file/d/1pz8C-x2gXY5HODiuUJjCpz_2dCePSII0/view?usp=sharing

REC Arup Neogi is presenting

IoT Use case: aircraft sensors

Internet-of-Things big data affects all industries

20 TB × 2 × 3 × 25,000 × 365

20 terabytes of data per engine per hour
twin-engine aircraft
three-hour average flight duration
commercial flights per day (USA)
days in a year

= 1,095,000,000 TB
= 1 ZB

Hewlett Packard Enterprise

People (41) Chat (2)

LINK for 1 week Online FDP ...

People (41)

- Blivika K M
- domi caroline Sundararaj
- Domievangelina S
- Dr.Sridevi S
- Gandhimathinathan A
- Geetha Rani.P
- jaya lakshmi
- Kiran K
- Kiran Kumar k.v
- kp.shashikala Shashikala
- LOHIT JAVALI

LOHIT JAVALI

Type here to search

REC Arup Neogi is presenting

Bhopal Smart City hackathon

HPE has won a deal of **INR 300 Crore** each to setup infrastructure and develop smart city applications

- Focus is on City surveillance, solid waste management and agriculture
- Incubation center is setup at Bhopal to cater the need of 7 cities.
- Dehradun – Usecase on Drone

Dehradun Smart City

People (41) Chat (2)

LINK for 1 week Online FDP ...

People (41)

- Blivika K M
- domi caroline Sundararaj
- Domievangelina S
- Dr.Sridevi S
- Gandhimathinathan A
- Geetha Rani.P
- jaya lakshmi
- Kiran K
- Kiran Kumar k.v
- kp.shashikala Shashikala
- LOHIT JAVALI

LOHIT JAVALI

Type here to search

SAILESH PATRA is presenting

WHY "SHIFT LEFT" AND COMPUTE AT THE EDGE?

The 7 benefits of computing at the Edge

- 4 Threats**
Transferring data by definition exposes data to security threats.
- 5 Duplication**
Complexity and cost of storage and other assets must be duplicated to accommodate the data if sent to a data center/cloud.
- 6 Corruption**
Data transmission, especially large amounts across large distances, can incur drops and delays associated with correction/recovery.
- 7 Compliance**
Region and country compliance issues can complicate data transfer across borders and long distances.

LINK for 1 week Online FDP on "I..."

People (42)

- raviteja jammulapati
- raviteja jammulapati
- SAILESH PATRA (Presentation)
- SAILESH PATRA
- Saritha A N
- Selva Kumar S
- sheetal koti
- Shruthi BV
- shruthi k
- Soumya Das

raviteja jammulapati is presenting

WHAT IS DATA SCIENCE?

DATA ACQUISITION: WEB SERVERS, LOGS, DATABASES, APIs, ONLINE REPOSITORIES

DATA PREPARATION: DATA CLEANING, TRANSFORMATION

EXPLORATORY DATA ANALYSIS: SELECTING AND REFINING THE SELECTION OF FEATURES, VARIABLES THAT WILL BE USED IN THE MODEL DEVELOPMENT

DATA MODELING: KNN, NAIVE BAYES, DECISION TREE

DEPLOYS AND MONITORING

VISUALIZATION AND COMMUNICATION

SIMPLY LEARN

People (47)

You 11:22 AM
extract features and information from data

Send a message to everyone

Search results - 50 x Google Forms x Meet - LINK x Google Meet Help x google meet tile x Introducing tiled x How to view peo x Change the layout x

meet.google.com/jpb-bmos-wcc?authuser=0

REC

Gandhimathinat... and 40 more

58 12:14 PM

A lot of people are here. The people list shows them all. [View all](#)

Type here to search

Certificate FDP on x Attendance form x Meet - LINK x Google Meet Help x google meet tile x Introducing tiled x How to view peo x Change the layout x

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REC

shruthi k is presenting

Characteristics	Machine learning	Deep learning
Training data	Good accuracy with small scale data	Good accuracy with large scale data
Hardware requirements	Not required – simple computations	Need specific GPUs - complex computations

LINK for 1 week Online FDP ... X

People (51) Chat

Add people

- S Sanjana T (You)
- A Anuradha Rajput
- A Arup Neogi
- Bhagya sree V
- B BHARATESH K.
- domi caroline Sundararaj
- D Domievangelina S
- D Dr.Sridevi S
- Gandhimathinathan A

shruthi k S. Krishna Murthy Tejaswini K geetha reddy Parimala Prab... Ranganath KS Dr.Sridevi S

Type here to search

Day 5—31st July 2020:

Hands-on exercise by **HPE speakers Mr. Ravi** on regression in Machine learning and **Ms. Shruthi K** on Deep learning using data sets was extensively done for better understanding of participants on data science and analytics.

Link of Recording:

https://drive.google.com/file/d/1ANkRjLG8mre0hyEqQupjsM4TkdUpkzm_/view?usp=sharing

R&D Spend	Administration	Marketing Spend	State	Profit
385,849.20	136,997.80	471,784.39	New York	292,291.83
362,845.51	151,877.99	443,869.53	California	191,782.04
353,443.51	151,145.55	407,834.54	Florida	181,060.39
344,372.41	116,671.85	383,139.62	New York	182,901.99
342,107.34	91,391.77	366,188.42	Florida	166,187.94
331,876.90	99,814.71	362,861.36	New York	156,991.12
334,615.46	147,199.87	277,718.82	California	156,122.51
330,296.13	145,550.26	628,476.89	Florida	156,792.89
225,542.62	146,728.95	312,613.09	New York	152,211.77
223,334.88	119,479.17	316,961.42	California	149,759.94
301,913.08	110,594.11	239,160.95	Florida	146,123.95
300,473.96	91,790.61	249,744.55	California	144,259.40

Day 6—1stAugust 2020:

On Day 6 of the FDP, **Mr. Vikranth B M** working as Assistant professor in the department of Computer Science and Engineering, **BMSCE** demonstrated the basics of R tool, import and export operations and graphical analysis or statistical analysis of data using R tool.

Dr. Geetishree Mishra working as Assistant Professor in the department of Electronics and Communication Engineering, **BMSCE** delivered talk on IoT data analytics using Python. She demonstrated programs on Google Colab.

Link of Recording:

<https://drive.google.com/file/d/1QovqhEXb5myVjXVb7mppdJO71T21m3U/view?usp=sharing>

The top screenshot shows a Google Meet session with the title "LINK for 1 week Online FDP ...". The presenter, Vikranth Bm, is displaying a slide titled "Introduction to R". The participant list on the right includes 24 people: Vikranth Bm, Saritha A N, Namratha M, Mallegowda M, Basavaraj Jak..., Sowmya V, Tejaswini K, and Domievangelin... The chat window is empty.

The bottom screenshot shows the same Google Meet session, but the presenter is now displaying the RStudio interface. The RStudio window shows a script with the following code:

```
1 install.packages("ggplot2")
2 library(ggplot2)
3 #View(HeightWeight)
4 x<-c(1,8)
5 y<-c(3,10)
6 dat<-data.frame(x,y)
7 dat
8 ggplot()+ geom_line(data=dat,aes(x=x,y=y))
9 dat$x<-c(-2,7)
10 dat$y<-c(13,-5)
11 dat
12 nonlat<- geom_line(data=dat,aes(x=x,y=y))
13 # (Top Level) z
```

The RStudio window also shows a scatter plot with a red dot at (1, 3). The participant list on the right now includes 39 people: Vikranth Bm, Basavaraj Jak..., chandrakant h..., Mallegowda M, geetha reddy, Thenmozhi Ra..., Ramesh Yerna..., and Saritha A N. The chat window contains the following messages:

- LOHIT JAVALI 10:03 AM: Good morning to all
- PREETI GUPTA 10:05 AM: Good morning to all
- sheetal koti 10:07 AM: Goodmorning all
- Ranganath KS 10:34 AM: Madam,Another meeting is at 10:30 I cant able to attend today.Let me know the test timings
- Saritha A N 10:35 AM: We let you know the timings after this session sir.

Certificates to check - sanjanat... Meet Recordings - Google Drive Meet - LINK for 1 week Online

meet.google.com/jpb-bmos-wcc?authuser=0

REC GEETISHREE MISHRA is presenting

LINK for 1 week Online FDP ...

People (44) Chat

Ranganath KS 10:34 AM
Madam, Another meeting is at 10:30 I can't be able to attend today. Let me know the test timings

Saritha A N 10:35 AM
We let you know the timings after this session sir.

Jaya lakshmi 11:08 AM
I request organizers to share quiz details in fdp WhatsApp also as here we have power cuts and network problems

Saritha A N 11:09 AM
Sure Mam.

You 11:23 AM
Participants please look at chat window for important announcements

Send a message to everyone

Overview of the Analytics Process Model

Preprocessing

Analytics

Post-processing

- Data Cleaning
- Munging/Wrangling
- EDA

meet.google.com is sharing your screen. Stop sharing Hide

Certificate of parti...pdf

Type here to search

11:34 AM 01-08-2020

Certificates to check - sanjanat... Meet Recordings - Google Drive Meet - LINK for 1 week Online

meet.google.com/jpb-bmos-wcc?authuser=0

REC GEETISHREE MISHRA is presenting

sheetal koti and 39 more

11:44 AM You

colab.research.google.com/drive/1cPV3LDiaFmUprETauhy-PgkWeCSXuW7authuser=1#scrollTo=nO-jWaP0hloh

IOT_EDA.ipynb

File Edit View Insert Runtime Tools Help All changes saved

+ Code + Text

Reconnect Editing

```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
import plotly.express as px
import plotly.graph_objects as go
from google.colab import files
uploaded = files.upload()

# Choose File: IOT-temp.csv
IOT-temp.csv (application/vnd.ms-excel) - 6913586 bytes, last modified: 8/1/2020 - 100% done
Saving IOT-temp.csv to IOT-temp.csv

[ ] import io
temp_iot_data = pd.read_csv(io.StringIO(uploaded['IOT-temp.csv'].decode('utf-8')))
temp_iot_data.head()
```

	id	room_id/id	noted_date	temp	out/in
0	__export__temp_log_196134_bd201015	Room Admin	08/12/2018 9:30	29	In
1	__export__temp_log_196131_7bca51bc	Room Admin	08/12/2018 9:30	29	In
2	__export__temp_log_196127_522915e3	Room Admin	08/12/2018 9:29	41	Out
3	__export__temp_log_196128_be0919cf	Room Admin	08/12/2018 9:29	41	Out
4	__export__temp_log_196126_d30b72fb	Room Admin			

meet.google.com is sharing your screen. Stop sharing Hide

Certificate of parti...pdf

Type here to search

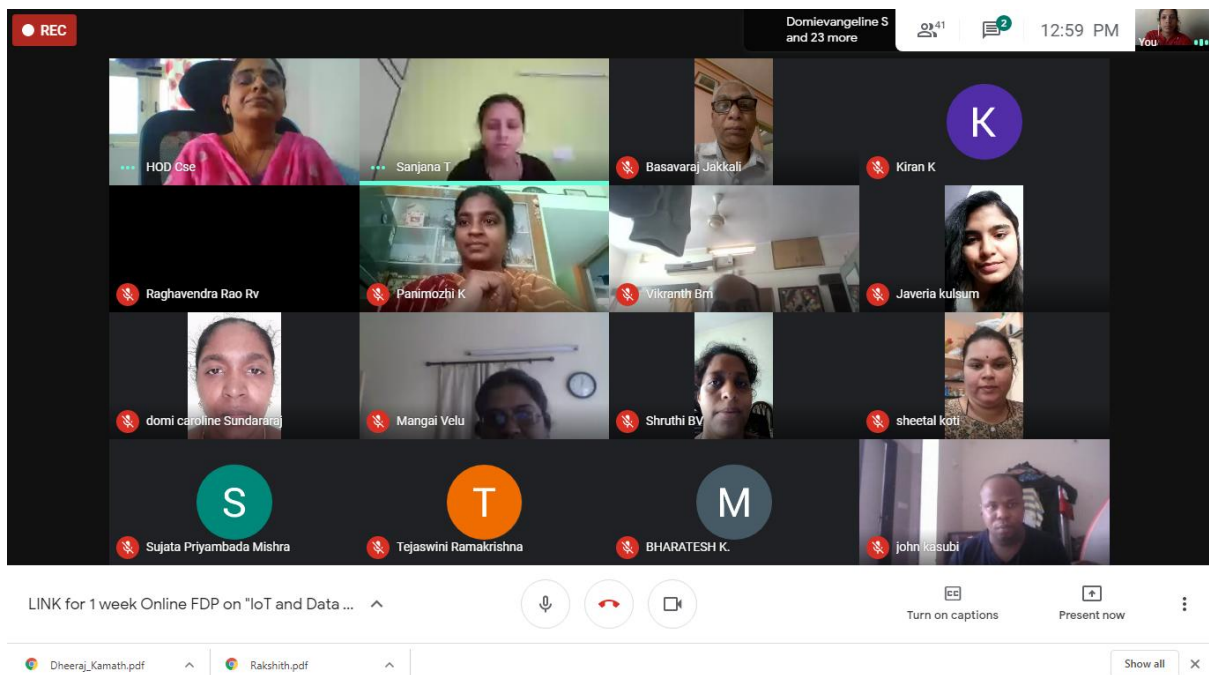
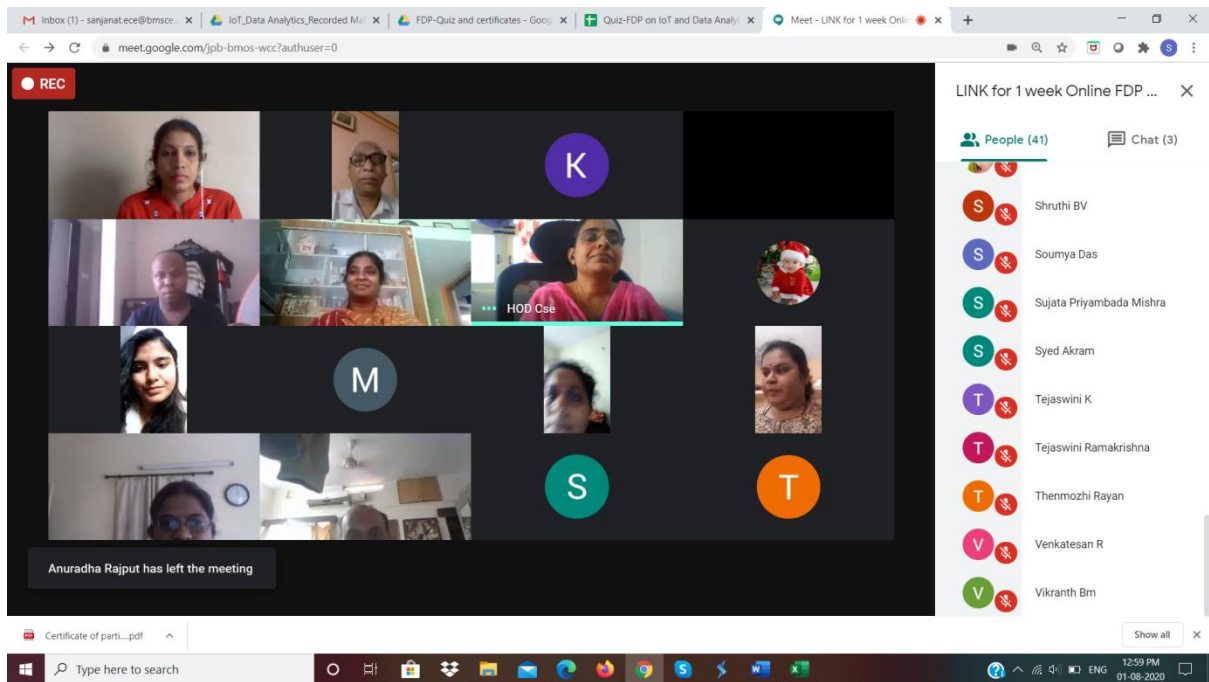
11:44 AM 01-08-2020

GEETISHREE MISHRA

Ramesh Yernagula

Vikranth Bm

Sujata Priyambada Mishra



ATTENDANCE & FEEDBACK: (For all days)

<https://drive.google.com/drive/folders/1yEjgHtPJ2EvXfwZLmK3E1vmX-XkYaYAn>



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on

“IoT and Data Analytics: An End-to-End Perspective”

27th July to 1st August 2020

CERTIFICATE OF PARTICIPATION

*This is to certify that **Antara Roy Choudhury** from **BMS College of Engineering** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **ANURAJ H V** from **MSRIT, BENGALORE** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **Anusha LS** from **RVCE** has participated and successfully completed One Week Online FDP on “**IoT and Data Analytics: An End-to-End Perspective**”, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **Anuradha** from **agra college** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **Bharatesh K** from **Ramaiah Institute of Technology** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **Mr. B. Mahender Reddy** from **Siddhartha Institute of Engineering and Technology** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **CHANDRAKANT HATTI** from **TONTADARYA COLLEGE OF ENGINEERING, GADAG** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **Mr.DENVAR PRAVIN JOY.T** from **LOURDES MOUNT COLLEGE OF ENGINEERING AND TECHNOLOGY** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **DOMI CAROLINE S** from **SRMIST RMP CAMPUS** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **Domi Evangeline S** from **SRM Institute of Science and Technology** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **Gandhimathinathan A** from **Amrita Vishwa Vidhyapeetham University, Coimbatore** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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on

“IoT and Data Analytics: An End-to-End Perspective”

27th July to 1st August 2020

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*This is to certify that **Dr. J Geetha** from **M S Ramaiah Institute of Technology** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **Dr Geetishree Mishra** from **B.M.S College of Engineering** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **Gunukula Sailakshmi** from **SRIDEVI WOMEN'S ENGINEERING COLLEGE, V.N.PALLY, HYDERABAD, TELANGANA, INDIA** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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*This is to certify that **Praveena Kumari M K** from **Mahatma Gandhi Memorial College, Udupi** has participated and successfully completed One Week Online FDP on **“IoT and Data Analytics: An End-to-End Perspective”**, organized by the Department of Computer Science & Engineering and Department of Electronics & Communication Engineering, B. M. S. College of Engineering, Bengaluru.*

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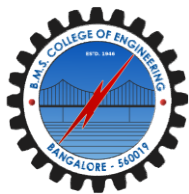
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**Schedule of Online FDP/SDP
on
Python programming**

Date	Sessions	Contents
Day-1 24.08.2020	I	Getting started with IPython
	II	Using plot command interactively
	III	Embellishing a plot
	IV	Saving plots
Day-2 25.08.2020	I	Multiple Plots
	II	Subplots
	III	Additional features of IPython
Day-3 26.08.2020	I	Loading Data From Files
	II	Plotting data
	III	Other Types Of Plots
	IV	Plotting Chats
Day-4 27.08.2020	I	Getting started with Lists
	II	Getting started with for
	III	Getting started with strings
Day-5 28.08.2020	I	Getting Started with files
	II	Parsing data
	III	Statistics
Day-6 29.08.2020	I	Getting Started with arrays
	II	Accessing parts of arrays
	III	Image manipulation using Arrays

Mandatory Work:

1. Quizzes should be submitted before 11.00 am (Next Day)
2. Course Journal/work should be submitted on 31.08.2020

Optional:

Test will be conducted on 02-09-2020

Instructions:

1. The entire FDP/SDP will be communicated through **WhatsApp platform**.
2. Pinup this group at the top to get all the communications.
3. Spoken Tutorial videos will be posted **everyday at 10AM**.
4. Participants need to watch these videos and practise the examples given in the sessions.
5. Participants need to prepare course journal based on the videos and same to be consolidated and submitted at the end of the programme **before 31st August, 2020**.
6. Based on the videos, quizzes will be released at 7:00PM everyday and it will be open till the **next day, 11:00AM**.
7. Final test will be conducted on **2nd September, 2020(OPTIONAL)**.
8. **Course Participation e-certificate** from BMS College of Engineering will be issued to the participants who have completed all the quizzes and submitted the course journal.
9. **Course Completion e-certificate** from Spoken Tutorial IIT-BOMBAY, will be issued to the participants who have cleared the final test along with the everyday quizzes and course journal.

Coordinators

FDP/SDP on Python Programming

Department of Mathematics

BMSCE

Brief report of Online FDP / SDP on Python Programming

This Faculty Development Program / Student Development Program is planned and designed by the Department of Mathematics, BMSCE, Bengaluru to encourage the Faculty and Students to learn an open source software called Python Programming in association with Spoken Tutorials, IIT Bombay.

This FDP was conducted virtually by utilizing the recorded spoken tutorials provided by IIT Bombay. The Program was inaugurated with the motivational speech by Principal Dr B.V. Ravishankar and Dr Rangaswamy, Head, department of Mathematics.

This FDP / SDP was scheduled for six days from 24th -29th , August,2020. Everyday the participants were shared with four to five recorded tutorials to practice the content and exercises. Participants were assessed by giving quiz everyday based on the videos shared with them. Participants were asked to submit the course journal at the end of the course. Participants were issued the participation certificate based on their performance in the quizzes.

Participants were given the final test by Spoken Tutorials, IIT Bombay. Course completion certificate was issued by IIT, Bombay for the participants who have secured more than 40% of marks in the final test.

The detailed schedule for the FDP / SDP is attached herewith.



**B.M.S. College of Engineering,
Bengaluru, India.**

AICTE Training And Learning (ATAL) Academy

A Report on

Online Faculty Development Programme (FDP) on 3D Printing & Design

Title: “Prospects and Challenges in 3D Printing: A Design Perspective”

Date: 01st September 2020 to 05th September 2020

Speaker’s from Industries:

1. Capricot Technologies
2. Delta Rapid 3D / EOS GmbH
3. Adroitec
4. LAS Innovations Pvt. Ltd
5. Rapid DMLS

Speaker’s from R&D’s:

1. DRDO
2. Central Manufacturing Technology Institute (CMTI)
3. NIT Warangal

FDP Coordinator’s:

Dr. M S Suma - *Department of Medical Electronics, BMSCE*

Dr. Saisha Vinjamuri - *Department of Biotechnology, BMSCE*

Prof. Sreekanth N V - *Department of Mechanical Engineering, BMSCE*

B.M.S. College of Engineering Online FDP on 3D Printing & Design
Title: “Prospects and Challenges in 3D Printing: A Design Perspective”
September 01, 2020 to September 05, 2020



Day 1 (1st September, 2020)		
Session 1	Introduction to 3D Printing	Prof. Sreekanth N V BMSCE
Session 2	CADD in 3D Printing	Mr. Manthesh M Capricot Technologies
Session 3	Extrusion based 3D Printing - Industry Case	Mr. Suman Gowda N C Capricot Technologies

Day 2 (2nd September, 2020)		
Session 4	Yoga for Health	Mr. R. Umapathy Yoga Instructor- JSS
Session 5	SLS and DMLS Machines- Design Challenges.	Mr. Niranjana Rapid DMLS
Session 6	Topology Optimization	Mr. Daniel Amos Delta Rapid 3D / EOS GmbH

Day 3 (3rd September, 2020)		
Session 7	Introduction to Metal 3D Printing	Dr. Ravikumar NIT Warangal
Session 8	Case Examples: Metal 3D Printing	Dr. Ravikumar NIT Warangal
Session 9	DMD and DMLS Industry Case	Mr. Vinod CMTI

Day 4 (4th September, 2020)		
Session 10	3D Printing of Composites	Prof. Arjun C C BMSCE
Session 11	Bio 3D Printing & 3D Printing in Medicine	Dr. Saisha V - BMSCE Ms. Manjushree S P – Elexes Medical Consulting
Session 12	Case Studies in 3D Bioprinting	Mr. Suprajeet Adroitec

Day 5 (5th September, 2020)		
Session 13	Design Issues in Stereolithography /DLP Machine	Mr. Ganesh G , LAS Innovations
Session 14	Research Avenues in 3D Printing	Dr. T Ram Prabhu DRDO
Session 15	Test	

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Session 1 - Introduction to 3D Printing

3D printing refers to a variety of processes in which a computer-operated machine creates three-dimensional objects by joining or solidifying material, typically layer-by-layer until the whole object is complete. 3D printing is also commonly referred to as additive manufacturing.

Even though the early years of the technology seemed to regard 3D printing as an expensive process only suitable for aesthetical prototypes, the technology behind additive 3D printing has evolved to an impressive scale in the last few years, lowering barriers and making it more popular and affordable to end-users.

There are different methods of 3D printing out there, but we'll focus on FDM 3D printing because that's the most popular nowadays. FDM stands for Fused Deposition Modeling, which in practice means that a continuous stream of melted material (usually plastic filament) is extruded through a nozzle and is immediately solidified, fusing together with existing layers on the printing plate.

In order to print something with a 3D printer, you'll need 3D printing filament. These are typically sold in rolls and measured in weight (1kg rolls, 500g rolls). There are a lot of different brands and materials, the most popular being PLA.

PLA is the most straightforward material to print. Other materials, such as ABS, can be quite difficult to print, requiring special conditions like a stable room temperature and a very hot print bed.

Another good option that prints easily and offers a much higher resistance than PLA is PETG. PETG is suitable for things that shouldn't break easily and stuff that must endure higher temperatures or just being exposed outdoors.

Other materials include flexible filament, copper-infused (also other metals), carbon fiber, and many more. These are typically harder to print, serving special purposes.

3D printing requires special software to turn the STL files we download from sites like MyMiniFactory into actual GCODE that is understood by your 3D printer. The process of turning an STL into GCODE is called slicing. A popular slicing program is Slic3r, and there's also the PrusaSlicer for those who own Prusa printers, either original or derivative ones.



Session 2 - CADD in 3D Printing

Computer Aided Design and Drawing (CAD) is defined as “the digitalized format of the imagination of creative designers, engineers, architects and scientists in the form of drawings that are created using computer hardware and software”.

Computer Aided Drawing utilizes the graphics module of the computer software to generate virtual prototypes of real world objects and designs of engineering of various domains. CAD has replaced drawing many drafting tools and has ability to create two dimensional and three dimensional designs and drawings that are used widely in the industries.

The change from manual drafting techniques to Computer Aided Drafting techniques has disrupted the industries involved in manual drafting. Once there were dozens of draftsmen who were responsible for developing maps in civil engineering, large industrial scale drawings of parts, layouts, machines and assemblies.

The use of CAD drawings have also been utilized in the late 80s and 90s for machines to directly load the work in the machine for manufacturing in CNCs and now are being widely utilized in the 3D printing field which was initially called rapid prototyping and now coined to a term called Additive Manufacturing.

Additive Manufacturing:

The advent of stepper motors and servos which helped automate the industry from manual labor to advanced machines also contributed to the development of CAD based manufacturing called Additive Manufacturing (AM). AM is a technology which is opposed to subtractive manufacturing takes the CAD based drawing as an input and provides a three dimensional part or an assembly as the output without much human intervention.

There are various materials that are being used in Additive Manufacturing process. The materials that are used in this technology are as follows:

1. Polymers
2. Metals & Alloys
3. Composites
4. Ceramics
5. Elastomers



Session 3 - Extrusion based 3D Printing - Industry Case

Extrusion is the most common and probably the simplest 3D printing technique. It can be used in almost every environment. The main printing material is a plastic filament. The filament is heated, melting in the printing head of the 3D printer.

Extrusion is an “additive” technology commonly used for modeling, prototyping, and production applications. It creates an object by laying down material in layers; a plastic filament or metal wire is unwound from a coil and supplies material to produce a part.

The flexibility in design provided by this technique offers many opportunities for manufacturing sophisticated 3D devices. The most widely utilized method is an extrusion-based solid-freeform fabrication approach, which is an extremely attractive additive manufacturing technology in both academic and industrial research communities. This method is versatile, with the ability to print a range of dimensions, multimaterial, and multifunctional 3D structures. It is also a very affordable technique in prototyping. However, the lack of variety in printable polymers with advanced material properties becomes the main bottleneck in further development of this technology. Herein, a comprehensive review is provided, focusing on material design strategies to achieve or enhance the 3D printability of a range of polymers including thermoplastics, thermosets, hydrogels, and other polymers by extrusion techniques. Moreover, diverse advanced properties exhibited by such printed polymers, such as mechanical strength, conductance, self-healing, as well as other integrated properties are highlighted. Lastly, the stimuli responsiveness of the 3D printed polymeric materials including shape morphing, degradability, and color changing was also discussed.

The TPS filaments were processed on a commercially available FLM/FFF 3D printer, which was upgraded with an adequate filament feeding system, so-called direct drive extruder, to prevent from the buckling issue occurring in the printing head when printing flexible materials. In contrast to stiff filaments flexible filaments can deform between the drive gear driven by a stepper motor (so-called cold end) and the heated liquefier unit in front of the nozzle (so-called hot end). Therefore the pressure built up by the driven gear on the filament cannot be transmitted to enter the hot end and the material cannot be printed. After optimization of the feeding mechanism the TPS filaments could be processed on the FLM/FFF 3D printer. Tensile bars of type S2 according to DIN 53504 were printed and analysed to estimate the mechanical properties of extrusion-based 3D printed TPS



Session 4 - Yoga for Health

Only a small amount of research has investigated yoga for general well-being, such as improving sleep and reducing stress, and the findings have not been completely consistent. Nevertheless, some preliminary research results suggest that yoga may have several different types of benefits for general well-being.

Stress Management. Some research indicates that practicing yoga can lead to improvements in physical or psychological aspects of stress.

Balance. Several studies that looked at the effect of yoga on balance in healthy people found evidence of improvements.

Positive Mental Health. Some but not all studies that looked at the effects of yoga on positive aspects of mental health found evidence of benefits, such as better resilience or general mental well-being.

Health Habits. A survey of young adults showed that practicing yoga regularly was associated with better eating and physical activity habits, such as more servings of fruits and vegetables, fewer servings of sugar-sweetened beverages, and more hours of moderate-to-vigorous activity. But it wasn't clear from this study whether yoga motivates people to practice better health habits or whether people with healthier habits are more likely to do yoga. In another study, however, in which previously inactive people were randomly assigned to participate or not participate in 10 weeks of yoga classes, those who participated in yoga increased their total physical activity.

Quitting Smoking. Programs that include yoga have been evaluated to see whether they help people quit smoking. In most studies of this type, yoga reduced cigarette cravings and the number of cigarettes smoked. Findings suggest that yoga may be a helpful addition to smoking cessation programs.

Weight Control. In studies of yoga in people who were overweight or obese, practicing yoga has been associated with a reduction in body mass index. An NCCIH-supported comparison of different yoga-based programs for weight control showed that the most helpful programs had longer and more frequent yoga sessions, a longer duration of the overall program, a yoga-based dietary component, a residential component (such as a full weekend to start the program), inclusion of a larger number of elements of yoga, and home practice.



Session 5 - SLS and DMLS Machines: Design Challenges.

Selective laser sintering (SLS) was one of the first additive manufacturing techniques, developed in the mid-1980s by Dr. Carl Deckard and Dr. Joe Beaman at the University of Texas at Austin. Their method has since been adapted to work with a range of materials, including plastics, metals, glass, ceramics, and various composite material powders. Today, these technologies are collectively categorized as powder bed fusion—additive manufacturing processes by which thermal energy selectively fuses regions of a powder bed.

The two most common powder bed fusion systems today are plastic-based, commonly referred to as SLS, and metal-based, known as direct metal laser sintering (DMLS) or selective laser melting (SLM). Until recently, both of these systems have been prohibitively expensive and complex, limiting their use to small quantities of high value or custom parts, such as aerospace components or medical devices.

Innovation in the field has surged recently, and plastic-based SLS is now poised to follow other 3D printing technologies like Stereolithography (SLA) and fused deposition modeling (FDM) to gain widespread adoption with accessible, compact systems.

Direct metal laser sintering (DMLS) is an industrial 3D printing technology that is changing the way metal parts are manufactured. Since DMLS is an additive manufacturing process, organic designs, complex features, and internal channels can often be easily created. As with any process, however, DMLS does come with some limitations that can create design challenges.

Metal properties have always been strongly linked to their method of manufacturing and even just a few years ago, the idea that 3D printing could produce parts with properties rivalling that of cast and forged pieces seemed crazy. New technologies and materials continue to push the bounds of what's possible and although the bleeding edge is fascinating, we the engineers are generally more interested in what's available and cost effective right now.

There is more than one way to additively manufacture a metal, but there can be some confusion as to what those methods are since different companies can have different names for the same process. Many companies offer a '3D printed metal' service, however it involves the use of a binding material and is mostly for visual purposes – the mechanical properties will not match the typical values of the metal and machining is not advised. For metal parts with properties similar to those from subtractive manufacturing methods, you can choose between Electron Beam Melting (EBM), Direct Metal Laser Sintering (DMLS), and Selective Laser Melting (SLM). To be even more confusing, DMLS and SLM are sometimes used interchangeably!

DMLS is a very new technology first developed in 1995, but not advanced enough to produce commercial products until 2006. Like all additive manufacturing technologies, building begins

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by slicing a CAD model into thin layers. DMLS, like SLM and EBM, works by running a heat source (laser beam) over micron-thin layers of metal powder in the shape of the design to fuse them together. With EBM and SLM, the material is fully melted whereas in DMLS, the material is heated just enough for the molecules to fuse together. All three technologies are capable of producing parts with over 98% density and leftover powder can be reused repeatedly so waste is low.

For metals as with other materials, prototyping and low production volumes are crucial to successfully designing your part for larger production runs. With material improvements, DMLS has a lot of potential.

Session 6 - Topology Optimization.

Topology optimization is a powerful form of computation design, capable of generating high-performing optimized structural geometries without requiring the user to provide an initial concept. Based on mathematical optimization algorithms, it is a systematic yet also highly creative design method, with a wide variety of industrial applications.

The topology optimization research within SOM reflects this wide application range, including compliant mechanisms, dynamic motion systems, heat exchangers, precision mounts for optical components, and more. We work to continuously extend the type of problems that can be addressed, with a focus also on the manufacturability of the resulting designs. Specifically additive manufacturing technologies offer exciting potential to realize the geometrically complex high-performance parts generated by topology optimization. Including the specific restrictions (e.g. overhang angle, overheating) and capabilities (material microstructure control) is a focus area of SOM. Further information is given in the project pages.

To fully exploit the advantages of AM's associated design freedom, topology optimization is often used to generate an optimal design for an AM part. Current topology optimization tools however do not take into account that local overheating during AM processing might occur. This overheating can result in microstructural inhomogeneity, defect formation, poor surface finish and undesired deformation and/or mechanical properties for the final AM part. Within the design work package of PAM2, a computationally inexpensive simplified thermal model, called a 'hotspot detector', is developed to detect zones of local heat concentration. Finite element implementation of the hotspot detector is integrated with the density based topology optimization in order to generate robust AM designs that are expected to be free of local overheating zones. An important advantage of this physics based method over already existing geometry based approaches is that it incorporates the temperature response of a geometry instead of imposing explicit prohibition of overhangs. The latter is found to be occasionally over restrictive, leading to sub optimal designs while in some cases it is insufficient for constraining local overheating.



Session 7 - Introduction to Metal 3D Printing

Metal 3D printing is not intended to replace traditional metal manufacturing processes. Rather, it's a manufacturing tool that opens up new possibilities for product designers. There are many metal 3D printing technologies out there like direct metal laser sintering (DMLS), selective laser melting (SLM), electron beam melting (EBM). Each are fairly similar in how they build parts from atomized metal powders.

Parts can be built from powdered aluminum, Inconel, titanium, stainless steel, cobalt chrome, and more. The powder has the same chemical composition as the final part, since the process does not require any binding agents or additives. It's essentially a microwelding process that results in a fully dense metal part with the mechanical strength and fatigue characteristics similar to a machined part.

Common uses of metal 3D printing include reducing multi-component assemblies into a single part and lightweighting designs with hollow features and internal channels. The possibilities may seem limitless but there are a few principles that you can follow to ensure quality results.

Basic Design Considerations for Metal 3D Printing

When designing for metal 3D printing it's important to be aware that certain features are prone to warping or in-build curl if not supported. This is due to the internal stresses created by the rapid heating and cooling of the material during production. The design of support structures isn't something you as a designer necessarily need to be too concerned with, but it's good to know that some shapes are exceptionally difficult to build, and making slight alterations to your part design can be an easy way to not only improve quality, but also reduce manufacturing costs.

Tolerances. High-resolution DMLS at Proto Labs builds at a layer thickness of 0.0008 in. (0.02 mm) and can produce quite accurate parts, with tolerances to ± 0.003 in. (0.076 mm), part features as small as 0.006 in. (0.152 mm), and surface finishes similar to that of a sand casting.

Wall thickness. At Proto Labs, our rule of thumb is walls below 0.040 in. (1 mm) must maintain a wall height-to-thickness ratio of less than 40:1. On the other hand, if walls are thick, it can be an inefficient use of material and build time leading to higher manufacturing costs. We prefer to hollow thick features out with a honeycomb or lattice structure in order to reduce material costs and processing time while preserving structural integrity.



Session 8 - Case Examples: Metal 3D Printing

Metal 3D printing on a large scale is a method that can:

- Make parts and systems lighter
- Use more varied materials
- Increase strength
- Be customized with complex details that weren't possible before
- Speed up production
- Produce lower quantities and large orders with equal ease
- Do it all cheaper

Industrial Uses

Below are some of the industries that use metal 3D printing today, but every day the list gets longer.

- Aerospace (rocket parts and intricate mechanisms)
- Automotive (race car prototypes)
- Robotics (robotic arms)
- Education (tools for complicated concepts and models for research projects)
- Health care (custom prosthetics)
- Dental (implants and appliances)
- Medical (specialized surgical tools)
- Jewelry (intricate casting)

Materials

While the potential applications are limitless, these are some of the most common materials used in 3D metal printing today.

- Titanium, for its high strength-to-density ratio and resistance to corrosion
- Aluminum, for its light weight and durability
- Copper, for its high thermal and electrical conductivity
- Stainless steel, for its strength, finish, and temperature resistance

Improving Technology

3D printing is still in its infancy, but it has already revolutionized many industries. 3D printing can make products with plastics and even food, but its future in metal is particularly promising. Future 3D metal printing technology will:



- Reduce costs
- Reduce the number of parts needed
- Reduce the number of steps in the manufacturing process
- Reduce waste
- Increase production capacity
- Increase customization
- Increase quality
- Increase speed to on-demand status
- Increase options for materials

Session 9- DMD and DMLS Industry Case

Direct Metal Deposition (DMD) Fabrication Process for Metal 3D Prints

Metal additive manufacturing is taking more and more space in the industry. From aeronautics to medical applications, these 3D printing technologies are offering brand new opportunities. Here, we are going to talk about Direct Metal Deposition, an additive manufacturing technology using a laser to melt the metallic powder. Unlike most of the other technologies, it is not based on a powder bed but it uses a feed nozzle to drive the powder into the laser beam. It is very similar to Fused Deposition Modeling as the nozzle can move to deposit the fused metal. In Direct Metal Deposition, the laser beam and the powder spray are focused and scan the substrate to deposit the metal. BeAM is one of the main DMD machine manufacturers.

As most of the metal 3D printing technologies (selective laser melting, direct metal laser sintering), this technology is based on the transformation of powdered metal into a solid metallic object. The main principle is to use a powder feed nozzle than propulse the powdered metal into the laser beam. The powdered metal is then fused by the laser. Using a layer by layer strategy, the printer head, composed of the laser beam and the feed nozzle, can scan the substrate to deposit successive layers. The deposit width is between 0.6 to 2.4 mm while the layer thickness lies between 0.2 and 0.8 mm.

Direct metal laser sintering (DMLS) is one of the few 3D printing technologies that directly create a metal part from its 3D computer model. This process is an advancement of powder metallurgy (PM), a mature metal-molding technology that uses heat and pressure to form powdered metal parts.

The working material for this 3D printing process is finely powdered metal. Typically the manufactured size of the metal particles is 20 – 40 micrometers. The particle size and shape limit the detail resolution of the final part. Smaller metal particle size and less variation allow better resolution.



Other resolution limits in this technology are the layer height and the size of the laser spot. Like other 3D printing processes, the model is divided into many fine layers, which are then printed one-by-one to build the final part. Printable layer heights are approximately the maximum size of the metal powder used.

DMLS follows the basic process sequence for most 3D printing technologies: model, slice, and print layer-by-layer. Once a 3D model is created and sliced with the appropriate software, the code needed for the printer to make the part is supplied to the printer, and the physical process can begin.

To start, the DMLS printer hopper is filled with the desired metal powder. Printer heaters bring the powder to a temperature near the sintering range of the alloy. The printer uses an inert gas, which protects the heated powder and part as it is built.

The build begins with dispensing a thin layer of metal powder onto the build platform. The laser then begins its path for this layer, selectively sintering the powder into a solid. The sequence of dispensing a layer and sintering continues until part completion.

After the part is left to cool, the surrounding loose metal powder is removed from the printer. The last steps include support removal as well as any post-processing needed.

DMLS parts can be treated like metal parts produced by conventional metal working for further processing. This may include machining, heat treatment, or surface finishing. These process steps are shared with SLM, just with the laser's power turned up to "melt".

As DMLS and SLM are functionally the same, they share many advantages and limitations, with a few exceptions. Naturally, both share many advantages with other 3D printing technologies. In particular, building an object layer-by-layer allows for the efficient and affordable production of complex internal and external geometries. This is simply not possible with subtractive (machining) or formative (molding) processes.

DMLS can build parts that simply cannot be manufactured with conventional metalworking technologies.

Medicine: Custom prosthetics can be modeled and printed in materials like titanium alloys to replace portions of bones lost to accident or disease. They have high strength, are resistant to attack by the body, and the porosity helps bone grow into the prosthetic structure. Most importantly, each prosthesis can easily be made unique to the individual patient.



Dentistry: Prosthetics, bridges, crowns, and partial dentures are easily modeled specifically for the patient then printed in high-strength materials like cobalt chrome. Custom fit, strength, and long-term durability are quickly available through the DMLS printing process.

Aerospace: DMLS is a key part of reducing part count, creating complex geometries, and weight reduction while maintaining or increasing part strength and durability. DMLS parts are used in commercial aircraft and rockets, from simple brackets to complex turbine parts and probes. Even complete rocket exhausts can be produced.

Session 10- 3D Printing of Composites

Recently, a new method, 3D printing composite materials, is starting to be utilized as well. The reinforcing material, glass or carbon fibers, are transformed into particles and are combined with a thermoplastic base, which could be nylon, ABS, or PETG, among many others. In general, even concrete could be considered a composite because it is a material made up of multiple different materials. However, the term is most often employed from an engineering point of view, which means we are talking about a material that has been reinforced with fibers. Even though fibers are very beneficial when combined with another material, they are almost never used by themselves to create a piece. Instead, they are added to a matrix material in the form of short fibers or in the form of continuous fiber reinforcement. One of the most popular fibers in the 3D printing industry is carbon fiber because it has one of the highest strength-to-weight ratios.

Why reinforce a material with fibers?

Composites are extremely beneficial when making lightweight yet strong parts. The fibers add strength to a part without adding weight. As mentioned, there are two types of reinforcements, short fiber or continuous fiber. In the first case, chopped fibers, which consist of segments less than a millimeter in length, are mixed into traditional thermoplastics to increase the stiffness and to a lesser extent the strength of components. Chopped fibers can be mixed with thermoplastics such as nylon, ABS or PLA. Every manufacturer will add and blend a different amount of short fibers to its plastic polymer, resulting in filament spools of different strengths. You should also be aware that print quality will be impacted by the quantity of chopped fibers. Above a certain threshold, the 3D printed part will lose in surface finish.

The highest performance comes from continuous fiber reinforcement. The process for making continuous fiber composites parts is not as easy as short fiber composites parts because the fibers need to be integrated into the thermoplastic continuously as the thermoplastic is being extruded. The fibers can also be deposited according to design techniques that optimize a part's strength to weight ratio and material consumption, also known as DfAM (Design for Additive



Manufacturing) techniques. Manufacturers claim that thanks to continuous fiber reinforcement you can create parts as strong as metal.

In terms of available fibers on the market, carbon fiber is without a doubt the most popular. Fiberglass, a common type of fiber-reinforced plastic using glass fiber and Kevlar, a heat-resistant and strong synthetic fiber, are also widely used in the industry. Fiberglass is a cost-effective material for adding strength to plastics and Kevlar has high shock resistance as it bends instead of breaking.

Session 11 - Bio 3D Printing & 3D Printing in Medicine

3D bioprinting has brought a huge hope within the medical industry and researchers are making headways to find what relevancy it has with organ transplant and various other applications.

But what exactly is bioprinting? The technology works on additive manufacturing principles. Instead of standard materials, the 3D printers for bioprinting utilize bioink.

The bioink is used to create tissue-like structures. And, these structures are formed in a layer-by-layer manner. The process has a huge impact on the fields of medical science and bioengineering. Talking about the recent advancements, bioprinting of cartilage tissue required for reconstruction and regeneration is already a reality now.

If you would look at the workflow, you would find it similar to any other 3D printer. You require a digital model to start 3D printing of the biomedical parts. And, this also happens layer by layer.

However, the process must be carried while maintaining proper sterile printing conditions. This is not only to ensure the accuracy of the complex tissues but also makes sure that the requisite cell-to-cell distances are perfectly fabricated to provide the desired output.

Pre-Bioprinting

Pre-bioprinting is the pre-preparation process before the 3D printing of tissues starts. In this process, users create a 3D model as well as choose the 3D material for use in bioprinting. To start the process, one first needs to acquire the biopsy of the organ. To accomplish the steps, the most common technologies available are computed tomography (CT) and magnetic resonance imaging (MRI). The technology initiates the tomographic reconstruction of the images. These images are created by isolating certain cells are then multiplying them as needed. To ensure the proper availability of oxygen, the cells are mixed with a special liquefied material. This keeps the cells alive.



Bioprinting

In this stage, the actual printing happens. The 3D printer is introduced with the 3D image and the bioink to start the layer preparation.

The liquid mixture of cells, bioinks, and matrix goes into the printer cartridge for starting the deposition of each layer, at one time. This is done using the reference of the patients' medical scans.

Post Bioprinting

The printer parts need to go through chemical and mechanical stimulation in order to form stable structures.

These structures are for biological materials. In case, the process isn't well performed, the mechanical integrity along with the function of the 3D printed structure would stand at risk.

That is why the mechanical, as well as chemical stimulation, is the part of the post bioprinting process. Using these stimulations, signals reach the cells which direct the remodeling as well as the growth of these tissues.

3D Printing in Medicine

3D printers are used to manufacture a variety of medical devices, including those with complex geometry or features that match a patient's unique anatomy.

Some devices are printed from a standard design to make multiple identical copies of the same device. Other devices, called patient-matched or patient-specific devices, are created from a specific patient's imaging data.

Commercially available 3D printed medical devices include:

- Instrumentation (e.g., guides to assist with proper surgical placement of a device),
- Implants (e.g., cranial plates or hip joints), and
- External prostheses (e.g., hands).

Scientists are researching how to use the 3D printing process to manufacture living organs such as a heart or liver, but this research is in early stages of development.

The 3D printing process can be accomplished using any of several different technologies. The choice of technology can depend on many factors including how the final product will be used and how easy the printer is to use. The most common technology used for 3D printing medical



devices is called powder bed fusion. Powder bed fusion is commonly used because it works with a variety of materials used in medical devices, such as titanium and nylon.

The powder bed fusion process builds a three-dimensional product from very fine metal or plastic powder, which is poured onto a platform and leveled carefully. A laser or electron beam then moves across the powder layer and melts the material it touches. Melted material fuses to the layer below it and to the powder around it to create a solid. Once a layer is completed, the platform moves down and one more layer of carefully leveled powder is placed on top.

The FDA has several 3D printers that help us better understand the capabilities of 3D printing of medical devices and the public health benefit of this technology. For example, the FDA has printers that use different printing technologies, including powder bed fusion, to evaluate what parts of the printing processes and workflows are critical to ensure quality of the finished medical device.

Patient-matched devices

While 3D printers are often used to create identical copies of the same device, they can also be used to create devices unique to a specific patient. Patient-matched (or patient-specific) devices are created specifically for the patient based on individual features, such as anatomy. They can be based on a template model that is matched to a patient using medical imaging. Patient-matching can be accomplished by techniques such as scaling of the device using one or more anatomic features from patient data.

The FDA regulates 3D printed medical devices through the same pathways as traditional medical devices; therefore they are evaluated according to the safety and effectiveness information submitted to us by the manufacturer. While traditionally manufactured medical devices come in discrete sizes, patient-matched devices can be made in a continuous range of shapes with pre-defined minimum and maximum specifications that we can use to review the devices in the same way as standard sized devices. For instance, the specification may define a minimum and maximum wall thickness or how sharp a curve can be to maintain device performance for its intended use.

There is a provision in federal law that exempts “custom” medical devices from FDA review, but patient-matched devices do not automatically meet all the requirements. For further information on custom device exemptions, please refer to the Custom Device Exemptions guidance.

Other uses of 3D printing

The use of 3D printing is not limited to medical devices. Other industries and government departments are also interested in its use. For instance, the U.S. Department of Energy (DOE) is



investing resources to study 3D printing, and how it can be used to reduce waste by using fewer raw materials and require fewer manufacturing steps. DOE has compiled information on how 3D printing works, the different types of printers and for what they are used.

Session 12 - Case Studies in 3D Bioprinting

It is true that realizing the real potential of 3D bioprinting is far-fetched. However, there are a lot of developments already underway. With some, we have already made a huge success and with others, we are still fighting to find the right solution. Here are a few applications that are possible with bioprinting:

As we know that the problem with organ failure is increasing at a higher rate, a need for a comprehensive solution is much needed. In such a scenario, artificial organs could change the face of medical science for good. Being able to 3D bioprint organs could solve all the issues pertaining to the lack of availability of organs. Hence, resulting in a faster solution to the patients. This would be a revolution for the entire healthcare system. 3D printing of tissues for pharmaceutical testing would erase the need for animal testing, providing researchers and scientists with a more ethical way to proceed. One can also identify the several side effects of new drugs. Hence, allowing for better administration of correct dosage and proper precautions related to the medicines for humans.

Cosmetic surgery is another great application that would let patients avail of the perks of 3D printing to the core. Skin grafting and plastic surgery is now a difficult process, involving the use of skin and tissues from another location on the patient's body to cover the burn. With bioprinting, these cells could be generated through 3D printing. Hence, eliminating the need for skin extraction from the patient's body. The other applications include bone tissue regeneration, prosthetics along with dental aids.

List of 3D Bioprinting Companies on Demand

1. CellInk
2. Digilab
3. Organovo

Not only 3D printing is able to bring justice from an ethical perspective, but it would also become one of the most necessary technologies in the coming future. It has been able to provide hope for better medical facilities. If given proper time and effort, the field of bioprinting would become an example for everyone. 3D bioprinting is definitely helping us through a lot of medical challenges currently. This does not limit its potential though. There is more to it. And, with advancing time, the importance of the technology would be firmer and obvious.



Session 13 - Design Issues in Stereolithography/DLP Machine

Stereolithography: an ongoing evolution

When it comes to SLA, DLP and the wider family of vat polymerisation technologies, one of the key trends how applications of the technologies are increasingly moving towards manufacturing at scale. Driving this trend are important developments in the technology — faster, more accurate systems, a wider range of resin materials available and, of course, access to less expensive desktop alternatives.

While the technology will continue to add value to already-established applications, the development of more automated, scalable systems will see these applications broaden even more. With new advancements being unveiled all the time, it's certainly an exciting time to witness this evolution.

Today, the inherent characteristics of 355-nm laser based stereolithography (SL) technology characteristics leverage ever-expanding material capabilities to mature into one of the widest used and highest utility AM processes. The term SLA, a registered trademark of 3D Systems, is often used by some to encompass various 3D printing processes that fall within the ASTM grouping of AM processes as “Vat Polymerization.”

Stereolithography in this session was focused on “industrial SL,” as the original technology has evolved and is differentiated from all other vat polymerization processes by:

- Platform sizes ranging from 250 mm (9.5 in.) square to over 800 mm (31.5 in.) square.
- Ultraviolet laser (355-nanometer wavelength) light source.
- Materials formulated for 355-nm UV including clear, pigmented, and composite systems.
- Imaging from above (build platform travels downward).

The use of a laser to instantly cure a photopolymer using a UV laser with a nominal spot size less than 0.2 mm provides one of the highest combinations of accuracy and resolution of any AM process, especially considering the range of part sizes the process can handle. Today's 355-nm SL materials can produce parts that have excellent dimensional consistency and surface aesthetics ranging from transparent to various colors resembling typical injection molded parts. These materials have overcome robustness and aging issues encountered in earlier generations that enable parts manufacture with a broad range of mechanical properties allowing functional applications in prototyping, patterns, and beyond.



Additive manufacturing processes utilizing thermoplastic materials are often cited for robust mechanical properties. Current generation SL materials can be selected to overlap the performance of common thermoplastics in other AM processes, while retaining all the accuracy and aesthetic benefits of the SL process.

Stereolithography is often typecast as a prototyping process sometimes based on an outdated understanding of material capabilities. The attributes of 355-nm SL equipment, combined with the latest photopolymers, enable applications that extend prototyping capabilities, as well as end uses. Opportunities in patterns for secondary forming operations include large-scale mass customization, low volume urethane part production, tooling for low volume injection molding, and metal clad composites.

Session 14 - Research Avenues in 3D Printing

The Industrial 3D Printing market is segmented on the Basis of Offering Type, Application Type, Technology Type, End-User Type, Regional Analysis.

By Offering Type this market is segmented on the basis of Printers, Materials, Software and Services. By Application Type this market is segmented on the basis of Tooling, Heavy Equipment and Machinery and Robotics. By Technology Type this market is segmented on the basis of Stereo lithography (SLA), Fused Deposition Modelling (FDM), Selective Laser Sintering (SLS), Direct Metal Laser Sintering (DMLS), PolyJet Printing (MJP), Inkjet Printing, Electron Beam Melting (EBM), Laser Metal Deposition (LMD), Direct Light Projection (DLP) and Laminated Object Manufacturing (LOM). By End-User Type this market is segmented on the basis of Automotive, Aerospace & Defense, Healthcare, Printed Electronics, Foundry & Forging, Food & Culinary, Jewellery and Other Industries. By Regional Analysis this market is segmented on the basis of North America, Europe, Asia Pacific, Latin America, Middle East and Africa.

The major restraining factors of Industrial 3D Printing market are as follows:

- Performance of the eSport system 2heavily depends on size, structure and idea
- Operator do not have full control over the tournaments and leagues
- Fraudulent betting

The major driving factors of Industrial 3D Printing market are as follows:

- Advancement in technologies
- Increase in awareness
- Increase in number of Industrial 3D Printing enthusiast



Session 15 – Test

A 40 marks Quiz was conducted based on all 14 sessions. Quiz was scheduled via Google Forms and respective marks were recorded.



B.M.S. COLLEGE OF ENGINEERING, BENGALURU

(An Autonomous Institution Affiliated to VTU with NAAC A++ Accreditation)

TEQIP – III Sponsored

Two Week Training Program on

Internet of Things (IoT)

09.11.2020 to 21.11.2020

Report

INTRODUCTION

The Internet of things (IoT) describes the network of physical objects - “things” that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the Internet. It is a new revolution of the internet and a hot technology worldwide. The traditional fields such as embedded systems, wireless sensors networks, control systems...etc. contribute in enabling the internet of things. There are a lot of concern about IoT growth in the area of privacy and security, and consequently industry and government moves to address these concerns including the development of international standards.

OBJECTIVES

- Provide introduction to Internet of Things (IoT).
- Exposure to use of sensors, controllers in embedded systems.
- Enable students to convert their IoT product idea into a working prototype
- How to connect the IoT product to cloud.
- Enhance thorough working knowledge of the Arduino Uno and Raspberry Pi Platforms.
- How to connect the Arduino Uno and Raspberry Pi to phone.
- Improving skills to develop projects.

Outcome of Training Program

- ☐ Hands on experience on IoT using Arduino Uno and Raspberry pi board.
- ☐ The certificate of Expert in IoT by MHRD
- ☐ Understanding the future technology to incorporate in student's project.
- ☐ Depth knowledge to develop IoT products.

EVENTS

The Two week training program on IoT commenced in the afternoon of 09.11.2020 at 02.00 PM with an inaugural function. The program was inaugurated by Dr. T S Pranesha, Controller of Examinations, BMSCE and Dr. M. V. Murugendrappa, HOD Department of Physics, BMSCE.

The inaugural session was followed by a lecture on “Introduction to IoT” by Dr. Kaliprasad C S Assistant Professor, Department of Physics, BMSCE. He gave the complete introduction and development of IoT from many years. Followed by this session, Mr. Yeshwanth Kumar T H gave a lecture on the basic requirements of IoT, extending to Hands On session in IoT. The session was concluded with an interaction between speaker and the participants.

On 10th November 2020, at 2 PM, the session started with a lecture on “How to use python program in development of IoT application”. Followed by this, Dr. S.B. Bhanu Prashanth delivered a lecture on “Sensors: types, signal types, shape and strength”. At 4 PM, hardware and software lab session was conducted by Mr. Yeshwanth Kumar T H. In this session, students learnt the use of **proteous** software by performing simulations of LED and displays.

On 11th November 2020, the session at 2 PM was on “How to use python program in development of IoT application”. This session gave the insight related to the inputs on using files and arrays in python program. Followed by Dr. S.B. Bhanu Prashanth delivered lecture on Sensor non-idealities: Sensitivity and offset drift, noise, minimum detectable signal, nonlinearity. Read-out circuits: Instrumentation-amplifier, SNR definition, noise-bandwidth-power tradeoff. At 4 PM hardware and software lab session was conducted by Mr. Yeshwanth Kumar T H.

On 12th November 2020 the first lecture was on python program. Students learnt writing of python programs. At 3 PM lecture was on Circuit component mismatch and mitigation technique. At 4 PM hardware and software lab session was conducted by Mr. Yeshwanth Kumar T H. He thought the use of stepper motor in **proteus**.

On 13th November 2020 the first lecture at 2 pm was on how to use python program in development of IoT application. Followed by Dr.S.B. Bhanu Prashanth delivered lecture on Basic signal processing. At 4 PM hardware and software lab session was conducted by

Mr. Yeshwanth Kumar T H. He thought the use of Arduino and also demonstrated the Arduino to the students.

On 17th November 2020 the first lecture at 2 pm was on “Statistics relevant to large data and Linear regression”. At 4 PM, hardware and software lab session was conducted by Mr. Yeshwanth Kumar T H. and he demonstrated the different sensors connection to Arduino.

On 18th November 2020 at 2 pm Dr. Beena Ullala Mata B.N. delivered a lecture on “Embedded software relevant to microcontroller and IoT platforms”. Followed by Mrs. Chandrakala G Raju delivered lecture on Cloud computing. At 4 PM hardware and software lab session was conducted by Mr. Yeshwanth Kumar T H. He thought how to use of sensors in Arduino.

On 19th November 2020 the first lecture at 2 pm was on how to use python program in development of IoT application. Followed by Dr. Banu Prashant delivered lecture on Sensors: types, signal types, shape and strength. At 4 PM hardware and software lab session was conducted by Mr. Yeshwanth Kumar T H. He thought small projects using Arduino and basics sensors.

On 20th November 2020, the first lecture at 2 pm was by Dr. Kaliprasad C S who delivered lecture on Review of Communication Networks, Challenges in Networking of IoT Nodes, range, bandwidth, Machine-to-Machine. Followed by at 4 PM, hardware and software lab session was conducted by Mr. Yshwanth Kumar T H. He thought how to connect different sensors to Raspberry Pi and writing program to that sensors. The participants used the learnt python program concepts to write program in Raspberry Pi Platform.

On 21th November 2020, the first lecture at 2 pm was conducted by Dr. Kaliprasad C S, about power constraints in IOT and how to use the battery and other power supply in IoT. Followed by this lecture, Mr. Yeshwanth Kumar T H. conducted the lab session on hardware and software lab. He thought how to connect Raspberry Pi to cloud and how use that through phone. He demonstrated how to do small projects using basic components. The training program was concluded with the valedictory function held at 3.45 pm on 21st November 2020. Participants shared their feedback about the program. The training program coordinator expressed his thanks to Prof. B. V. Ravi Shankar, Principal, BMSCE

and Prof. Murgendarappa M. V. HoD, Department of Physics, BMSCE. Also the coordinator expressed his thanks to TEQIP-III for the financial support to conduct this training program. The certificates to all the participants were distributed.

List of Participants

Sl.NO	Name	Designation /USN	Branch
1	RAVI SAJJANAR	Student	Branch
2	HITESH N	Student	CSE
3	G S Bharath	Student	Mechanical
4	Skand Tandon	Student	electronics and communication
5	Shreesh Kumar	Student	EIE
6	Aditi	Student	EIE
7	SHRAVANKUMAR	Student	Electronics and Instrumentation
8	Riya Shetty	Student	ECE
9	Lavanya C M	Student	IEM
10	Rahul R	Student	ECE
11	VINEETH K C	Student	Mechanical
12	Akshata Rai	Student	Medical Electronics
13	Parjanya Modi	Student	Electronics and communication
14	HITESH N	Student	CSE
15	Anjali Bhardwaj	Student	Mechanical
16	Sushmitha M	Student	Electronics and Instrumentation
17	Sanjay	Student	Electronic and instrumentation
18	Varun Canamede	Student	Mechanical branch
19	Ujwal Sharma S	Student	Medical electronics

20	Ritu Toshniwal	Student	EEE
21	Parashuram A	Student	ECE
22	Utkarsh Singh	Student	Mechanical engineering
23	Utkarsh Singh	Student	Eie
24	Shreya S Gokavi	Student	Eie
25	Shreya S Gokavi	Student	Electronics and instrumentation
26	Sanghpriay	Student	Electronics and instrumentation engineering
27	G S BHARATH	Student	Electronics & Instrumentation Engineering
28	Akshata Rai	Student	ECE
29	Laasya A Prasad	Student	Electronics and communication
30	MOHAMMAD MUZAFFAR HYDER	Student	Information Science
31	Laieeqa Anche	Student	ELECTRONICS AND INSTRUMENTATION
32	Santosh L	Student	Electronics and instrumentation
33	Samprad Naik	Student	Mechanical engineering
34	Prateek G	Student	Mechanical engineering
35	Shreyas G	Student	CSE
36	N JYOTHI SWAROOP	Student	Information Science
37	Subramanya K	Student	ECE

Total Number of Registered Participants: 37

List of Invited Speakers

Sl. No.	Name of the invited speaker	Affiliation	Title of the talk
1.	Dr S.B Bhanu Prashanth	Medical Electronics Engineering , BMS college of Engineering	Sensors and its applications
2.	Dr. Beena Ullala Mata B N	Medical Electronics Engineering, BMS college of Engineering	Embedded System
3.	Mrs, Chandrakala G Raju	ISE, BMS college of Engineering	Cloud computing
4.	Mr. YeshwanthKumar T H	Loginware softtech Pvt. Ltd.	Hardware and software lab

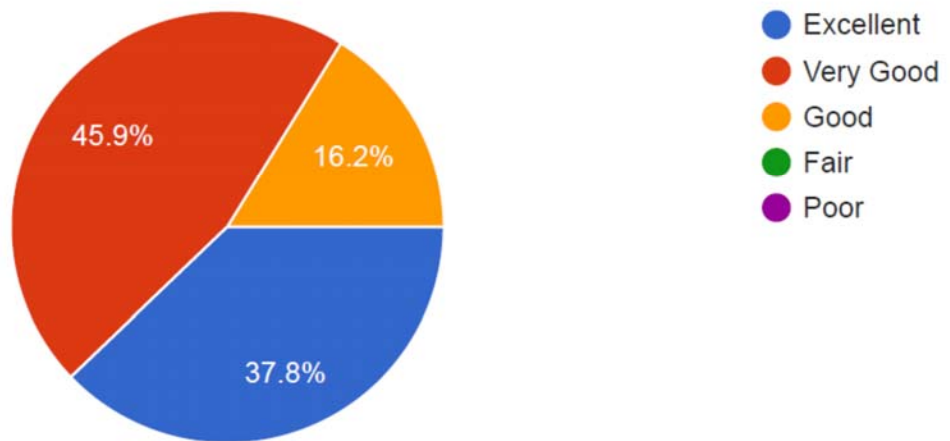
**Report of Training Program Online Link from
09.11.2020 to 21.11.2020**

Date	Link
09.11.2020	https://meet.google.com/tjm-ujsz-qje
10.11.2020	https://meet.google.com/aoh-snnr-hwf
11.11.2020	https://meet.google.com/kzj-bikc-hah?authuser=0
12.11.2020	https://meet.google.com/oup-ufda-vpp
13.11.2020	https://meet.google.com/czm-xwzs-jcf
17.11.2020	https://meet.google.com/vnx-kqdr-whz
18.11.2020	https://meet.google.com/jut-kdbf-abm
19.11.2020	https://meet.google.com/wdt-qkcn-npv
20.11.2020	https://meet.google.com/irv-cggz-tue
21.11.2020	https://meet.google.com/zxx-nksu-tpy

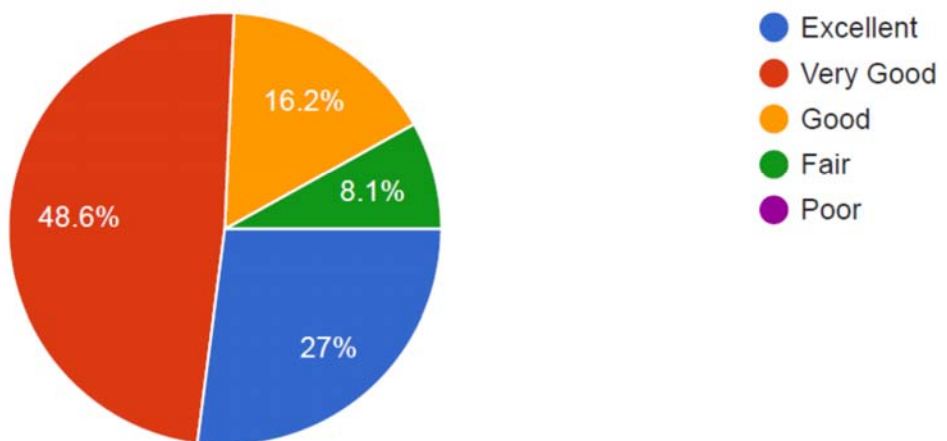
Feedback analysis

The % of opinion given by the participant's from the feedback form in the training Program on "Internet of Things" (IoT)

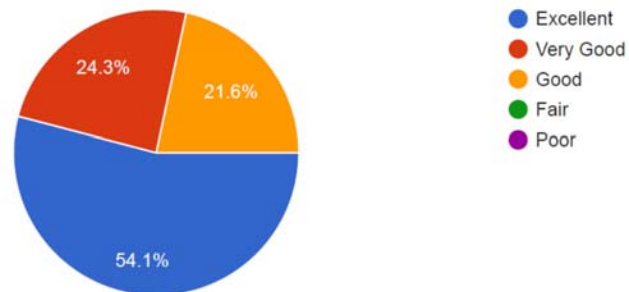
1. Was the content of the training program is useful to Academic / Research work?



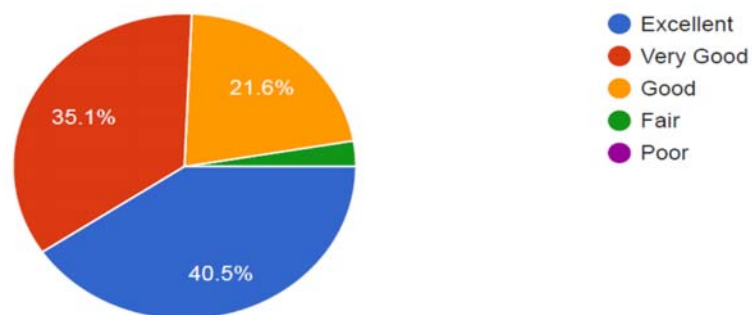
2. Was the lecture sessions are interesting/ motivating?



3. Were the scheduled program was done as per schedule?



4. Hardware / Software labs hands on experience?



5. Please provide overall rating for the training Program

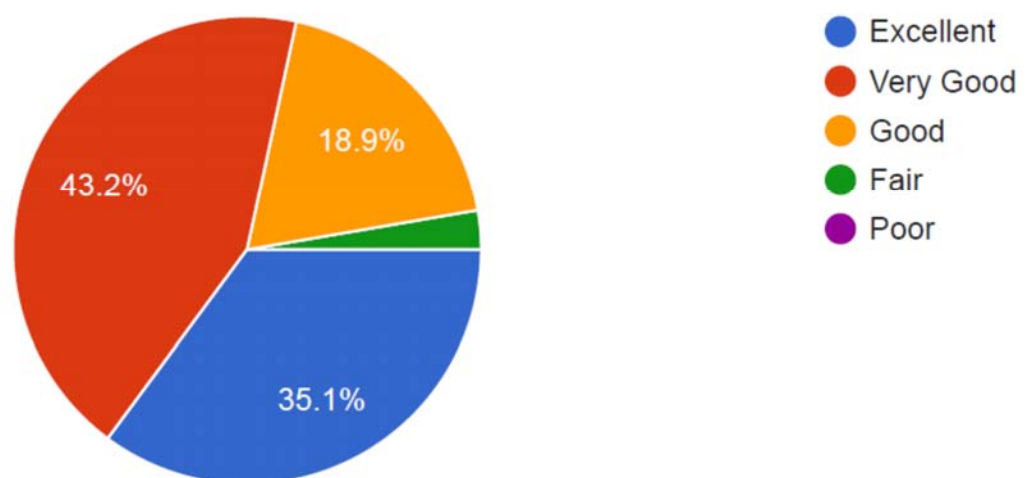
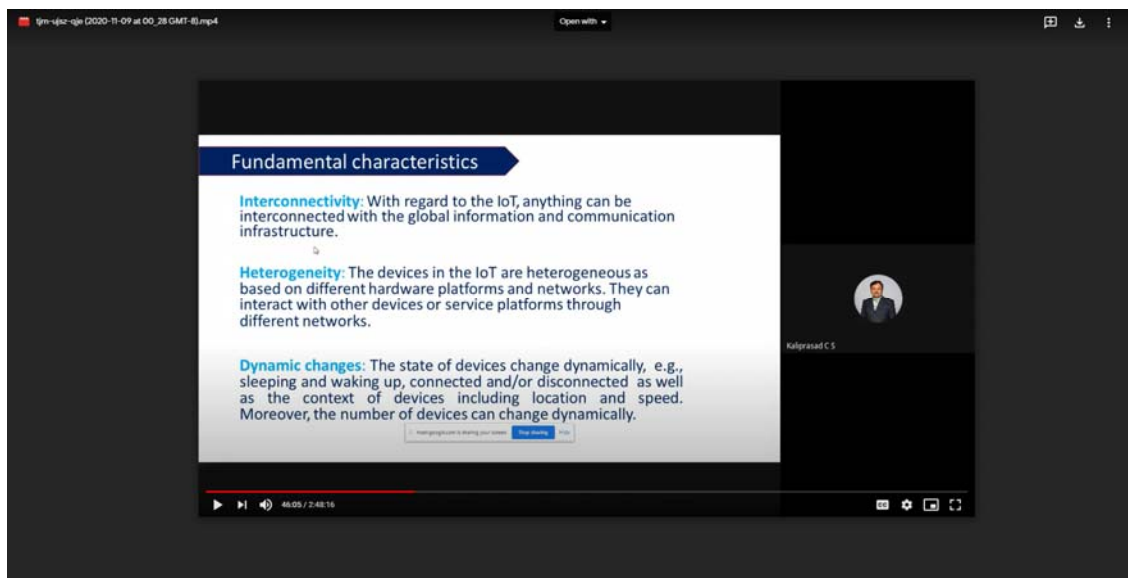


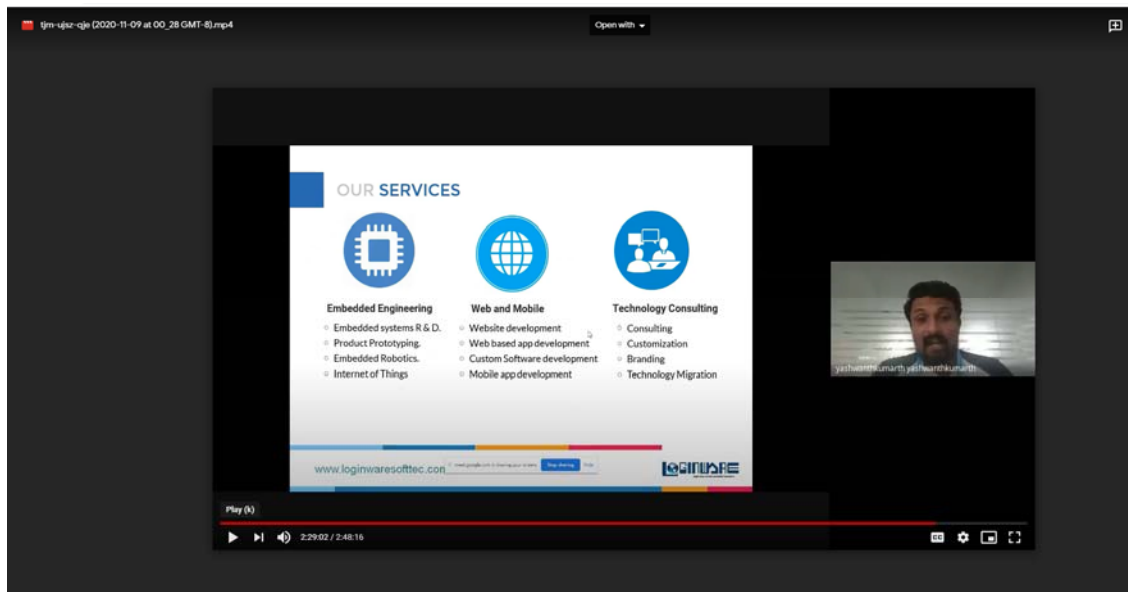
PHOTO OF DIFFERENT SESSIONS



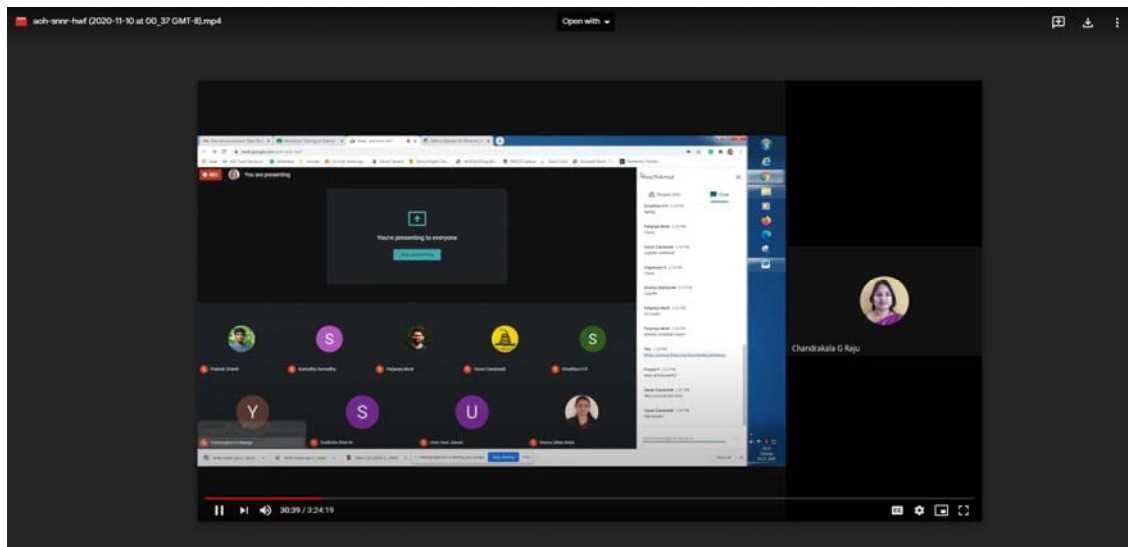
Inauguration by Dr. Pranesha T S, COE, BMSCE



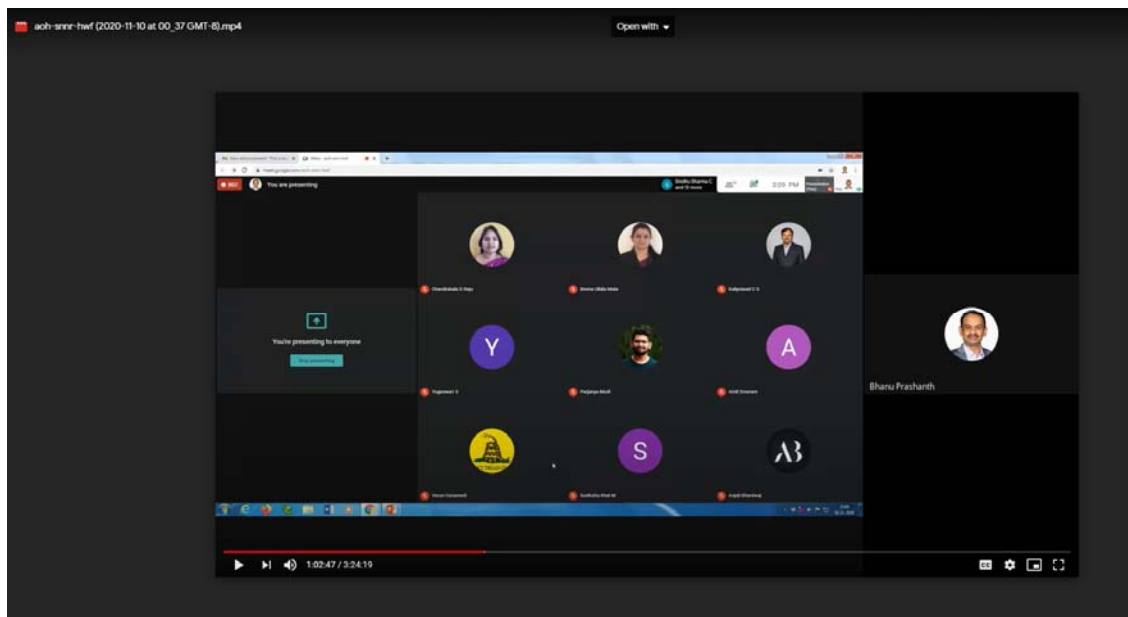
Session by Dr. Kaliprasad CS



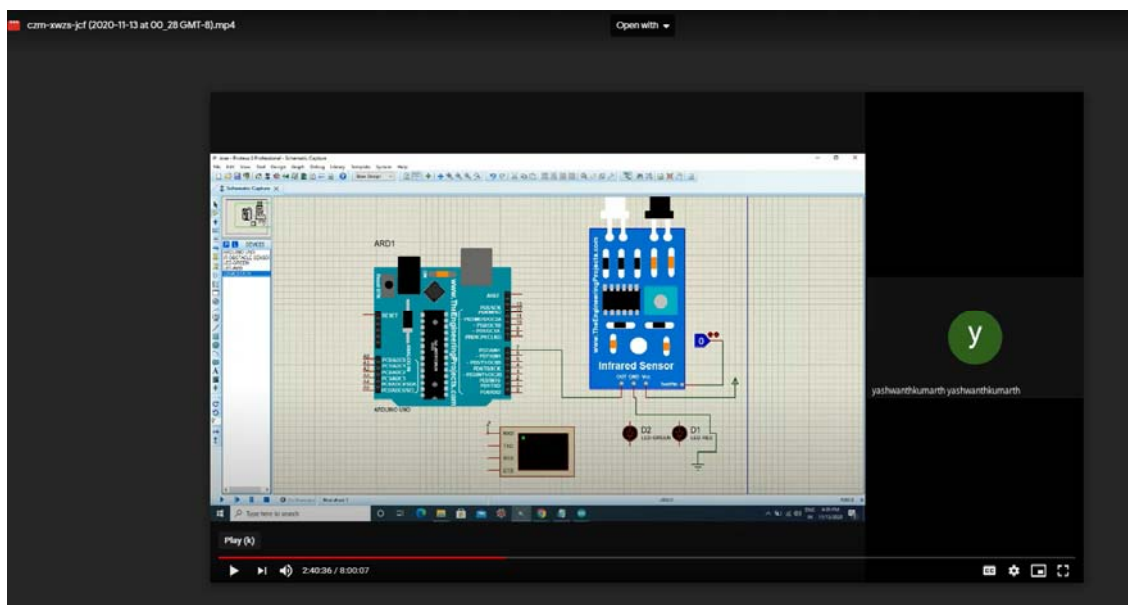
Session by Mr. YeshwanthKumar T H



Session by Mrs. Chandrakala G Raju



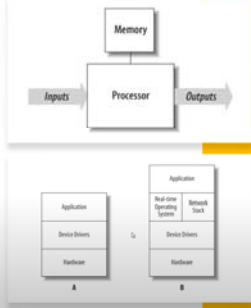
Session by Dr. S.B. Bhanu Prashanth



Proteus program for LED

Common Embedded System Components

- Processor is the main component
- Memory - *Read-only memory* (ROM) and *Random access memory* (RAM).
- If only a small amount of memory-required- within the same chip as the processor.
- Otherwise, one or both types of memory reside in external memory chips.
- Embedded systems- some type of inputs and outputs, either digital I/O or analog I/O or both
- In some cases- networking components are also present for communication.



The diagram illustrates the components of an embedded system. At the top, a block labeled 'Memory' is connected to a central 'Processor' block. The 'Processor' has 'Inputs' on the left and 'Outputs' on the right. Below the processor, two system architectures are shown: 'A' and 'B'. Architecture 'A' shows a stack of 'Application', 'Device Drivers', and 'Hardware'. Architecture 'B' shows a stack of 'Application', 'Real-time Operating System', 'Device Drivers', and 'Hardware'. A double-headed arrow connects the 'Device Drivers' of both architectures. To the right of the slide, a video feed shows Dr. Beena Ullala Mata.

Session by Dr. Beena Ullala Mata B N

Dr. Kaliprasad C S, Training program Coordinator



ATAL Faculty Development Program
Technology Innovation: Wealth from
Waste-23-27 November 2020
Department of Chemical Engineering
B.M.S. College of Engineering Bengaluru



REPORT

on



ATAL Faculty Development Program
Technology Innovation: Wealth from Waste
23-27 November 2020

Department of Chemical Engineering
B.M.S. College of Engineering Bengaluru



ATAL Faculty Development Program
Technology Innovation: Wealth from
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Wealth from Waste

The Technology Innovation -Wealth from waste 5-Days AICTE sponsored workshop was conducted between 23rd to 27th November 2020 in which around 210 participants from different parts of the country registered out of which 162 participated actively in the program and qualified for receiving the certificate.

The program was conducted on CISCO Webex Platform on all the five days. The speakers' profiles with schedule for the 5-day workshop on "Technology Innovation – Wealth from Waste" are as per the following table.



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ONLINE FACULTY DEVELOPMENT PROGRAM

Technology Innovation: Wealth from Waste

Five-day National Level ATAL FDP on Waste Technology: Wealth from Waste 23-27 November 2020
Department of Chemical Engineering, B.M.S. College of Engineering Bengaluru

S.NO	Details of Expert Speaker-DAY1			Title	Schedule
	Principal/Vice Principal & Dr. Murali Krishna Joint Director MoEF&CC, RO Bengaluru			Program Inauguration.	9.30 am to 10 am
1	Dr. Hoysala N Chanakya Chief Research Scientist chanakya@iisc.ac.in		ASTRA / Centre for Sustainable Technologies Indian Institute of Science Bangalore 560 012	"Energy recovery and value addition from agro-residues and organic fraction of MSW"	Day-1 : Session -1 23rd November 2020, Monday 10:00 am to 11:30 am
2	Dr. Uttam Ravishankar Doraswami Founder and Director uttamrd@gmail.com		Elxion, Bangalore	"Metal circularity, critical materials and E-Waste: A Wealth of Opportunities".	Day-1 : Session -2 23rd November 2020, Monday 11:45 am to 1:15 pm
3	Dr. Ravishankar, Former Technical Advisor. dnr@greenlantern.in		BWSSB, Bengaluru	Decentralised Solid and Liquid Waste (Sewage) Management.	Day-1 : Session -3 23rd November 2020, Monday 2:00 to 3:30 pm



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	Details of Expert Speaker–DAY 2			Title	Schedule
4	Dr. Manjappa, Director (R& D) drsmdivg2gmail.com		Sahyadri College of Engineering and Management. Mangalore.	Wealth from waste of sugar industry complex for its economic and environmental sustainability.	Day-2 : Session -1 24th November 2020, Tuesday 9:30 am to 11:00 am
5	Er. M. N. Thippeswamy mnts1947@gmail.com		Former Engineer in chief, BWSSB	Waste water : An untapped resource for energy recovery	Day-2 : Session -2 24th November 2020, Tuesday 11:30 am to 1:00 pm
6	Mr. ANANT VITHAL TURAMBEKAR avt@renukasugars.com		Sri Renuka Sugars Ltd.	Case study – Bio-composting from distillery spent wash with sugar industry press mud	Day-2 : Session -3 24th November 2020, Tuesday 2:00 pm to 3:30 pm



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	Details of Expert Speaker- –DAY 3			Title	Schedule
7	Mr. Basavaiah basav.environment@gmail.com		Rtd. MD- Karnataka compost development corporation at Govt. of Karnataka	Solid Waste Management and need for pollution free sound practices	Day-3 : Session -1 25 th November 2020, Wednesday 9:30 am to 11:00 am
8	Dr. C T Puttaswamy Prof & Head, BMSCE puttaswamyct.che@bmsce.ac.in		Department of Chemical Engineering B.M.S College of Engineering, Bangalore – 560027	Zero Pollution and 7Rs Rule for cleaner production, life cycle assessment with extender producer responsibility.	Day-3 : Session -2 25 th November 2020, Wednesday 11:30 am to 1:00 pm
9	Dr. P Parthasarthy – Managing Director E-Parisaraa Pvt. Ltd recycle@ewasteindia.com		E-Waste India.	Case Study on E-Waste Recycling in India	Day-3 : Session -3 25th November 2020, Wednesday 2:00 to 3:30 Pm



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	Details of Expert Speaker–DAY 4			Title	Schedule
10	Mr. Tamilmanian Founder & Managing Director. info@kuppaikaaran.com		Kuppaikaaran Waste Management Private Limited	"Latest trends in anaerobic digestion" "	Day-4 : Session -1 26th November 2020, Thursday 9:30 to 11:00 am
11	Dr. Shashi Shankar A Professor & Head, AMCEC shashianant@gmail.com		Department of Civil Engineering, AMCEC, Bengaluru	"Waste to Green Energy saga of Bane to Boon"	Day-4 : Session -2 26th November 2020, Thursday 11:30 to 1:00pm
12	Dr. Sourabh Kumar Yadav Sr. Manager – Environment Saurabh.yadav1@jkcement.com		J K Cement Works, Muddapu, Bagalkot, Karnataka	Co-processing and Co- Incineration of hazardous waste during cement production and legal requirements	Day-4 : Session -3 26 th November 2020, Thursday 2:00 to 3:30 pm



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	Details of Expert Speaker –DAY 5			Title	Schedule
13	Dr. G Sekaran, Chief Scientist ganesansekaran@gmail.com		CSIR-Central Leather Research Institute, Chennai.	" Leather industry : solid waste generation and conversion into value added products"	Day-5 : Session -1 27 th November 2020, Friday 9:30 am to 11:00 am
14	B Suryaprabha Programs Coordinator Contact: +91 7411112682		Art of Living Youth Desk Banagalore India b.suryaprabha@gmail.com	ROAD - Response Effectiveness, Organising Self, Attitudinal Shift, Decision Making	Day-5 : Session -2 27th November 2020, Friday 11:30 am to 1:00 pm
15	Objective Type online test and Valedictory program				27th November 2020, Friday 2:00 pm to 3:30 pm



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The inauguration was held on 23rd November 2020 online at 9:30 am. Chief Guest of the program was Dr. Murali Krishna, Joint Director Ministry of Environment Forest & Climate Change, Regional Office Bangalore, Prof. B V Ravishankar (Principal BMSCE) Presided over the function and Guest of Honour of the function were Prof. S Muralidhara (Vice Principal), the other dignitaries who graces the program were Deans, HODs and Faculties from the college and Department of Chemical Engineering, BMSCE,

Prof. Sreelakshmi, Asst. professor welcomed all the participants, Chief Guest, President and Guest of Honour HoD, Faculty and others also joined for the inaugural function. The Program started with invocation song by Ms. Sai Meera, 7th semester, Chemical Engineering student. Prof. C T Puttaswamy, Professor, Head and Program coordinator greeted the participants and guest and also briefed about the FDP scheduled program. Dr. Murali Krishna Chief guest of the inaugural program had emphasized about the need of such enlightening FDPs which can bring about the socio-economic change.

Dr. B V Ravishankar, Principal, BMSCE expressed his assertive opinion about the topics and expressed more such workshop need to be arranged to bring awareness among the teaching fraternity. Further Dr. S Muralidhara, Vice Principal expressed his concern regarding the



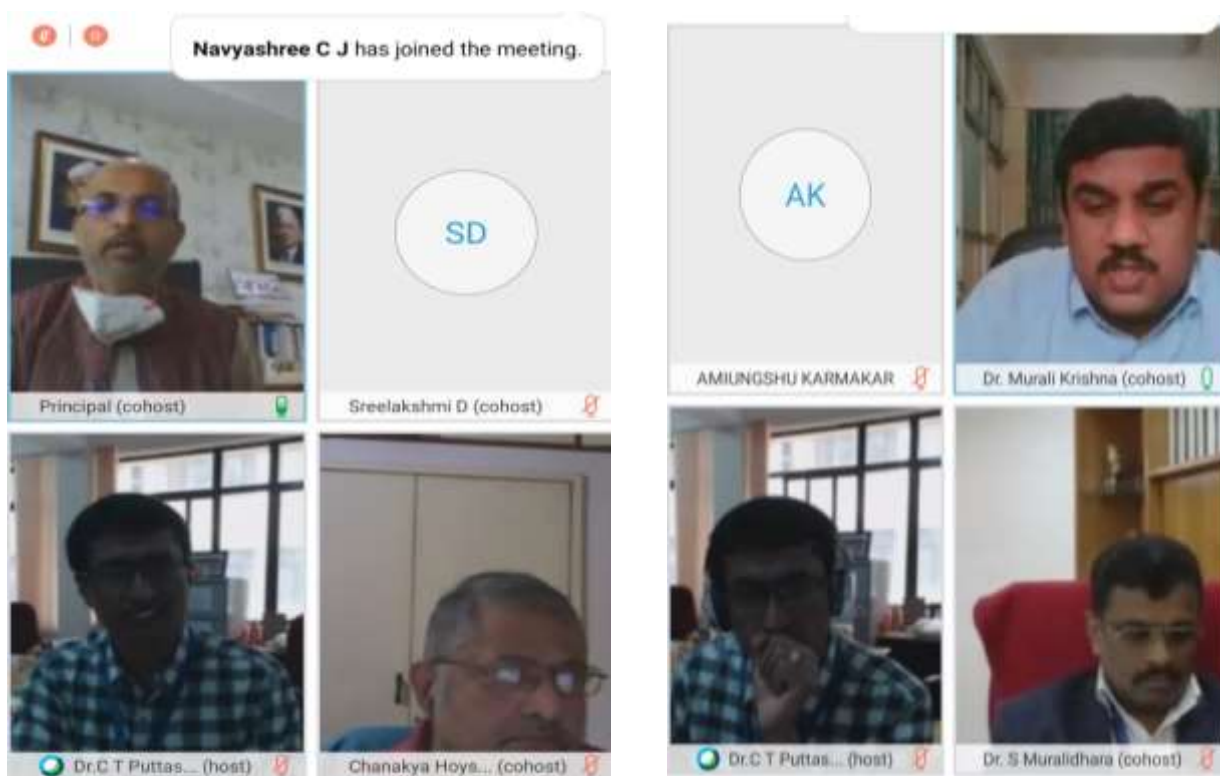
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care and safety aspect while concentrating on Hazardous and Bio Medical Wastes.

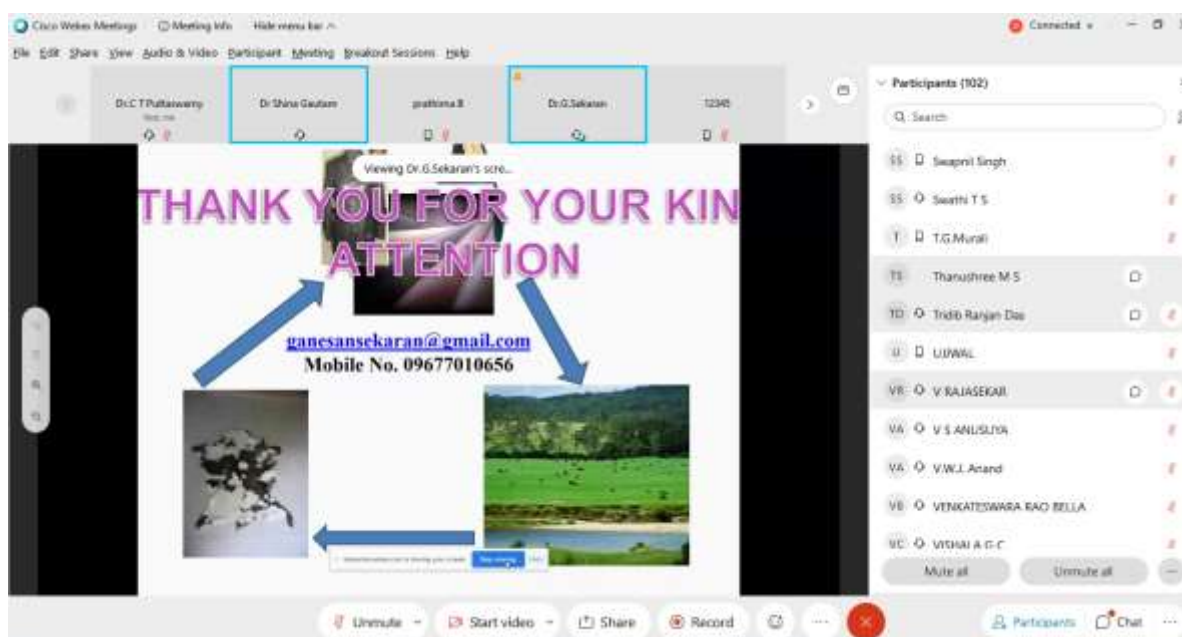
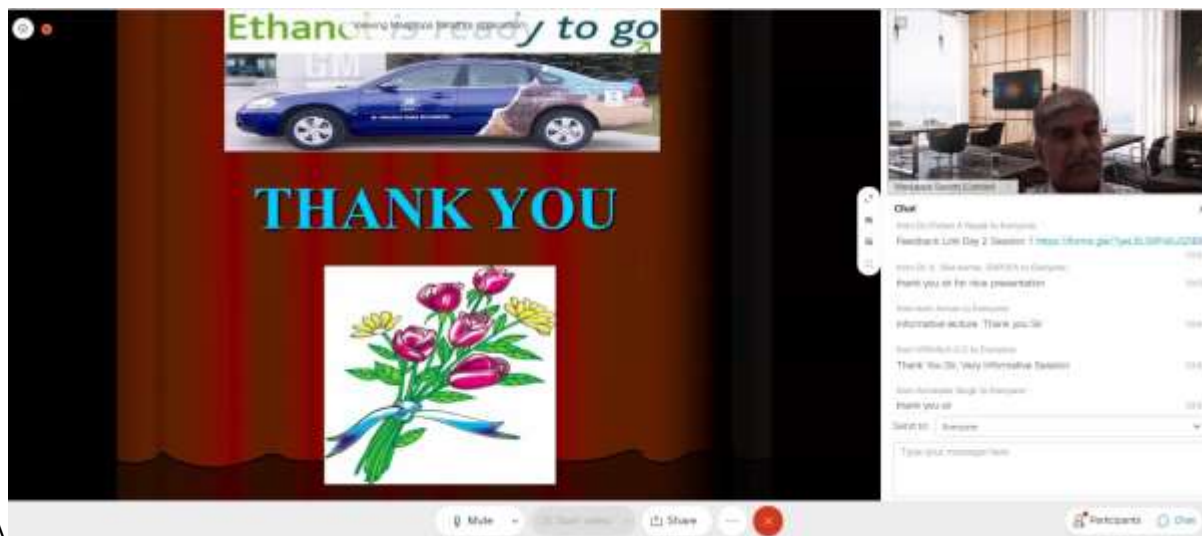
Dr. Sreelakshmi extended her vote of thanks to all the participants, dignitaries and speakers for benevolently extending their support in making this FDP fruit full

Some screenshots of the inaugural function and other interactive session are as below.





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List of Participants with Contact Details

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Fourth Announcement

National Aerospace Propulsion Conference NAPC – 2020

Gas Turbine Research Establishment
Defence R&D Organization
Ministry of Defence, Govt. of India
Bengaluru – 560 093

B.M.S. College of Engineering
Autonomous Institute
Affiliated to VTU, Karnataka
Bengaluru – 560 019



Dates: December 17-19, 2020

**Hosted on a Digital Platform by
B.M.S. College of Engineering, Bengaluru**

Under the auspices of

***NATIONAL COMMITTEE FOR AIR-BREATHING ENGINES
(NCABE)***



About the Conference

The National Aerospace Propulsion Conference (NAPC) is a national conference with focus on aerospace propulsion technologies. The conference is an amalgamation of the erstwhile conducted National Propulsion Conference (NPC) and National Conference on Air-Breathing Engines (NCABE) conferences. This conference is intended to bring together the entire propulsion community spanning air-breathing and non-air-breathing propulsion. The conference will be an ideal opportunity to showcase one's research activities with peers and also foster future collaborations through networking. The first National Aerospace Propulsion Conference (NAPC-2017) was organized by Indian Institute of Technology Kanpur and the second NAPC (NAPC-2018) was organized by Indian Institute of Technology Kharagpur. The third NAPC (NAPC-2020) is being organized jointly by Gas Turbine Research Establishment, DRDO, Bengaluru and BMS College of Engineering, Bengaluru. The conference will be hosted by BMS College of Engineering, Bengaluru on a digital platform.

Scope of the Conference

Papers pertaining to all aerospace propulsion-related topics. Topics include the following areas:

- **Gas Turbine Propulsion**

- Compressors, Fans
- Turbines
- Heat Transfer
- Combustion, Fuels and Emissions
- Structures and Dynamics

- **Rocket Propulsion**

- Solid, Liquid and Hybrid Propulsion
- Electric Propulsion
- Advanced Concepts in Rocketry
- Propellants and Combustion

- **Ramjets, Scramjets and Hybrid Propulsion Devices**

- **Special Topics (only in the context of Aerospace Propulsion)**

- Aerodynamic/Thermal/Structural/Vibration/Rotodynamic Analyses, Ground and Flight Testing, Advances in Engine Accessories, Power Transmission Systems, Control System, Diagnostics and Instrumentation, Quality Assurance, Reliability, Certification, Additive Manufacturing

Important Dates

Feb 24, 2020	First announcement
Jun 30, 2020	Last date for abstract submission
Jul 15, 2020	Notification of abstract acceptance
Sept 31, 2020	Last date for full paper submission
Nov 15, 2020	Notification of paper acceptance
Nov 25, 2020	Submission of camera ready full length paper
Dec 01, 2020	Conference Preregistration
Dec 17-19, 2020	Conference date

Registration Fees:

Delegates & Students

: Rs. 2500/-

The fees will cover password protected login, live video connection to all sessions and a password protected softcopy of the conference proceedings.

Registration Fee can be paid online to the following account.

NCABE Trust, State Bank of India, NAL, Bengaluru Branch

Current Account number – 1046 1037 124

IFS Code: SBIN0004815, MICR Code: 560002035

Authors will be allowed to present their papers only after completing the registration process. On a single registration, authors would be permitted to present a maximum of 2 papers.

About GTRE:

Gas Turbine Research Establishment is one of the pioneering laboratories of Defence Research & Development Organization under the Ministry of Defence, Government of India. The main charter of the establishment is to design and develop aero gas-turbine engines for military applications, besides carrying out advanced research work in the area of aero gas turbine subsystems. In addition, the establishment is responsible for establishing the requisite testing and prototype manufacturing facilities for components and full-scale engine development.

About NCABE:

The National Committee on Air breathing Engines was founded in 1992 as a trust to provide a forum and stimulus to the R&D activities in the field of aerospace propulsion in the country. The first National Conference, NCABE was held in Bangalore in 1992 and since then NCABE has been a well-attended major technical event held at different aero- space institutions across the country. NCABE serves as the Indian complement for the International Conference on Air Breathing Engines (ISABE).

About BMS College of Engineering:

B.M.S. College of Engineering (BMSCE) was founded in the year 1946 by Late Sri. B. M. Sreenivasaiah, a great visionary and philanthropist and nurtured by his illustrious son Late Sri. B. S. Narayan. It is the first private engineering college established in the country and approved by AICTE & affiliated to VTU, Karnataka. All UG and eligible PG programs of BMSCE are accredited by NBA and the institute is accredited by NAAC with A++ score (3.83 out of 4). It is located in the heart of Bengaluru at Basavanagudi which is about 5 kms from Bengaluru City Railway Station.

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THIRD NATIONAL AEROSPACE PROPULSION CONFERENCE



Certificate

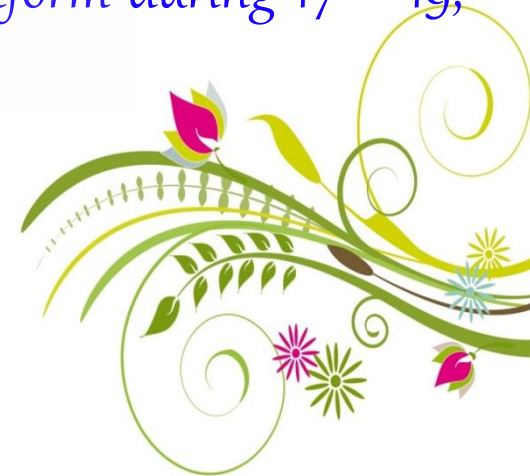
This certificate is issued to **Dr. Gnanendra P. M.** of **B. M. S. College of Engineering, Bengaluru** for the oral and technical presentation of the paper titled “*Experimental Studies on Flame Propagation in a Packed Bed Reactor*” in the **3rd National Aerospace Propulsion Conference (NAPC 2020)** as well as for his participation in the conference jointly organized by B. M. S. College of Engineering, Bengaluru & Gas Turbine Research Establishment, DRDO, Bengaluru under the auspices of National Committee on Air Breathing Engines on a digital platform during 17 – 19, December, 2020.

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B.M.S. COLLEGE OF ENGINEERING, BANGALORE – 19

(An Autonomous institution, Affiliate to VTU)

REPORT ON TEQIP-III SPONSORED ONE-DAY WORKSHOP ON **“Awareness on Cyber Security-Industry Perspective”**

A workshop was organized on 22nd December 2020 on “Awareness on Cyber Security-Industry Perspective” in collaboration with in association with Hewlett Packard Enterprise incubation centre on Virtualization and Data Security.

1. **Event Duration:** 10:30 AM to 4:00 PM

2. **Venue:** Online Mode – Go to Meeting.

3. **Resource person:**

Session 1: Mr. Srinivas Naika, Quality Automation Specialist from **Royal Bank of Scotland Business**

Session 2: Mr. Muralikrishna Nidugala and Mr. Pradhyumna Padhan from **Hewlett Packard Enterprise**

4. **Participants: Total of 138**

Faculty: 19 (Internal:1, External : 18)

Research Scholar: 3 (External :3)

PG Students : 4 (Internal: 4)

UG Students : 112 (Internal: 50, External: 62)

The workshop was inaugurated on 22nd December 2020 with a total of 168 participants across different colleges.

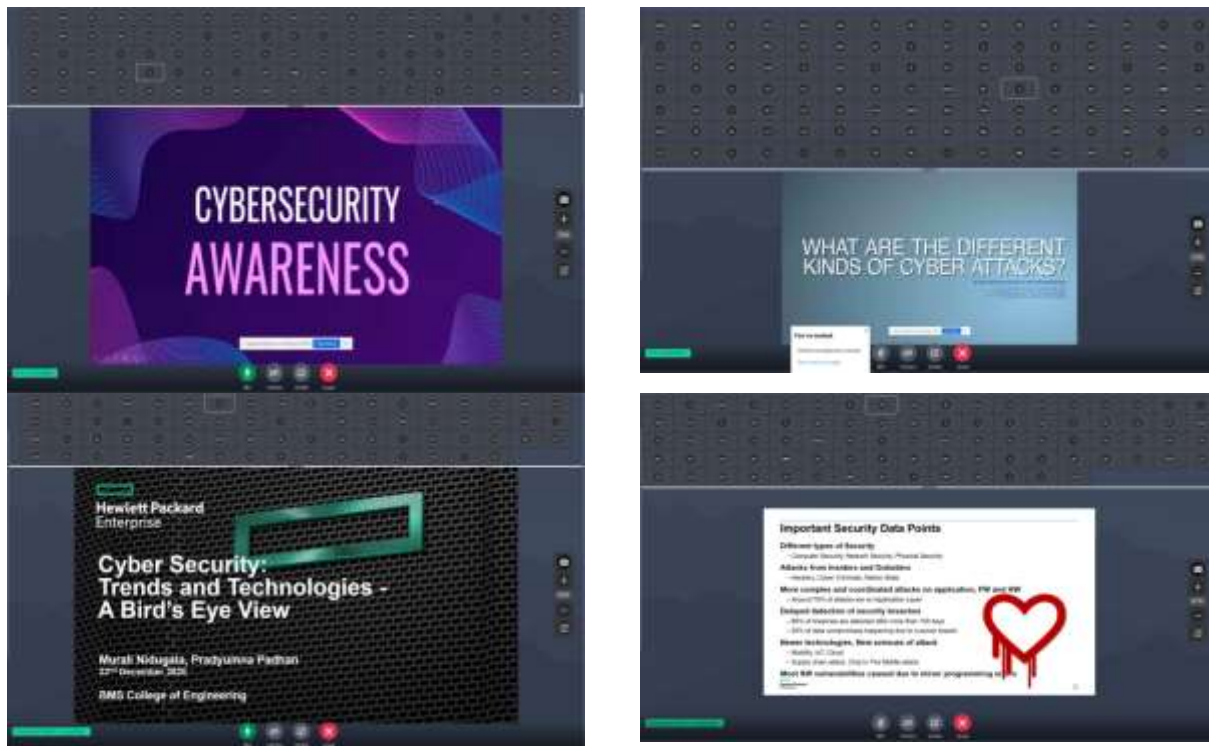
Following were the contents covered in the one day workshop:

Day	Topic	Resource Persons	Time
22 nd December, 2020	Cyber Security Awareness	Mr. Srinivas Naika, Quality Automation Specialist from Royal Bank of Scotland Business	10:00 A.M to 1:00 PM
22 nd December, 2020	Industry Case Studies on Cyber Security	Mr. Muralikrishna Nidugala and Mr. Pradhyumna Padhan from Hewlett Packard Enterprise	2:00 PM to 4P.M

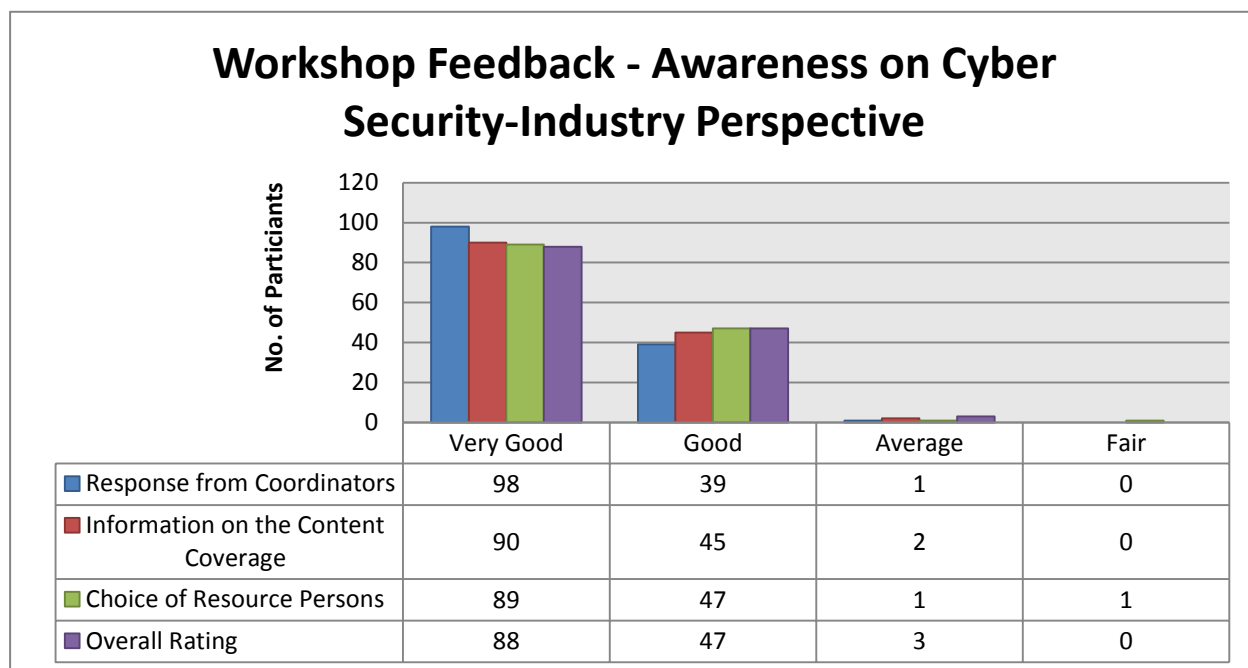
The following outcomes were achieved during the one-day workshop.

- To provide awareness to UG/PG/Ph.D./Faculty on Cyber Security
- Learn the basic concepts of Cyber Security, Threats in the e-world.
- Understand the attacker’s mind and hacking tools and techniques.
- Develop familiarity and deep understanding of hacking mechanisms.
- Learn the best practices to protect one’s own data from the attacker’s world.

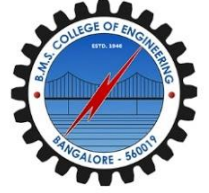
The workshop concluded with the valedictory on 22nd December 2020 by HOD, Dept.of ISE, BMSCE and the Programme Coordinator Dr. R. Ashok Kumar, Gururaja H.S, Dr. N. Sandeep Varma. The participants gave the feedback on the programme.



The feedback statistics from the participants of the workshop is depicted below:



B. M. S. College of Engineering, Bengaluru-19
(Autonomous Institute, Affiliated to VTU)



Dept. of Information Science & Engineering
in association with
Hewlett Packard Enterprise Incubation Centre
on
Virtualization and Data Security



Certificate of Participation

This is to Certify that A NIDHI UDAY of BMS COLLEGE OF ENGINEERING has Participated in the TEQIP-III sponsored One day online Workshop on “Awareness on Cyber Security-Industry Perspective” in association with Hewlett Packard Enterprise held on 22nd December 2020 at Dept. of ISE, BMSCE, Bengaluru-19.

Dr. R. Ashok Kumar
Convener

Dr. M. Dakshayani
HoD, ISE

Dr. B. V. Ravishankar
Principal

B. M. S. College of Engineering, Bengaluru-19
(Autonomous Institute, Affiliated to VTU)



Dept. of Information Science & Engineering
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Virtualization and Data Security



Certificate of Participation

This is to Certify that ABHISHEK S J of BMSCE has Participated in the TEQIP-III sponsored One day online Workshop on “Awareness on Cyber Security-Industry Perspective” in association with Hewlett Packard Enterprise held on 22nd December 2020 at Dept. of ISE, BMSCE, Bengaluru-19.

Dr. R. Ashok Kumar
Convener

Dr. M. Dakshayani
HoD, ISE

Dr. B. V. Ravishankar
Principal

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Certificate of Participation

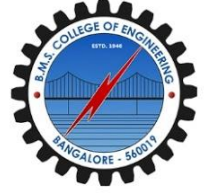
This is to Certify that ADARSH MISHRA of Samrat Ashok Technological Institute Vidisha has Participated in the TEQIP-III sponsored One day online Workshop on “Awareness on Cyber Security-Industry Perspective” in association with Hewlett Packard Enterprise held on 22nd December 2020 at Dept. of ISE, BMSCE, Bengaluru-19.

Dr. R. Ashok Kumar
Convener

Dr. M. Dakshayani
HoD, ISE

Dr. B. V. Ravishankar
Principal

B. M. S. College of Engineering, Bengaluru-19
(Autonomous Institute, Affiliated to VTU)



Dept. of Information Science & Engineering
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Certificate of Participation

This is to Certify that ADITYA KULKARNI of BMSCE has Participated in the TEQIP-III sponsored One day online Workshop on “Awareness on Cyber Security-Industry Perspective” in association with Hewlett Packard Enterprise held on 22nd December 2020 at Dept. of ISE, BMSCE, Bengaluru-19.

Dr. R. Ashok Kumar
Convener

Dr. M. Dakshayani
HoD, ISE

Dr. B. V. Ravishankar
Principal

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Day 1 - 11 Jan. 2021		
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11.30 to 11.45	Tea Break	
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13.15 to 15.00	Lunch Break	
15.00 to 16.30	Introduction to VR: Spin A 3D Cube	Mr.Ritesh
Day 2 - 12 Jan. 2021		
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11.30 to 11.45	Tea Break	
11.45 to 13.15	Codesys: Web Based HMI and Modelica OPC-UA Interface	Mr.Ajeya
13.15 to 15.00	Lunch Break	
15.00 to 16.30	Introduction to Blender: Make a 3D Ball	Mr.Ritesh Ms. Monisha
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11.30 to 11.45	Tea Break	
11.45 to 13.15	Interacting Tank Model: Modelica Hands on	Dr. S. R. Desai
13.15 to 15.00	Lunch Break	
15.00 to 16.30	Meditation- A scientific tool for Physical and Mental Development	Mr.Udaya Kumar
Day 4 - 14 Jan. 2021		
10.00 to 11.30	Interacting Tank Model: Modelica Hands on	Mr.Ajeya
11.30 to 11.45	Tea Break	
11.45 to 13.15	Interacting Tanks Model: Codesys PLC Hands On	Mr.Ajeya
13.15 to 15.00	Lunch Break	
15.00 to 16.30	Interacting Tank Model: 3D Modeling Hands On	Mr.Ritesh Ms. Monisha
Day 5 - 15 Jan. 2021		
10.00 to 11.30	Interacting Tank Model: 3D Modeling Hands On	Mr.Ritesh
11.30 to 11.45	Tea Break	
11.45 to 13.15	VR Hackathon: Solving a VR problem	Dr. Sunil Shah Mr. Ritesh
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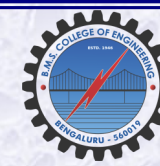
B.M.S. College of Engineering

The B.M.S. College of Engineering (BMSCE) was founded by a great visionary and philanthropist Late Sri. B. M. Sreenivasaiah (BMS) in the year 1946. After demise of the founder, Sri. B. S. Narayan the illustrious son of the Founder took over the reins of the College. Under his able leadership, the college grew from strength to strength. BMSCE is the first engineering college established in the country (pre independent India) by a private enterprise. The college is an aided institution (by Government of Karnataka) and affiliated to Visvesvaraya Technological University (VTU). BMSCE offers 13 UG, 16 PG & 15 Research programmes.

The College became an autonomous institution under VTU in the year 2008-09. In the year 2011, BMSCE was recognized as a QIP Centre in Engineering & Technology by All India Council for Technical Education (AICTE). The College is one among the 14 Engineering Colleges in the State qualified for Phase-2 of the Technical Education Quality Improvement Programme (TEQIP), a world bank sponsored project. BMSCE is the only partner institution from India along with the other universities located in Chile, China, Germany and USA for the Melton Foundation, USA. The college has a strong alumni base. More than 35000 students have left the portals of the Institution. Most of the alumni occupying coveted positions in many educational, industrial and research organizations in India and all over world.

About Electronics & Instrumentation Engg.

The Department of Instrumentation Technology started in the year 1991. Currently the program offers Under Graduate (UG) degree with an intake of 60. The Department Infrastructure fulfills the requirements of academics and learning skills on the latest technology in the industry. Dedicated faculty with Ph.D who are into Research and Development activities at Institution level, Qualified technical staff and enthusiastic and intelligent students are the strength of the department.



AICTE Training And Learning (ATAL)
Academy

sponsored

Faculty Development Program(FDP)

on

Immersive Virtual Reality
(11th - 15th Jan., 2021)

Organized by

Department of
Electronics & Instrumentation
Engg.,

B. M. S. College of
Engineering,
(Autonomous College under VTU)
Bengaluru-19

Coordinator

Dr. Santosh R. Desai

Organizing Member

Prof. Krishnamurthy K. T.

Chief Patrons

Dr. B.S. Ragini Narayan, Donor Trustee

Dr. Dayanand Pai, Chairman, B.M.S.C.E.

Patrons

Dr. B. V. Ravishankar, Principal, B.M.S.C.E.

Dr. S. Muralidhara, Vice- Principal, B.M.S.C.E.

Advisor

Dr. Veena N. Hegde, HOD(EIE), B.M.S.C.E.

Coordinator

Dr. Santosh R. Desai, Dept. of EIE, B.M.S.C.E.

Organizing Member

Prof. Krishnamurthy K. T.

(M:8147287397,

Email - krishnamurthykt.intn@bmsce.ac.in)

Who can attend :

The faculty members of the AICTE approved institutions, research scholars, PG Scholars, participants from Government, Industry (Bureaucrats/Technicians/ Participants from Industry etc.) and staff of host institutions. Participants will be selected on first come first serve basis.

Contact Details:

Dr. Santosh R. Desai,

Professor, Dept. of EIE, B.M.S.C.E.

M: 8618242724, 9620566085,

Email - santoshdesai.intn@bmsce.ac.in

About the workshop topic

The Teaching Learning Process (TLP) can be made more interesting, effective with the use of Information and Communication Technology (ICT) in education. Automation in Process Control is one such field where, physical distances from various industries and the lack of resources (costly and sophisticated equipment) will limit the student's ability to have a feel and be aware of the situations arising in Process Automation. Generally, the educational institutions find themselves difficult to keep pace with the technology enabled changes in industries. In order to provide good learning experience, improve the delivery of knowledge to the students and enable the students to understand better, a workshop is being proposed here in this communication.

Basically, this FDP caters to the better understanding of topics related to Process, Control and Automation. These multidisciplinary courses are being dealt in the Department of Electronics, Instrumentation, Mechanical, Chemical, Electrical etc. The proposal comprises of a batch reactor module with associated components such as controllers, HMI, Programming Logic Controllers, valves, tanks etc. This can be achieved by enabling the setup with ethernet facility. This FDP will enable the participants to model the physical phenomenon by a set of equations and

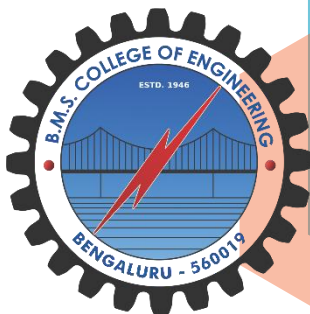
carrying out simulations to yield the result of the particular experiment. The result of the experiment will provide an approximate version of the 'real-physical' experiment. Thus, the virtual environment will bring in a feeling as that of the real time scenario. Use of AR/VR will further enhance the live experience.

Resource persons :

- Dr. Sunil Shah,
Modelicon Infotech LLP, Bengaluru.
- Mr. Ajaya,
Modelicon Infotech LLP, Bengaluru.
- Mr. Ritesh,
Modelicon Infotech LLP, Bengaluru.
- Ms. Monisha,
Modelicon Infotech LLP, Bengaluru.
- Mr. Udaya Kumar,
Teacher, Art Of Living
- Dr. Santosh R. Desai,
Prof., Dept. of EIE, B.M.S.C.E.

For registration and more details scan QR code





Report

Immersive Virtual Reality

11-15 Jan., 2021

Organized by

Department of Electronics & Instrumentation Engg.,

B. M. S. College of Engineering, Bengaluru-19

Dr. Santosh R. Desai
Coordinator,
Professor, Dept. of EIE

Mr. Krishnamurthy K. T.
Organizing Member,
Asst. Prof. Dept. of EIE

Dr. Veena N. Hegde
Professor & Head
Dept. of EIE

Brief Summary:

Day 1 : 11 Jan., 2021 (Monday)

This FDP kickstarted with Inaugural session at 9.30am. Dr. Sunil Shah, Founder, Partner, Modelicon InfoTech was the Chief Guest while Dr. S. Muralidhara, Vice-Principal, B.M.S.C.E. presided over the function. The participants were taken through the role of AR/VR in process industry, its associated architecture apart from introduction to Unity 3D software.

Day 2 : 12 Jan., 2021 (Tuesday)

BMSCE is a part of FOSSEE team at IITBombay. FOSSEE works on the promotion and development of Free and Open Source Software in education and is funded by MHRD, Government of India. The participants were introduced to Modelica a free open source software and CODESYS on the second day.

Day 3 : 13 Jan., 2021 (Wednesday)

The participant was made aware of the facility available in the dept on the third day which is being funded by Vision Group of Science and Technology, Govt of Karnataka. A Meditation session was also organized as per the guidelines of ATAL academy. A teacher from Art of Living founded by Sri Sri Ravishankar shared the required information.

Day 4 : 14 Jan., 2021 (Thursday)

Participants were taken over through the hands on sessions extensively on the fourth day of this FDP. Interacting tank model was the example considered for discussion during this day using CODESYS and Modelica.

Day 5 : 15 Jan., 2021 (Friday)

A hackathon was conducted on the last day. The problem statement to create an interesting 3D animation scene using Unity 3D was communicated to the participants two days in advance. Amazon Vouchers were distributed to the winners of first and second prize. As per the norms of ATAL academy an evaluation test was also conducted followed by the valedictory function.

Mr. Ramachandra Kerur, Managing Director, Sunlux Technovations Private Limited was the Guest of Honour, Dr. Sunil Shah, Founder, Partner, Modelicon InfoTech was the Chief Guest while Dr. Samita Maitra, Dean Academics, B.M.S.C.E. presided over the function.

About workshop

...

The Teaching Learning Process (TLP) can be made more interesting, effective with the use of Information and Communication Technology (ICT) in education. Automation in Process Control is one such field where, physical distances from various industries and the lack of resources (costly and sophisticated equipment) will limit the student's ability to have a feel and be aware of the situations arising in Process Automation. Generally, the educational institutions find themselves difficult to keep pace with the technology enabled changes in industries. In order to provide good learning experience, improve the delivery of knowledge to the students and enable the students to understand better, a work-shop is being proposed here in this communication.

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About workshop contd...

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Resource Persons:

Dr. Sunil S. Shah

Founder, Partner, Modelicon InfoTech with 30+ years of experience in modeling, simulation, control, optimization and developing training simulators etc. Chemical engineer with specialization in control and optimization



Mr. Ritesh K. Sharma

System Engineer at Modelicon Infotech LLP. Experienced in industrial communication, embedded systems and Virtual Reality



Mr. Ajeya B.

System Engineer at Modelicon Infotech LLP. Experienced in industrial communication, embedded systems and VR



Mr. Udaya Kumar

Art of living YLTP teacher (youth leadership training program) and state council member(SCM). Serving as Jalachethana (River Rejuvenation) district coordinator for Dakshin Kannada(Karnataka)



Ms. Monisha R.

Deals with full stack and front end dev and currently interning at Modelicon Infotech.



Dr. Santosh R. Desai

Awarded with Ph.D degree by Indian Institute of Technology Roorkee in the year 2014. He has ongoing/completed project grants worth 55 Lakhs and currently Professor at B.M.S. College of Engg., Bengaluru



Acknowledgements:

We would like to express our deep sense of gratitude to AICTE Training and Learning (ATAL) Academy for sponsoring, providing the opportunity and entrusting us to conduct this FDP.

We would like to thank and appreciate the efforts, support received from all the team members, ATAL Academy.

We are indebted to our beloved Dr. B. V. Ravishankar, Principal, Dr. S. Muralidhara, Vice Principal for their guidance, valuable suggestions and motivation.

We are grateful to Dean-(Academics) whose kind nature, has always inspired us to conduct such events.

We would like to thank all the Resource persons, Participants, and each one of our faculty/staff at B.M.S. College of Engineering for their encouragement and constant support.



List of approved participants

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Immersive Virtual Reality



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81	Mrs. Archana P	talakad29@gmail.com	Assistant Professor	Adichunchanagiri Institute Of Technology
82	Mr. Tushar Kute	tushar.kute@gmail.com	Data Scientist	Mitu Skillologies
83	Miss Srilatha Reddy	v.sreelatha@cvr.ac.in	Assistant Professor	CVRCE

84	Dr. Veena M.B	veenamb.ece@bmsce.ac.in	Associate Professor	B.M.S. College Of Engineering
85	Mr. Venkata Krishna Odugu	venkatakrishna.odugu@gmail.com	Associate Professor	CVR College Of Engineering
86	Mr. Venkateswarlu Gummadilli	venkigummadilli@gmail.com	Assistant Professor	CVR College Of Engineering
87	Mrs. Vinutha Srikanth	vinutha.srikanth@gmail.com	Associate Professor	K S School Of Engineering And Management
88	Dr. Vishalakshi Prabhu H	vishalaprabhu@rvce.edu.in	Assistant Professor	R V College Of Engineering
89	Mr. Karthikeyan V	vkinfo19@gmail.com	Assistant Professor	Vel Tech Rangarajan Dr. Sagunthala R&D Institute Of Science And Technology
90	Mr. Vishal Sharad Hingmire	vs.hingmire@gmail.com	Assistant Professor	Arvind Gavali College Of Engineering
91	Mr. Bhosale Yogesh Harishchandra	yogeshbhosale988@gmail.com	Assistant Professor	CSMSS Chh. Shahu College Of Engineering

Winners of the Hackathon:

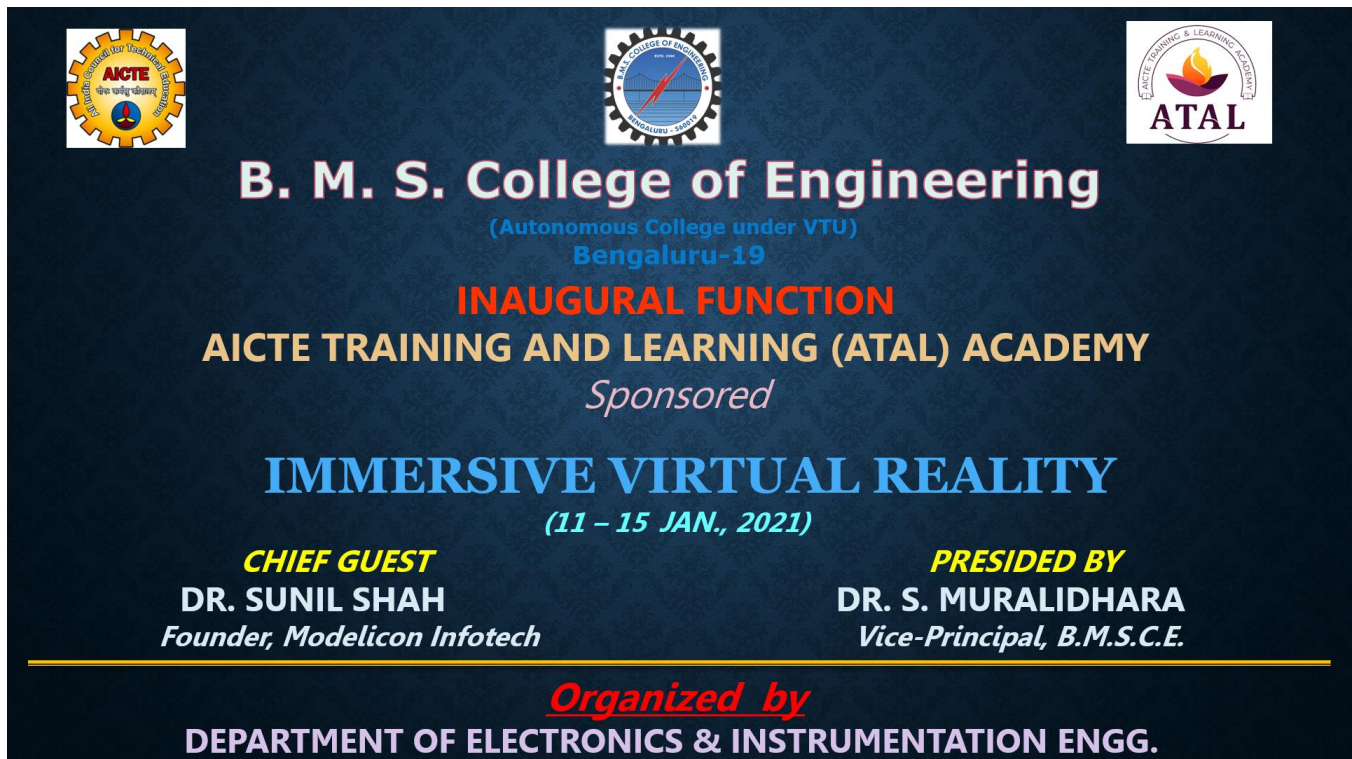
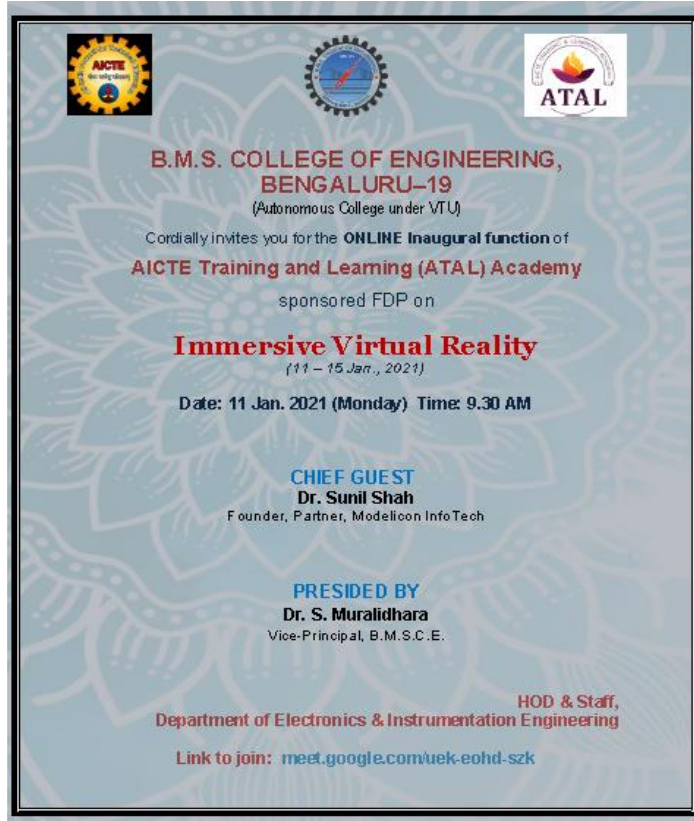
1. First Prize (Amazon Gift voucher of INR 1000/-)

Mr. Jabinth J
 Assistant Professor
 RAMCO INSTITUTE OF TECHNOLOGY
 Rajapalayam Virudhunagar 626117 TAMIL NADU
 jabinth@ritrjpm.ac.in
 8807576597

2. Second Prize (Amazon Gift voucher of INR 500/-)

Miss pranali kishor pawar
 Assistant Professor
 MScIT, V.G Vaze College (w)
 3/1854 sambhaji nagar, Thane -400607 MAHARASHTRA
 pranali.pawar92@gmail.com
 9819776508

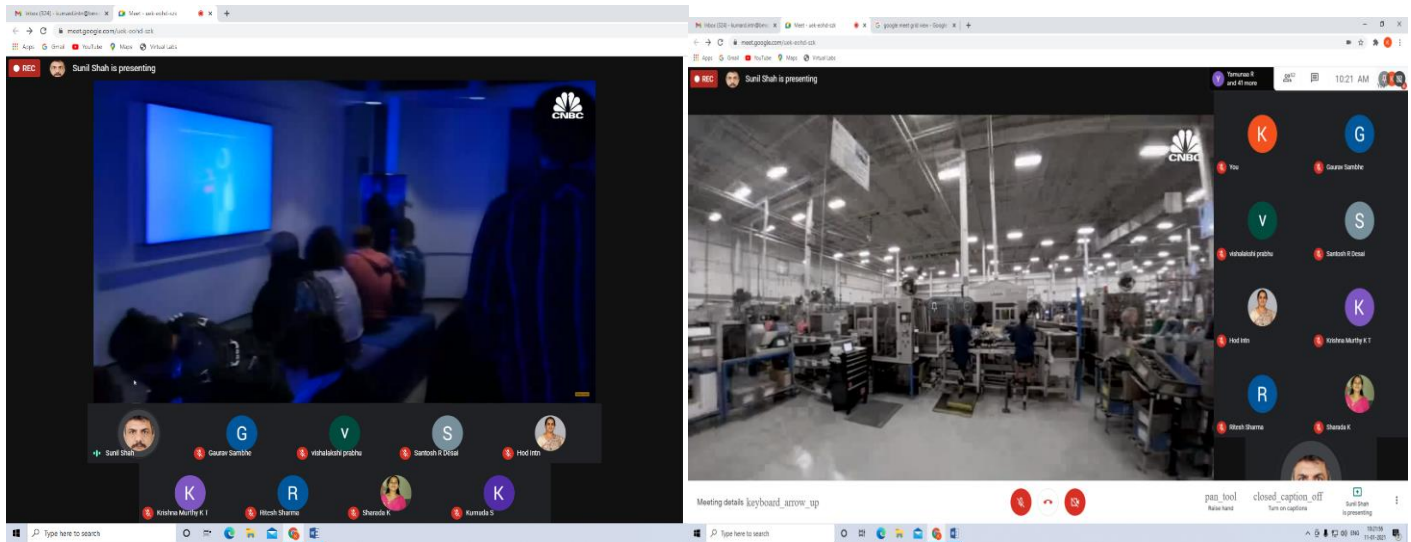
Screenshots:



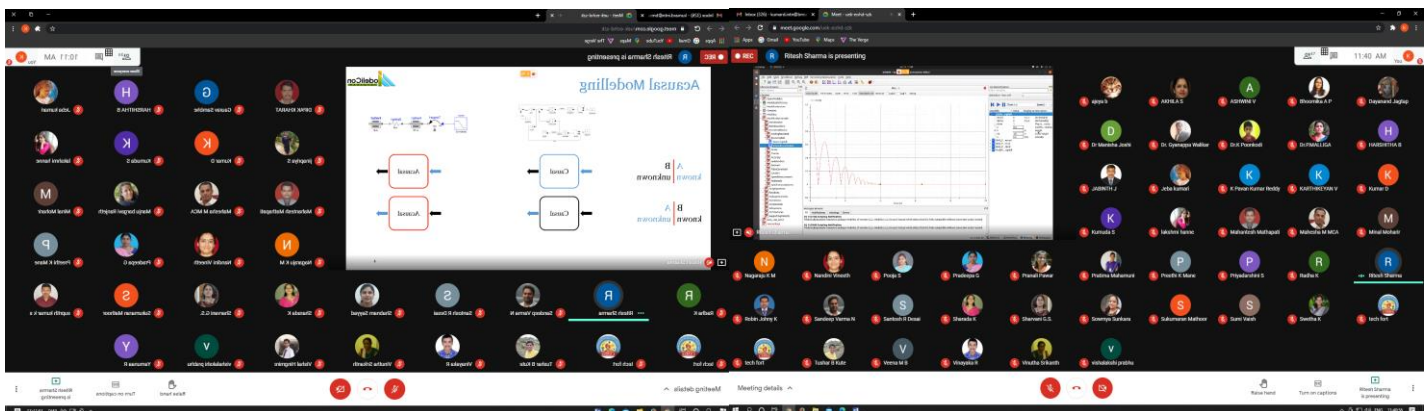
Immersive Virtual Reality



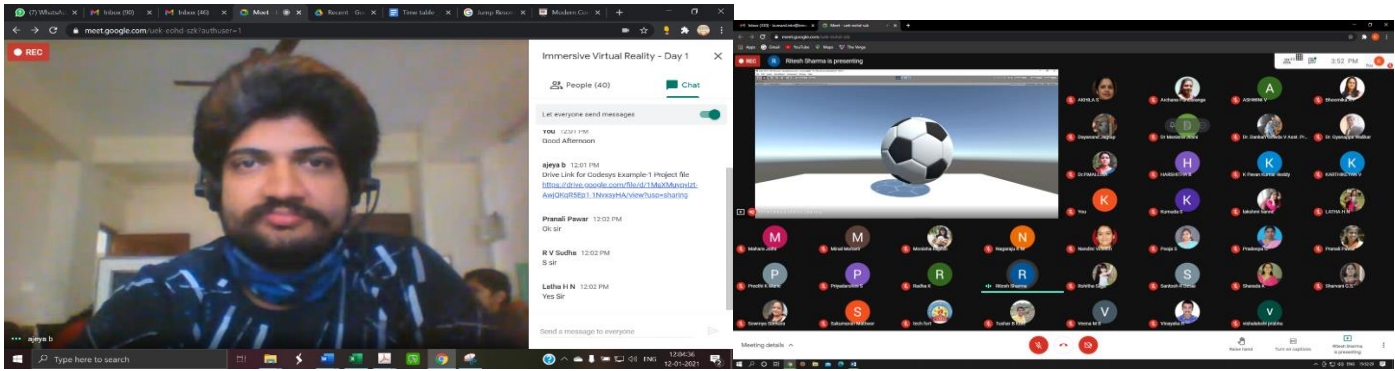
Sessions on Day 1:



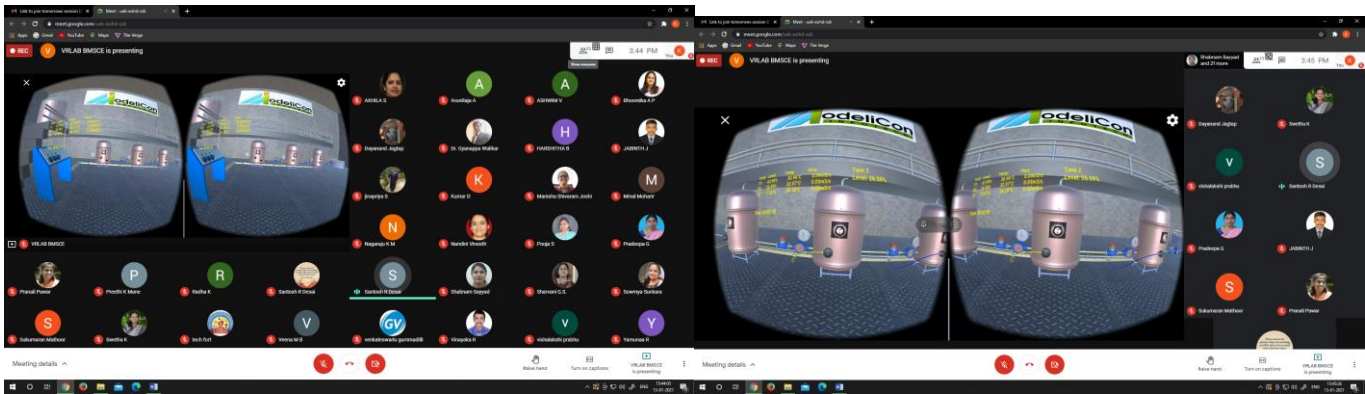
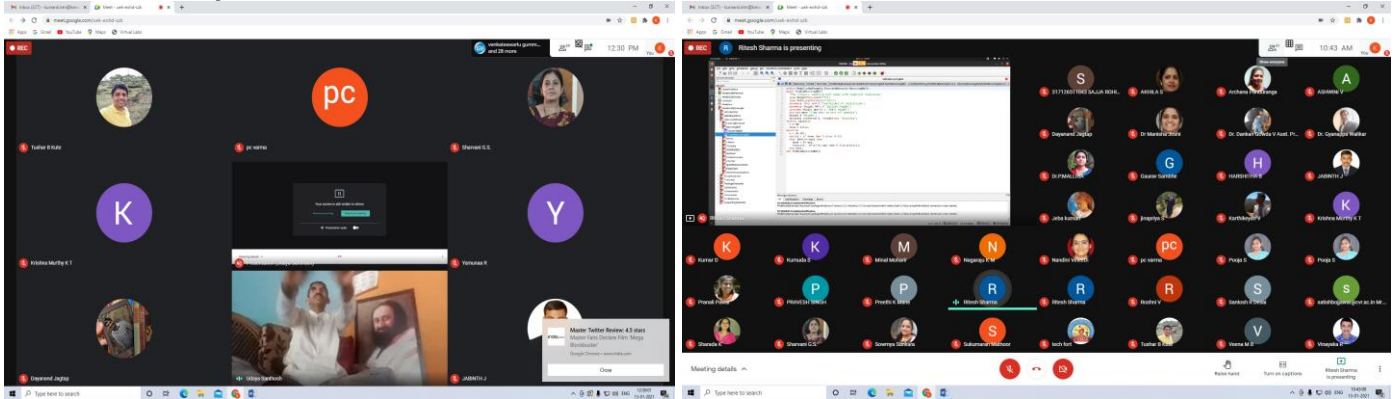
Sessions on Day 2:



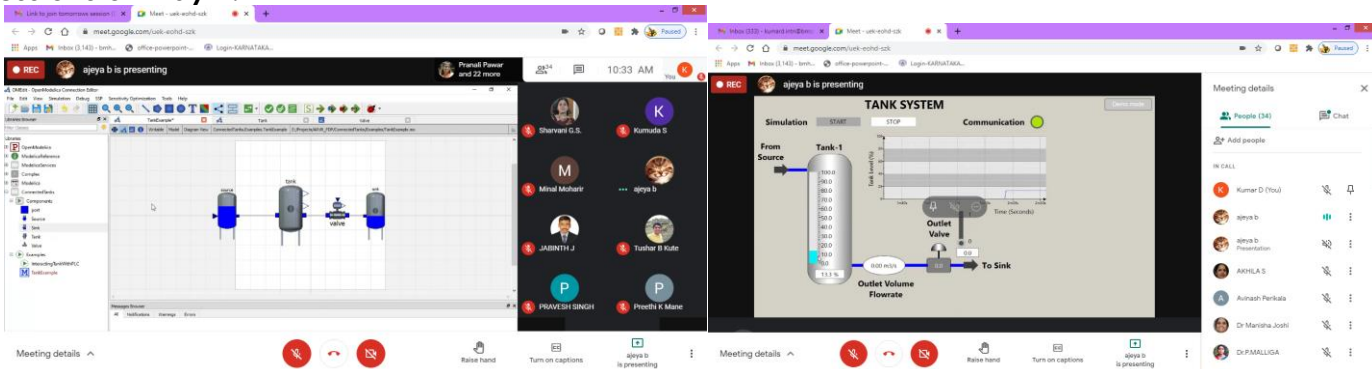
Immersive Virtual Reality



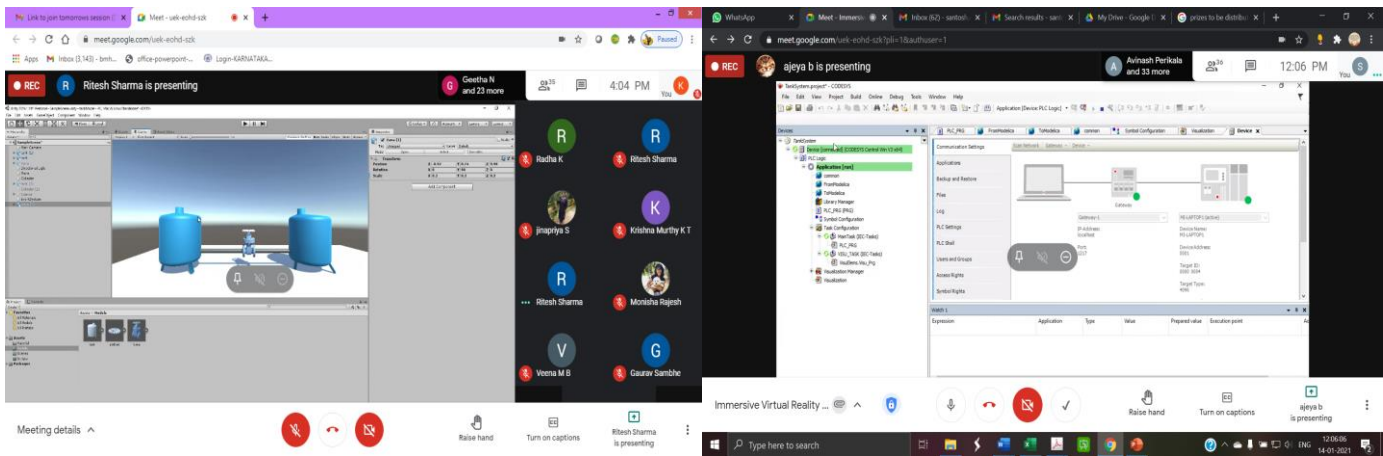
Sessions on Day 3:



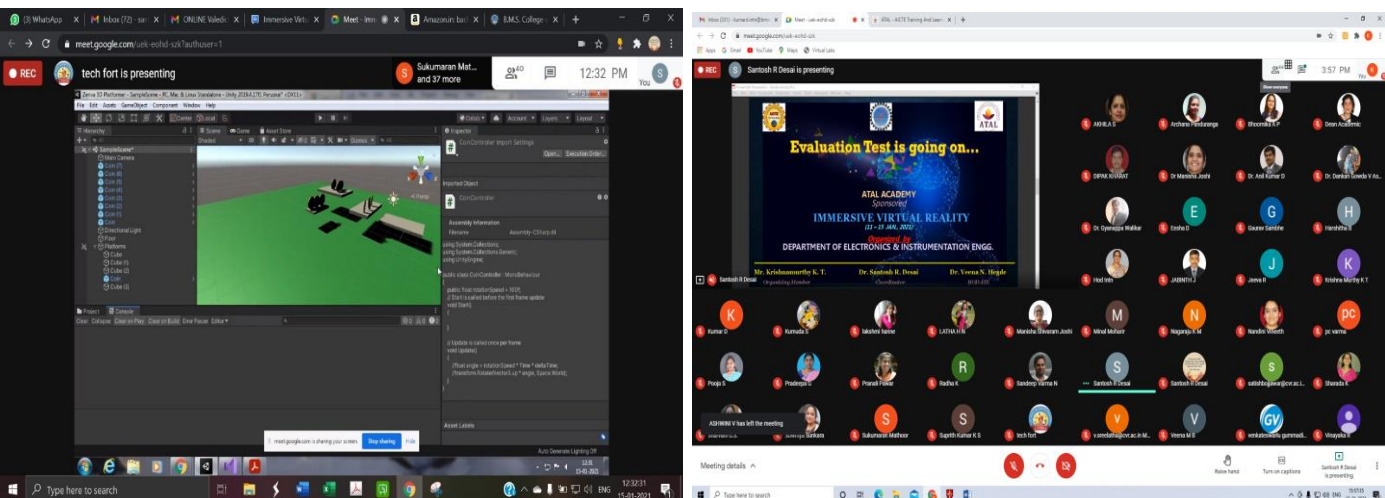
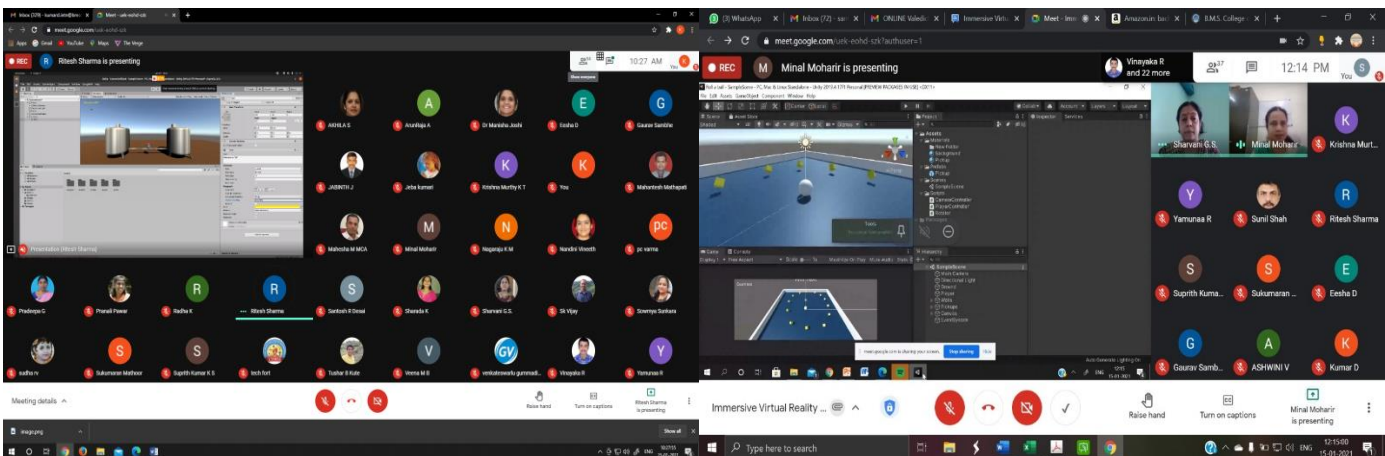
Sessions on Day 4:



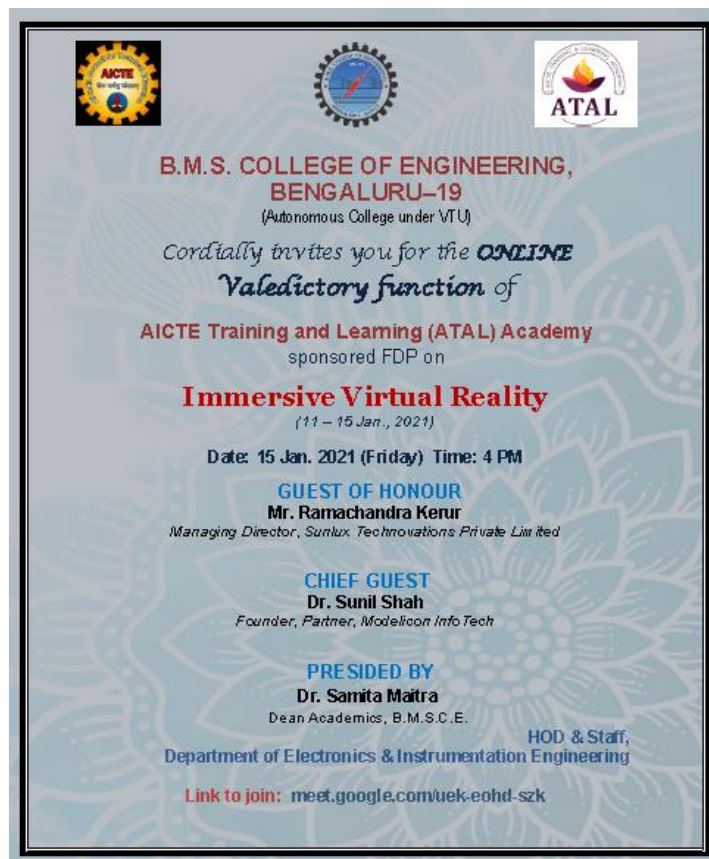
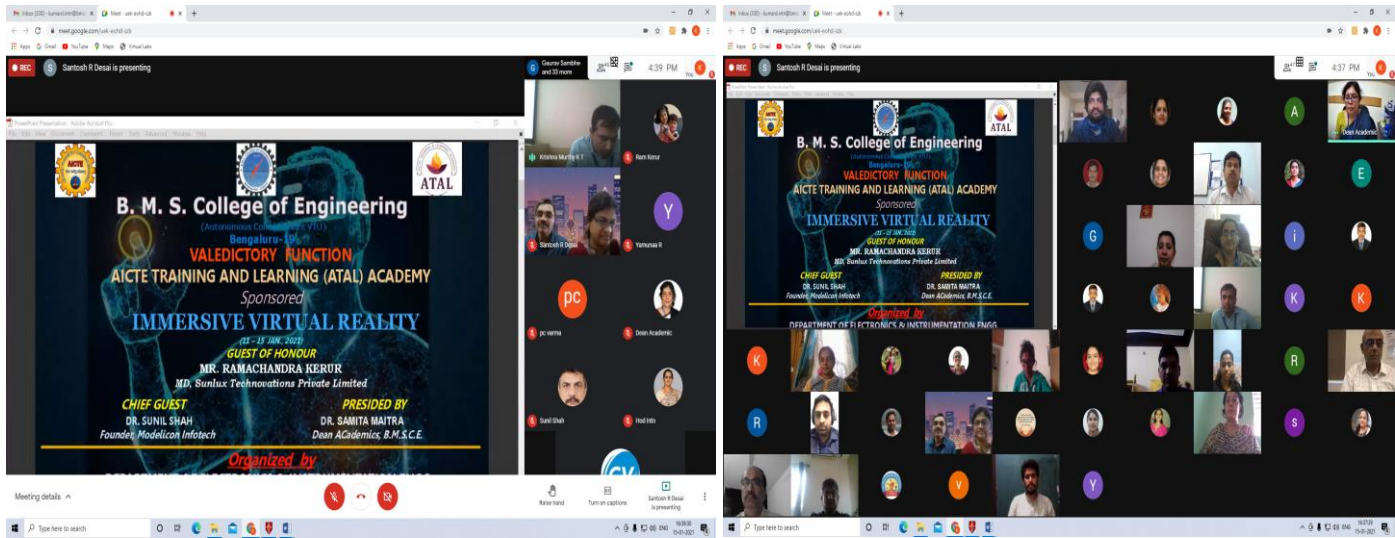
Immersive Virtual Reality



Sessions on Day 5:



Immersive Virtual Reality





B. M. S. College of Engineering
(Autonomous College under VTU)
Bengaluru-19

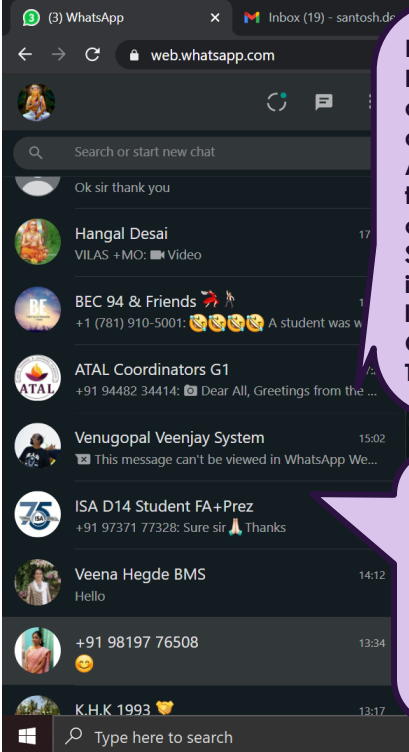
VALEDICTORY FUNCTION
AICTE TRAINING AND LEARNING (ATAL) ACADEMY
Sponsored
IMMERSIVE VIRTUAL REALITY
(11 – 15 JAN., 2021)
GUEST OF HONOUR
MR. RAMACHANDRA KERUR
MD, Sunlux Technovations Private Limited

CHIEF GUEST
DR. SUNIL SHAH
Founder, Modelicon Infotech

PRESIDED BY
DR. SAMITA MAITRA
Dean ACademics, B.M.S.C.E.

Organized by
DEPARTMENT OF ELECTRONICS & INSTRUMENTATION ENGG.

Feedbacks:



WhatsApp chat interface showing a list of contacts on the left and a chat window on the right.

Hello myself Pranali Kishor Pawar From Maharashtra
Introducing new technology to the people in such nice way is really appreciable. The workshop was really very nice, got new things in hand and also got new way of thinking.
About speakers they are really knowledgeable they have solved all doubts, at the moment. They helped in each possible way. They highlight point which I observed in workshop was the meditation for faculties. Next the College and Santosh sir also have done really appreciable job, they forwarded each information in time also active for problem the person facing while joining the lectures.
Overall workshop given nice fruit on hand .
Thank you

Feedback
1. Codesys was interesting..
2. Trainers were a bit fast....or we must have had the prerequisites before hand.
3. Event organisation and management was good
Entire programme was smooth without much network issuesThank you
- Vinutha Srikanth





One week Online FDP
on
**"Blockchain & Decentralized Application
Development (Hands-on)"**

From 27th January to 2nd February 2021

Organized By,

**Department of Computer Science & Engineering
&
Department of Information Science & Engineering**

B.M.S. College of Engineering, Bull Temple Road, Basavanagudi, Bangalore-19

REPORT

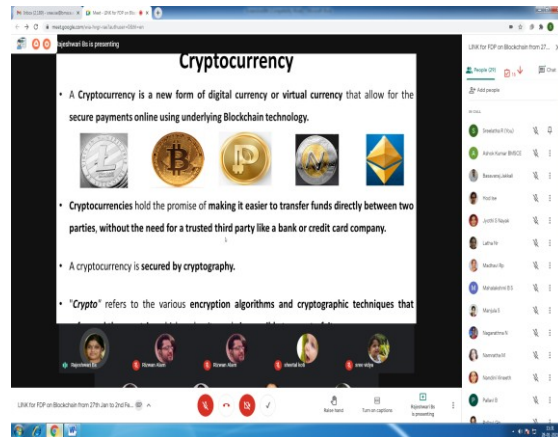
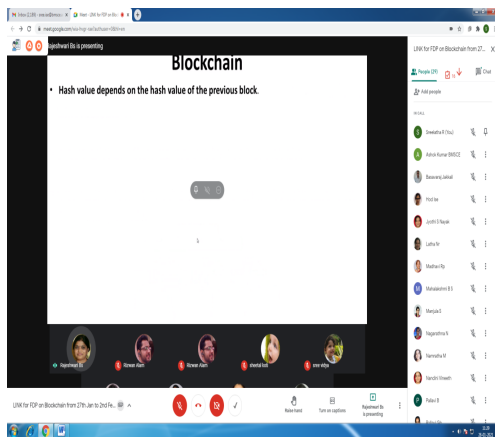
A Six days Faculty development programme (FDP-2021) was successfully conducted on **"Blockchain & Decentralized Application Development (Hands-on)"** by the Department of Computer Science & Engineering & Department of Information Science & Engineering, B.M.S. College of Engineering, Bangalore, from **27th January to 2nd February 2021**. The FDP programme received an overwhelming response with 32 participants from various states such as Bangalore, Chennai, Andhra Pradesh, Tamil Nadu etc. The speakers were from Industry & Academia.

Date: 27th January 2021 (First Day) Inaugural Session

The programme was inaugurated in the morning by a welcome speech, by Dr. Umadevi HOD, CSE and Dr. M Dakshayani HOD, ISE. Later they shared their views with the faculty participants that if faculty wants to develop themselves and their students, then attending such faculty development programmes would enhance their skills of teaching concepts practically. Further they shared that it helps to improve the performance of faculty in teaching and highlighted the importance and objectives of organizing faculty development programmes. They briefed the participants about the subjects chosen for the FDP and highlighted the reasons and importance of the same. The inauguration programme ended with vote of thanks by Prof. Saritha A. N.

On the second day, the session was started by the resource person **Dr. M Dakshayini**, Professor, HOD ISE. She started the Session on Bank Frauds, Bankers Third Party to make all transactions, Cryptographically linked using Hash values for Block Chain, Symmetric/shared Key Cryptography, Asymmetric/Public Key Cryptography, Walmart with Block Chain etc., The session went on well with good examples. It was a very informative session to all the participants.

[illegible]



Date: 29th January 2021 (Third Day)

On the Third day, the session was started by the, resource person **Mr Lohith J J**, Assistant Professor, Dept of CSE. He started the session by enquiring the participants regarding the concepts of Blockchain were the concepts were very clear was there any need to take more sessions on block chain. Once the concepts were clear he moved on to the next topic Introduction to Ethereum Contracts. He spoke about the block chain of Ethereum, Wallets, Transactions, Code execution, Gas, Smart Contract. Later he started the session on hands on remix.ethereum.org. Programs were executed using Java Virtual, Deploy and Run transactions. Later he showed the installation of local Blockchain Ganache. It was a very informative session which helped the participants to learn a lot.

Blockchain 2.0 Ethereum blockchain

- Ethereum Blockchain is the most popular Blockchain for developing smart contracts.
- Ethereum is a public or private Blockchain with a built-in Turing-complete language to allow writing any smart contract.
- The Ethereum Virtual Machine (EVM), which can execute scripts using an international network of public nodes.
- Ether is a cryptocurrency in Ethereum network.

Blockchain Demo

Block

Block: # 1

Nounce: 10

Data: Hi

Hash: 8c25724fe933e2b70e6df62d6c3816b96ca1a094de9f4d4f63639fc1

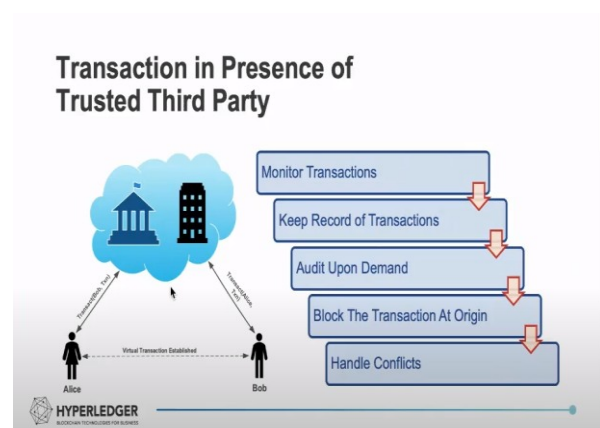
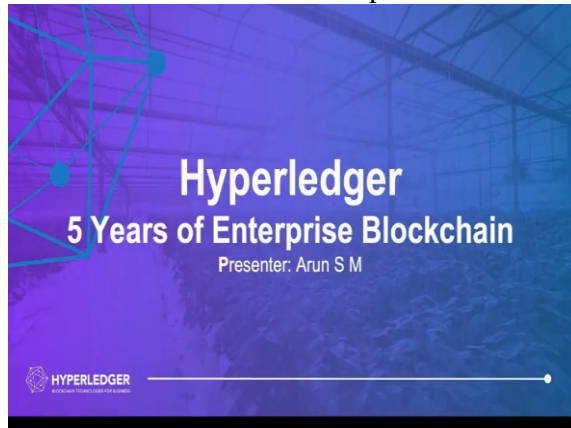
More

Gas

- Halting problem (infinite loop) – reason for Gas
 - Problem: Cannot tell whether or not a program will run infinitely from compiled code
 - Solution: charge fee per computational step to limit infinite loops and stop flawed code from executing
- Every transaction needs to specify an estimate of the amount of gas it will spend
- Essentially a measure of how much one is willing to spend on a transaction, even if buggy

Date: 30th January 2021 (Fourth Day)

On the Third day, the session was started by the, resource person **Mr. Arun S M, Senior Software Engineer -WalMart**. He started a session on Hyper Ledger. He gave an introduction about Hyperledger he spoke about Transaction in presence of Trusted Third party, Distributed and Decentralized Approach to the trust, Hyper ledger Green House, Digital Identity: one Kyc. Hands-on was done on this topic. His session was informative.

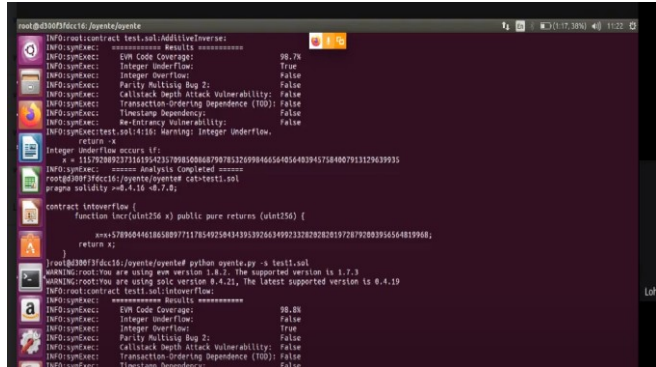
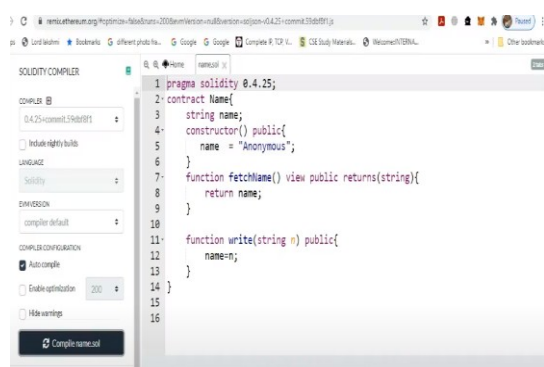


```
SECURITY.md
asset-transfer-abac
asset-transfer-basic
asset-transfer-events
asset-transfer-ledger-queries
asset-transfer-private-data
asset-transfer-sbe
asset-transfer-secured-agreement
auction
bin
chaincode
ci
commercial-paper
config
fabcar
high-throughput
interest_rate_swaps
off_chain_data
```

```
bm0yypxm-c02yd9mijgsh test-network % ./network.sh up
Starting nodes with CLI timeout of '5' tries and CLI delay of '3' seconds and
using database 'leveldb' with crypto from 'cryptogen'
LOCAL_VERSION=2.2.2
DOCKER_IMAGE_VERSION=2.2.2
/Users/a0m09px/Documents/Projects/fabric-samples/test-network/.../bin/cryptogen
Generating certificates using cryptogen tool
Creating Org1 Identities
+ cryptogen generate --config=./organizations/cryptogen/crypto-config-org1.yaml
+ res=0
Creating Org2 Identities
+ cryptogen generate --config=./organizations/cryptogen/crypto-config-org2.yaml
+ res=0
Creating Orderer Org Identities
```

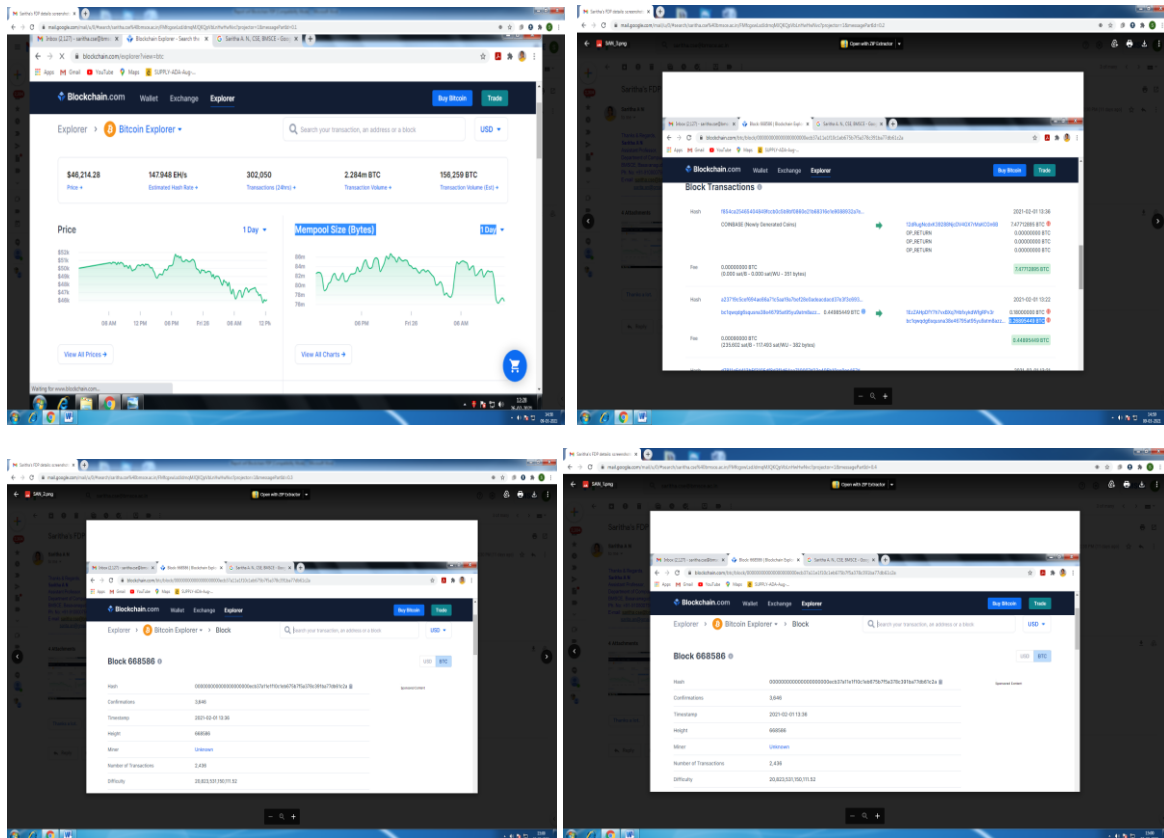
Date: 1st February 2021 (Fifth Day)

On the Fifth day, the session was started by the, resource person **Mr Lohith J J**, Assistant Professor, Dept of CSE. He had already taken one session on 29th January on Smart Contract. Today session he covered on Vulnerabilities in Ethereum Smart Contracts (Hands-on-Session). He installed on Ubuntu and showed the working of the program. It was a very good informative session.



Date: 2nd February 2021 (Six Day)

On the Fifth day, the hands-on session was started by the resource person **Prof. Saritha A. N**, Assistant Professor, Dept. of CSE. She spoke on Blockchain Explorer, which was a live blockchain data. Bitcoin explorer was explained in the Blockchain explorer. She covered cryptocurrency blockchain explorer service, and how to see the price, memory pool, blocks, its transactions.

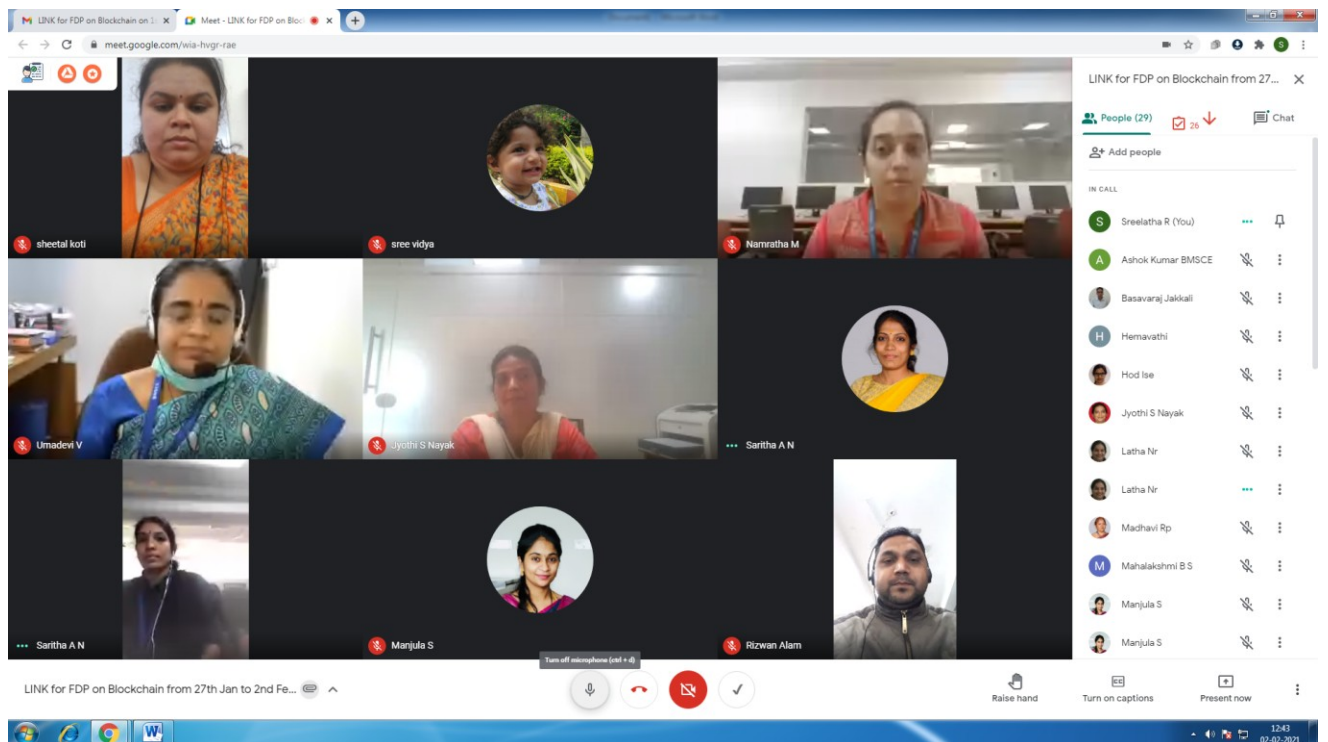
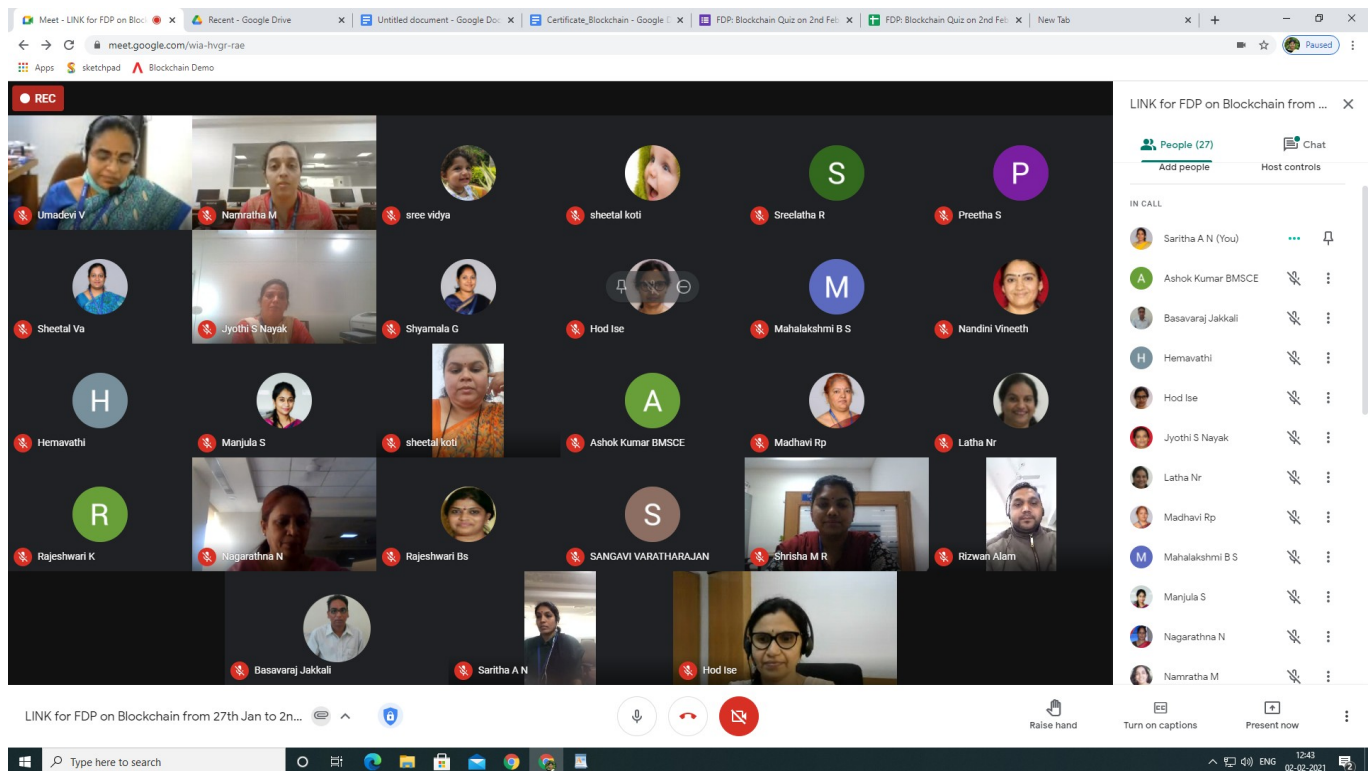


Later on the session was carried out by the resource person **Prof. Namratha M**, Assistant Professor; Dept. of CSE. She covered the sessions on the concepts related to Mining in Block chain, various reward functions in Block chain was covered. Also how different reward systems can be used in real time was demonstrated. Block chain live analysis of the mining data was demonstrated and how the transactions are validated on the block and added was shown. It was an hands on session.

Schedule of the FDP:

Date	Ses sio n	Timings	Topics Covered	Resource Person
27 th Jan 2021 Wednesday	1	10:00 AM to 10:30 PM	Key note speaker	Dr. Kunwar Singh, Assistant Professor, Dept of CSE, NIT Trichy
		10:30 AM to 1:00 PM	Cryptographic primitives of Block Chain	
28 th Jan 2021 Thursday	1	10:00 AM to 11:30 AM	Introduction to Bitcoin and Block Chain	Dr. M. Dakshayini Professor & Head, Dept of ISE, BMSCE
	2	11:30 AM to 1:00 PM	Introduction to Bitcoin and Block Chain contd...	Dr. Rajeshwari B. S, Assistant Professor, Dept of CSE, BMSCE
29 th Jan 2021 Friday	1	10:00 AM to 11:30 AM	Introduction to Ethereum and Smart Contract	Prof. Lohith J J, Assistant Professor, Dept of CSE, BMSCE
	2	11:30 AM to 1:00 PM	Introduction to Ethereum and Smart Contract-(Hands-on- Session)	
30 th Jan 2021 Saturday	1	10:00 AM to 11:30 AM	Hyperledger	Mr. Arun S. M Senior Software Engineer Walmart Global Tech
	2	11:30 AM to 1:00 PM	Hyperledger (Hands-on)	Mr. Arun S. M Senior Software Engineer Walmart Global Tech
1 st Feb 2021 Monday	1	10:00 AM to 11:30 AM	Vulnerabilities in Ethereum Smart Contracts	Prof. Lohith J J, Assistant Professor, Dept of CSE, BMSCE
	2	11:30 AM to 1:00 PM	Vulnerabilities in Ethereum Smart Contracts (Hands-on- Session)	Prof. Lohith J J, Assistant Professor, Dept of CSE, BMSCE
2 nd Feb 2021 Tuesday	1	10:00 AM to 11:30 AM	Mining in Block Chain and Reward Systems	Prof. Saritha A. N., Assistant Professor, Dept of CSE, BMSCE
	2	11:30 AM to 1:00 PM	Mining in Block Chain and Reward Systems (Hands-on)	Prof. Namratha M, Assistant Professor, Dept of CSE, BMSCE

Pictures of the sessions and Group:



The screenshot shows a Google Meet window with a presentation slide titled "LINK for FDP on Blockchain from 27th Jan to 2nd Fe...". The slide content is as follows:

```

graph TD
    A[My Name is daksalayini] --> B[Hash function (SHA 256)]
    B --> C[BA7BD73C8D5A888401DA5111923E6D38DC958B18D4CC7194442B245B7418D5DA...]
  
```

The bottom of the screen shows a grid of participants: Hod Ise, Rizwan Alam, sree vidya, Latha Nr, and Manjula S. The right sidebar lists 23 people in the call, including Sreelatha R (You), Ashok Kumar BMSCE, Basavaraj Jakkali, Hemavathi, Hod Ise, Jyothi S Nayak, Latha Nr, Madhavi Rp, Mahalakshmi B S, Manjula S, Nandini Vineeth, and Pallavi Gb.

The screenshot shows a Google Meet window with a grid of participants. The participants are arranged in a 3x3 grid, with the bottom-right cell empty. The participants are: Shristha M K, sree vidya, Namratha M, sheetal koti, Jyothi S Nayak, Saritha A N, Hod Ise, Manjula S, and Latha Nr. The right sidebar lists 27 people in the call, including Sreelatha R (You), Ashok Kumar BMSCE, Basavaraj Jakkali, Hemavathi, Hod Ise, Jyothi S Nayak, Latha Nr, Madhavi Rp, Mahalakshmi B S, Manjula S, Nandini Vineeth, and Pallavi Gb.

Meet - LINK for FDP on Blockchain from 27th Jan to 2nd Feb 2021 - Google Chrome

meet.google.com/via-hvgr-rae?authuser=0

Kunwar Singh is presenting

10 minute - 1 block - 25 B.
Q reward money
25-bitcoin

THANK YOU

meet.google.com is sharing your screen. Stop sharing Hide

People (27)

- Mahalakshmi B S
- Nagarathna N
- Namratha M
- Nandini Vineeth
- Preetha S
- Rajeshwari B S
- Rajeshwari K
- Rizwan Alam
- Rizwan Alam
- SANGAVI VARATHARAJ...
- sheetal koti
- Sheetal Va
- Shyamala G
- Sowmya T
- Sowmya V
- sree vidya

LINK for FDP on Blockchain from 27th Jan to 2nd Feb 2021

12:10 27-01-2021

Inbox (2,188) - sree.ise@bmsce... Meet - LINK for FDP on Blockchain from 27th Jan to 2nd Feb 2021 - Google Chrome

meet.google.com/via-hvgr-rae?authuser=0&hl=en

Hod Ise is presenting

Cryptographically linked using hash values

Arbitrary Length Input

Hash function

Output Fixed Length

People (22)

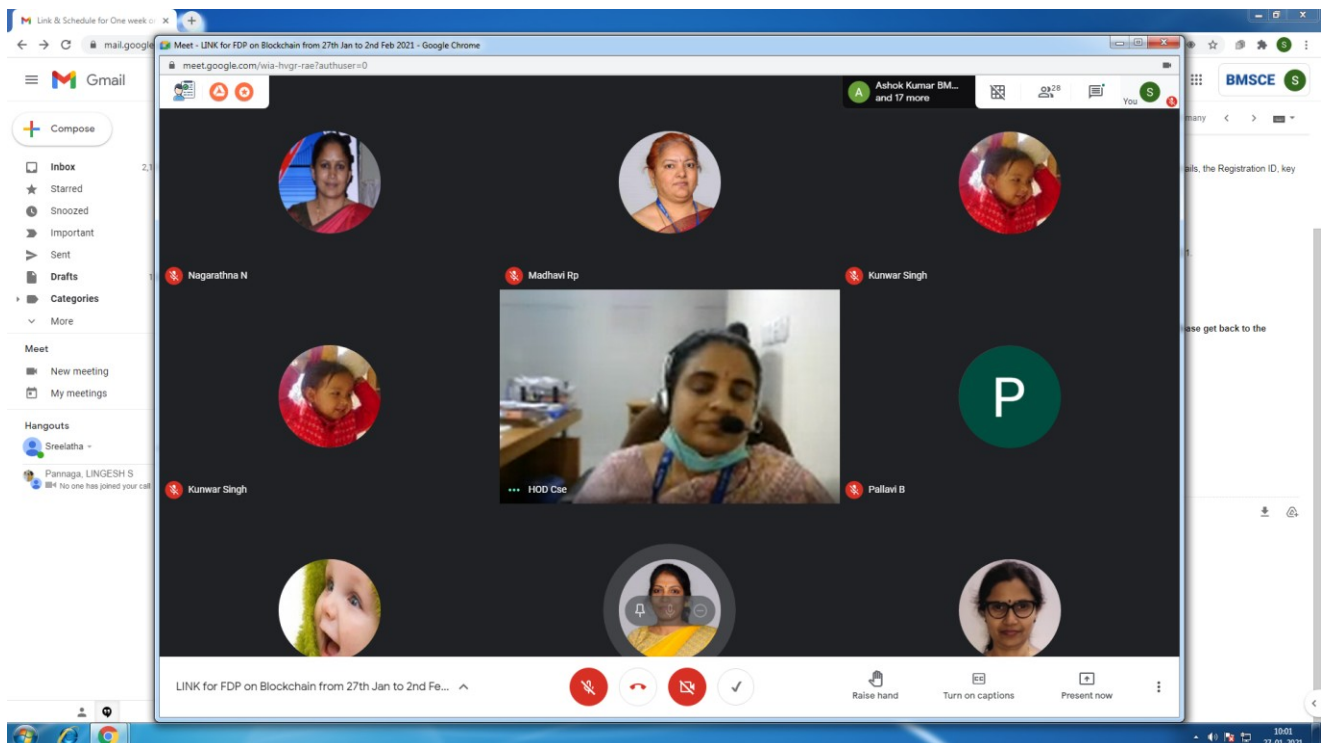
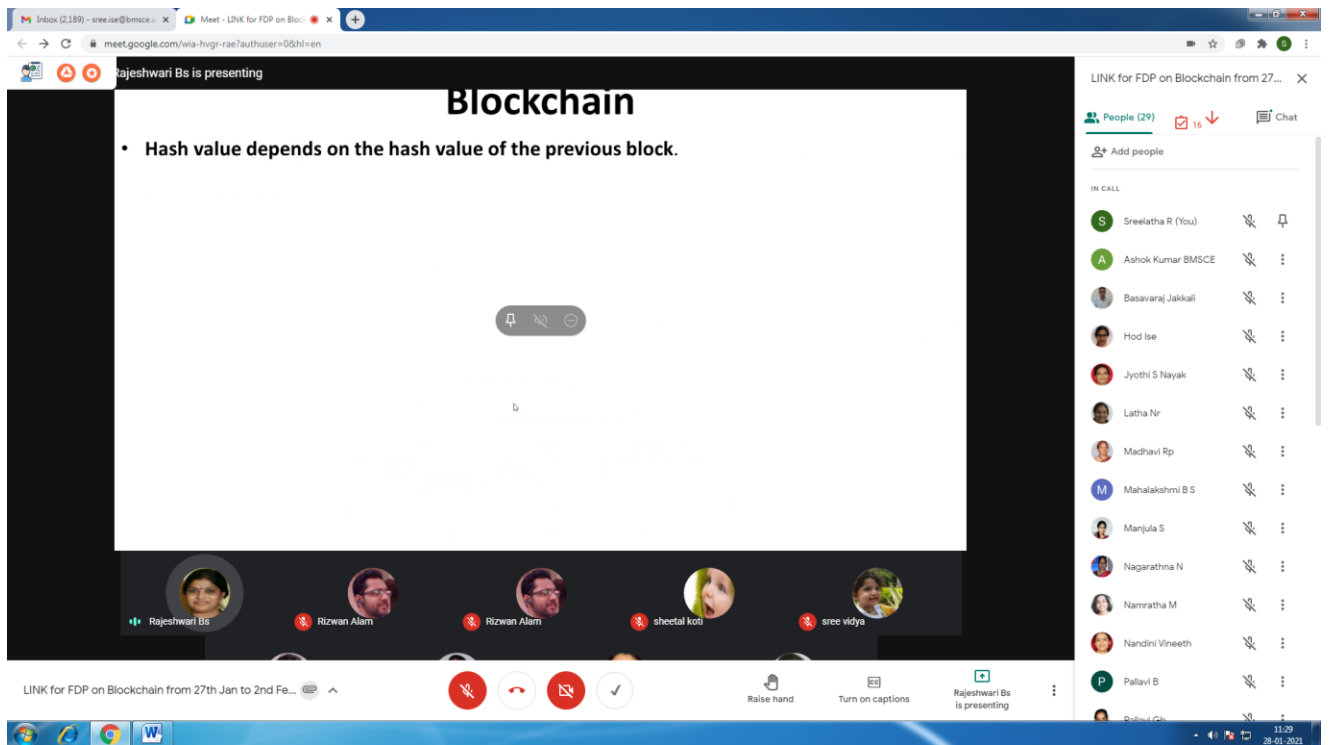
Add people

IN CALL

- Sneelatha R (You)
- Ashok Kumar BMSCE
- Basavaraj Jakkali
- Hemavathi
- Hod Ise
- Hod Ise Presentation
- Jyothi S Nayak
- Latha Nr
- Madhav Rp
- Mahalakshmi B S
- Manjula S
- Nandini Vineeth
- Pallavi Gb
- Preetha S

LINK for FDP on Blockchain from 27th Jan to 2nd Feb 2021

12:39 28-01-2021



meet.google.com/via-hvgr-rae?authuser=0&hl=en

Rajeshwari Bs is presenting

Cryptocurrency

- A **Cryptocurrency** is a new form of digital currency or virtual currency that allow for the secure payments online using underlying **Blockchain** technology.



- Cryptocurrencies** hold the promise of making it easier to transfer funds directly between two parties, without the need for a trusted third party like a bank or credit card company.
- A cryptocurrency is **secured by cryptography**.
- "**Crypto**" refers to the various **encryption algorithms** and **cryptographic techniques** that

LINK for FDP on Blockchain from 27th Jan to 2nd Fe...

sheetal koti

Rajeshwari Bs is presenting

11:31 28-01-2021

meet.google.com/via-hvgr-rae?authuser=0&hl=en

Rajeshwari Bs is presenting

Bitcoin Transaction on Blockchain



Phil Jack

PHIL -> BTC JACK

A new transaction is entered

sheetal koti and 17 more

11:38 AM

Rajeshwari Bs is presenting

11:38 28-01-2021

The link for all recorded sessions:

<https://drive.google.com/drive/folders/1ibTyrnq1-3r6qkCc59mF-SLIHOSfU1Gk>

The link for Quiz & Feedback:

https://docs.google.com/forms/d/1J_NWSgSmz-cKiY7Z4qkfHURNZaQC_hwIkXTIMxjTV1s/edit#responses

The link for FEE paid:

https://drive.google.com/drive/folders/0B76va11QwfO_fmNXa3VkSFRBX2IVemNCcIVxYV9KUVdKUGpHTkFCYmtDUk1vSkdOVD RDUKk

The link for Certificates:

<https://drive.google.com/drive/folders/13ciA08LrYkR4oH8-CZLCCs96UwZbW8qz>



B. M. S. COLLEGE OF ENGINEERING, BENGALURU-19

(Autonomous Institute under VTU, Approved by AICTE, Accredited by NAAC)

One Week Online FDP

on

“Blockchain & Decentralized Application Development (Hands-on)”

From 27th January to 2nd February 2021

CERTIFICATE OF PARTICIPATION

*This is to certify that **Dr Geetishree Mishra** from **BMSCE** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

Dr. Umadevi V

Head, Dept. of CSE
B. M. S. College of Engineering

Dr. Dakshayini M

Head, Dept. of ISE
B. M. S. College of Engineering

Dr. B.V. Ravishankar

Principal
B. M. S. College of Engineering



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CERTIFICATE OF PARTICIPATION

*This is to certify that **Shrisha M R** from **BMS College of engineering** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

Dr. Umadevi V

Head, Dept. of CSE
B. M. S. College of Engineering

Dr. Dakshayini M

Head, Dept. of ISE
B. M. S. College of Engineering

Dr. B.V. Ravishankar

Principal
B. M. S. College of Engineering



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*This is to certify that **basavaraj jakkali** from **bmsce** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

Dr. Umadevi V

Head, Dept. of CSE
B. M. S. College of Engineering

Dr. Dakshayini M

Head, Dept. of ISE
B. M. S. College of Engineering

Dr. B.V. Ravishankar

Principal
B. M. S. College of Engineering



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One Week Online FDP

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From 27th January to 2nd February 2021

CERTIFICATE OF PARTICIPATION

*This is to certify that **Dr. Rajeshwati B S** from **B. M. S College of Engineers** has participated and successfully completed One Week Online FDP on **“Blockchain & Decentralized Application Development (Hands-on)”**, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

Dr. Umadevi V

Head, Dept. of CSE
B. M. S. College of Engineering

Dr. Dakshayini M

Head, Dept. of ISE
B. M. S. College of Engineering

Dr. B.V. Ravishankar

Principal
B. M. S. College of Engineering



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One Week Online FDP

on

“Blockchain & Decentralized Application Development (Hands-on)”

From 27th January to 2nd February 2021

CERTIFICATE OF PARTICIPATION

*This is to certify that **Chandrakala G Raju** from **BMSCE** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

Dr. Umadevi V

Head, Dept. of CSE
B. M. S. College of Engineering

Dr. Dakshayini M

Head, Dept. of ISE
B. M. S. College of Engineering

Dr. B.V. Ravishankar

Principal
B. M. S. College of Engineering



B. M. S. COLLEGE OF ENGINEERING, BENGALURU-19

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One Week Online FDP

on

**“Blockchain & Decentralized Application Development
(Hands-on)”**

From 27th January to 2nd February 2021

CERTIFICATE OF PARTICIPATION

*This is to certify that **Chambamma koti** from **Tontadarya college of engineering** has participated and successfully completed One Week Online FDP on **“Blockchain & Decentralized Application Development (Hands-on)”**, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

Dr. Umadevi V

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Dr. Dakshayini M

Head, Dept. of ISE
B. M. S. College of Engineering

Dr. B.V. Ravishankar

Principal
B. M. S. College of Engineering



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*This is to certify that **Mrs.G.JayaLakshmi** from **V R Siddhartha Engineering College** has participated and successfully completed One Week Online FDP on **“Blockchain & Decentralized Application Development (Hands-on)”**, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Ms. HEMAVATHI** from **B.M.S COLLEGE OF ENGINEERING** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **JYOTHI S NAYAK** from **B.M.S. College of Engineering** has participated and successfully completed One Week Online FDP on **“Blockchain & Decentralized Application Development (Hands-on)”**, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Latha N.R.** from **B.M.S. College of Engineering** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Mahalakshmi B S** from **BMS College of Engineering** has participated and successfully completed One Week Online FDP on **“Blockchain & Decentralized Application Development (Hands-on)”**, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Madhavi R.P.** from **BMSCE,Basavanagudi,B'lore-19** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Manjula S** from **BMS College of Engineering** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Nagarathna N** from **B.M.S. College of Engineering** has participated and successfully completed One Week Online FDP on **“Blockchain & Decentralized Application Development (Hands-on)”**, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Pallavi B** from **BMSCE** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Pallavi.cse@bmsce.ac.in** from **BMSCE** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Preetha S** from **B.M.S. College of Engineering** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Rajeshwari K** from **BMSCE** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Rizwan Alam** from **PSS Central Institute of Vocational Education, NCERT, Bhopal** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Sreevidya B S** from **Dayananda Sagar College of Engineering** has participated and successfully completed One Week Online FDP on **“Blockchain & Decentralized Application Development (Hands-on)”**, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Shyamala G** from **B.M.S.C.E** has participated and successfully completed One Week Online FDP on “**Blockchain & Decentralized Application Development (Hands-on)**”, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Shilpashree S** from **Dayanandasagar College of Engineering** has participated and successfully completed One Week Online FDP on **“Blockchain & Decentralized Application Development (Hands-on)”**, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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*This is to certify that **Sowmya T** from **BMS Evening College of Engineering** has participated and successfully completed One Week Online FDP on **“Blockchain & Decentralized Application Development (Hands-on)”**, organized by the Department of Computer Science & Engineering and Department of Information Science & Engineering, B. M. S. College of Engineering, Bengaluru-19.*

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B.M.S. College of Engineering, Bengaluru-560019
QIP/ NDF Cell, R&D Center
Technical Education Quality Improvement Program
Centre Of Excellence In Advanced Materials Research
Two Day Webinar on Writing Project Proposals, Journal Papers and
IPR
In association with mentee Institution
FET M J P Rohilkhand University Bareilly, Uttar Pradesh

Report on the two day webinar on writing project proposals, journal papers
and Intellectual Property Rights

28 – 29 JANUARY, 2021

INTRODUCTION

In view of getting acquainted with the fundamentals of the facets of research with a holistic goal of setting up strong foundations based out of research and technology driven aptitude among the stakeholders viz., Ph.D. scholars, Masters students and Faculty members, the QIP/ NDF Cell conceptualized the webinar crafting the contents of the same to suit the basic essential requirements for anyone who is the initial pedestals in the journey of a prospective research career. Key aspects viz., research paper writing, project proposal basics, IPR in research were discussed by experts in the domain through online mode of communication. A highly enthusiastic and receptive audience made good use of the rich expertise of the professionals through active participation across the two days of the event. In total, the organizers and the stakeholders were optimistic about the outcomes of the webinar which will potentially result in active research in the days to come.

OBJECTIVES

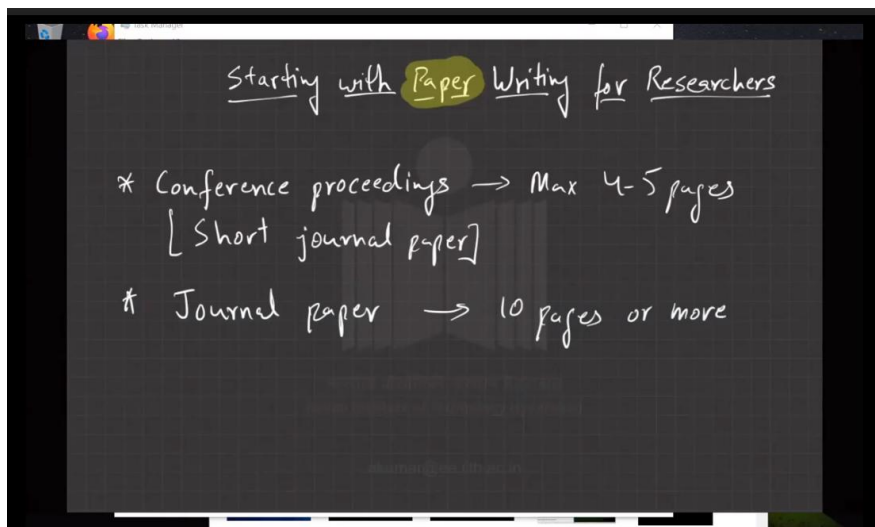
- Expert lectures in the domains of technical writing, research proposal writing, journal paper writing, research proposal writing and research proposal execution.
- Experience sharing of experts in contribution to research.
- Discussion of key points for stakeholders to write project proposals

ONLINE EVENTS

The webinar was formally inaugurated by the Honorable Principal, Prof. B V Ravishankar who greeted the audience and welcomed them to BMSCE. The brief talk of the inauguration also held emphasis on the need to undertake research in order to thrive and excel in the ever evolving competitive market.

The first session of the webinar was handled by Dr. Abhishek Kumar, Assistant Professor, Department of Electrical Engineering, IIT – Hyderabad. The title of the talk was “Starting with

paper writing for researchers”. The talk emphasized on the essential elements that is involved in understanding the fundamentals of research paper writing. Prof. Abhishek Kumar discussed the various elements that comprise the research paper and explained several aspects of the art of writing the same effectively to keep the reader curious about the outcomes of the research paper.

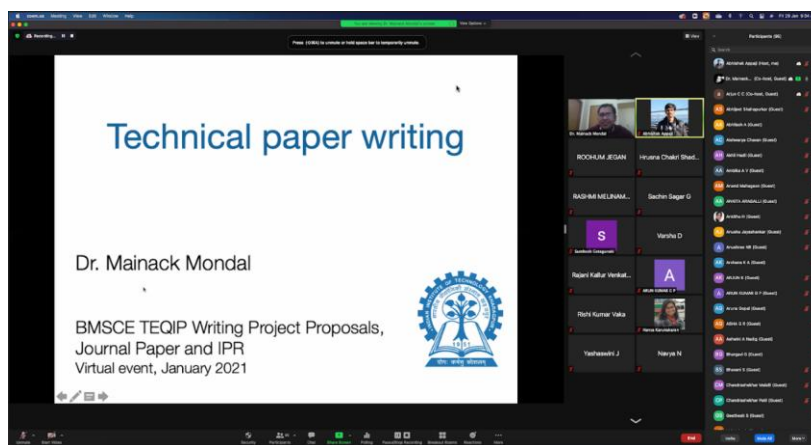


The second session of the webinar was handled by Dr. Kantha Babu, Professor in the Department of Manufacturing Engineering in College of Engineering, Guindy, Chennai. The title of the talk was “Overview of IPR and Innovation”. The talk was highly informative with real case scenarios comprising examples from day-to-day inventions and how a product can be driven from the concept to the product stage with Intellectual Property Rights in mind. The talk gave several perspectives about IP rights and the legal aspects related to intellectual property that a budding researcher has to keep in mind.

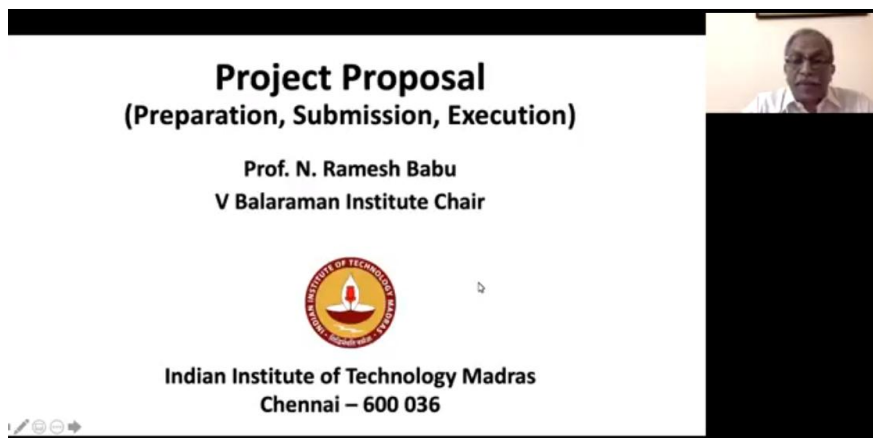


On day two, **the third session** of the webinar was conducted by Dr. Mainack Mondal, Assistant Professor in the Department of Computer Science and Engineering, IIT – Kharagpur. The title of the talk was “Technical Paper Writing Skills”. This talk dealt principally on the art of writing the research paper. Aspects related to the language, structure of the paper, do’s and don’ts to be kept in mind during technical paper writing, scope of research paper etc. were discussed with a

detailed presentation by Dr. Mondal. The audience asked several doubts in the process and the session was rich with knowledge exchange and the session was interactive with Q&A.



The last session i.e., **the fourth session** of the webinar was conducted by Prof. N Ramesh Babu, Professor in Mechanical Engineering Department, IIT – Madras. The details related to Research Proposal writing and explanation of the same with applications in a specific domain was discussed by Prof. Ramesh Babu. The talk also mentioned the progression of research proposals in India and the speaker also gave his perspectives about how young researchers can make use of funding that is available from various agencies. The speaker also explained the policies that are available by authorized agencies which will enable researchers to carry out their projects through sanctioning funds.



The webinar concluded with a thank you note from Dr. Abhishek Appaji, R&D Coordinator



TOTAL NUMBER OF PARTICIPANTS:

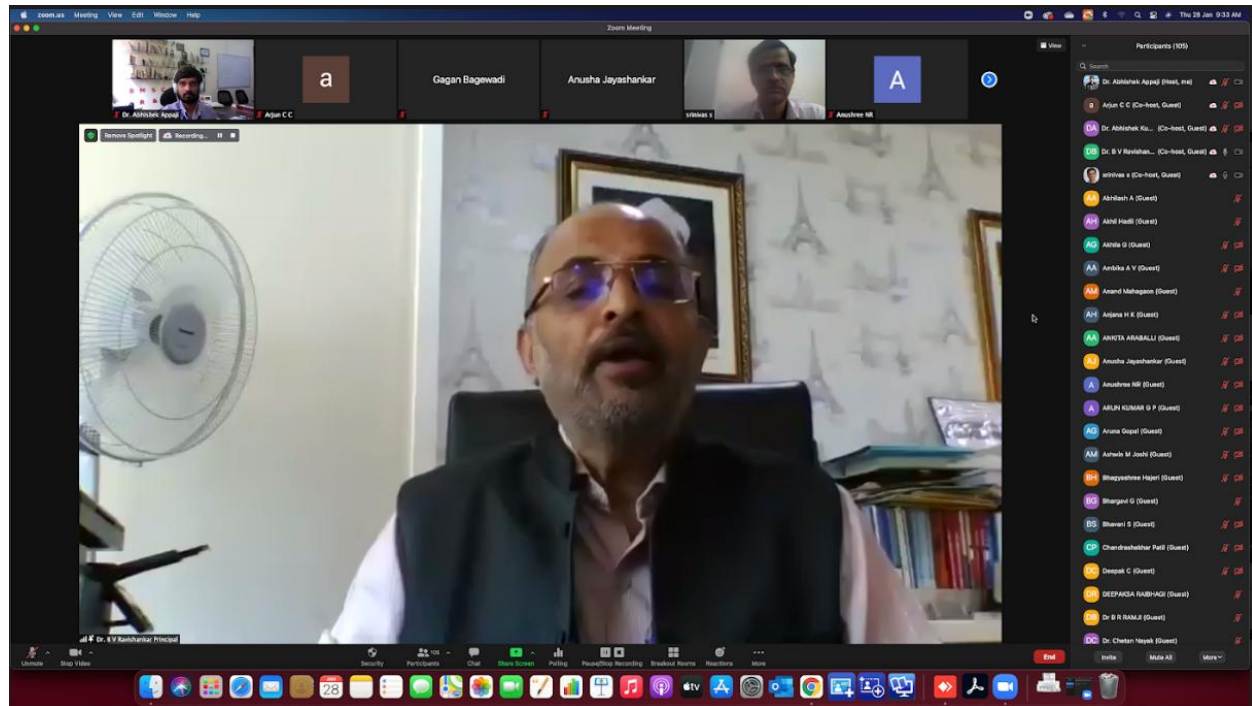
Summary of registration (Total 280 registrations)

87 Ph.D. Students

35 Faculty Members

151 M. Tech Students

7 (speakers, Coordinators)



INAUGURATION BY PRINCIPAL, Prof. B V RAVISHANKAR



OIP/NDP CELL RAD CENTER,
B.M.S. COLLEGE OF ENGINEERING,
PRESENTING A TWO-DAY WEBINAR UNDER COE IN ADVANCE MATERIALS
IN ASSOCIATION WITH MENTEE INSTITUTION FET M.J.P. ROHLIKHAND UNIVERSITY, BARBILLY



WRITING PROJECT PROPOSALS, JOURNAL PAPERS, AND IPR



Dr. Abhishek Kumar



Dr. M. Kanthababu



Dr. Mainack Mondal



Dr. N. Ramesh Babu

For More Details Contact
Dr. S. Srinivas - 9844923532
Dr. Abhishek Appaji - 9844923532
Mr. Arjun C. C. - 9845609430

28-29 JAN, 2021

Day 1
Thursday, Jan 28th

"Starting with paper writing for researchers"
By, Dr. Abhishek Kumar,
Asst Prof, Department of Electrical Engineering
Indian Institute of Technology, Hyderabad,
(9:30 AM to 11:30 AM)

"Overview of IPR and Innovation"
By, Dr. M. Kanthababu
Prof. (DoME), Director (CIPI)
Department of Manufacturing Engg
College of Engineering, Guindy, Anna University, Chennai.
(11:45 AM to 1:45 PM)

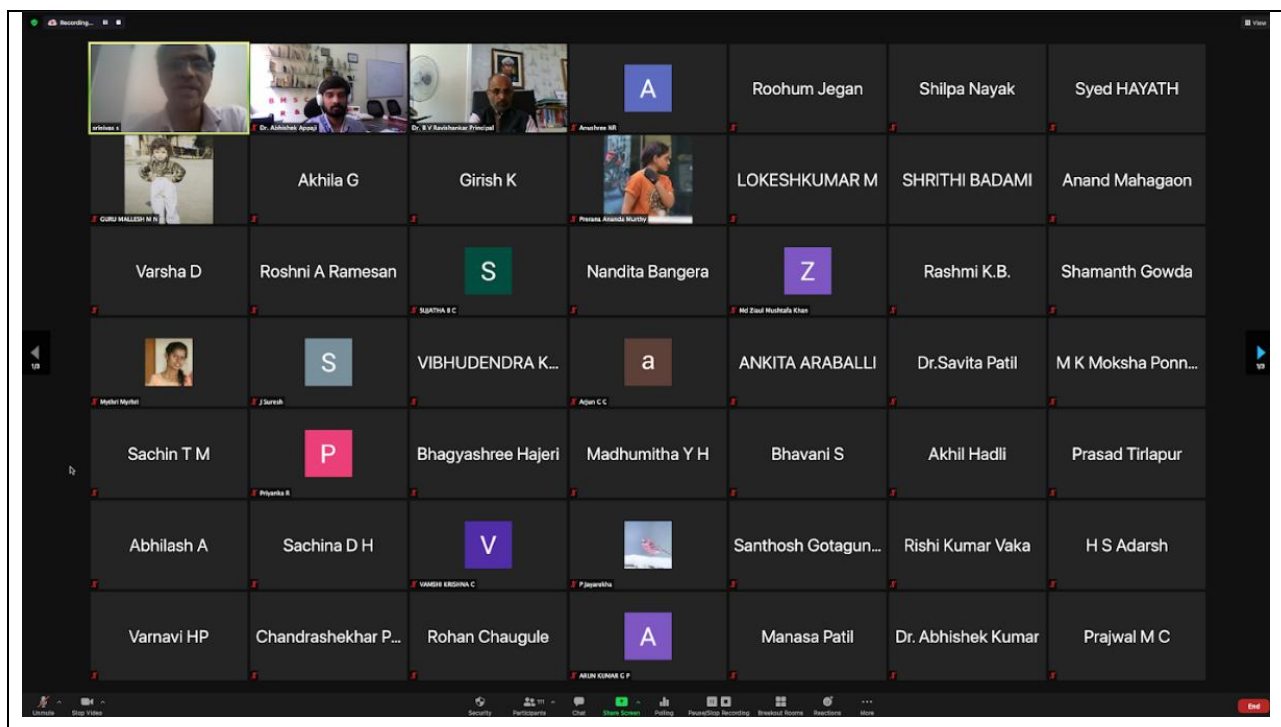
Day 2
Friday, Jan 29th

"Technical Paper Writing Skills"
By, Dr. Mainack Mondal,
Asst. Prof, Department of Computer Science and Engineering,
Indian Institute of Technology, Kharagpur West Bengal
(9:30 AM to 11:30 AM)

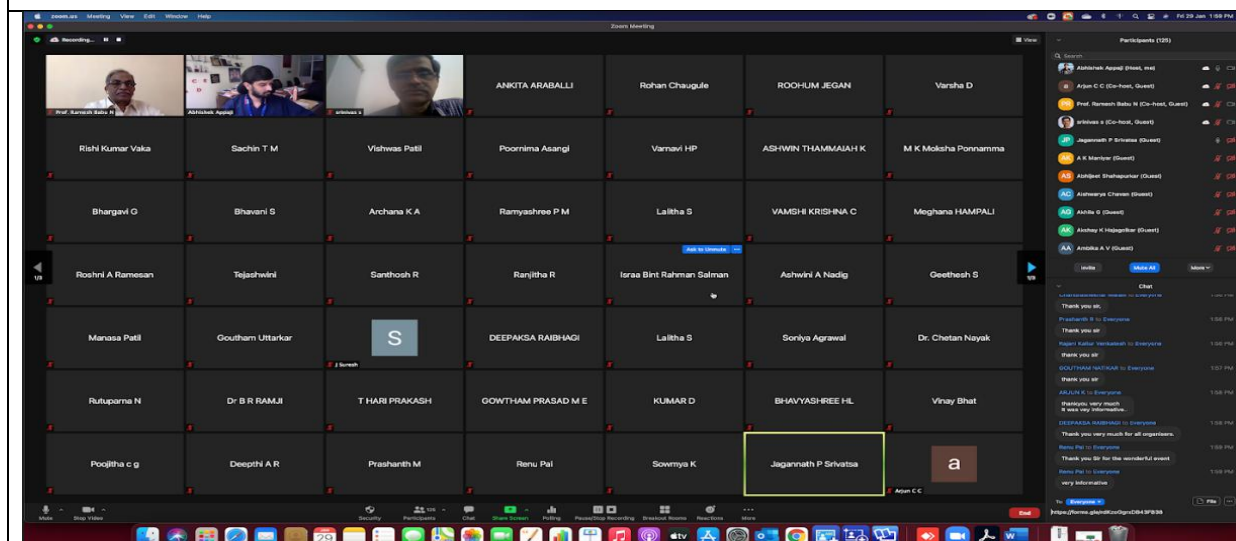
"Research Proposal writing"
By, Dr. N. Ramesh Babu,
V Balaram Institute Chair Professor,
Dept. Of Mechanical Engg, Indian Institute of Technology Madras, Chennai
(11:45 AM to 1:45 PM)

Sp Adobe Spark

BANNER OF THE PROGRAM



SCREENSHOT OF PARTICIPANTS (DAY 1)



SCREENSHOT OF PARTICIPANTS (DAY 2)

Feedback from Participants:

Total No. of Participants who took part in Feedback Process: 174



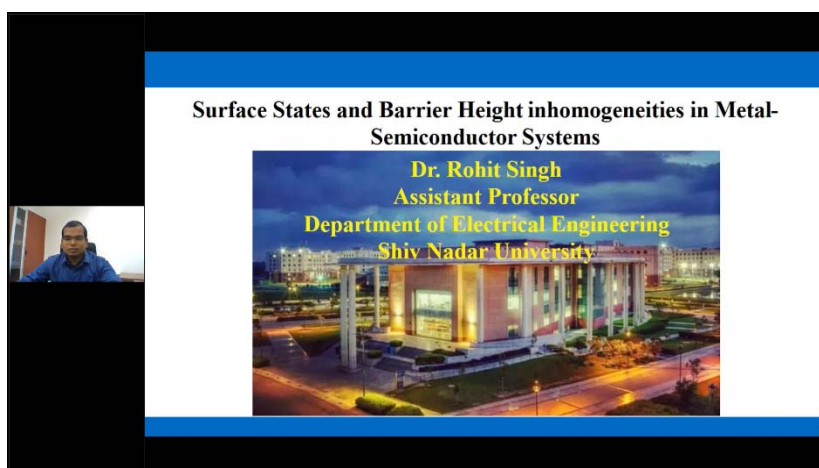
B.M.S. COLLEGE OF ENGINEERING, BENGALURU-19
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Report of TEQIP III Sponsored One-week e-Workshop on “Recent Trends in Materials for Next Generation Applications”

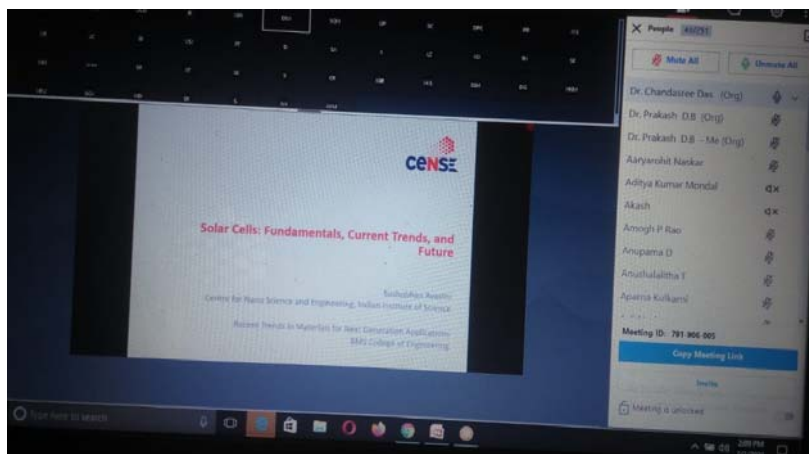
A TEQIP III Sponsored One-week e-Workshop was scheduled from 1st February 2021 to 5th February 2021. The title of this workshop was Recent Trends in Materials for Next Generation Applications. Total number of registered participants was 130.

The workshop was started with Inauguration Ceremony on 1st February 2021. In this ceremony, the Presidential Speech was given by Dr. S. Muralidhara, Vice-Principal; addressing all participants by Dr C. Lakshminarayana, HOD, EEE; and about the workshop by Dr. Chandasree Das, Associate Professor, EEE. Followed by the Inauguration Ceremony, the first session of the workshop was started with brief introduction about the speaker by Dr. Chethan Raj D, Assistant Professor, EEE.

The first talk of workshop was given by Dr. Rohit Singh, Assistant Professor, Shiv Nadar University, Dadri on 1st February, 2021 from 10:30 AM to 12:30 PM. Title of his talk was Surface States and Barrier Height inhomogeneities in Metal-Semiconductor Systems. He discussed about importance of metal-semiconductor interface, ideal and non-ideal metal semiconductor contacts with its case study.



Second session of first day from 02:00 PM to 04:00 PM was taken by Dr. Sushobhan Avasthi, Associate Professor, IISc Bengaluru. Title of his talk was Solar Cells: Fundamentals, Current Trends, and Future. He discussed about history of solar cells and fundamentals of solar cells.





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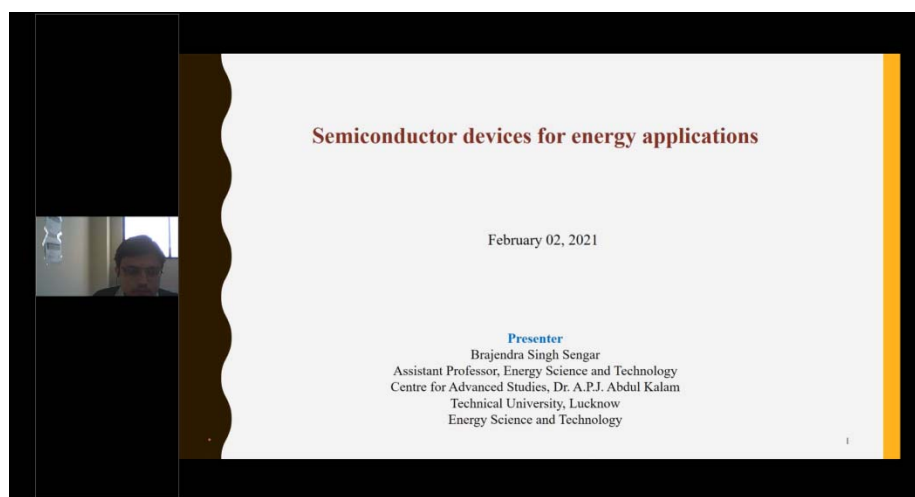
Autonomous Institute, Affiliated to VTU

First session of second day from 10:30 AM to 12:30 PM on 2nd February, 2021 was taken by

Dr. Chilaka Ranga, Assistant Professor, NIT Srinagar. Title of his talk was Recent Trends in Transformer Diagnosis. He discussed about testing of transformer insulation, fuzzy logic based health index assessment of transformer based on multi attributes and incipient fault diagnosis of power transformers.



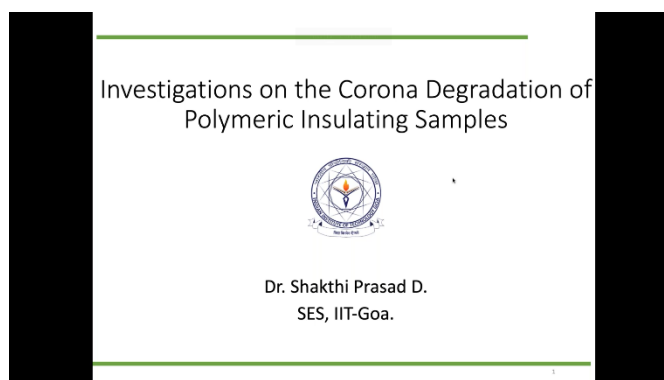
Second session of second day from 02:00 PM to 04:00 PM was taken by Dr. Brajendra S. Sengar, Assistant Professor, Centre for Advanced Studies, AKTU Lucknow. Title of his talk was Semiconductor



Devices for Energy

Applications. He discussed about introduction, theoretical analysis of Photovoltaics, Silicon and Thin film solar cells and Organic Photovoltaics.

First session of third day from 10:30 AM to 12:30 PM on 3rd February, 2021 was taken by Dr. Shakthi Prasad D, Assistant Professor, IIT Goa. Title of his talk was Investigations on the Corona Degradation of Polymeric Insulating Samples. He discussed about high voltage engineering, various insulators, corona experimentation and material degradation.

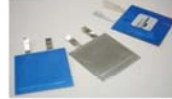
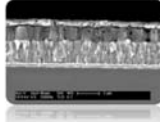
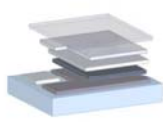


Second session of third day from 02:00 PM to 04:00 PM was taken by Dr. G Mohan Rao, Retd. Professor, IISc Bengaluru. Title of his talk was Thin Film Batteries – Power Sources for Next Generation Devices. He discussed about history of batteries, thin film batteries, fabrication, sputtering, electrolyte etc.



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Thin film batteries – Power sources for next generation Devices



Mohan Rao G
Plasma Processing Laboratory
Department of Instrumentation and Applied Physics
Indian Institute of Science
Bangalore 560012
gmrao@iisc.ac.in

BMSCE, 3 Feb 2021



First session of fourth day from 10:30 AM to 12:30 PM on 4th February, 2021 was taken by Dr. Amitesh Kumar, Assistant Professor, NIT Patna. Title of his talk was Non-volatile Memories for Data Storage & Neuromorphic Computing. He discussed about memristor, semiconductor devices, emerging memories, resistive memory and applications.



Non-volatile memories for Data Storage & Neuromorphic Computing

Dr. Amitesh Kumar

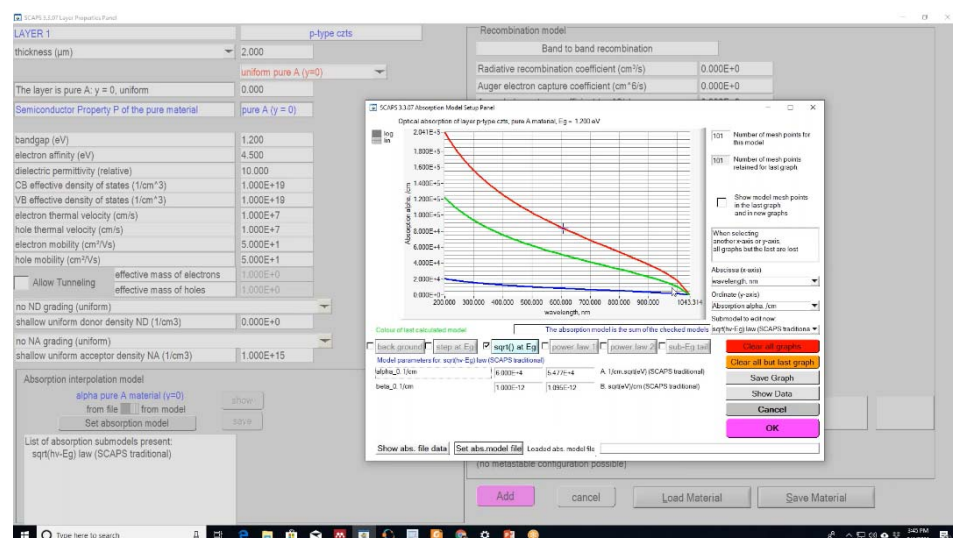
Assistant Professor, Electrical Engineering

National Institute of Technology (NIT), Patna

Ph.D. (EE), IIT Indore
CSIR, Research Fellow

B.Tech. (EE), IIT BHU
Postdoc, University of Utah, USA

Second session of fourth day from 02:00 PM to 04:00 PM was taken by Dr. Brajendra S. Sengar, Assistant Professor, Centre for Advanced Studies, AKTU Lucknow. He has conducted a lab session through SCAPS.



He discussed about fundamentals of semiconductors, various terminologies, fabrication of solar cells and atomic layer deposition.



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First session of fifth day from 10:30 AM to 12:30 PM on 5th February, 2021 was taken by Dr. Bidhan Pramanick, Assistant Professor, IIT Goa. Title of his talk was Glassy Carbon: A Material for Sensors to Electronics. He discussed about semiconductor devices, MEMS, micro propulsion devices, fabrication and applications.

The screenshot shows a video conference interface. On the left, a small video window shows Dr. Bidhan Pramanick. The main area displays a presentation slide with the title "Glassy Carbon: A Material for Sensors to Electronics". The slide includes the IIT Goa logo, the speaker's name "Dr. Bidhan Pramanick", his title "Faculty Coordinator, CoE-PCI Assistant Professor", and his affiliation "School of Electrical Sciences, IIT Goa, Farmagudi, GEC Campus, Ponda, Goa-403401". Email addresses "bidhan@iitgoa.ac.in" and "faculty-coordinator-coe@iitgoa.ac.in" are also listed.

Second session of fifth day from 02:00 PM to 04:00 PM was taken by Dr. Narendra Singh, Assistant Professor, IIT Tirupati. Title of his talk was New Materials and Photovoltaic Concepts. He discussed about introduction, theoretical analysis of Photovoltaics, Silicon and Thin film solar

The screenshot shows a video conference interface. On the left, a small video window shows Dr. Narendra Singh. The main area displays a presentation slide with the title "New materials and photovoltaics concepts". The slide includes the BMS College of Engineering logo, the college name "BMS College of Engineering, Bangalore, Karnataka", and the speaker's name "Dr. Narendra Singh". It also lists his title "Assistant Professor" and affiliation "Department of Chemical Engineering, Indian Institute of Technology Tirupati, Tirupati".

cells and Organic Photovoltaics. Followed by this session, the valedictory session was started. Presidential Speech was given by Dr C. Lakshminarayana, HOD, EEE; outcome of the workshop by Dr. Chandasree Das, Associate Professor, EEE and vote of thanks by Dr. Prakash D B, Assistant Professor, EEE.

Chief Patrons

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Professor & TEQIP Coordinator

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Professor, PI and coordinator COE

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Associate Professor and PI, COE

Dr. Chandasree Das,

Associate Professor and PI, COE

Dr. K Padmavathi,

Professor, Dept. of EEE

Mr. Asim Rahmaan Ansari,

Asst. Professor, FET, MJP

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Coordinators

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Ph: +91-9480235493

Dr. Chethan Raj D, Asst. Professor

Ph: +91-9738128573

Dr. Dipesh Kumar, Asst. Professor

Ph: +91-9835950369

IMPORTANT DATES

Last date for registration: 05.02.2021

Participation and Registration

Faculty, Research Scholars from various institutes and Industry persons.

Minimum 60% of marks in quiz is required and only active participants will get the certificate. Quiz will be conducted at the end of the FDP.

NO REGISTRATION FEE

<https://forms.gle/AH2xxNSZwBSM4TiG6>

OR



RESOURCE PERSONS

The speakers for the course will be from Premier academic Institutes from India and Abroad and from Industry.

COURSE CONTENT

- PCM, FBG based Sensor applications
- PV from silicon to new materials.
- Dielectric materials and its application
- Materials for aerospace applications
- Conducting and laminating materials for machines and materials for power energy equipment.

**BMS College of Engineering
Bengaluru-560 019**

Two-week e-FDP

On

**Advanced and New Generation
Materials in Electrical and
Electronics Engineering**

Sponsored by

Centre of Excellence in Advanced Materials Research
(TEQIP-1.2.1)

Feb 8th to Feb 19th, 2021



Organizers

Center of Excellence in Advanced Materials Research

**Department of Electrical and Electronics
Engineering
BMS College of Engineering
Bengaluru-560 019
&**

**In collaboration with
FET, MJP. Rohilkhand University
Bareilly U.P.**

ABOUT BMS COLLEGE OF ENGINEERING

BMS College of Engineering was founded in the year 1946 by Late B M Sreenivasaiyah, and nurtured by his illustrious son, Late B S Narayan. BMSCE is the first private sector initiative in Engineering Education in India. BMSCE is in the field of Engineering Education over 7 decades of dedicated service. BMSCE today offers 13 Under Graduate & 16 Post Graduate courses, both in conventional and emerging areas. At present, 15 Departments are recognized as Research Centers offering PhD/MSc Engineering by Research in Science, Engineering, Architecture and Management. First Institution in the state bestowed with NBA Accreditation in Tier I Format (Washington Accord). World Bank funded TEQIP Phase I and Phase II Institute and Partner Institution of the Melton Foundation, USA which advocates Global Citizenship. Autonomous Institute (UGC approved) since 2008.

ABOUT THE DEPARTMENT

The Department of Electrical Engineering was established in 1946 and subsequently emerged as Department of Electrical and Electronics Engineering. The Department has the distinction of having its graduates known worldwide for their contributions and accomplishments in varied domains. The focus of the department is to equip students with capabilities through a wide exposure to all aspects facilitating their development as professionals. This enables them to adapt to the societal needs and the progressive technological requirements. The department receives grants from Govt. of Karnataka and offers an undergraduate program B.E, Electrical and Electronics, with a sanctioned intake of 60. The department is NBA Accredited under Tier I of Washington Accord and has a Student Faculty Ratio of 14:8:1. The department offers M.Tech, program in Power Electronics which started in 1991 with a sanctioned intake of 18 which is also NBA Accredited. It has a research Centre under VTU since 2003. It is a recognized AICTE QIP Research Centre since 2012, AICTE NDF (National Doctoral

Fellowship Scheme) Research Centre since 2018. The number of awarded Ph.Ds. till date is 13 and currently 26 research scholars are pursuing their research in various domains.

ABOUT CENTRE OF EXCELLENCE IN ADVANCED MATERIALS RESEARCH

Centre of Excellence in Advanced Materials Research initiative will support long-term materials research and development leading to potential breakthroughs in areas such as Synthesis, Characterization and Processing of Nano Composites, Polymer Composites, Phase Change Memory Materials and their application in the manufacturing of relevant industrial components. This initiative addresses development of a balanced infrastructure for Under Graduate and Post Graduate education and training of human resource in future advanced materials. COE also foster institute-industry collaborative efforts to develop programs, partnerships and joint ventures which will build on the strengths of each and thus creating new opportunities for leadership in high quality research and innovation in advanced materials.

ABOUT THE FDP

Materials have always played an essential role in the performance and economy of any technological system. The field of materials is immense and diverse. The materials used in conducting, insulating and magnetic areas of electrical equipments have significant role to play in the performance for a particular application. The advent of new materials is based on enhanced knowledge of good processability and hence the manipulation of their properties to suit a particular application. More rapid consumption of materials has paved way for new and advanced materials for diverse applications. Also, an innovative method in the design and production of new materials have rejuvenated the technological trajectories in traditional materials and has resulted in improved material characterisation. The efficiency of equipments and the machines used in industries

largely depends upon selection of materials for cores and pole pieces which strengthen the magnetic fields created. The moving parts in motors and switchgears which require specially chosen materials considering the design features of the particular component. Transformers and high tension switchgear have insulating oil, which besides insulating, also acts as coolant. Motors, transformers, relays, have their coils wound on cores. The core materials require high permeability, quick magnetizing and demagnetizing characteristics. Semi conducting materials find application in various fields like photo-voltaic, optics, memory devices. Therefore the choice of materials for equipments in electrical and electronics domain should be made with great care and well thought through. It is necessary to be aware of how many objects of everyday life have been transformed or improved by the application of material science and engineering. The flexibility offered by the material science and engineering domain increases the options in replacement of a given material. The potential to produce materials required for high technology industries should be exploited. Also, there is an emphasis to find eco-friendly materials as alternatives. Thus, material study, research and technology development becomes important with the objective of producing more knowledge intensive materials. This FDP thus provides the participants a good opportunity to enhance their interest and knowledge shared by eminent researchers extensively working on novel materials and their target applications in varied fields.

OBJECTIVES AND OUTCOMES

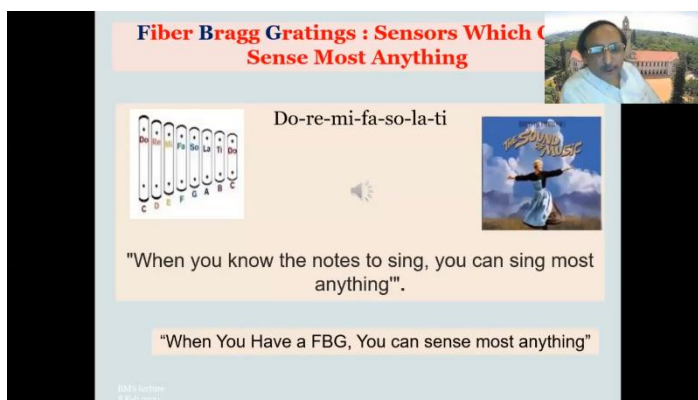
- To familiarize the faculty and research scholars to create awareness about the recent advancement in conducting, semiconducting, insulating, magnetic materials used in electrical equipment.
- To highlight importance of material characterization.
- To encourage more in-depth studies in the domain of material research and applications.

Report of TEQIP III Sponsored Two-week e-FDP on “Advanced and New Generation Materials in Electrical and Electronics Engineering”

A TEQIP III Sponsored Two-week e-FDP was scheduled from 8th February 2021 to 19th February 2021. The title of this FDP was Advanced and New Generation Materials in Electrical and Electronics Engineering. Total number of registered participants was _____.

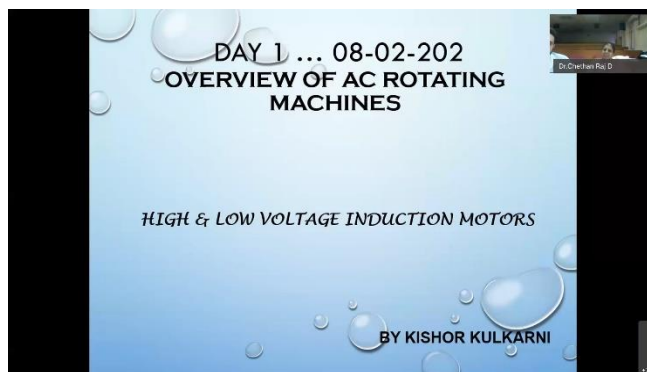
The FDP was started with Inauguration Ceremony on 8th February 2021. In this ceremony, the FDP was started with speech from Chief of Guest: Dr. S. Asokan, Professor, IISc Bengaluru, then the Presidential Speech was given by Dr. S. Muralidhara, Vice-Principal; addressing all participants by Dr C. Lakshminarayana, HOD, EEE; about the FDP by Dr. K. Padmavathi, Professor, EEE; and Vote of Thanks by Dr. V. Champa, Associate Professor, EEE. Followed by the Inauguration Ceremony, the first session of the FDP was started with brief introduction about the speaker by Dr. Chandasree Das, Associate Professor, EEE.

The first talk of FDP was given by Dr. S. Asokan, Professor, IISc Bengaluru on 8th February, 2021 from 10:30 AM to 12:30 PM. Title of his talk was FBG Based Sensors and Applications. He discussed about optical fiber, fiber bragg grating, refractive index property, FBG sensors, SHM of aircrafts, health monitoring windmills, FBG



seismic sensor, FBG pressure sensor, chemical/bio sensing using bare & etched FBG sensors.

Second session of first day from 02:30 PM to 04:30 PM was taken by Mr. Kishor Kumar Kulkarni, Ex-VP, Emerson Group. Title of his talk was Overview of AC Rotating Machines. He discussed about high & low voltage induction motors, cage induction motor, wound rotor induction motor.



First session of second day from 10:30 AM to 12:30 PM on 9th February, 2021 was taken by Dr. V. Gauri Shree, Associate Professor, Anna University. Title of his talk was Breakdown Mechanism in Dielectric.

Second session of second day from 02:30 PM to 04:30 PM was taken by Mr. Kishor Kumar Kulkarni, Ex-VP, Emerson Group. Title of his talk was Materials for Electrical Machines.

First session of third day from 10:30 AM to 12:30 PM on 10th February, 2021 was taken by Dr. Shakthi Prasad D, Assistant Professor, IIT Goa. Title of his talk was Application of Image Processing in Material Degradation Study. He discussed about high voltage engineering, various insulators, image processing, various detection techniques, corona, HDR image, experimentation and material degradation.



Second session of third day from 02:30 PM to 04:30 PM was taken by Dr. Elisabetta Sieni, Professor, University of Insubria, Italy. Title of her talk was Materials for Photovoltaic Conversion: from Silicon to New Materials. She discussed about introduction to photovoltaic, structure of silicon cell, evolution of photovoltaic technologies, thin film such as amorphous silicon, CdTe, CIS, CIGS, perovskite etc.



First session of fourth day from 10:30 AM to 12:30 PM on 11th February, 2021 was taken by Dr. Girish M Joshi, Associate Professor, ICT Mumbai. Title of his talk was Recent Development of Polymer Composites for high Performance Electrical and Electronics Applications. He discussed about metallic objects, ceramic objects, polymer objects, graphene reinforced polymer composites, electrical insulation system, nanocomposites, dielectric spectroscopy, random wound wire enamel.

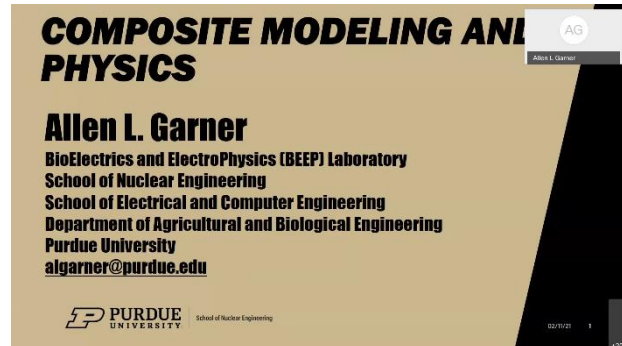


Second session of fourth day from 02:30 PM to 04:30 PM was taken by Dr. K. Natarajan, Professor, Jain University. Title of his talk was Smart Sensors and IoT Applications. He discussed about semiconductor history, MEMS, surface micro machined motor, silicon

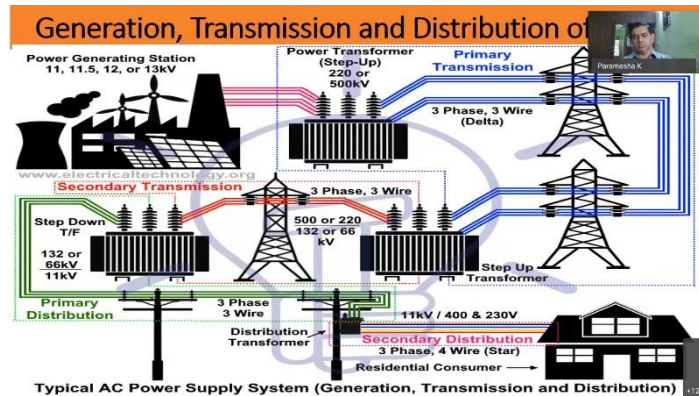


microneedle, microcantilever, nanotechnology, silicon technology, bulk/surface micromachining technology, pressure sensor for college kit, automobile tyre pressure monitoring, analog devices, electrostatic mirror, inertial sensor, motion sensing, biomedical instruments, IoT applications.

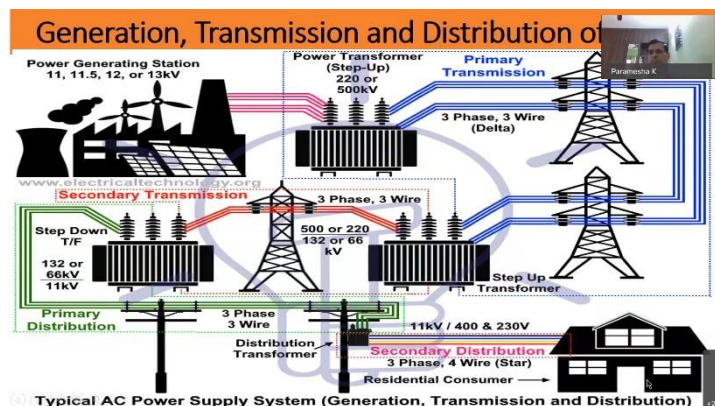
First session of fifth day from 08:30 AM to 10:30 AM on 12th February, 2021 was taken by Dr. Allen Garner, Associate Professor, Purdue University, USA. Title of his talk was Composite Modeling and Physics. He discussed about motivation for developing composite materials, effective medium theories, development of semi-empirical models for predicting electromagnetic performance of stainless steel inclusions, development of composites of nonlinear inclusions, application of composite theory to biological systems.



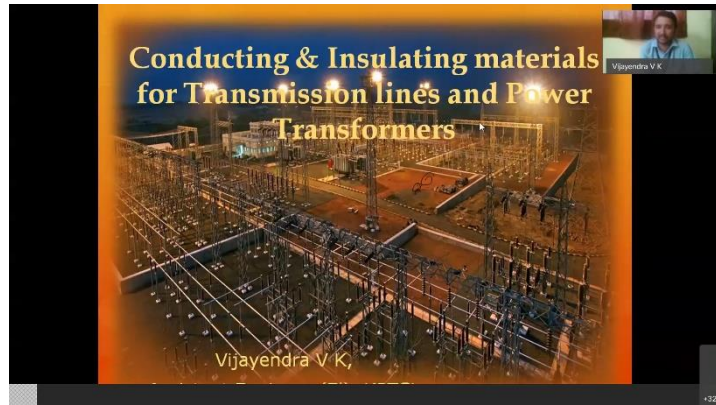
Second session of fifth day from 02:30 PM to 04:00 PM was taken by Mr. Paramesha K., Joint Director, Energy Department. Title of his talk was Overview of Generation, Transmission and Distribution of Electricity in India. He discussed about substation equipment, distributed control protection, various circuit breaker, gas insulated transformer, series compensation, distribution system, lightning protection, power theft control, insulators & conductors, FACTS devices.



First session of sixth day from 10:30 AM to 12:30 PM on 13th February, 2021 was taken by Mr. Paramesha K., Joint Director, Energy Department. Title of his talk was Overview of Generation, Transmission and Distribution of Electricity in India. He discussed about hydropower station, thermal power station, power network, power capacity, wind & solar power, pumped storage project, evolution of grid connection in India, grid operation, SCADA features, advancement in remote control.



Second session of sixth day from 02:30 PM to 04:00 PM was taken by Mr. Vijeyendra V K, Assistant Engineer, KPTCL. Title of his talk was Conducting and Insulating Materials for Transmission lines and Power Transformers. He discussed about overview of grid/network components, conducting & insulating material for transmission lines & power transformers, preparation of nano-liquid dielectric for enhancing critical properties of transformer oil.



First session of seventh day from 08:30 AM to 10:30 AM on 15th February, 2021 was taken by Dr. Raji Sundarajan, Professor, Purdue University, USA. Title of her talk was Electrical Laser Pulse for Biological Systems.

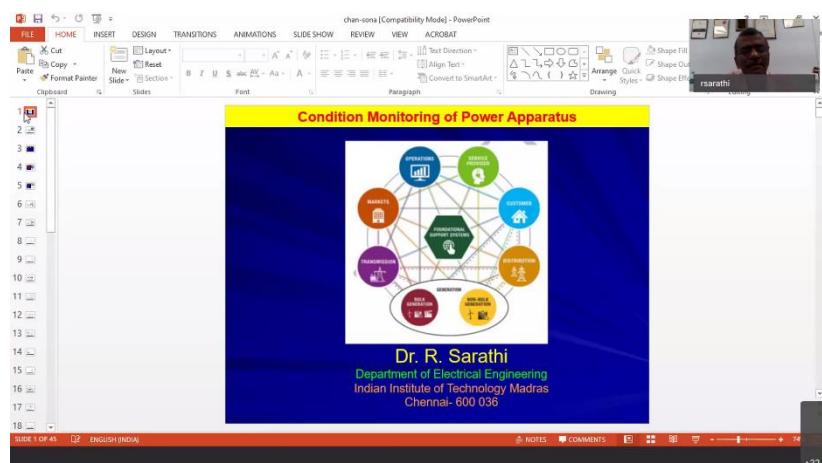
Second session of seventh day from 02:30 PM to 04:00 PM was taken by Dr. Sushobhan Avasthi, Associate Professor, IISc Bengaluru. Title of his talk was Advancement in PV materials.

First session of eighth day from 10:30 AM to 12:30 PM on 16th February, 2021 was taken by Dr. D. Harimurugan, Assistant Professor, NIT Jalandhar. Title of his talk was Numerical Techniques for Design of Power System Components: An Overview. He discussed



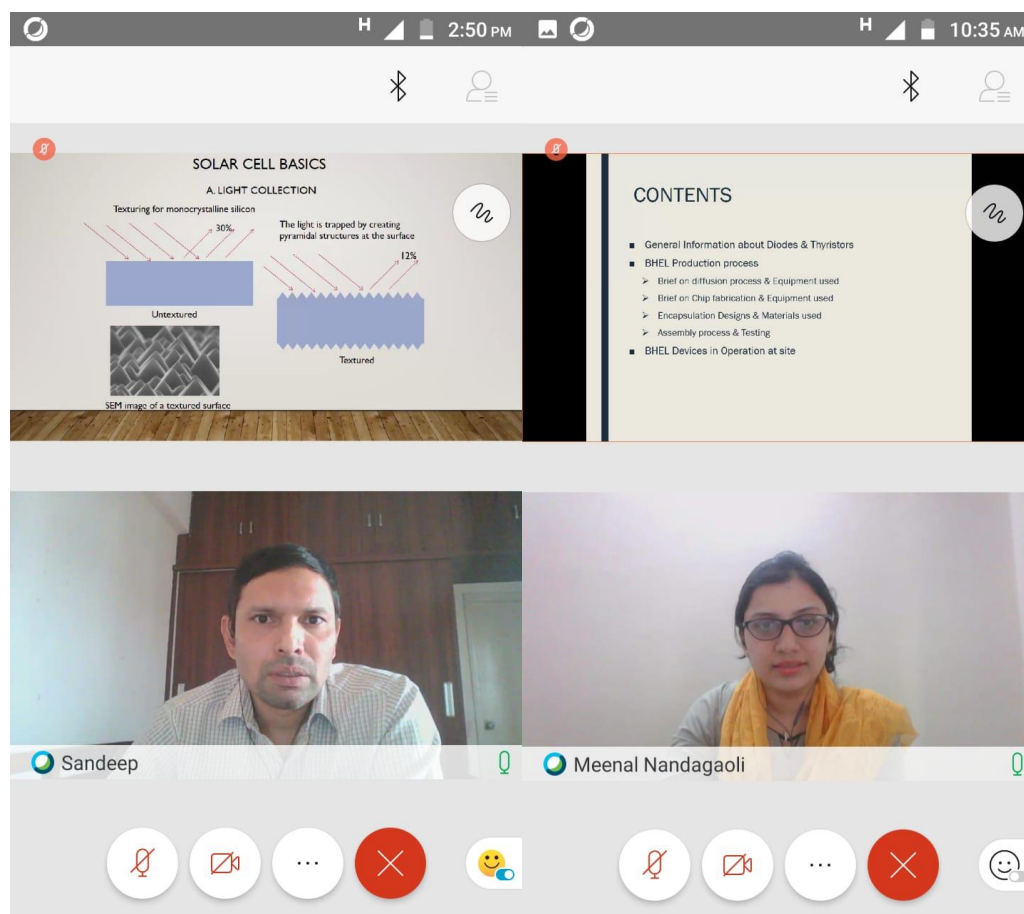
about introduction to insulation design, numerical techniques for field computation, charge simulation method, high voltage capacitor design and conductor clearance in EHV substation.

Second session of eighth day from 02:30 PM to 04:00 PM was taken by Dr. R Sarathy, Professor, IIT Madras. Title of his talk was Condition Monitoring of Power Apparatus. He discussed about transformers for smart grid



adaptability, identification of partial discharge activity, wire explosion process, nanofluid preparation, analysis of CIV, corona discharge activity, PRPD analysis, and laser induced breakdown spectroscopy.

First session of ninth day from 10:30 AM to 12:30 PM on 17th February, 2021 was taken by Mrs. Meenal Arun, Manager, BHEL. Title of her talk was Manufacturing of Diodes and Thyristors. She discussed about general information about diodes and thyristors, BHEL production process on diffusion process, chip fabrication, assembly process & testing and BHEL devices in operation at site.



Second session of eighth day from 02:30 PM to 04:00 PM was taken by Dr. Sandeep Chandril, Manager, BHEL. Title of his talk was An overview of key Materials used for Solar Energy Generation.

First session of tenth day from 10:30 AM to 12:30 PM on 18th February, 2021 was taken by Dr. J. Sundara Rajan, Retd. Additional. Director, CPRI. Title of his talk was Recent Advances in Polymer Composites for Electronics and Electrical Engineering Applications. He discussed about nanocomposites: fillers, fabrication &

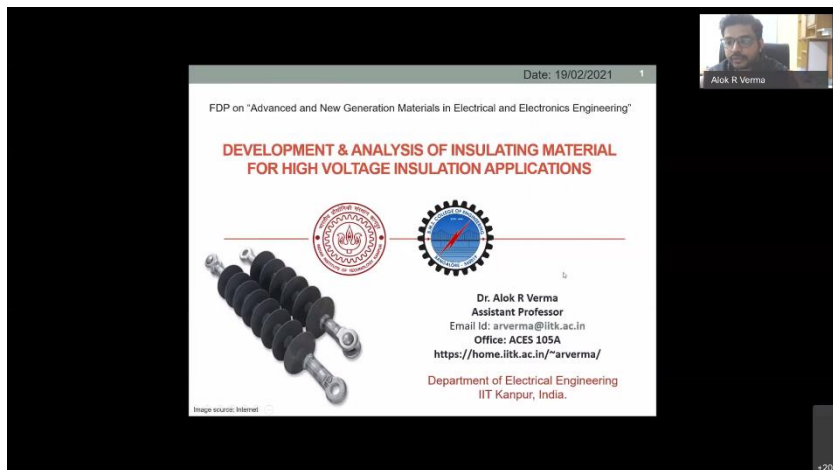


characterization, recent development in insulating material & conducting polymers, application of nanocomposites, bandgap engineering and circuit element modeling of nanocomposites.

Second session of eighth day from 02:30 PM to 04:00 PM was taken by Dr. Pradeep Kumar Dixit, Professor, MSRIT Bengaluru. Title of his talk was Materials for Aerospace Applications. He discussed about isotropic & anisotropic materials, electrical engineering materials, material groups, material engineering, lightning mechanism and aircraft composite materials.

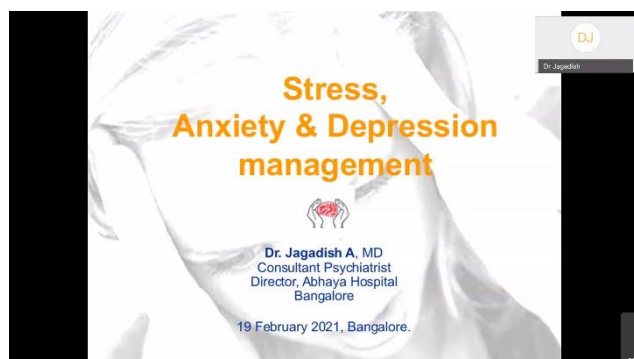


First session of eleventh day from 10:30 AM to 12:30 PM on 19th February, 2021 was taken by Dr. Alok Ranjan Verma, Assistant Professor, IIT Kanpur. Title of his talk was Development & Analysis of Insulating Material for High Voltage Insulation Applications. He



discussed about types of insulating materials, polymeric insulators, techniques for physicochemical evaluation case study-based investigations and leakage current investigations.

Second session of eleventh day from 02:30 PM to 04:00 PM was taken by Dr. A. Jagadish, Psychiatrist. Title of his talk was Stress & Depression Management. He discussed about causes of stress, individual stress, interpersonal stress, community stress, organizational stress, job stress & health and its management. Followed by this session, the valedictory



session was started. Presidential Speech was given by Dr. B.V. Ravishankar, Principal; addressing all participants by Dr C. Lakshminarayana, HOD, EEE; outcome of the FDP by Dr. V. Champa, Associate Professor, EEE and vote of thanks by Dr. K. Padmavathi, Professor, EEE

APPLICATION FORM
**One Week Faculty Development
Program on
Functional Materials for Engineering
Applications**
(15.02.2021 to 19.02.2021)

1. Name:
2. Educational qualifications:
3. Designation:
4. Institution:
5. Address for communication:

6. Mobile:
7. E-mail ID:
8. Whether your institution is TEQIP supported: Yes / No
9. Kindly confirm your participation by registering in the following link:
https://docs.google.com/forms/d/e/1FAIpQLSfd6YkywCFMrtFQLxpR9ZnsMUzt03_U6GDXTTr39IKfrsrXBg/viewform?usp=sf_link

DECLARATION

The information furnished above is true to the best of my knowledge. I agree to abide by the rules and regulations governing the course. If selected, I shall attend the course for the entire duration. On provisional selection, I will submit the registration form on or before **10.02.2021**.

Signature of the applicant
Date:



SPONSORSHIP CERTIFICATE

Certified that Dr./Mr./Ms.....
is an employee / student of our institute and is hereby sponsored for the FDP on “*Functional Materials For Engineering Applications*” at B.M.S. College of Engineering during the period **15.02.2021 to 19.02.2021**.
Our institute is supported/not supported by TEQIP. He/she will be permitted to attend the course, if selected.

Important Dates

Submission of Applications ends : **10.02.2021**
Selection confirmation : **13.02.2021**

B.M.S. College of Engineering

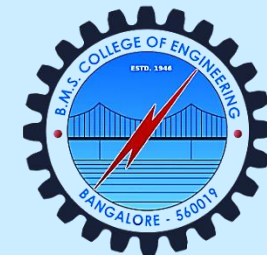
Bengaluru-19
(An Autonomous Institution Affiliated to VTU)

**One Week Faculty Development
Program
Sponsored by**

**Centre of Excellence in Advanced Materials Research
(TEQIP-1.2.1)**

On
**Functional Materials for Engineering
Applications**
(Nanomaterials, Ceramic materials, Bulk , and Polymer materials for Engineering Applications)

15.02.2021 to 19.02.2021



Accredited with A⁺⁺ grade by NAAC

Organized by
**Departments of Physics and
Chemistry**

B.M.S. College of Engineering
Bull Temple Road, Bengaluru-560019
In Association with **MJP Rohilkhand University,**
Bareilly

Introduction

The development of functional materials is at the heart of technological needs and the forefront of materials research for Engineers. This FDP provides a comprehensive and up-to-date applications of functional materials, which are needed for electrical, dielectric, electromagnetic, optical, and magnetic applications. Materials concepts are strongly linked to Engineering applications.

Functional Materials Applications are

Electrical Conduction Behavior

Dielectric Behavior

Electromagnetic Behavior

Optical Behavior

Magnetic Behavior

Catalytic behavior

B.M.S. COLLEGE OF ENGINEERING

B.M.S. College of Engineering was founded in the year 1946 by Late B M Sreenivasaiah, and nurtured by his illustrious son, Late B S Narayan. BMSCE is the first private sector initiative in Engineering Education in India. BMSCE has over 70 years of dedicated service in the field of Engineering Education. BMSCE offers numerous Under Graduate and Post Graduate courses, both in conventional and emerging areas. At present, 15 Departments are recognized as Research Centers offering PhD/MSc Engineering by Research in Science, Engineering and Management. It is the first Institution in the state bestowed with NBA Accreditation in Tier I Format (Washington Accord). It is also a World Bank funded TEQIP Phase I and Phase II Institute and Partner Institution of the Melton Foundation, USA which advocates Global Citizenship. BMSCE has been functioning as an autonomous Institute (UGC approved) since 2008.

DEPARTMENT OF PHYSICS

The Physics Department at BMS College of Engineering was established in 1946. The vision of the department is to be a dynamic, inclusive and competitive centre of excellence in teaching, learning and research in Physics to ensure that the technical needs of students are addressed. The Department has well qualified, experienced and highly motivated faculties. The faculties of the Department teach Engineering Physics course for I year B E students. Department faculties are involved in research and consultancy activities. They have received funding for conducting research from various external funding agencies such as DST, VGST, BARC etc. The department is VTU recognized research centre since 2011.

DEPARTMENT OF CHEMISTRY

The Chemistry Department at BMS College of Engineering was established in 1946. The vision of the department is to be a dynamic, inclusive and competitive centre of excellence in teaching, learning and research in chemistry to ensure that the technical needs of students are addressed. The Department has well qualified, experienced and highly motivated faculty members. The faculties of the Department teach Engineering chemistry, Materials chemistry and its Applications, Nanomaterials and Environmental chemistry and corrosion sciences and Industrial engineering materials for Engineering students. Department faculties are involved in research and consultancy activities. They have received funding for conducting research from various external funding agencies such as DST, VGST, SERB etc. The department is VTU recognized research centre since 2011.

OBJECTIVE AND OUTCOMES OF FACULTY DEVELOPMENT PROGRAM

- ❖ To create awareness about the various fields of Materials for engineering applications
- ❖ To familiarize the participants with the latest research trends in the fields of chemistry and physics
- ❖ To highlight the research being carried out and promote further research in material aspects

COURSE CONTENT

- * Synthesis of Bulk and Nanomaterials from various techniques
- * Characterization and property studies of materials
- * Importance of materials from Engineering aspects
- * Applications of materials and impacts to the society

RESOURCE PERSONS

The faculty for the course will be from USA, UK and IISc, IIT and other premier Institutes.

WHO CAN ATTEND?

Faculty of Engineering College, Degree College, Research Scholars, PG/UG students.

HOW TO APPLY

Apply in the prescribed format by email on or before 20.01.2021. provisional selection will be intimated by email, the applicant has to send the sponsorship certificate in the attached format as to reach the coordinator on or before 10.02.2021.

Chief Patron

Dr. P. Dayananda Pai

Chairman, BOG, BMSCE

Patrons

Dr. B. S. Ragini Narayan

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Dr. Manjunatha.S, Asst. Professor, Department of Chemistry

Dr. Latha Kumari, Asst. Professor, Department of Physics

Dr. Ramya Hariharan, Asst. Professor, Dept. of Physics

Address for correspondence

Dr. Srinidhi Raghavan.M

Dr.Ramya Hariharan

Coordinator, **FDP on “Functional Materials for Engineering Applications”**

Department of Chemistry and Physics

B.M.S. College of Engineering, Basavanagudi,

Bengaluru-560019

Phone: 9986273000

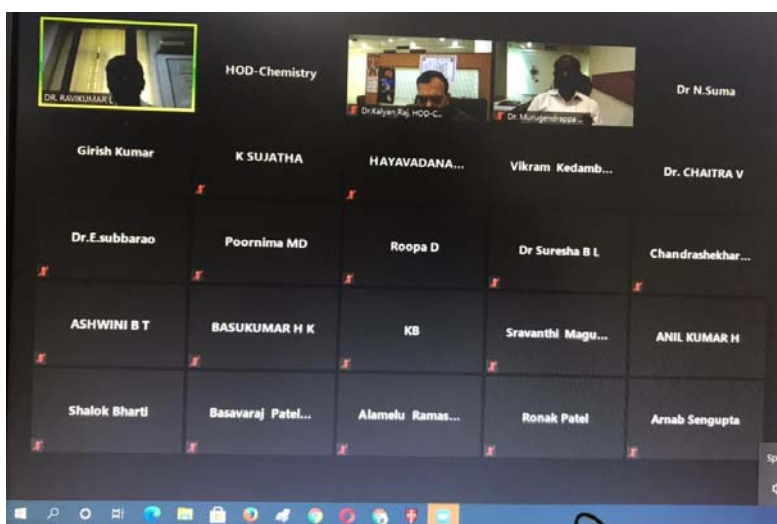
E-mail: srinidhir.chem@bmsce.ac.in

E-mail: ramyah.phy@bmsce.ac.in

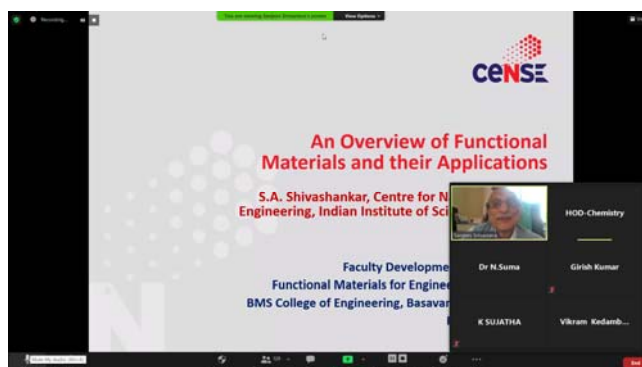
Report of TEQIP III Sponsored One-week Online Faculty Development Program (FDP) on “Functional Materials for Engineering Applications”

A TEQIP-III Sponsored One-week Online-FDP was scheduled from 15th February 2021 to 19th February 2021. The title of this FDP was “Functional Materials for Engineering Applications”. Total number of registered participants was more than 120.

The FDP was started with Inauguration Ceremony on 15th February 2021. In this ceremony, the FDP was started at 10-11.15 AM with Dr. Kalyanraj, HOD, Chemistry by welcoming all the delegates and the Participants. Dr. L. Ravikumar, Professor, Department of Mechanical Engineering and Co-ordinator TEQIP-III. He briefs the importance of the TEQIP-III and FDP. Vote of Thanks by Dr. Dr. M. V. Murugendrappa, Associate Professor and HOD, Physics.

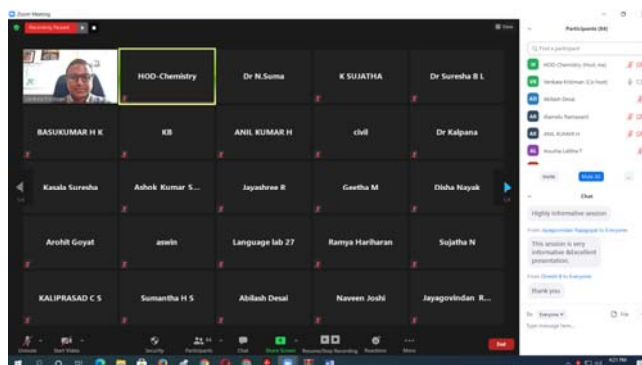


The first session was started at 11.45-1.00 PM with the Keynote lecture on “An Overview of Functional Materials and Their Applications” by the Chief of Guest: Prof. S. A. Shivashankar, Professor Emeritus, CeNSE, IISc Bengaluru. Keynote speaker gave an in detailed explanation on synthesis, characterization of different perovskites for various sensor applications.

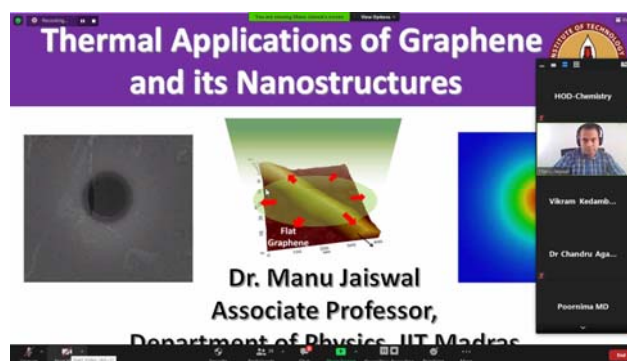


The second session of the FDP was started at 2.15-3.15 PM with the speaker by Dr. Praveen Ramamurthy, Associate Professor, Materials Engineering, IISc, Bengaluru. He spoke on “Organic photovoltaics: Issues and challenges”. He discussed about optical and electronic properties of several organic molecules for harvesting the solar energy.

Dr Venkata Krishnan, IIT Mandi was started with the third session at 3.30-4.30 PM with the title on Heterogeneous Catalysis



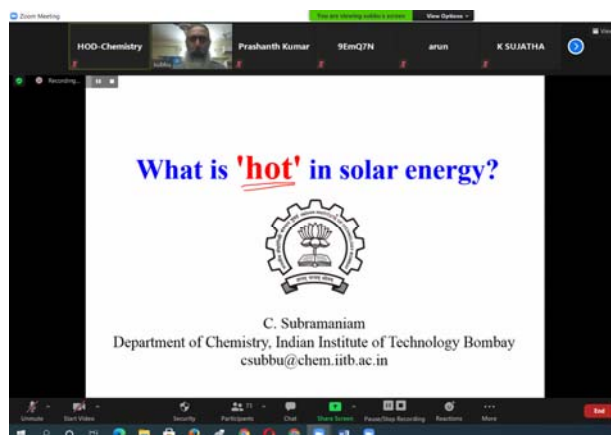
DAY 2 FDP first session was begin at 10-11.15 AM with an eminent personality Dr Manu Jaiswal from IIT Madras. The title of the talk was” Thermal Applications of Graphene and its Nanostructures”. This mainly focuses on the Graphene and its structure for its thermal properties and applications.



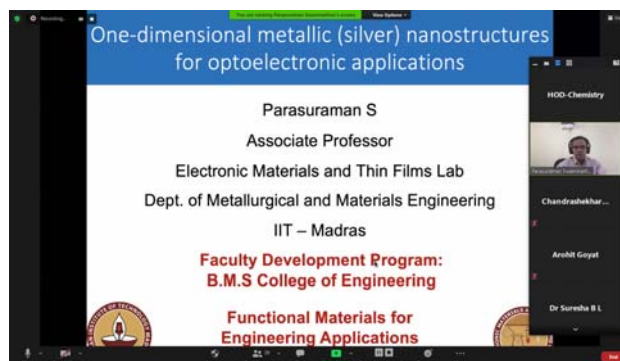
Dr. Rupesh Devan, IIT Indore began the session at 11.45-1.00 PM with the title of the presentation was “Influence of nano-hetero-architectures in technology development”.

The third session of the day was started with Dr Suresh, NMKRV, Bangalore. His title of the talk was “Lithium Ion batteries:Basics, Progress and challenges”.

Last session of the day 2 FDP at 3:30-5:00PM was concluded with the talk given by Dr Chandramouli Subbramanyam, IIT Bombay. His talk on “What is ‘hot’ in solar energy? As a principle.”



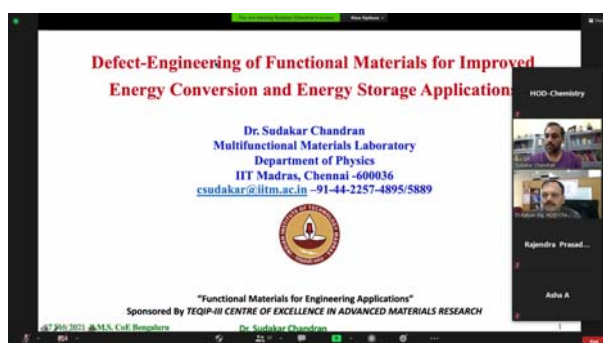
17 FEB first session of DAY 3 was begin at 10-11.15 AM with Dr Parasuraman Swaminathan, IIT Madras. He presented on the title “ One Dimensional Metallic (Silver) nanostructures for Optoelectronic Applications”.



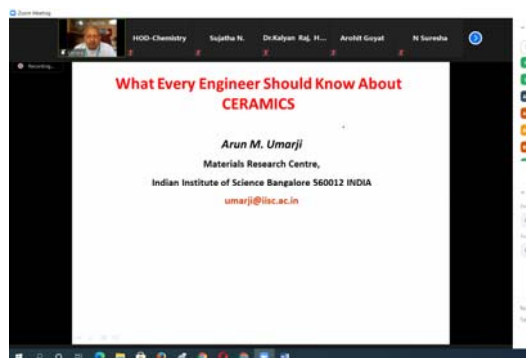
Second session was started at 11.45-1.00 PM by Prof K.L. Yadav, IIT Roorkee. The title of the topic was “Quest for Green Energy”.

Dr. Nagabhusan, MSRIT, Bangalore was started the third session of day 3 at 2.15-3.15 PM. The title of the presentation was “Research Opportunity in Low Temperature Solution Combustion Process”.

It is followed by the last session of the day 3 given by Dr Sudakar Chandran, IIT Madras. The title of the talk was “ Defect engineering the Materials for improved energy storage and energy conversion performance”.



The forth day of the FDP was on 18 February started at 10-11.15 AM. The first session of this day was shared by an eminent personality Prof. Arun Umarji from Materials Research Centre, IISc, Bengaluru. The presentation title was “What every engineer should know about Ceramics”.



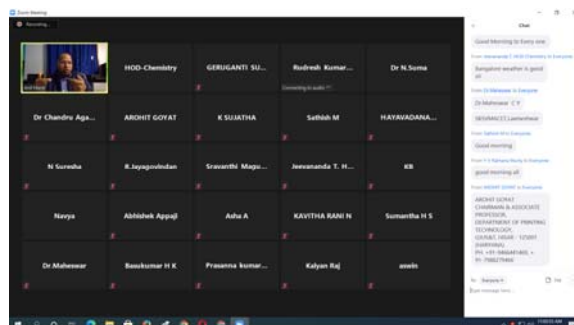
At 11.45-1.00 PM second session was started with the title “Synthetic bio-molecule for bio-medical applications” by Dr. Mahesh B from JSS Academy of Technical Education, Bengaluru.

Dr. Ramesh Chandra Mallik from IISc, Bangalore started the third session at 2.15-3.15 PM

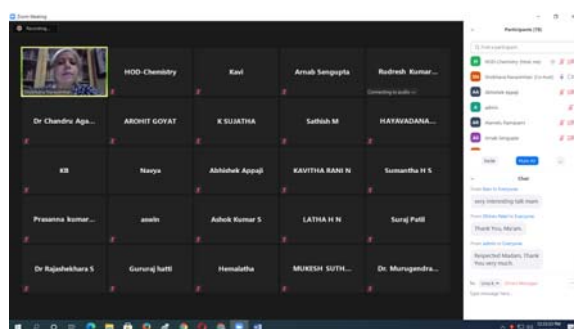
with the title of the presentation “Thermoelectric properties enhancement of $\text{Co}_4\text{Sb}_{12}$ via the combined strategy of filling the voids and nanocomposites”.

At 3.30-4.30 PM last session of the day was concluded with the title “Solid State Chemistry in Metal-Ion Batteries” by Dr. Kothandaraman from IIT Madras.

The last day of the FDP on 19 FEB, it was started at 10-11.15 AM by Dr Anil Mane, Argonne national Laboratory, USA with the title “ALD of Nanocomposite Materials and its Applications”.

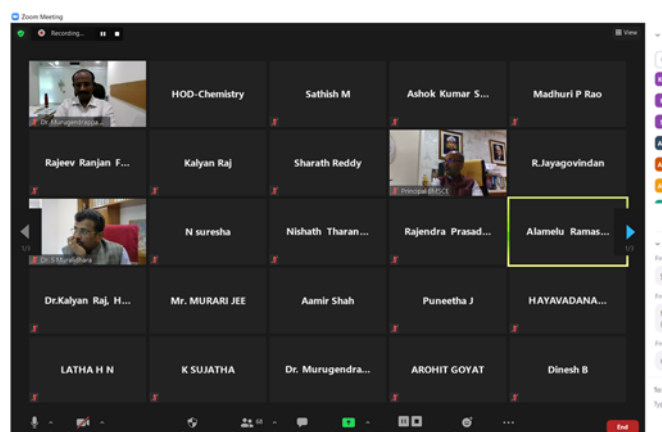


At 11.45-1.00 PM Dr Shobhana Narashiman from JNCSR, The title of her presentation was “Not to be taken for granted: how to formulate and write a grant proposal”.



The last session of the one week FDP was concluded with Dr S. Varadarajaperumal, CeNSE, IISc, Bangalore with the title “Fabrication and Characterization of Functional Materials for Engineering Applications”.

The valedictory session was started at 3.30 PM. Presidential Speech was given by Dr. B.V. Ravishankar, Principal; addressing all participants by Dr S. Muralidhara, Vice Principal, BMSCE; outcome of the FDP by Dr. M. Murugendrappa, Associate Professor and Head, Department of Physics and vote of thanks by Dr. Kalyanraj, Professor and Head, Department of Chemistry, BMSCE.



Chief Patrons

Dr. B.S. Ragini Narayan, Donor Trustee
Dr. Dayanand Pai, Chairman, BMSCE

Patrons

Dr. B. V. Ravishankar, Principal, B.M.S.C.E.
Dr. S. Muralidhara, Vice- Principal, B.M.S.C.E.

Advisors

Dr. Veena N. Hegde, HOD(EIE), BMSCE
Dr. C. Lakshminarayana, HOD(EEE), BMSCE

Coordinators

Prof. Preethi K. Mane, Dept. of EIE, B.M.S.C.E.
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Prof. Santosh R. Desai, Dept. of EIE, B.M.S.C.E.
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Prof. Divya S., Dept. of EEE, B.M.S.C.E.
divyas.eee@bmsce.ac.in, M:7795080678
Prof. Shiv Kumar Tomar, Dept. of ECE, FETMJPRU.

Organizing Members

Mrs. Geetha N., Dept. of EIE, B.M.S.C.E.
Mrs. Yamunaa R., Dept. of EIE, B.M.S.C.E.

Registration fee

Faculty of academic Institutions - Rs. 200/-
(except TEQIP funded)
PG/Research Scholars - Rs. 100/-
Industry participants - Rs. 500/-

Last date for registration

20th Feb. 2021

How to apply

Apply in the prescribed format and post/scan and mail the application so as to reach on or before the last date. Registration fee can be paid through cash/DD. The DD should be drawn in favour of HOD-EIE Engg, B.M.S. College of Engineering, payable at Indian Bank, Hanumanthanagar, Bengaluru - 560019.

About the workshop

The program provides an immersive learning experience on the concepts of Mechanical system modeling and analysis using industry standard simulation tool. It adds the insights of ANSYS Workbench, parametric analysis, 3D operation, Scoping loads and supports, section formation, mesh creation, mesh control, modelling connections, static structural & thermal analysis along with Multiphysics simulations with respect to Electrical/Electronics & Mechanical.

Resource persons

Mr. Gokul Raj M.
Sr. Application Engineer, Entuple Technologies Pvt. Ltd.
Mr. Navin Sankar J.
Field Application Engineer, Entuple Technologies Pvt. Ltd.
Mr. Mandeep Singh
Nanatom Technologies
Mr. Soma Shekhar H.,
Academic Manager, Entuple Technologies Pvt. Ltd.

Online registration

Link : <https://forms.gle/gnAvX3p1AVAPQrxE8>



Who can attend

Faculty of Electrical, Instrumentation, Electronics and Communication, Mechanical, Chemical, Researchers and PG students working in similar area can attend this program.

Registration Form (offline)

**Department of
Electronics & Instrumentation Engg.,
Electrical & Electronics Engg.,
Under COE in Advanced Materials**

**BMS College of Engineering,
Bengaluru-19**



Sponsored Workshop on

**Material Characterization,
Modelling & Performance
Analysis of CMOS Inverter
(22 - 26 Feb, 2021)**

1. Name :
2. Designation :
3. Department :
4. College :
5. Email id :
6. Mobile no :
7. Mode of payment of registration fee: Cash/ DD details

Time	Description
Day 1 - 22 Feb. 2021	
8.45 to 9.00	Inauguration
9.00 to 11.00	Introduction about Ansys
11.00 to 11.30	Tea Break
11.30 to 13.30	Introduction to SpaceClaim
13.30 to 14.00	Lunch Break
14.00 to 16.00	Introduction to Ansys Workbench
Day 2 - 23 Feb. 2021	
9.00 to 11.00	Introduction to Meshing
11.00 to 11.30	Tea Break
11.30 to 13.30	Introduction to Multiphysics
13.30 to 14.00	Lunch Break
14.00 to 16.00	Multiphysics: Demo & Case Studies
Day 3 - 24 Feb. 2021	
9.00 to 11.00	Introduction to IC Design Methodologies
11.00 to 11.30	Tea Break
11.30 to 13.30	The Big Picture- Logic Gate Quality Metrics, MOSFET Review
13.30 to 14.00	Lunch Break
14.00 to 16.00	MOSFET Capacitances, CMOS Inverter Review, Performance and Power
Day 4 - 25 Feb. 2021	
9.00 to 11.00	MOSFET Digital Switching Model, Model Parameter Extraction
11.00 to 11.30	Tea Break
11.30 to 13.30	CMOS Inverter Design, Characterization and Performance Optimization
13.30 to 14.00	Lunch Break
14.00 to 16.00	CMOS Fabrication Overview, Layout Design Rules, Standard Cell Template Design, CMOS INVX1, Standard Cell Layout
Day 5 - 26 Feb. 2021	
9.00 to 11.00	Introduction to Library Characterization
11.00 to 11.30	Tea Break
11.30 to 13.30	Circuit Characterization using FinFET
13.30 to 14.00	Lunch Break
14.00 to 16.00	Fundamentals of Mechanical Characterization of Materials.
16.00 to 16.15	Valedictory

B.M.S. College of Engineering

The B.M.S. College of Engineering (BMSCE) was founded by a great visionary and philanthropist Late Sri. B. M. Sreenivasaiah (BMS) in the year 1946. After demise of the founder, Sri. B. S. Narayan the illustrious son of the Founder took over the reins of the College. Under his able leadership, the college grew from strength to strength. BMSCE is the first engineering college established in the country (pre independent India) by a private enterprise. The college is an aided institution (by Government of Karnataka) and affiliated to Visvesvaraya Technological University (VTU). BMSCE offers 13 UG, 16 PG & 15 Research programmes.

The College became an autonomous institution under VTU in the year 2008-09. In the year 2011, BMSCE was recognized as a QIP Centre in Engineering & Technology by All India Council for Technical Education (AICTE). The College is one among the 14 Engineering Colleges in the State qualified for Phase-2 of the Technical Education Quality Improvement Programme (TEQIP), a world bank sponsored project. BMSCE is the only partner institution from India along with the other universities located in Chile, China, Germany and USA for the Melton Foundation, USA. . The college has a strong alumni base. More than 35000 students have left the portals of the Institution. Most of the alumni occupying coveted positions in many educational, industrial and research organizations in India and all over world.

About Electronics & Instrumentation Engg.

The Department of Instrumentation Technology started in the year 1991. Currently the program offers Under Graduate (UG) degree with an intake of 60. The Department Infrastructure fulfills the requirements of academics and learning skills on the latest technology in the industry. Dedicated faculty with Ph.D who are into Research and Development activities at Institution level, Qualified technical staff and enthusiastic and intelligent students are the strength of the department.



B. M. S. College of Engineering (Autonomous College under VTU) **Bengaluru-19**

Faculty Development Program(FDP) *on*

Material Characterization, Modelling & Performance Analysis of CMOS Inverter

(22nd - 26th Feb, 2021)

Jointly organized by

**Department of
Electronics & Instrumentation Engg.
Electrical & Electronics Engg.
Under COE in Advanced Materials**

in association with

**FET, MJP. Rohilkhand University Bareilly,
Uttar Pradesh**

Sponsored by

TEQIP-3
Technical Education Quality Improvement Programme

Coordinators

**Prof. Preethi K. Mane Prof. Santosh R. Desai
Prof. Divya S. Prof. Shiv Kumar Tomar**

Organizing Members

Mrs. Geetha N. Mrs. Yamunaa R.

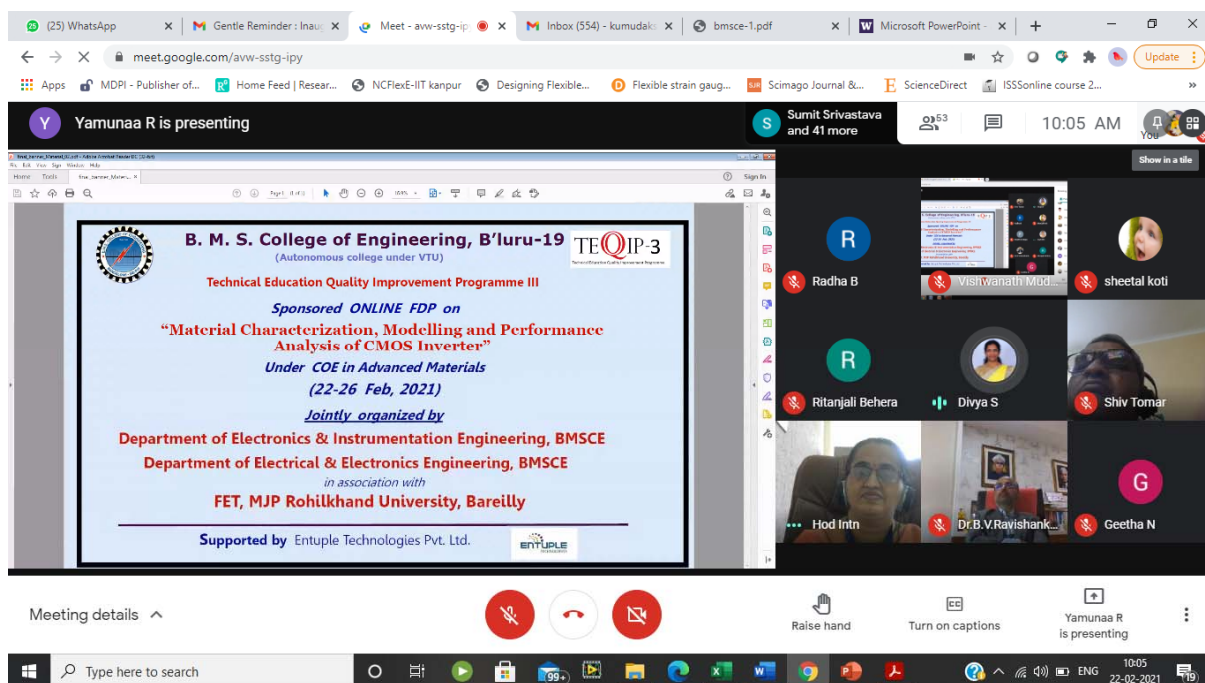
**ONLINE TEQIP III sponsored Faculty Development Program(FDP) on
Material Characterization, Modelling &
Performance Analysis of CMOS Inverter**

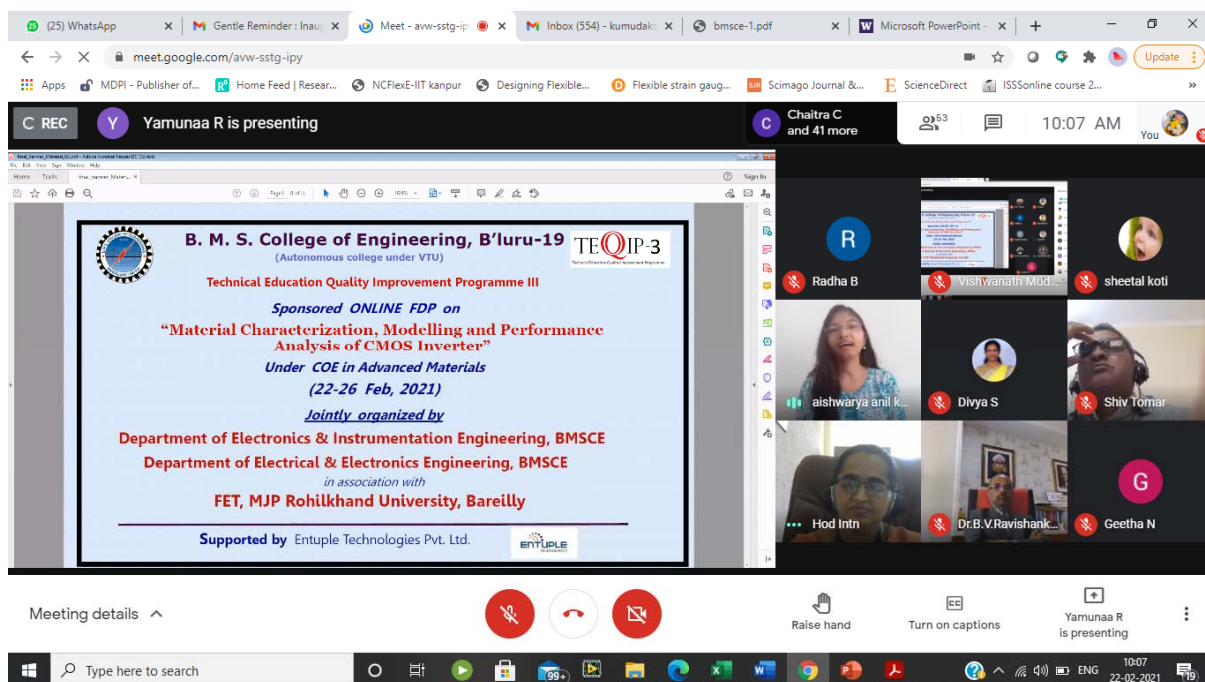
(22 - 26 Feb., 2021)

Organised by
**Department of
Electronics & Instrumentation Engg.,
Electrical & Electronics Engg.,
Under COE in Advanced Materials**

- **Online Link to join for FDP on all 5 days :meet.google.com/avw-sstg-ipy**
- A google group and WhatsApp group was created to facilitate effective communication among coordinators and participants
- 79 participants had registered for the FDP

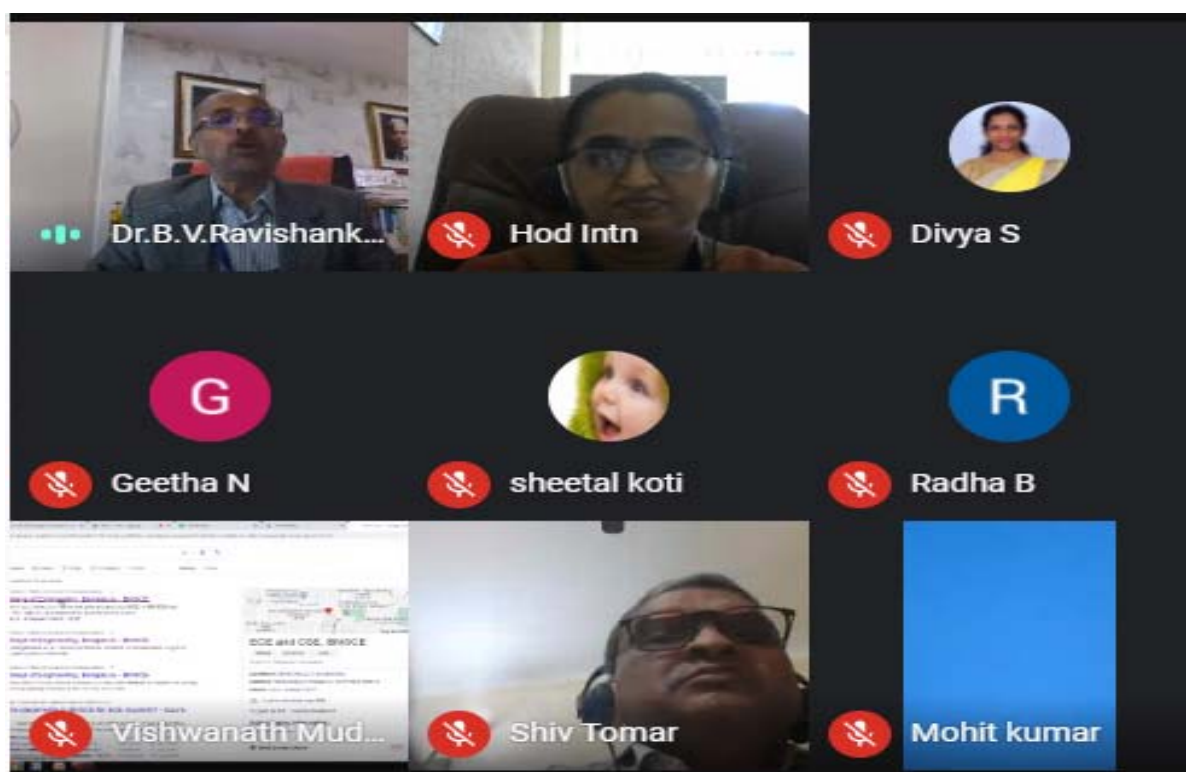
The session started with Inauguration in Online mode by invoking the blessings of the almighty by Ms. Aishwarya Kulkarni Student of EIE dept, followed by welcome address by Dr. Veena N Hegde, Professor and Head of Dept. of Electronics and Instrumentation Engineering. Later, FDP Coordinator Mrs. Preethi K Mane, Associate Professor of dept. of EIE briefed about the workshop.





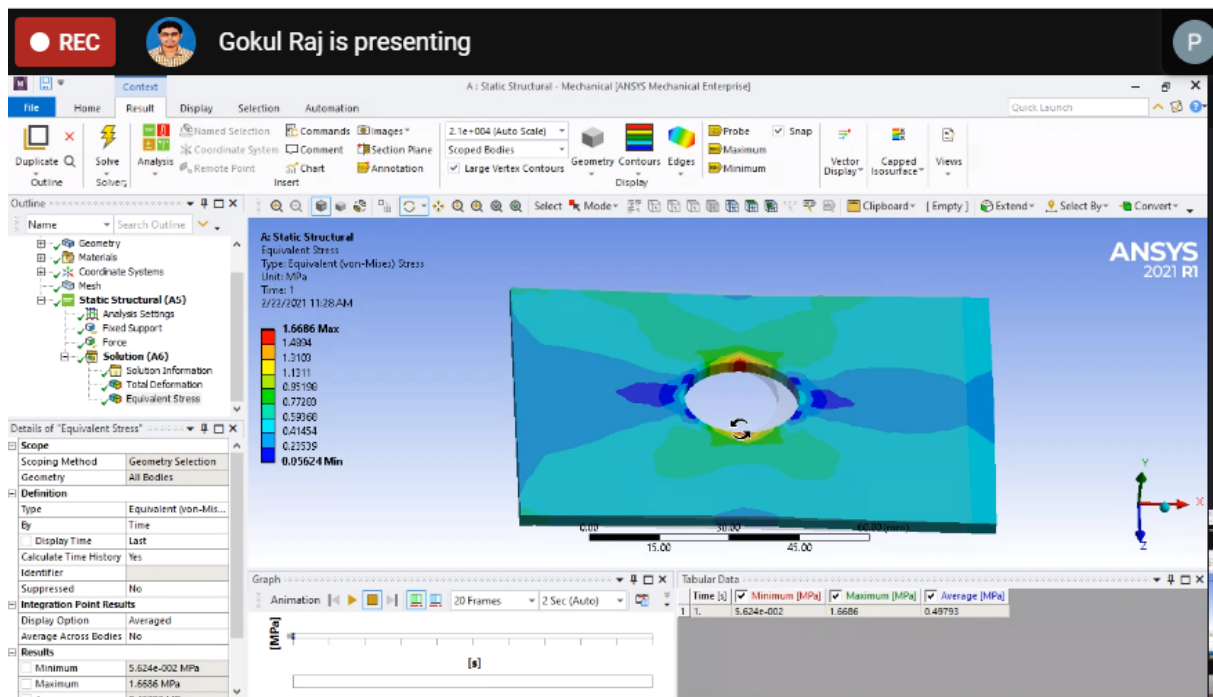
The chief guest of the FDP Mr. Damodara M.S, Business development Manager at Entuple Technologies Pvt.Ltd., gave the significance of the contents that would be covered in these five days programme.

Our Beloved Principal, B.M.S.C.E. Dr. B. V. Ravishankar, wished all the participants to actively participate and take the maximum benefits of this FDP. Sir, also gave the importance of Materials, its characterisation and its analysis in the current scenario which will lead to good research opportunities in future.



Finally the Inauguration ended by Vote of thanks rendered by Mrs. Divya S, Assitant Professor of Dept. of EEE, B.M.S.C.E

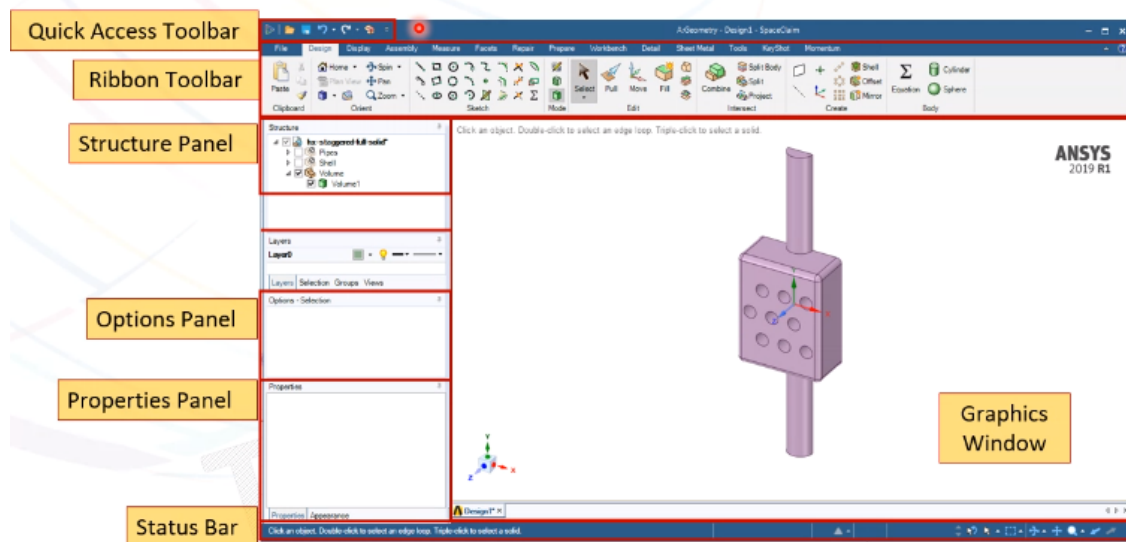
The first session of first day was started by Mr. Gokul Raj.M with the Introduction of Ansys



The second session of first day was on Introduction to Spaceclaim direct Modeler, which was given by Mr.Vanam Vijayendranath. From Concept building to modelling can be done on the same platform. Some of the application areas were discussed like Biomedical implants geometry can be modelled, sheet metal works, controls of space claim ,interfaces, etc.,

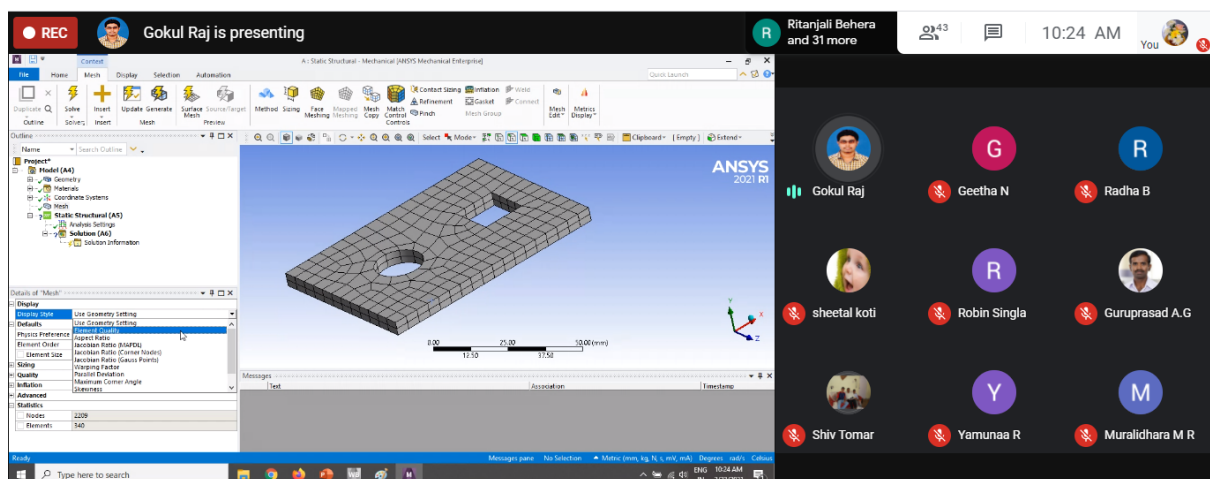
SpaceClaim Interface

EN1



Day 2 session on 23/2/2021 was started by Mr.Gokul Raj.M with live demonstration of importance of Meshing.

Mesh core skills like meshing local and global control, meshing methods and its quality was demonstrated.

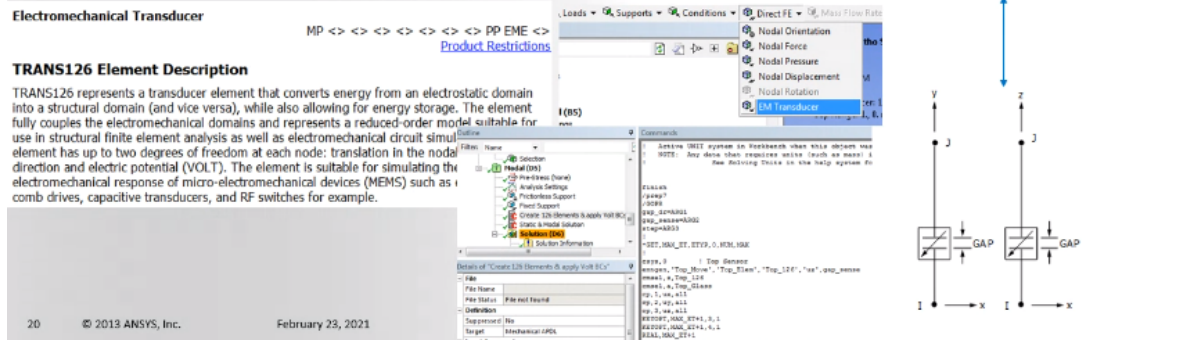
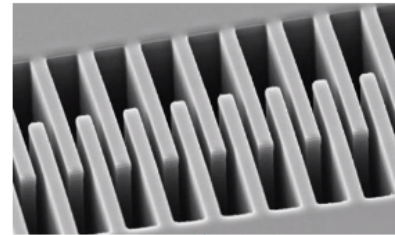


Second session for the day was on Multiphysics usage and simulations. The complete workflow of Multiphysics was illustrated and simulated.



Electromechanical transducers

- Comb drives are geometrically complex and repetitive.
- Once characterized, they can be represented in ANSYS as electromechanical transducer elements
- These elements can be generated using a command script.



REC

Gokul Raj is presenting

Srinivasa Rao N and 28 more

40

11:39 AM

You

Scope of Multiphysics simulation

Important in many industries

- Aerospace
 - Antennas, Satellites, anti-icing systems, motors
- Thermal cycling
- Electronics
 - Circuit boards, wave guides, welds, handheld devices
- Process equipment
 - Thermal cycling, pipes, power plants

Sun load at the structure
Figures Courtesy of Vertex Antennentechnik GmbH

Electromagnetics → Temperature

Gokul Raj

Sheetal Koti

Geetha N

Robin Singla

Santosh R Desai

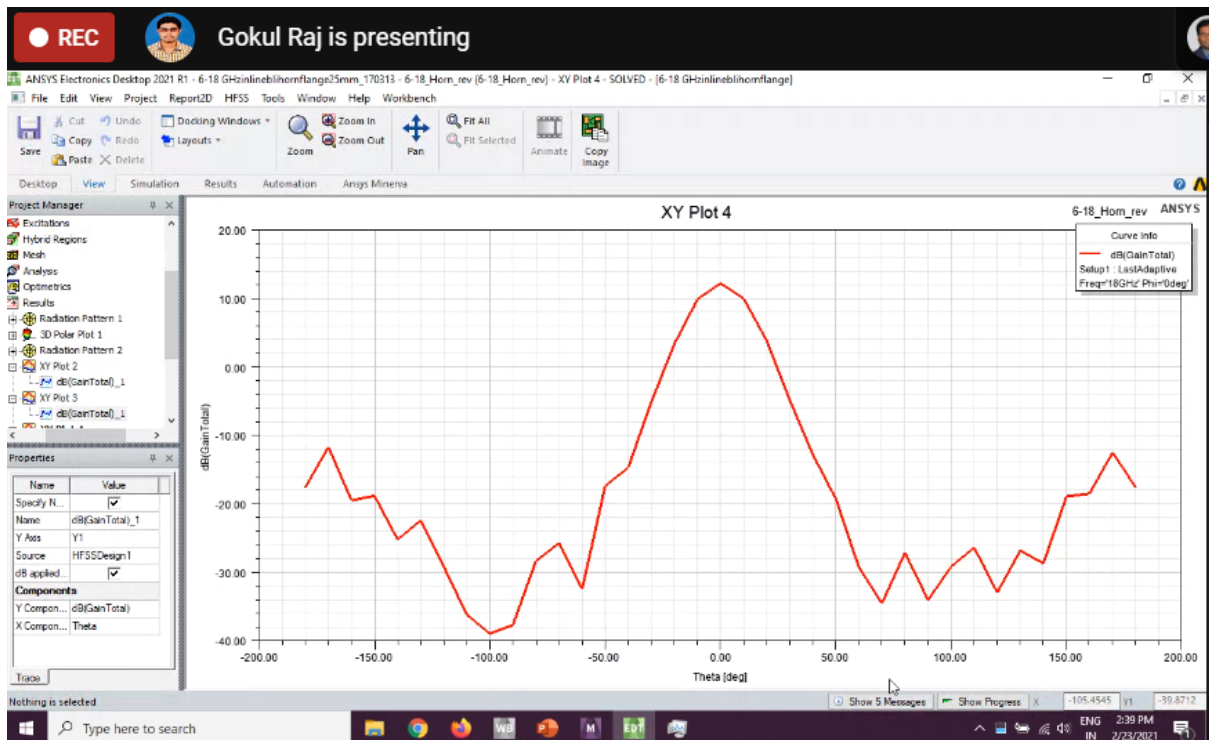
Guruprasad A.G.

Yarnunaa R

Muralidhara M R

Dr Mamatha G

Third session of second was on demo and case studies of Multiphysics taken by Mr.Gokul Raj.M. Case study of instruments for positioning of Autonomous systems, use of ANSYS for building IoT enabled Pharma Containers for shipping vaccines, Ball grid array Failure analysis



Third day session on 24/2/2021 was on Introduction to IC design Methodologies by Mr.Navin Sankar. MOSFET operations and its characteristics were discussed in detail. The steps for semi and full custom design was illustrated with Cadence software

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Meeting controls: REC, Navin Sankar is presenting, Dhayanandh S and 23 more, 12:48 PM, You

Slide content: Section01_24_feb_2021.pptx

Cadence Tools for Full Custom & Semi-Custom IC Design

- Semi-Custom IC Design**
 - Design Entry → Compilation, Elaboration & Simulation → Incisive
 - Synthesis → Genus Synthesis Solution / Stratus
 - STA → Tempus (Timing Sign-off Tool)
 - DFT → Modus
 - Physical Design → Innovus Implementation System
 - Static & Dynamic Power Analysis → Voltus (Power Sign-off Tool)
 - Linting → Conformal / Jasper Gold
 - Library Characterization → Liberate
- Packaging, SI & PI → Allegro**

Meeting participants: Navin Sankar, Divya S, Geetha N, sheetal koti, Dinesh gangwar, Muralidhara M R, Srinivasa Rao N, Robin Singla, Sirasappa Yp

Meeting details: Raise hand, Turn on captions, Navin Sankar is presenting

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Meeting controls: REC, Navin Sankar is presenting, Nagendra Narona and 26 more, 3:29 PM, You

Quality Metrics of a Digital Gate (01/ 04)

Question 1: How robust is the gate?

- What are the **guaranteed** output voltage levels for "0" and "1"?
- What are the **worst case** input logic levels for which the gate produces the corresponding guaranteed output logic levels?
- What are the **worst case noise** amplitudes the gate is able to overpower and provide functionally correct responses?
- Noise Margins
 - $NMH = V_{OH} - V_{IH}$
 - $NML = V_{IL} - V_{OL}$

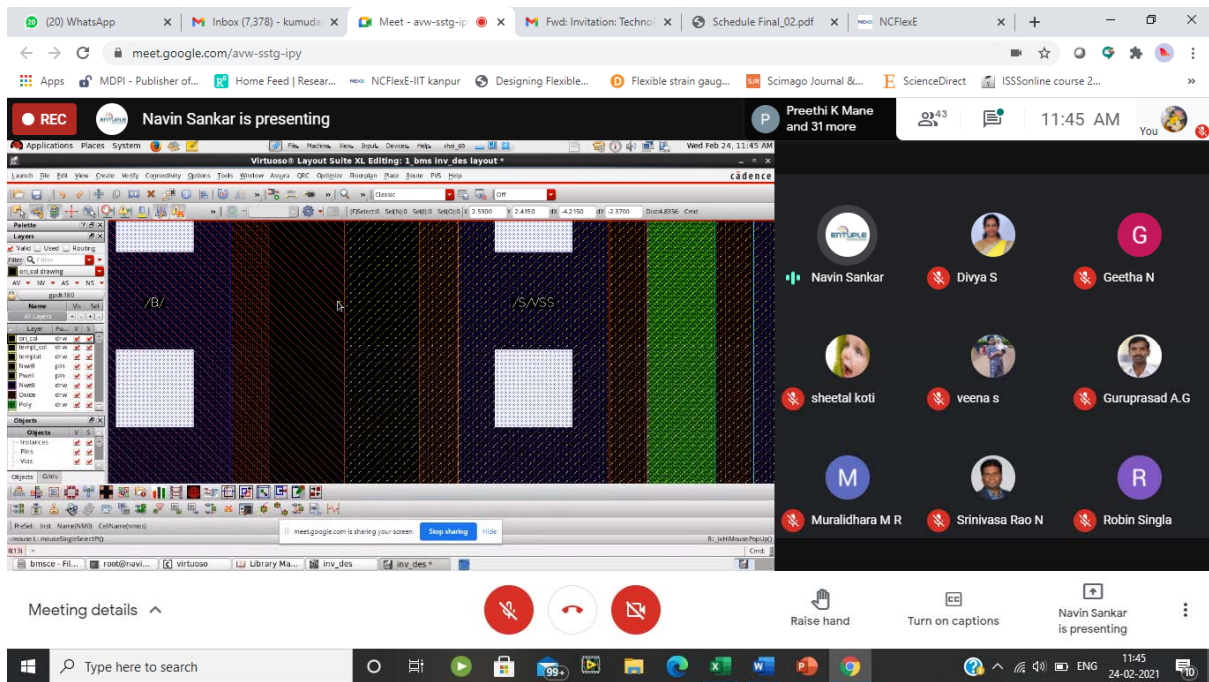
Truth Function Table (English)

A	Y
0	1
1	0

Diagram showing Practical VTC and Ideal VTC with Slope = -1. Labels include V_{OH} , V_{OL} , V_{IH} , V_{IL} , V_{OL} , V_{OH} , V_{IH} , V_{IL} , V_{OL} .

Meeting participants: Navin Sankar, Geetha N, Chaitra C, sheetal koti, mala s, Sumanth Kashyap, Muralidhara M R, Srinivasa Rao N, Santosh R Desai

Meeting details: Raise hand, Turn on captions, Navin Sankar is presenting



Fourth day Session on 25/2/2021 was started by on MOSFET as a capacitor. MOSFET as a field control device operates in three different modes Accumulation, depletion and Inversion modes.

Later, I-V characteristics of MOSFET was explained, various inverter topologies like current sink, current source and push pull were discussed with advantages and disadvantages.

CMOS inverter specification was discussed, followed by its design steps, layout design rules, standard cell template design and fabrication process were explained.

REC

Navin Sankar is presenting

(02/04)

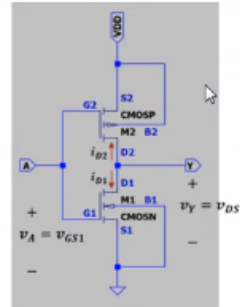
ENTUPLE
TECHNOLOGIES

MOSFET as a Capacitor

- MOSFET as a Capacitor: Depletion
 - $0 < v_G < V_T, v_S = v_D = v_B = 0$
 - As v_G increases above zero volts
 - Positive charge on the metal electrode repels holes under SiO_2
 - $\Rightarrow$ Leaves behind a layer of negative ions
 - $\rightarrow$ Depletion region under SiO_2 !
 - No carriers exist in the depletion region indefinitely!

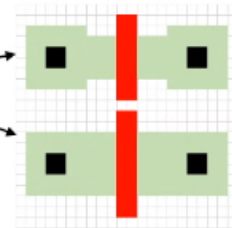
CMOS Inverter Design - Steps (03/ 04)

- Design Steps
 - Step 1 → Circuit Synthesis →



○ Step 2

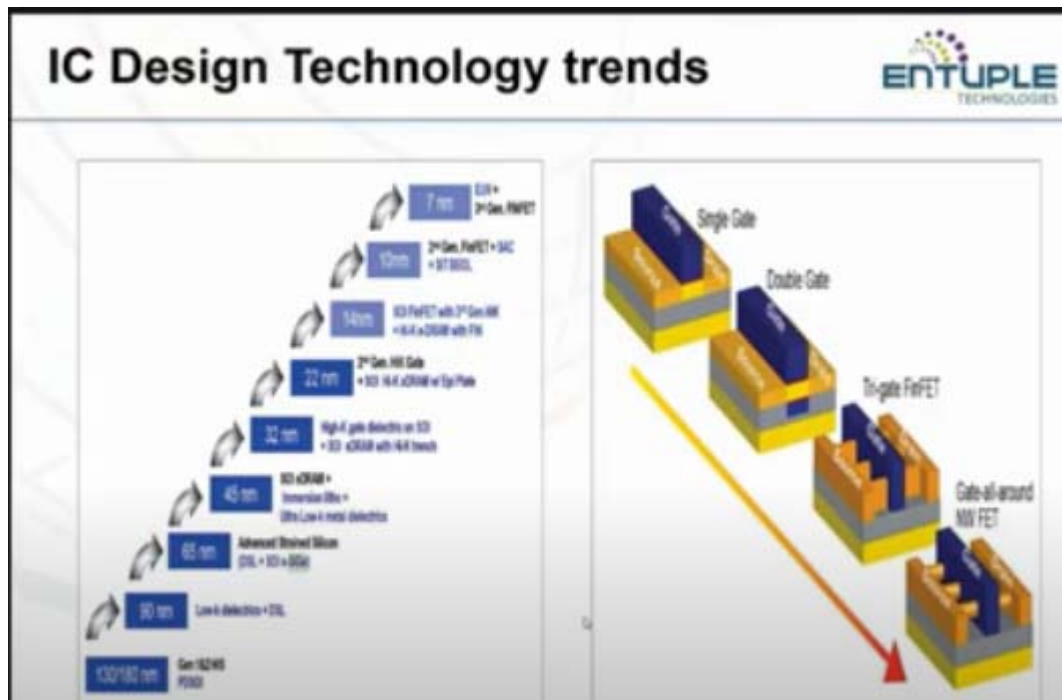
- From GPDK 180 DRM and Ref Manual, $W_{\min} = 420 \text{ nm}$
- We use the base width for NMOS $W_{\text{unit}} = 850 \text{ nm}$!
- P or NFET with $\frac{W}{L} = \frac{W_{\text{unit}}}{L_{\min}} = \left(\frac{850 \text{ nm}}{180 \text{ nm}}\right) \rightarrow \text{unit transistor!!}$
- How to size the PMOS W_p ?!
 - Need to look up the → RC Delay Model
 - → MOSFET Digital Switching Model
 - Extract MOSFET Digital Model Parameters!



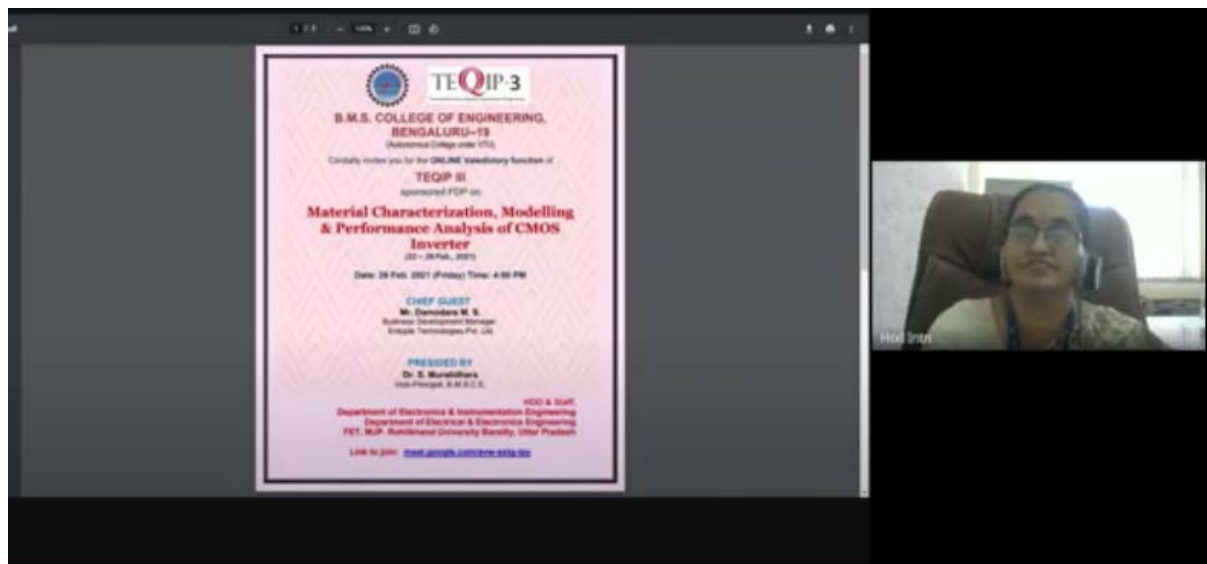
Last day and fifth day of the workshop was started by Mr. with CMOS fabrication Technology a simplified and detailed view. NMOS width optimisation for desired performance, standard cell layout concepts.

MOSFET can be viewed as electrically controlled switches and can be used to build logic gates. CMOS fabrication process like diffusion, etching, photolithography was explained followed by layout design rules.

Later, Mr. Damodara M. S. explained on the mechanical characterisation of material and about potential usage of various tools. Device characterisation and Modelling – an overview was given.



Finally, five day FDP ended with valedictory in online mode. Mr. Damodara M.S was the chief guest , Dr. S. Muralidhara , Professor and Vice principal, B.M.S college of Engineering presided over the valedictory function along with Dr.Veena N Hegde, Professor and HOD of Dept. of Electronics and Instrumentation Engg.



Coordinators

Prof. Preethi K. Mane, Dept. of EIE, B.M.S.C.E.

Prof. Santosh R. Desai, Dept. of EIE, B.M.S.C.E.

Prof. Divya S., Dept. of EEE, B.M.S.C.E.

Prof. Shiv Kumar Tomar, Dept. of ECE, FETMJPRU.

Organizing Members

Mrs. Geetha N., Dept. of EIE, B.M.S.C.E.

Mrs. Yamunaa R., Dept. of EIE, B.M.S.C.E.

**REPORT TOWARDS THE ONE-WEEK ONLINE FACULTY
DEVELOPMENT PROGRAMME ON
RECENT ADVANCES IN SUSTAINABLE MATERIALS FOR ENGINEERING
APPLICATIONS**

**Program Schedule for One Week Online FDP
[22nd – 26th, February 2021]**

Name of the FDP: Recent Advances in Sustainable Materials for Engineering Applications (RASMEA-2021)

Hosting Institute: Department of Civil Engineering, B.M.S. College of Engineering

Association Partner: Faculty of Engineering and Technology, M.J.P. Rohilkhand University, Bareilly, U.P. (India)

Venue: B.M.S. College of Engineering

Date: Feb 22th – June 26th, 2021

Total Duration: 5 Days

No. of Resource Persons: External = 08 and Internal = 03, Total = 11

Total Participants:

REC

Structural and Architectural Potential of Masonry
a sustainable solution ?

S Raghunath
Professor, Department of Civil Engineering,
(NBA Accredited for 6 years : 2014-2020)
BMS College of Engineering, Bangalore 560019
www.bmsce.ac.in
raghunath.smrc@gmail.com
raghu.civ@bmsce.ac.in

NIVASA – an Architectural NGO
www.nivasa-ngo.org

Raghunath S

You
Vinay
P

REC

Classification of materials/technologies/processes

Un-shaped materials

Shaped materials



Raghunath S

Participants: You, Vinay

11:07

FDP 2021-RASMEA_Session 3

REC

Methodology

```

graph TD
    LS[Landfill Sustainability] --> ES[Pillar of Sustainability: Environmental Sustainability]
    LS --> EC[Pillar of Sustainability: Economic Sustainability]
    LS --> SS[Pillar of Sustainability: Social Sustainability]
    ES --> TEA[Tools of Assessment: Potential environmental impacts through LCA]
    EC --> LCCA[Tools of Assessment: Life Cycle Cost Analysis]
    SS --> DHH[Tools of Assessment: Damage to human health (DALYs) Permanent death or disabilities]
    TEA --> GWP[Indicators: Global Warming Potential(GWP) (relative to CO2) & Photochemical ozone creation potential (POCP)]
    LCCA --> OCMR[Indicators: Operation cost, Maintenance cost & Revenue generated]
    DHH --> EMM[Indicators: Emission from MSW management CO2, CH4, NO, CO, NH3, H2S, NOx, SOx, VOCs, PM10]
  
```

Prof. Sivakum

Participants: You, Shivaprasad

REC

Challenges in Sustainable Construction - K.V.L. Subramaniam - I.T. Hyderabad

Faculty Development Program
22 February 2021, BSM College of Engineering

Concrete Innovations for Sustainable Construction

Prof. K.V.L. Subramaniam
Dept. of Civil Engineering
I.I.T. Hyderabad

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY HYDERABAD

K.V.L. Subramaniam

Participants: You, Manjunath

REC

Challenges: Construction

🔔

Built Shapes

- ☐ Current Forms of Construction are limited by forming on site – rectilinear
 - ☐ Rectangular shapes not efficient – high material usage
- ☐ Even plane assemblies limited to simple I, T shapes




K V L Subramaniam



⌵



⌵



⌵



⌵

REC

Challenges: Construction

🔔



Prashanth M.H Civil Engg Dept



⌵



⌵



⌵



⌵

INTRODUCTION

The document on hand is a detail narration of the events and proceedings of the One week online faculty development programme on “Recent Advances in Sustainable Materials for Engineering Applications (**RASMEA-2021**)”. The FDP was conducted by the Department of Civil Engineering, B.M.S.C.E as a value added and knowledge enhancement programme in collaboration with the Faculty of Engineering and Technology, M.J.P. Rohilkhand University, Bareilly, U.P. (India). This one week program is utilized for all the practicing Engineers, Faculty members, Research scholars and Students of both engineering as well as polytechnic colleges. The training was conducted at the premises of Civil Engineering Department, B.M.S.C.E through online mode – Google Meet and the whole programme was designed for 5days.

OBJECTIVES AND OUTCOME OF THE PROGRAMME

- The course is proposed to generate and impart knowledge on recent advancement in concrete technology and sustainable infrastructure.
- To provide the knowledge about various developments in the area of concrete and other sustainable materials use for infrastructure development.
- Provide a forum to keep themselves abreast of the emerging trends in construction materials.
- Understand the latest and advanced inputs about materials/composites and its techniques.
- Make specific recommendation for future course of action to promote efficient & effective trends and technologies in of advanced construction material.
- This Programme will enhance better teaching ability with respect to content and delivery in the area of advanced concrete technology.

ABOUT THE RESOURCE PERSONS AND PARTICIPANTS

The programme was very planned by gathering the various resource persons having an enormous knowledge in the area of the advances in sustainable materials from various premier institutions such as IITs, IISc, NITs and other universities. Due to this, the programme received an overwhelming participates consisting of PG Students, Research scholars, Faculty members in and around the globe from various premier institutions such as NITs, IITs and other universities. A total number of 120 participants were gathered for the programme.

TIME SCHEDULE:

The FDP was conducted for a period of 5 days in the Department of Civil Engineering at B.M.S.C.E from 22nd to 26th Feb 2021. Each day consists of one morning session between 10.00 AM – 12.00 Noon and one afternoon session between 2.00 PM – 4.00 PM. The training was conducted during the pandemic condition in order to enhance the knowledge of the participants through the online mode.

The Schedule of the FDP is as given below:

Sl. No.	Time Schedule	Activity	Speaker
Day – 1; 22nd February 2021			
1	9:30 am – 10:00 am	Inauguration	Inauguration of the Programme
2	10:00 am – 12:00 pm	Session - 1	Topic: Sustainable Alternatives in Masonry Construction Speaker: Dr. S Raghunath, Professor, Civil Engineering Department, B.M.S.C.E
3	2:00 pm – 4:00 pm	Session - 2	Topic: Concrete Innovations for Sustainable Construction Speaker: Dr. K V L Subramaniam, Professor, Civil Engineering Department, IIT-Hyderabad
Day – 2; 23rd February 2021			
1	10:00 am – 12:00 pm	Session - 3	Topic: Sustainable Geotechnical and Geo-environmental Infrastructure Speaker: Dr. G L Sivakumar Babu, Professor, Civil Engineering Department, IISc, Bangalore.
2	2:00 pm – 4:00 pm	Session - 4	Topic: Performance of Sustainable High Strength Concrete – Mix Design & Characterisation Speaker: Dr. M C Nataraj, Professor & Head, Civil Engineering Department, M.S.R.I.T
Day – 3; 24th February 2021			
1	10:00 am – 12:00 pm	Session - 5	Topic: Use of Acoustic Emission Technique to study the fatigue behaviour of under reinforced concrete beams Speaker: Dr. Prashanth M H, Assistant Professor, Civil Engineering Department, NITK-Surathkal
2	2:00 pm – 3:00 pm	Session - 6	Topic: Retrofitting of RC Structural Elements Speaker: Dr. Rajanna T, Assistant Professor, Civil Engineering Department, B.M.S.C.E
3	3:00 pm – 4:00 pm	Session - 7	Topic: Bio renewable Arecanut: Commercial Values towards sustainable economy Speaker: Dr. Gurumurthy Hegde, Professor and Prof. CNR RAO Chair Professor, B.M.S.C.E
Day – 4; 25th February 2021			
1	10:00 am – 12:00 pm	Session - 8	Topic: Advancements in Sustainable Pavement Technologies: Innovative materials, construction, best practices and asset management tool kits Speaker: Dr. B Krishna Prapoorna, Associate Professor, Civil Engineering Department, IIT-Tirupati
2	2:00 pm – 4:00 pm	Session - 9	Topic: Shear Behaviour of Cement Stabilized Rammed Earth Speaker: Dr. Pavan G S, Assistant Professor, Civil Engineering Department, NITK-Surathkal
Day – 5; 26th February 2021			
1	10:00 am – 12:00 pm	Session - 10	Topic: Sustainable Geopolymer Concretes and their application Speaker: Dr. N P Rajmane, Former Scientist, CSIR-SERC, Chennai
2	2:00 pm – 4:00 pm	Session - 11	Topic: Rammed Earth – Structural Performance and their behaviour Speaker: Dr. Prasanna Kumar P, Professor & H.O.D, Civil Engineering Department, B.M.S.C.E

FDP PROCEDURES – IN BRIEF

The Programme started with an inaugural speech by the programme co-ordinators. The inauguration of the programme was done by Dr. B V Ravishankar, Professor & Principal, B.M.S.C.E. The participants were welcomed by Dr. S Muralidhara, Professor & Vice Principal, B.M.S.C.E. Dr. Prasanna Kumar P, Professor and Head, Civil Engineering Department by also addressed the participants. The key note speaker for the programme Dr. S. Raghunath, Professor, Dept. of Civil Engg., BMSCE was also introduced at the inaugural session. Further a brief overview about the department and the objectives of the FDP was provided by the HOD.

INAUGURAL SESSION:

The esteemed personalities present during the inaugural session of the programme:

- Dr. B.V. Ravishankar, Principal, B.M.S.C.E
- Dr. S Muralidhara, Vice Principal, B.M.S.C.E
- Dr. Prasanna Kumar P, Professor and Head, Civil Engineering Department B.M.S.C.E
- Dr. Raghunath S, Professor, Civil Engineering Department B.M.S.C.E

Dr. Prasanna Kumar P, HOD of Civil Engineering Department welcomed all the respected dignitaries and participants and highlighted about the current programme. Dr. B.V. Ravishankar, Principal, B.M.S.C.E congratulated the co-ordinators for the effort taken in conduction of the programme in the recent trend. Dr. S Muralidhara, Vice Principal, B.M.S.C.E appreciated the program and also encouraged for such activities to be conducted periodically.

1st Day (22/02/2021) Session I:

Dr. S Raghunath, Professor, Department of Civil Engineering, BMSCE, Bangalore delivered the lecture on “Sustainable alternatives in masonry construction”. His expertise mainly includes areas of structural masonry, experimental dynamics, Earth quake resistant buildings, alternate building materials and methods, Energy and buildings, Masonry domes and vault, restoration and structural strengthening of heritage buildings. The lecture mainly highlighted on the strengthening of the existing structures using alternative building materials and their performance at their later stages.

1st Day (22/02/2021) Session II:

Dr. K.V.L Subramaniam, Dean and Professor, IIT Hyderabad delivered the interactive lecture on “Concrete Innovation for sustainable construction”. His research interest mainly includes Behaviour of Concrete and Masonry Structures; Alkali-activated Binders

and Geopolymers; Rheology Control and 3D Printing; Fiber-reinforced Concrete; Sensor development for Concrete structures and Infrastructure Monitoring; Low-cost housing solutions with prefabricated elements; Repair systems and Strengthening of Concrete. He mainly overviewed on the different alternative low embodied energy material usage in the different sectors of the concrete industry.

2nd Day (23/02/2021) Session I:

An informative lecture on “Sustainable Geotechnical and Geo-environmental infrastructure” was presented by Dr. G.L. Siva Kumar Babu, Professor, IISC, Bangalore. His research activities mainly includes Risk and reliability applications in Geotechnical engineering, Geosynthetics and reinforced soil structures, Environmental Geotechnology, Fibers in geotechnical engineering, Earthquake Geotechnical engineering, Geotechnics for disaster mitigation. The lecture mainly highlighted on the most effective usage of solid waste management and usage of these wastes in the most effective manner.

2nd Day (23/02/2021) Session II:

Dr.M.C.Nataraj, Professor and Head, M.S.Ramaiah Institute of technology, Bangalore delivered an informative lecture on “Performance of sustainable high strength concrete – Mix design and characterisation”. His area of interest is on advanced construction materials, concrete technology, structural design, geopolymers and many more. He briefed about the usage of alternative sustainable materials as fine aggregate and coarse aggregates in the development of high strength concrete along with formulated mix design as per the latest code.

3rd Day (24/02/2021) Session I:

Dr. Prashanth M.H, Assistant Professor, NITK Surathkal discussed on “Use of acoustic Emission technique to study the fatigue behaviour of under reinforced concrete beams”. His subject expertise is mainly on fracture mechanics of concrete and discussed on the effective usage of AEM technique for effective identification of crack propagation in RC beams.

3rd Day (24/02/2021) Session II:

Dr. Gurumurthy Hegde, Professor & Prof. CNR Rao Chair Professor, B.M.S.C.E illuminated the participants with “Biorenewable Arecanut : Commercial Values towards sustainable economy”. His expertise is on Nano technology, liquid crystal displays, bio waste materials, super capacitors, photo induced studies, catalysis etc. He illustrated about the different perspectives for usage of Nano material which probably may not be sustainable material, but its effective usage as construction materials.

3rd Day (24/02/2021) Session III:

Dr. Rajanna T, Asst. Professor, Dept. of Civil Engg., BMSCE has delivered a lecture on retrofitting of RC structural elements. He has covered different test procedure to find the degradation of RC structures and re-strengthening of the same by using different techniques. Also, the detailed retrofitting by using FRP laminates has been covered.

4th Day (25/02/2021) Session I:

Dr. B. Krishna Prapoorna Biligiri, Associate Professor, IIT Tirupathi gave a detailed informative lecture on “Advancements in Sustainable Pavement Technologies: Innovative materials, construction, best practices and asset management tool kits”. His research interest includes Transportation Engineering, Sustainable Roadway Infrastructures for Smart Cities – Pavement Materials & Construction, Advanced Pavement Materials Characterization – Testing, Evaluation, & Quality Control, Sustainable Materials & Energy Use – Asphalt-Rubber, Recycled, Bio-based, & Nanoscale, Impacts of Roads on Environmental Quality – Pervious Concrete & Warm-Mix Asphalt, Pavement Aging & Forensic Evaluation – Perpetual Pavements & Nondestructive Testing, Roadway Systems Performance – Life Cycle Assessment & Management, Statistical Analyses & Constitutive Modelling – Rational Performance Prediction, Laboratory & Field Highway Noise Evaluation & Modelling – Quiet Environment and Computer Applications in Civil Engineering – Database Creation & Management.

4th Day (25/02/2021) Session II:

Dr. Pavan G.S, Assistant Professor, NITK Surathkal discussed on “Shear Behaviour of Cement Stabilized Rammed Earth”. His subject expertise is mainly on Finite element formulation of beams, plates and shells, Isogeometric methods, Mechanics of structural masonry, Modern earthen construction: CSEB, CSRE.

5th Day (26/02/2021) Session I:

Dr. Rajamane N.P, Former and Founder, Head, CACR, SRMIST (formerly SRM University) Near Chennai, India. Delivered a lecture on “Sustainable Geopolymer Concretes and their applications”. His research interest mainly includes geopolymer concrete, Nano materials and advanced concrete technology and many more. Geopolymer concrete is the current order of the research and is also called as Father of Indian Geopolymer concrete. He overviewed the practical application of geopolymer concrete in actual field conditions.

5th Day (26/02/2021) Session II:

Dr. P. Prasanna Kumar, Professor and Head, Department of Civil Engineering, BMSCE, Bangalore delivered the lecture on “Rammed Earth – Structural Performance and their behaviour”. His expertise mainly includes areas of rammed earth, masonry, sustainability, alternate building materials. The lecture enlightened the huge knowledge on the usage of rammed earth in the actual practical application. Further typical case studies were also

highlighted where the usage of rammed earth technology has been effectively brought out more in view of sustainability along with structural stability.

LIST OF PARTICIPANTS REGISTERED FOR RASMEA-2021

Name	College/Institution	Position
Mekhala R	Presidency University	M.Tech Student
Dr. Shivaprasad K N	JSS Science and Technology University, Mysuru	Assistant Professor
Dr. Ajay N	RASTA - Resource Centre for Asphalt and Soil Training Academy	Assistant Professor
Sharanabasava Patil	Ballari Institute of Technology and Management	Assistant Professor
Karthik M	Dayananda Sagar College of Engineering	Assistant Professor
Thyagaraj K J	Sri Venkateswara College of Engineering	Assistant Professor
Nitin Arvind Deshpande	KLS Gogte Institute of Technology, Belagavi	Assistant Professor
Sreenivasa M	PES College of Engineering, Mandya	Assistant Professor
Sharada S A	S.J.C. Institute of Technology	Assistant Professor
Bhavya S	S.J.C. Institute of Technology	Assistant Professor
Maaz Allah Khan	Maharishi University of Information Technology, Lucknow	Research Scholar
Manjunath S	Acharya's NRV School of Architecture	Assistant Professor
Dr. Kavitha C S	Malnad college of engineering	Assistant Professor
Veeresh Kumar S	JSW Steel	Industry
Dr. Sangeetha D M	AJ Institute of Engineering and Technology,	Associate Professor
H S Sathish	B.M.S. College of Engineering	Professor
Dr. S. Poorna Prajna	PES College of Engineering, Mandya	Assistant Professor
Srinivas F Chitragar	Basaveshwar Engineering College, Bagalkot	Assistant Professor
Mukundaswamy M S	Dr. Ambedkar Institute of Technology	Assistant Professor
Asha Rani N R	Alliance university	Assistant Professor
SIDDANNA	Government Polytechnic, Mirle	Lecturer
Arjun	B.M.S. College of Engineering	Assistant Professor
SURYA KANT SAHDEO	IIT ROORKEE	Research Scholar
Abhishek S	Sri Venkateswara College of Engineering,	Assistant Professor
Nandeesh M S	M.S. Ramaiah Institute of Technology	Assistant Professor
Vajreshwari umachagi	Industry	Consultant
Chandana prasad	Global academy of technology	M.Tech Student
Dr. Venkata Krishnaiah R	Bharath Institute of Higher Education and Research	Professor
M.A. Venugopal	PES College of Engineering, Mandya	Assistant Professor
Praveen Nigam	RGPV BHOPAL	Research Scholar
Panditharadhy B J	National Institute of Technology Karnataka	Research Scholar
Sushma M	S.J.C. Institute of Technology	Assistant Professor
SANDESH N U	BMS College of engineering	Research Scholar
Suyog Bapuso Rayjadhav	DKTES Textile and Engineering Institute, Ichalkaranji	Assistant Professor
Venugopal G	RV College of Engineering	Assistant Professor

ROOPANJALI S	Sri Jayachamarajendra college of Engineering	Assistant Professor
Fatheali A Shilar	KLE Technological University, Hubli	Assistant Professor
Dr. Amulya Murthy Aku	KLE SBMK AYURVEDA MAHAVIDYALAYA	Research Scholar
Chandrashekar Gowda K N	Maharaja Institute of Technology Mysore	Assistant Professor
R.Chitra	BIHER	Assistant Professor
H S Vishwanatha	MEI Polytechnic	H.O.D
Arun kumar H R	East West Institute of Technology	Assistant Professor
Sujay C Deshpande	KLS GIT, Belagavi	Assistant Professor
Mrs MANASA B	Vivekananda Institute of Technology	Assistant Professor
Neha Vivek A	BMS College of Engineering	Research Scholar
Vinayaka N M	Rao Bahadur Y Mahabaleswarappa Engineering College, Bellary	Assistant Professor
Shashi Kiran C R	R V College of Engineering	Assistant Professor
YOGESH PATHAK	Institute of Engineering and Technology	Research Scholar
HANUMANTHARAJU S	Government Polytechnic Kalgi, Gulbarga	Lecturer
BHOODEVI BHANDARE	PDA COLLEGE OF ENGINEERING	Assistant Professor
Dr. AMITHA N R	Acharya's NRV School of Architecture	Assistant Professor
Ashwin Thammaiah K	RV College of Engineering	Assistant Professor
Pavan Gudi	KLS Gogte Institute of Technology	Assistant Professor
RAJESH GL	KS Institute of Technology, Bengaluru	Assistant Professor
Gowtham Prasad M E	R V College of Engineering	Assistant Professor
Dr. Pradeep Kumar D	Bule Hora University, Ethiopia	Lecturer
RAVIKIRAN S WALI	R V College of Engineering	Assistant Professor
SHRIDHAR MARUTI YALLURKAR	Anjuman Institute of Technology and Management Bhatkal	Associate Professor
RAJA ANWAR HUSSAIN	Government Engineering College, Raichur	Assistant Professor
Ashwini Manjunath B T	Atria institute of technology	Assistant Professor
Dr. K. Ganesh	B.M.S. College of Engineering	Professor
Dr. T.H.Patel	Ballari Institute of Technology and Management, Bellary	Professor
Navya N	Sapthagiri college of engineering	Assistant Professor
VIJAYKUMAR	Government Engineering College Raichur	Assistant Professor
Shankar H Sanni	BEC BAGALKOT	Associate Professor
Dr. Mahesh V M	Sri Jayachamarajendra College of Engineering, Mysore, Karnataka, India	Assistant Professor
Dr. Bindya S	SJCE JSSSTU MYSURU	Assistant Professor
Zeenat Barkatalli Merchant	POONA COLLEGE OF ARTS, SCIENCE AND COMMERCE	Associate Professor
M N Prakasha	PES College of Engineering, Mandya	Assistant Professor
Snehalata hiremath	Tontadraya college of engineering,	Assistant Professor
Dr. B S Keerthi Gowda	CPGS VTU Mysuru	Assistant Professor
Vinod B R	BMSIT&M	Assistant Professor
Dr. Sadashiva M	PES College of Engineering, Mandya	Assistant Professor
Sirisha Reddy	Acharya institute of technology	Assistant Professor

Darshini s Shekhar	Presidency university	Research Scholar
Dr. N. Kumara Swamy	JSS Science and Technology University	Assistant Professor
Dr. Sanjay Kumar Verma	Takshshila Institute of Engineering and Technology, Jabalpur, Madhya Pradesh	Associate Professor
Dr. Nakul Ramanna	Presidency Univerty	HOD
Manjunath Gouda M Patil	KLS Gogte Institute of Technology, Belagavi	Assistant Professor
Raghunath Diwakar	KLS Gogte Institute of Technology, Belagavi	Assistant Professor
ARAVINDAN S	Sri Venkateshwara College of Engineering	Assistant Professor
Mahesh Chandra K V	Bangalore Institute of Technology	Assistant Professor
PRAMUKH N	JSSATE	Assistant Professor
SHIVARAJ S MANGALGI	PDA COLLEGE OF ENGINEERING KALBURAGI	Associate Professor
S. O. Sunitha	MEI Polytechnic	Sl. Gr. Lecturer
Dr. A Mani	Bharath Institute of Higher Education and Research	Professor
THEERTHANANDA M P	Government Engineering College Kushalnagar	Assistant Professor
Dr. Suresh B	Bapuji Institute of Engineering and Technology	Assistant Professor
Ashwini B	PES College of Engineering, Mandya	Assistant Professor
MANJUNATHA MC	TMAE'S POLYTECHNIC, HOSPET	Lecturer
Ravichandra Honnalli	Ballari Institute of Technology & Management	Assistant Professor
Ravindra M V	S.J.C. Institute of Technology	Associate Professor
Suchetha N Raju	Sri Jayachamarajendra College of Engineering, Mysore	Assistant Professor
Dr. Yogesha K K	The National Institute of Engineering	Assistant Professor
AVINASH S DESHPANDE	REVA University	Assistant Professor
Roopashree	Government Engineering College, Karwar	Assistant Professor
Shilpa B S	East West Institute of Technology	Assistant Professor
Prasanna Nadagouda	Tontadarya College of Engineering	Assistant Professor
Dr. Basavana Gowda S N	Tontadarya College of Engineering	Associate Professor
MAMATHA M K	PES College of Engineering Mandya	Assistant Professor
Ravindranath C	S.J.C. Institute of Technology	Assistant Professor
Veeresh kumar s	JSW Steel	Industry
Jitha PT	B.M.S. College of Engineering	Research Scholar
Ram Rohit	B.M.S. College of Engineering	Assistant Professor
Subash Chandra K S	Government Polytechnic, Bagepalli	Lecturer
Mohammed Sayeed Ali M	SJCE Mysore	MTech Student
Rajesh A S	Maharaja Institute of Technology, Mysore	Assistant Professor
Dr. Yashwanth M K	Maharaja Institute of Technology, Mysore	Assistant Professor
Dr. N K Narayana Swamy	B.M.S. College of Engineering	Assistant Professor
Er. Gayathri S Shivakumar	BMS School of Architecture	Associate Professor
Varuna Koti	Global Academy of Technology	Assistant Professor
SHRITHI S BADAMI	R V College of Engineering	Assistant Professor
Prakash T B	BMS Evening College of Engineering	Assistant Professor

ROOPANJALI S	Sri Jayachamarajendra College of Engineering, Mysore	Assistant Professor
G S Vijaya	Govt. SKSJ Technological Institute	Assistant Professor
Hema H	The National Institute of Engineering,	Assistant Professor
Shruthi K v	S J Government Polytechnic College	Lecturer
Dr. Varsha B N	B.M.S. College of Engineering	Assistant Professor
Dr. Krishnappa R Olekar	B.M.S. College of Engineering	Assistant Professor

FEEDBACK

Feedback for all the sessions in the programme was taken after completion of every session from the attended participants. A good amount parameters and fields were considered in the feedback form shared with the participants. The programme received an over helming positive response and appreciation from all the participants regarding the conduction of the FDP, managements and the quality of the lecture delivered by the speakers.

CONCLUSION AND RECOMMENDATIONS

The FDP was conducted successfully and all the participants actively took part in all the sessions of the 5 days programme and ended with the vote of thanks by the programme co-ordinators. Later the certificate of appreciation and participation were reached to all the resource persons and participants.

TEQIP sponsored one week online FDP on "Recent Advances in Sustainable Materials for Engineering Application" 22 - 26 February 2021

FEED BACK for Session 9 _26th February 2021

Topic: Sustainable Geopolymer Concretes and their application

Resource Person: Dr. N P Rajmane, Former Scientist, CSIR-SERC, Chennai

Email address *

chandanaep@gmail.com

Name of the Participant *

Chandana Prasad

Name of the Institution/Organisation *

Global Academy of Technology

Designation *

☐ Assistant Professor

☐ Associate Professor

☐ Professor

☐ Research Scholar

☒ Other: Student Mtech final semester

e-mail Id *

chandanaep@gmail.com

The content of the session was useful and interesting *

	1	2	3	4	5	
Strongly Disagree	☐	☐	☐	☐	☒	Strongly Agree

The FDP session was structured and well organised *

	1	2	3	4	5	
Strongly Disagree	☐	☐	☐	☐	☒	Strongly Agree

What are your take away points from Session-9 ? *

It's all about the advancements in the field of geo polymer concrete and how it is being incorporated as a replacement to cement. All the applications which is being carried out in this field was briefly explained.

Any suggestions for further improvements

The quality of network had to be improved

This form was created inside of BMS College of Engineering.

Google Forms

CONCLUSION AND RECOMMENDATION

The FDP was conducted successfully and all the participants actively took part in all the sessions of the 5 days programme and ended with the vote of thanks by the programme co-ordinator. Later the certificate of appreciation and participation were reached to all the resource persons and participants.

Dr. Manjunath R
Programme Co-ordinator
Assistant Professor,
Civil Engg. Dept.,
B.M.S.C.E

Dr. Rajanna T
Programme Co-ordinator
Assistant Professor,
Civil Engg. Dept.,
B.M.S.C.E

Vinay M L Gowda
Programme Co-ordinator
Assistant Professor,
Civil Engg. Dept.,
B.M.S.C.E

BMS College of Engineering, Bengaluru-560019
Department of Mechanical Engineering
Technical Education Quality Improvement Program
Centre Of Excellence In Advanced Materials Research
One Week Workshop on Advanced Manufacturing
In association with mentee Institution
FET M J P Rohilkhand University Bareilly, Uttar Pradesh

Report on the One Week Workshop on Advanced Manufacturing

01 – 05 March 2021

INTRODUCTION

In view of getting the Masters Students, Research Scholars and Faculty of Mechanical Engineering in the latest trends in Manufacturing, and with an intent of setting up strong foundations based out of research and technology driven aptitude among the stakeholders viz., Ph.D. scholars, Masters students and Faculty members, the Department of Mechanical Engineering conceptualized the Workshop crafting the contents of the same to suit the research needs of any professional who is the domain of composites. In total, the workshop was for five days between 9:30 A.M. to 4:30 P.M.

OBJECTIVES

- Expert lectures in the domains of composites and advanced manufacturing.
- Experience sharing of experts in contribution to research.
- Discussion of key points for stakeholders to write project proposals and carry out research activities

Session-wise details:

Day 1: 01/03/2021 Monday

On the first day, i.e., 01/03/2021, the workshop was formally inaugurated in the presence of dignitaries from the institution and industry. Sri. Chandan Kumar, Application Engineer from M/s. Kennametal was the chief guest and Prof. B V Ravishankar, Principal of the Institution was the president of the function. Senior faculty members from the Institute were among the invitees who graced the occasion.

The first session was a keynote session by Sri. Chandan Kumar, Application Engineer, Kennametal India. The session focused on the advancements in mechanical engineering from an industrial perspective. The session was lively with the audience asking many queries at the end.

The second session was from a distinguished scientist from DRDO. Due to confidentiality of the contents of the talk, the same has not been mentioned. The speaker gave leads about the possible outcomes of research in the field of mechanical and aerospace engineering.

The third session was from Sri. Vaidyanath Harinarayana from Purdue University, United States of America virtually.. The session focused on technical concepts such as Two Photon Lithography, modern technologies in 3D Printing.

Day 2: 02/03/2021 Tuesday

The third session was on Abrasive Waterjet Cutting by Dr. S Srinivas, Professor, Department of Mechanical Engineering, BMSCE. The session focused on fundamentals of Abrasive Waterjet Machining and research opportunities in the said domain.

The fourth session was in the domain of Material Characterization by Dr. Sachin Kumar, Assistant Professor, Mechanical Engineering, BMSCE. The talk focused on elementary and advanced concepts in the field of Scanning Electron microscopy, X Ray Diffraction methodology.

The fifth session was undertaken by Sri. Prithvi Prasad Thirumalai Vinjamopre from Purdue University, United States of America virtually. The talk was in the domain of Topology Optimization. The talk covered the design and manufacturing concepts and also dealt with the domain of new product development through topology optimization.

Day 3: 03/03/2021 Wednesday

The sixth session was undertaken on Fatigue behavior of composites by Dr. Anil Chandra, Assistant Professor, Mechanical Engineering, BMSCE. The talk emphasized on the composite materials and fatigue behavior. The speaker also explained the processes involved in fatigue characterization in nano composites.

The seventh session was undertaken by Dr. Suhasini Gururaja, Associate Professor, Mechanical Engineering, University of Auburn, Alabama, United States of America via online mode. The speaker dealt on the modeling of composites on software. The discussed extensively in the multi scale damage modeling in the field of composites.

Day 4: 04/03/2021 Thursday

The eighth session was on the challenges involved in handling, modeling, fabrication, processing and manufacturing of composites. This was undertaken by Dr. Akshay Hejjaji, from University of Toulouse, France. The speaker aptly discussed various vantage points a researcher has to keep in mind while handling composites,

Laboratory visits and Hands-on Training (Day 4 and 5: 04/03/2021 and 05/03/2021 Fri and Sat)

5 exclusive sessions were planned to give all the participants a hands-on training in the Abrasive Waterjet Machining facility, Electric Discharge Machining Facility, Scanning Electron Microscopy Facility, X Ray Diffraction facility, 3D Printing Facility, Nano Technology Laboratory Facility. The participants were made into small groups of 4 or 5 members and cyclically, all the members got an opportunity to understand the working of these technologies and briefly practice the same.

The last session of the workshop was the valedictory function, wherein, the Principal of the Institution, Prof. B V Ravishankar presided over and took stock of the event report and also heard the reviews and feedback from the participants. Participation certificates were distributed to all the participants.

TOTAL NUMBER OF PARTICIPANTS: 21

Ph.D. Students: 3

Faculty Members: 1

M. Tech Students: 17

INAUGURATION BY PRINCIPAL, Prof. B V RAVISHANKAR



BANNER OF THE PROGRAM



SCREENSHOT OF LABORATORY TRAINING



SCREENSHOT OF LABORATORY TRAINING





Valedictory function



Certificate distribution

Coordinator Name	Signature
Dr. S Srinivas	
Mr. C C Arjun	



TEQIP-3
Technical Education Quality Improvement Programme

IEEE SSIT
SOCIETY ON SOCIAL IMPLICATIONS OF TECHNOLOGY

B.M.S. College of Engineering
Bengaluru-560 019

March 1st to 5th 2021



One-week online workshop
On



Sponsored by
Centre of Excellence in Advanced Materials Research
(TEQIP-1.2.1)

Advanced Materials for Power
Electronic Circuits

EVENT REPORT

Event: One-week online workshop on “Advanced Materials for Power Electronic Circuits”

Date: 1st March 2021 to 5th March 2021

A national level online workshop on “Advanced Materials for Power Electronic Circuits”, jointly organized by Dept. of EEE, BMSCE, IEEE PELS, IES and SSIT societies, Bangalore chapters and sponsored by Centre of Excellence in Advanced Materials Research (TEQIP-1.2.1) was conducted during 1st March 2021 to 5th March 2021. A total number of 133 participants, from almost all the parts of India viz. Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, Rajasthan, UP, MP, Tripura and Mizoram had registered for the workshop. There were 32 IEEE members and 101 non-IEEE members among the participants. The aim of this workshop was to enlighten upon the recent developments in all types of materials for advancing power electronics. These developments include research in wide band gap semiconductors for power devices, novel magnetic materials for inductors and capacitors, modern materials for dielectrics in capacitors, packaging and cooling materials. The resource persons include veterans in the field of power electronics and materials, from eminent institutions like IISc, NITs and industry.

The workshop was inaugurated by Mr. Vishal Anand, chair of IEEE PELS Bangalore chapter. Mr. Vishal gave a brief about IEEE PELS and IES societies and the importance of giving back to society. He briefed about the importance of simulation in the field of power electronics.

The workshop started with the session by Dr. S. Moorthy, Professor, NIT Trichy. He gave an overview of various devices used in power electronics circuits. The afternoon sessions of Day1 and Day 2 were handled by Dr. Jatis Kumar from SRM University, AP. He covered the fabrication process of ultra-thin film semiconductors.

On the second day, morning session was handled by Dr. J. Venkataramanaiah, SVNIT, Surat. He dealt with many new topologies in multilevel inverters with the control strategies. On Day-3 we had Dr. Venkata R Vanjari, Delhi Technological University. He gave an insight about the design and challenges on photovoltaic power conversion. Day-3 second session was handled by Dr. Digbijoy N. Nath, Associate Professor, IISc, CenSE. He has a very good research experience in wide band gap semiconductor devices. He gave an insight on the features and

current trends on Gallium nitride (GaN)-based high electron mobility transistors for power electronics.

On Day-4, Dr. Sandeep N, Assistant Professor, NIT Jaipur, gave a deep insight into applications and challenges of multilevel inverters. The second session was handled by Mr. Vinay Kumar, Development Engineer, E3/DC GmbH, Germany. He shared his experience on Current Trends in Silicon carbide devices.

Last day was handled by Dr. Shakti Prasad D, Assistant Professor, IIT, Goa., who introduced Basics and Techniques of EMI reduction in power electronic circuits.

The success of the workshop was clearly evident from the very good feedback given by the participants.

Gallery

Inauguration



Day 1

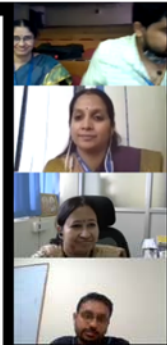


Evolution of Electronic devices and their uses in Power Applications

Dr. S. Moorthi

Associate Professor

Department of Electrical and Electronics Engineering
National Institute of Technology, Tiruchirappalli
Tamil Nadu – 620 015



Day 2

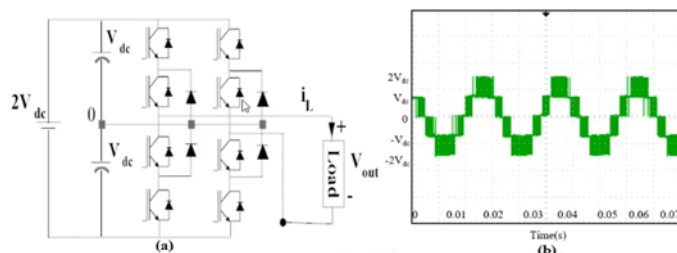


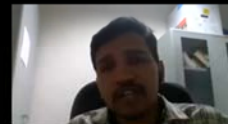
Fig.1.2: (a) First multilevel inverter introduced by nabae (1981), (b) Sample 5-level inverter output voltage waveform

Traditional Multilevel inverters

Limitations (no. of levels increase)

1. Diode clamped multilevel inverter (DC-MLI) ■ DC-MLI-----Clamping diodes
2. Flying capacitor multilevel inverter (FC-MLI) ■ FC-MLI-----Flying capacitors
3. Cascaded H-bridge multilevel inverter (CHB-MLI) ■ CHB-MLI---Isolated power supplies

Note: "CHB-MLI looks good to increase the number of levels among them"



Fabrication process of ultra-thin film semiconductors

Part-2

Online workshop

On

"Advanced Materials for Power Electronic Circuits"

at

B.M.S. College of Engineering
Bengaluru

Presentation at BMS College of Engineering, Mar 02, 2021

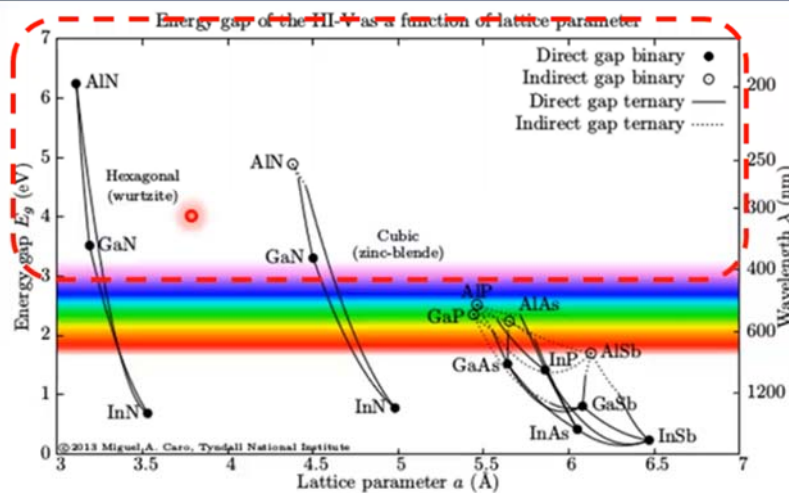
by Jatis Kumar Dash

1



Day 3

What is wide band gap?



Source: Masataka et al

- III-nitride family (GaN and its alloys with InN, AlN)
- Ga₂O₃ – emerging
- Diamond
- SiC

Day 4

Current Trends in Silicon carbide devices

Vinay Kumar Krishnappa
04.03.2021



DAY 5



BASICS AND TECHNIQUES OF EMI REDUCTION IN POWER ELECTRONIC CIRCUITS –PART 1 INTRODUCTION TO ELECTROMAGNETICS

Dr. Shakthi Prasad D.
School of Electrical Sciences , IIT Goa

REGISTRATION FORM
One week Online STTP
on

**“Renewable Energy options with
Advanced Materials & Scientific Tools”**
[REO-AMST-2021]
[8th-13th March,2021]

Name:

Designation:

Qualification:

Organization:

Address for communication:

.....
.....
.....

Mobile:

Email ID:

Whether your Institution is TEQIP supported?
YES/NO

Kindly confirm your participation by registering
through following Registration link:
<https://forms.gle/cFiMT6Ffbnpjyucf9>

“E-CERTIFICATE WILL BE PROVIDED TO ALL THE
PARTICIPANTS ATTENDING THE PROGRAMME”

Registration Fee:

The participants interested in the program are requested to fill the registration form and pay the registration fees by using **NEFT/IMPS** as the payment mode **only**. The bank detail is stated below

A/C NAME: - HOD CIVIL ENGG
BANK: -INDIAN BANK
A/C NO. 20274181427
BRANCH: Hanumanthnagar Branch
IFSC: - IDIB000B607
MICR Code:560019065

Researchers & PG students from other Institutions	Rs.500 per Participant
Government Colleges	Rs.500 per participant
Teaching Staff from other Institutions	Rs.500 per participant
Corporate	Rs.1000 per participant

Note: **No Registration Fees for TEQIP supported
Institutions**

**LAST DATE FOR SUBMISSION OF REGISTRATION
FORM IS 7TH MARCH 2021**

Address for the Correspondence:

Dr. Priya V
Dr. M C Sampath Kumar
BMS College of Engineering, Bangalore-560019,
Karnataka
Email: mcsk.civ@bmsce.ac.in
priyav.civ@bmsce.ac.in
Mobile No:9003930950, 9980941336

B.M.S College of Engineering
Bengaluru-19
[An autonomous Institute Affiliated to VTU]
One week Online STTP
on

**“Renewable Energy options with
Advanced Materials & Scientific Tools”**
[REO-AMST-2021]
(8th-13th March,2021)



Accredited with A++ Grade by NAAC

Sponsored by
TEQIP-III
Centre of Excellence

In Association with



ISTE -BMSCE chapter

Principal Coordinator.

Dr. Priya V

Co-Coordinator

Dr. Sampath Kumar M C

Organized by

Department of Civil Engineering
B.M.S. College of Engineering, Bangalore
Bull Temple Road, Bangalore-560019
In association with
Faculty of Engineering and Technology
M.J.P. Rohilkhand University, Bareilly
U.P.(India)

ABOUT THE INSTITUTE:

B.M.S College of Engineering [BMSCE] situated in the lush green campus of Bull temple road, Bangalore offers various Engineering and Management courses. This college was founded in the year 1946 by Late Sri. B M Sreenivasaiah as the first engineering college under private enterprise in technical Education in India and is approved by All India Council for Technical Education (AICTE). This institution has made its mark by offering UG, PG and research programs in most of the branches of engineering, Computer Applications and Business Administration. The UG program is Autonomous under the Visveshwaraya Technical University, Belgaum.

BMS College of Engineering is ranked as 25th best Engineering College of India by Outlook (2010) and is rated as AAA in the special issue of Careers360 magazine. All the departments are accredited by NBA New Delhi; Under Washington accord Tier-I format.

ABOUT THE CIVIL ENGINEERING DEPARTMENT:

The department of Civil Engineering at BMSCE have well qualified, experienced and highly motivated faculties. The department offers both UG & PG programs and is recognized as a Research Center by the VTU and are offering Ph.D. program. The department of Civil Engineering is recognized as QIP center by AICTE. The department is accredited for FIVE years under Washington accord Tier-I format. The Department has organized several short-term training programs and workshops for the faculty within and affiliated colleges.

INTRODUCTION ABOUT STTP:

Provision of Renewable will have to dominate the future energy architecture on a global level, to supplement and eventually substitute the more polluting traditional energy resources. But renewable such as solar and wind power have a major drawback-they must be tailored to a certain area to make best use of local conditions. Yet technologies and best practices developed in one region can and should be leveraged in another.

Smart integration of renewable into existing electricity grids will be of paramount importance. Assessments of key technologies that must be developed to upgrade current grid are essential for a critical area of energy harnessing by using energy efficiently. This STTP is an effort to cover this theme and enlighten the need for Renewable energy options with advanced materials and scientific tools.

OBJECTIVES:

- To discuss state of the art mechanisms
- To identify various techniques to harness renewable energy
- To evaluate the feasibility of the techniques
- To evaluate the engineering economics of the techniques
- To evaluate the carbon credits and carbon foot prints
- Feasibility study of the locally available techniques

WHO CAN APPLY?

Faculty, research scholars, entrepreneurs, industrialists, specialists from government, civil society and academia.

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Donor Trustee, BMS Educational Trust

Dr.P. Dayananda Pai

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B.M.S. College of Engineering

Dr. S. Muralidhara

Professor and Vice Principal

B.M.S. College of Engineering

Organizing Committee

Dr. P. Prasanna Kumar, Professor & Head,
Dept. Of Civil Engineering, BMSCE.

Coordinators

Dr. Priya V & Dr. M C Sampath Kumar

BMS College of Engineering, Bangalore-560019,

Karnataka, Email: mcsk.civ@bmsce.ac.in

priyav.civ@bmsce.ac.in

Organizing Committee

Prof. Shivaprasad. N, Assistant Professor, BMSCE.

Prof Soumya. T, Assistant Professor, BMSCE.

Prof. Sreenivasa Murthy. A, Assistant Professor, BMSCE.

Prof Deepak. B. C, Assistant Professor, BMSCE.

Student Coordinators

Atmika Suresh, BMSCE

Sushanth Krishna, BMSCE

REPORT on "REO-AMST 2021"

The Department of Civil Engineering had conducted a TEQIP III sponsored, One week Online STTP on "Renewable Energy Options in developing countries with Advanced Materials and Scientific tools", "REO-AMST 2021" during 8th-13th March 2021.

There were a total of 87 (Eighty seven) Registrations for the Short term training program. The participants included Assistant Professors from various Institutions, faculty from BMSCE, Research scholars, M.Tech Students and B.Tech students.

We had 2 session /Day handled by Speakers(Six Days with a total of 12 Speakers) from Industry ,IIT, IISc , other Institutions and BMSCE. Specifically we had five speakers from Industry, one speaker from IIT, One speaker from IISc , five speakers from other Institutions and one speaker from BMSCE.

The STTP was conducted on CISCO Webex Platform at the CAD Lab, Department of Civil Engineering during 8-13 March 2021. The feedback was collected after Every session.

The best part of the STTP was the Question and Answer session. The speakers (specifically Speakers from Industry) conducted their session (presentation) for maximum of 1 hour to 1 hour 15 minutes. The Discussion Forum was open for more than one hour where the participants have effectively learnt by asking as many as 20-25 questions during session.

As this Cisco Webex platform was new to many speakers, there was demonstration trial session given.

Overall a Very good feedback has been obtained from the participants and speakers in context of the STTP.

Athmika Suresh
Host, me

Dr Priya V
Cohost

Ahetesham Ali

Arya

Pulla Re... (Cohost)

ANUSHRI SHRIVASTAVA

Layout

Lineage

Viewing Pulla Reddy Botta's a...

ADITYA BIRLA
UltraTech

UltraTech Cement is part of Aditya Birla Group (ABG)

- ABG is a leading multinational from India
- A US \$48.3 billion corporation
- Operating in 36 countries with ~50% Group revenues from overseas operations
- Over 130 state-of-the-art manufacturing units globally
- Anchored by 120,000 employees belonging to 42 different nationalities



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Participants (16)

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Host, me

PB

Pulla Reddy Botta

Cohost

BB

bsncentre bsncentre

Cohost

DV

Dr Priya V

Cohost

AA

Ahetesham Ali

AS

ANUSHRI SHRIVASTAVA

AP

ARUN KUMAR G P

A

Arya

B

Bruhan

CP

Chinmay Patil

DS

Dr. G. Saravanakumar

HK

Hansa K

KY

Krishan Dutt Yadav

NB

nitesh bhatt

Mute all

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Athmika Suresh
Host, me

Dr Priya V
Cohost

Ahetesham Ali

Arya


Pulla Re... (Cohost)

Aishwarya

Cost Reduction - TSDF vs Co-processing



CHW-TSDF



Co-processing

Minimum Expected
Financial Benefit

Spent Solvent /
Distillation Residue

Rs. $\equiv$ Base Charges +
Transportation + treatment &
stabilisation charges
Total Cost $\geq$ Rs 13,000/ton.

Rs. 1,500 to 3,000/ton +
Transportation cost. [Total Cost
 $\equiv$ 4,500 to 6,500 Rs./ Ton.]

50 – 70% ↓

Sludges, Salts, Used
PPEs and other Non-
Haz Wastes

Rs. $\equiv$ Base Charges +
Transportation + treatment &
stabilisation charges
Total Cost $\geq$ Rs 10,000/ton .

Rs. 4,000 to 5,000/ton +
Transportation cost. [Total Cost
 $\equiv$ 7,000 to 8,000 Rs./ Ton.]

30% ↓

Membership Deposit
for 5 years minimum

Rs. $\equiv$ Rs 20,000 to 5,00,000

[No Membership Fees]

100% ↓

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Participants (19)

Search

AS Athmika Suresh
Host, me

PB Pulla Reddy Botta
Cohost

DV Dr Priya V
Cohost

AA Ahetesham Ali

A Aishwarya

AS ANUSHRI SHRIVASTAVA

A Arya

B Bruhan

CT Chandan Takhi

CP Chinmay Patil

D deepak

DS Dr. G. Saravanakumar

HK Hansa K

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Start video

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Participants

Q & A

Athmika Suresh
Host, me

Dr Priya V
Cohost

Ahetesham Ali

Arya


Pulla Re... (Cohost)

Aishwarya

Cost Reduction - TSDF vs Co-processing



CHW-TSDF



Co-processing

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[No Membership Fees]

100% ↓

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Participants (19)

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Cohost

DV Dr Priya V
Cohost

AA Ahetesham Ali

A Aishwarya

AS ANUSHRI SHRIVASTAVA

A Arya

B Bruhan

CT Chandan Takhi

CP Chinmay Patil

D deepak

DS Dr. G. Saravanakumar

HK Hansa K

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Participants

Q & A

Athmika Suresh
Host, me

Tamilmanian Nagalingam
(Cohost)

Dr Priya V
Cohost

Priya V

Aishwarya

ANUSHRI SHRIVASTAVA

Layout

Viewing Tamilmanian Nagalin...

Layout

Dr Priya V
Cohost

Tamilmanian Nagalingam
(Cohost...)

Athmika Suresh
Host

Dr Priya V (Cohost)

Priya V

Aishwarya

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Participants (17)

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AS Athmika Suresh
Host, me

TN Tamilmanian Nagalingam
Cohost

DV Dr Priya V
Cohost

A Aishwarya

AS ANUSHRI SHRIVASTAVA

A Arya

B Bruhan

D deepak

HK Hansa K

KY Krishan Dutt Yadav

NB nitesh bhatt

PD P.ARUNA DEVI

PT Prasad Tirlapur

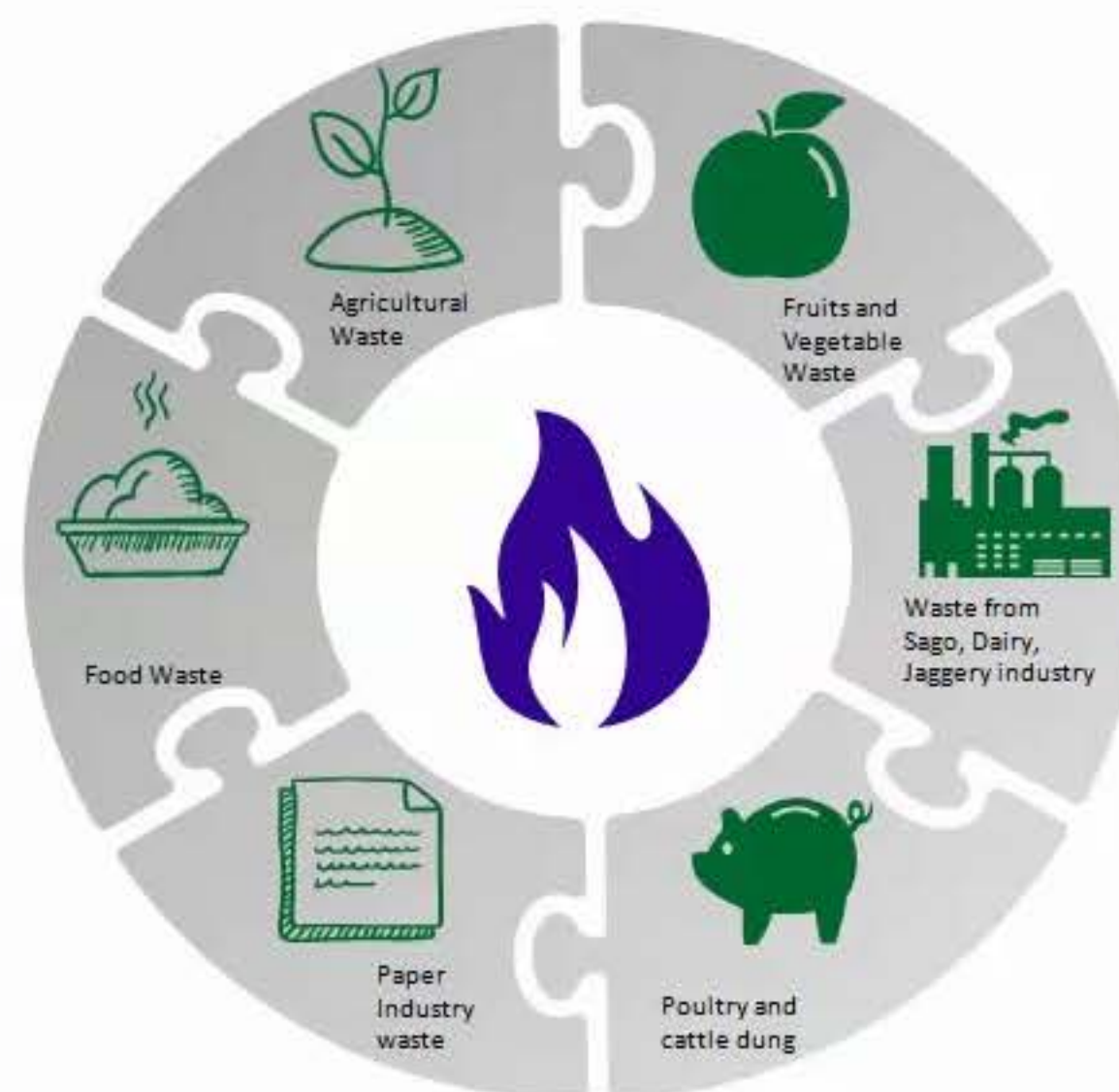
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10:11 AM 12-03-2021

Viewing Tamilmanian Nagalin...

KUPPAIKAARAN BIOGAS PLANT produces cooking gas from leftover food/vegetable/organic waste through the process of anaerobic bacterial digestion. In simple terms, organic waste is degraded biologically, and biogas which is produced as output is used for cooking/electricity production.



Q Search

- | | | |
|----|--|---|
| AS |  Athmika Suresh
Host, me |  |
| TN |  Tamilmanian Nagalingam
Cohost |   |
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Cohost |  |
| A |  Aishwarya |  |
| AC |  Aishwarya chavan |  |
| AS |  ANUSHRI SHRIVASTAVA |  |
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| D |  deepak |  |
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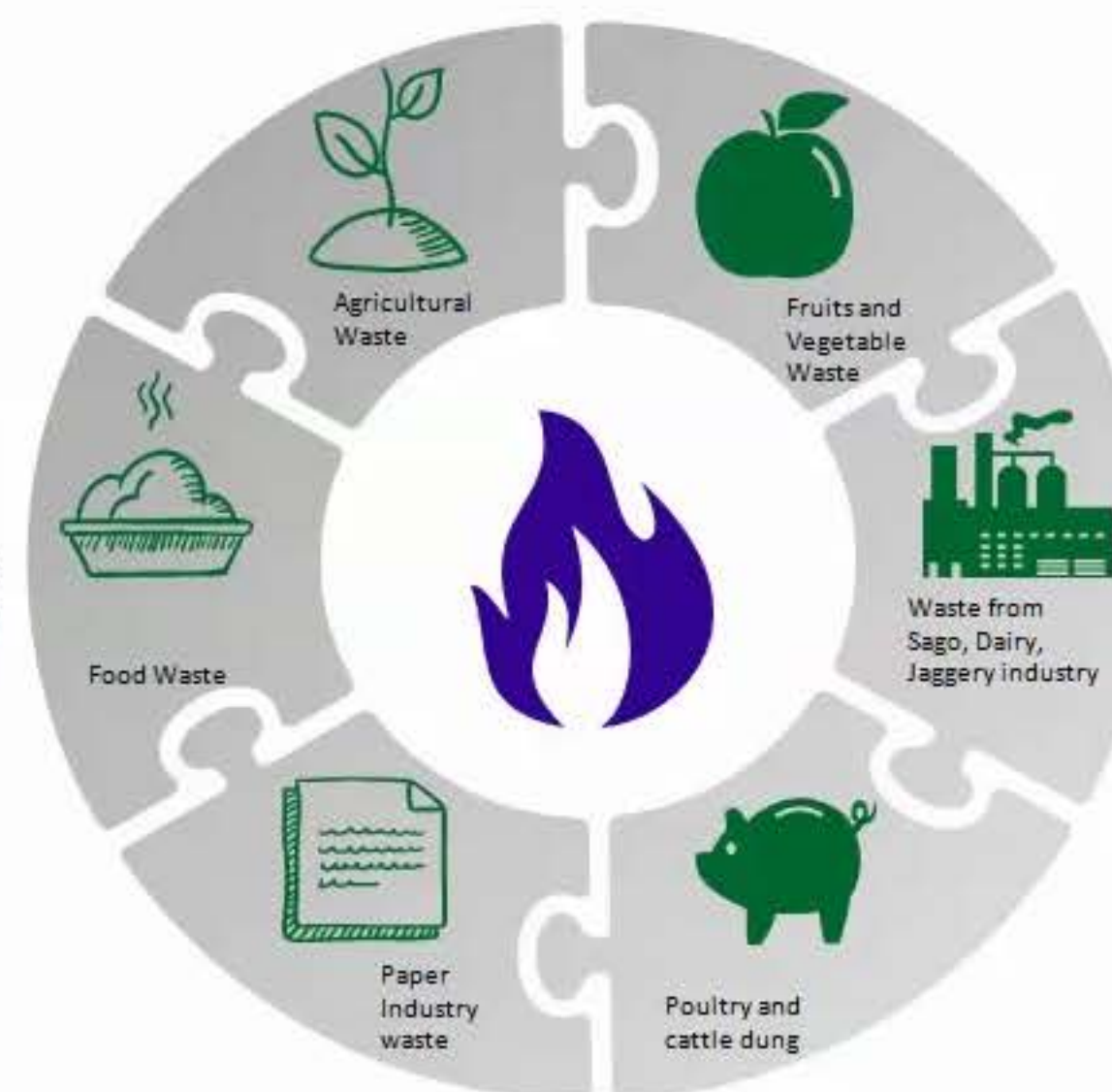
Participants

 Chat

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Q Search

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| DV |  Dr Priya V
Cohost |  |
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| AC |  Aishwarya chavan |  |
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| B |  Bruhan |  |
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| D |  deepak |  |
| HK |  Hansa K |  |
| KY |  Krishan Dutt Yadav |  |

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Participants

 Chat

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Slide 3 of 98 "Office Theme"

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Host, me

Priya V
Cohost


prasann... (Cohost)

Abigail

Aditya

Aishwarya

PPK Webinar 12-03-2021 - Microsoft PowerPoint

File | Home | Insert | Design | Transitions | Animations | Slide Show | Review | View

Clipboard | Slides

Font | Paragraph | Drawing | Editing

1

By, Prasanna Kumar.P

2
Target audience
• Researchers : Topic of study
• Field Engineers : Application

3
INTRODUCTION
• Variation of textural and coloured finishes could be achieved
• Wall thickness can be varied easily alongwith flexibility in the plan forms.
• Rammed earth buildings can have better living environmental conditions with better indoor air quality and low thermal transmittance.


4
INTRODUCTION
• Rammed earth is a technique of forming in-situ structural wall elements using rigid formwork.
• Bulk of the raw materials used for rammed earth are local materials available within a short distance from the construction site.
• Rammed earth structures are aesthetically beautiful resembling closely to a sedimentary rock finish with stratified finished layers.


5
INFORMATION ON RAMMEDE EARTH
• Soils with low colloids (clay + fines) are favourable for rammed earth walls to resist
RESISTANCE TO WATER PENETRATION THROUGHOUT THE LIFE OF THE WALL

Slide 3 of 98 | Office Theme

Participants (19)

Swetabh Kumar (Not sig... is waiting in the lobby. Admit

Search

AS ANUSHRI SHRIVASTAVA

AP ARUN KUMAR G P

A Arya

BS Birendra Kumar Singh

B Bruhan

G1 GANESHA S 1BM19CV404

HK Hansa K

KY Krishan Dutt Yadav

NB nitesh bhatt

OP one plus pro

R Rakesh

S Surya

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Unmute | Start video | Share | Record | ...

Participants | Q & A | ...

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ENG

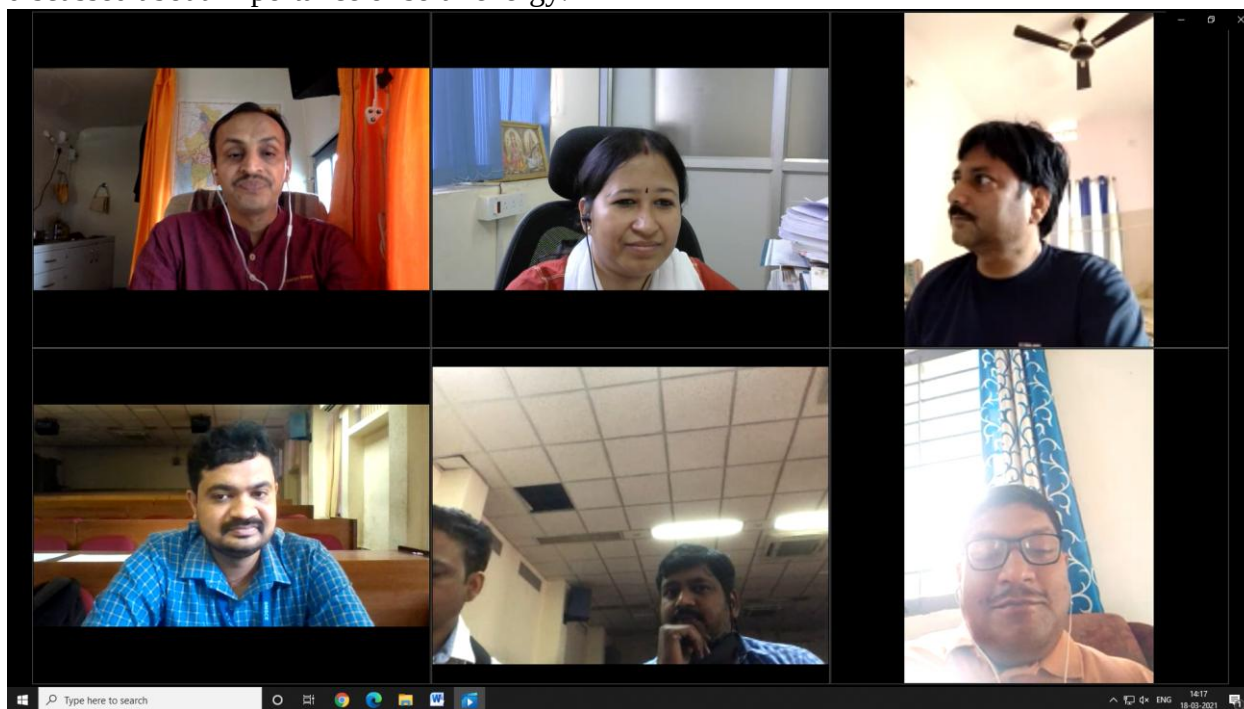
10:17 AM 13-03-2021

Report of TEQIP III Sponsored one-week e-FDP on Materials for Semiconductor Devices and PV Modules 8th March 2021 to 13th March 2021

A TEQIP III Sponsored Two-week e-FDP was scheduled from 8th March 2021 to 13th March 2021. The title of this FDP was Materials for Semiconductor Devices and PV Modules. Total number of registered participants was 264.

The FDP was started with Inauguration Ceremony on 8th March 2021. In this ceremony, the FDP was started with welcome speech from Dr C. Lakshminarayana, HOD, EEE then Presidential Speech from Dr. Samitha Maitra, Dean Academics; about the FDP by Dr. Chandasree Das, Assoc. Professor, EEE; and Vote of Thanks by Dr. Dipesh Kumar, Asst. Professor, EEE. Followed by the Inauguration Ceremony, the first session of the FDP was started with brief introduction about the speaker by Dr. Chandasree Das, Associate Professor, EEE.

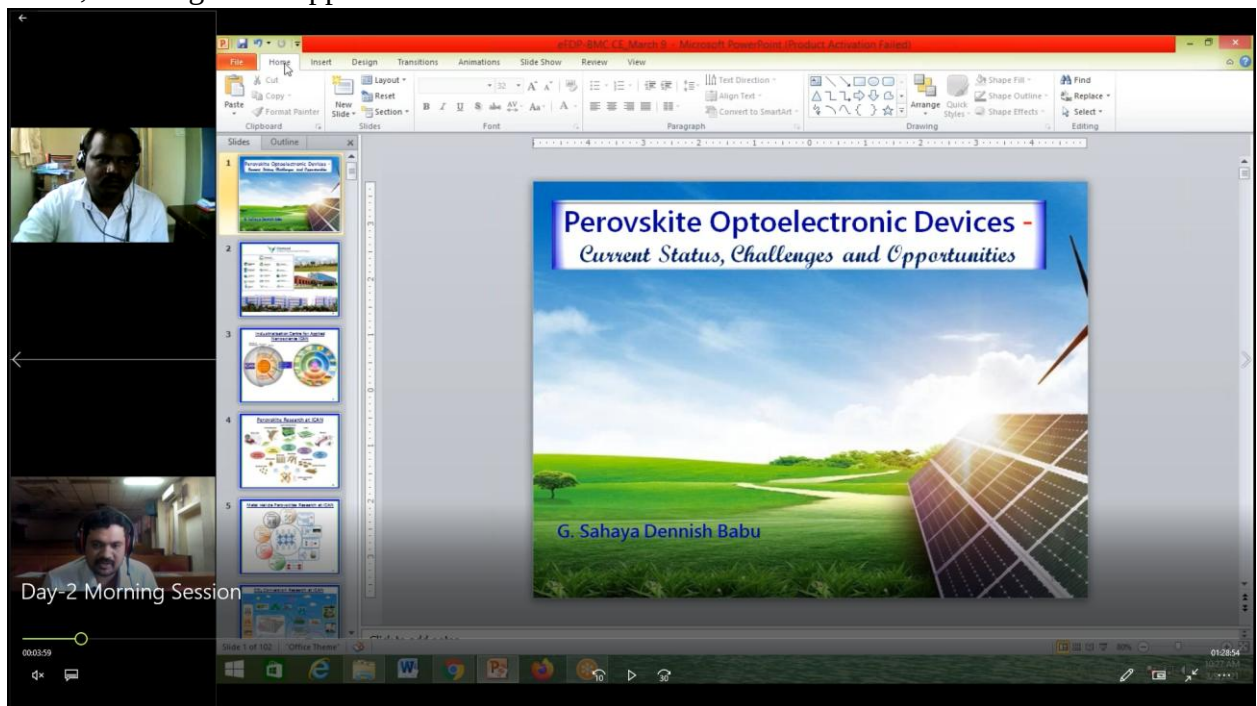
The first talk of FDP was given by **Prof. Chetan Singh Solanki** IIT, Bombay on 8th March, 2021 from 08:30 AM to 10:30 AM. Title of his talk was Energy Swaraj- Essence of sustainability. He discussed about importance of solar energy.



Second session of first day from 02:00 PM to 04:00 PM was taken by **Prof. Digbijoy N. Nath** IISc, CeNSE. Title of his talk was Material for Semiconductor Devices.



First session of second day from 10:30 AM to 12:30 PM on 9th March, 2021 was taken by **Prof. Dennish Babu**, CCET, Karur. Title of his talk was Perovskite Optoelectronic Devices- current status, challenges and opportunities



Second session of second day from 02:00 PM to 04:00 PM was taken by **Prof. Brajendra Singh Sengar**, Centre for Advanced Studies, AKTU, Lucknow. And his title was Photovoltaic devices for energy harvesting.

The screenshot shows a Zoom meeting interface. On the left, a small video window shows a man in a blue shirt. The main screen displays a PowerPoint presentation titled "Photovoltaic devices". The slide content includes the date "March 09, 2021" and the presenter's information: "Presenter: Brajendra Singh Sengar, Assistant Professor, Energy Science and Technology, Centre for Advanced Studies, Dr. A.P.J. Abdul Kalam Technical University, Lucknow, Energy Science and Technology". The Zoom controls at the bottom show a timer of 00:09:53.

First session of third day from 10:30 AM to 12:30 PM on 10th March, 2021 was taken by **Prof. Vivek Garg**, NIT, Surat, He discussed about Insights into Advanced Concepts in the field of Photovoltaics

The screenshot shows a Zoom meeting interface. The main screen displays a PowerPoint presentation titled "Insights into the Advanced Concepts in Photovoltaics". The slide content includes the presenter's information: "Presented By: Dr. Vivek Garg, Department of Electronics Engineering, S. V. National Institute of Technology (SVNIT) Surat". The email address "email: vivekgarg0101@gmail.com;" is also listed. The Zoom controls at the bottom show a timer of 00:14:39 and a message "app.gotomeeting.com is sharing your screen."

Second session of third day from 02:00 PM to 04:00 PM was taken by **Prof. Rajanarayanan Prusthy**, VIT, Vellore and he discussed about Probabilistic Load Flow Analysis in Power Systems with PV Generations

TEQIP III Sponsored One Week FDP on
**Materials for Semiconductor Devices and
PV Modules**

10th Mar. 2021, 2 pm - 4 pm)

**Probabilistic Load Flow Analysis in Power
Systems With PV Generations**

Dr. B Rajanarayan Prusty



School of Electrical Engineering (SELECT)

Vellore Institute of Technology (VIT), Vellore

First session of fourth day from 10:30 AM to 12:30 PM on 12th March, 2021 was taken by **Prof. Dattatraya N Gaonkar**, NIT, Karnataka he discussed about Smart Grid Operation and Control with Renewable Energy Systems



**Operation and Control of Smart Grid with
Renewable Energy Systems**

Dattatraya N. Gaonkar, Ph.D.

Department of Electrical and Electronics Engineering

National Institute of Technology Karnataka (NITK) Surathkal, Mangalore-575025 .

Second session of fourth day from 02:00 PM to 04:00 PM was taken by **Mr. Sheshnag Chitlur Sreenivasa** Cofounder at SunInTown Renewables Pvt. Ltd. He discussed about Latest Advancement in Solar PV Materials

TEQIP

A.P.J. ABUL KALAM
TECHNICAL UNIVERSITY
BANGALORE - 560076

Latest Advancement in Solar PV Material & Trends

Sheshnag Chitlur
Co-Founder
Sunintown Renewables Pvt. Ltd.
sheshnag@sunintown.com

Day-4 Afternoon Session

00:18:26

First session of fifth day from 10:30 AM to 12:30 AM on 13th February, 2021 was taken by **Mr. Rishabh Anand** SunGrow India Pvt. Ltd. and his talk was on Grid Tie PV inverter technologies for different applications.

SUNGROW
Clean power for all

Grid Tie PV Inverter technologies for different applications

A.P.J. ABUL KALAM
TECHNICAL UNIVERSITY
BANGALORE - 560076

IEEE
SSIT
SOCIETY ON
SOCIAL IMPLICATIONS
OF TECHNOLOGY

SUNGROW INDIA PVT. LTD.

RE 100

Day-5 Morning Session

00:05:02

Second session of fifth day from 02:00 PM to 04:00 PM was taken by **Prof. Amitesh Kumar**, NIT, Patna,. He discussed about Photovoltaic System: From Solar Cells to Solar Panels

The image is a screenshot of a presentation slide. At the top left is the NIT Patna logo, and at the top right is the IIT BHU logo. The main title is "Photovoltaic System: From Solar Cells to Solar Panels" in a large, bold, blue font. Below the title, the speaker's name "Dr. Amitesh Kumar" is written in a bold, red font. Underneath the name, his position "Assistant Professor, Electrical Engineering" and affiliation "National Institute of Technology (NIT), Patna" are listed in a smaller, black font. At the bottom of the slide, there is a footer with two lines of text: "Ph.D. (EE) , IIT Indore CSIR, Research Fellow" and "B.Tech. (EE) , IIT BHU Postdoc, University of Utah, USA". The slide is framed by a black border with navigation arrows on the sides and a progress bar at the bottom.

Followed by this session, the valedictory session was started. addressing all participants by Dr C. Lakshminarayana, HOD, EEE; outcome of the FDP by Dr. Chethan Raj D, Asst Professor, EEE and vote of thanks by Dr. Dipesh Kumar, Asst. Professor, EEE

**One Week online
Faculty Development Programme
On**

**Recent Advances in
Composite Materials
For Engineering Applications**

08-3-2021 to 12-3-2021

Registration Form

1. Name :
2. Designation:
3. Department:
4. Institution:
5. Address: _____

6. Mobile:
7. E - Mail ID:
8. Whether your institution is TEQIP
Supported Yes / No
9. Kindly Confirm the participation by
registering in the link below

<https://forms.gle/v2mM59mLGV2PmpU2A>

Chief Patrons

Dr. B.S.Ragini Narayan, Donor Trustee, BMSET
Dr. P. Dayananda Pai, Chairman, BOG, BMSET

Patrons

Dr. B. V. Ravishankar, Principal, BMSCE
Dr. S Muralidhara, Vice Principal, BMSCE

Organizing Committee

Dr. Rudra Naik
Professor & Head, Dept. of Mechanical Engg.,

Dr. P Prasanna Kumar,
Professor & Head, Dept. of Civil Engg.

Dr. O.P Upadhya,
Professor & Head, Dept. of Mechanical Engg.
M.J.P. Rohilkhand University.

Program Coordinators

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Dept. of Civil Engg., BMSCE
Mobile: +91-9900445005
E-mail: rajanna.civ@bmsce.ac.in

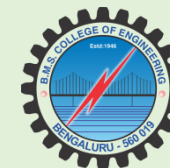
Dr. Prakash H.R, Assistant Professor,
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Mobile: +91-9591925200
E-Mail: prakash.mech@bmsce.ac.in

Ram Rohith V, Assistant Professor,
Dept. of Mech. Engg., BMSCE
Mobile: +91-9986141999
E-Mail: ramrohit.mech@bmsce.ac.in

**Registration is Limited to 100
Participants.**

No Registration fees for Participants.

**E - Certificates will be provided for all
Participants.**



B.M.S.College of Engineering

Bull Temple Road, Bengaluru-19

**One Week online
Faculty Development Programme
On**

**Recent Advances in
Composite Materials
For Engineering Applications**

08-3-2021 to 12-3-2021

**Sponsored by
Centre of Excellence in Advanced
Materials Research
TEQIP - 1.2.1**



**Organized By
Department of Civil and Mechanical
Engineering
B.M.S. College of Engineering**

**In Collaboration with
Faculty of Mechanical Engineering
M.J.P. Rohilkhand University, Bareilly
U.P. (India)**

About the Institute:

B.M.Sreenivasaiah College of Engineering (BMSCE) started in the year of 1946, located in Bull Temple Road, Bengaluru was founded by the great visionary, Late Sri B.M Sreenivasaiah. After the demise of the founder, Sri B S Narayan, the illustrious son of the founder took over the reins of the institute. Under his able leadership, the college grew from strength to strength. It is the first private sector initiative for technical education in India. BMSCE offers total 39 programmes both in conventional and emerging areas (13 Undergraduate & 16 Postgraduate courses and also 14 research centers for Pursuing PhD).

BMSCE becomes autonomous institution under VTU in the year 2008 - 09, and is approved by All India Council for Technical Education (AICTE), accredited by NBA and NAAC (Grade A++). In the year 2011, BMSCE has been recognized as a Quality Improvement Programme (QIP) Centre in Engineering & Technology by AICTE. BMSCE is one among the 14 Engineering Colleges in the state of Karnataka selected for the Technical Education Quality Improvement Programme (TEQIP), a world bank sponsored project. BMSCE is the only partner institution from India for the Melton Foundation, USA, along with other universities located in Chile, China, Germany and USA. The Melton Foundation advocates Global citizenship Programme. BMSCE has a strong alumni base. More than 35000 students, who have left the portals of BMSCE, have occupied coveted positions in many educational, industrial and Research organizations in India and over the world.

Department of Mechanical Engineering:

The Department of Mechanical Engineering came into existence in the year of 1946. The Department has 52 well-experienced, qualified and dedicated faculties with specialization covering various areas of Mechanical Engineering. The department has well equipped laboratories and workshops and also has many research projects sponsored by various organizations. The department is offering M. Tech program in Machine Design, Manufacturing and Thermal sciences. The department is recognized as a research centre by VTU, Belgaum, as well as QIP Centre for Ph.D program by AICTE. The major research areas are Smart Materials, MR Fluids, MMC, Thermo acoustic Refrigeration and Structural Dynamics.

Department of Civil Engineering:

The Department of Civil Engineering came into existence in the year of 1946. In the past seven decades, the department has seen a lot of progress in academics, research and consultancy. In the year 2008, the UG program was accorded academic autonomy status by VTU which enabled us to have our own curriculum to enhance knowledge, skills and Attitudes in students. In the year 2014, the National Board of Accreditation, India has given us Six years of Accreditation under Tier-I (Washington Accord) recognizing our academic accomplishments. The department is offering M. Tech program in Construction Technology, Transportation and Environment Engineering. The department is recognized as a research centre by VTU, Belgaum, as well as QIP Centre for Ph.D program by AICTE.

About the FDP Programme:

The prime goal of the FDP is to enhance the knowledge about the latest development in the field of concrete and sustainable Materials. The FDP will provide a common platform for professionals, academicians and researchers to share their knowledge and ideas for achieving sustainable development to cater for the rapid growth of infrastructure. It will help the participants to redefine their horizons in recent advancement in technologies in the broad application of concrete and other sustainable material in construction Processes leading towards sustainable development and recognizing the areas which require future research.

Objectives of Programme:

- The course is proposed to generate and impart knowledge on recent advancement in the area of composite materials and its manufacturing techniques.
- To provide the knowledge about the mechanical characterization of composite materials.
- Provide a forum to keep themselves abreast of tribological peculiarities of composites.
- Create the culture of learning and self-improvement.

Outcomes of the Programme:

- Understand the latest and advanced inputs about composites and manufacturing techniques.
- Make specific recommendation for future course of action to promote efficient & effective trends and technologies in composite materials and their tribological aspects.
- This FDP will enhance better teaching ability with respect to content and delivery in the area of composite materials.
- Facilitate insight to different research models and their application in teaching.

WHO CAN ATTEND:

The program is open to faculty members, M.Tech students, Research scholars & professionals working in industries.

Resource Personnel:

Professors and Researchers from premier academic Institutes like IISc, IITs, CSIR, NITs, BMSCE, R&D

**REPORT TOWARDS THE ONE-WEEK ONLINE FACULTY
DEVELOPMENT PROGRAMME ON
RECENT ADVANCES IN COMPOSITE MATERIALS FOR ENGINEERING
APPLICATIONS**

**Program Schedule for One Week Online FDP
[08th – 12th, March 2021]**

Name of the FDP: Recent Advances in Composite Materials for Engineering Applications (RACMEA-2021)

Hosting Institute: Department of Civil and Mechanical Engineering, B.M.S. College of Engineering

Association Partner: Faculty of Engineering and Technology, M.J.P. Rohilkhand University, Bareilly, U.P. (India)

Venue: B.M.S. College of Engineering

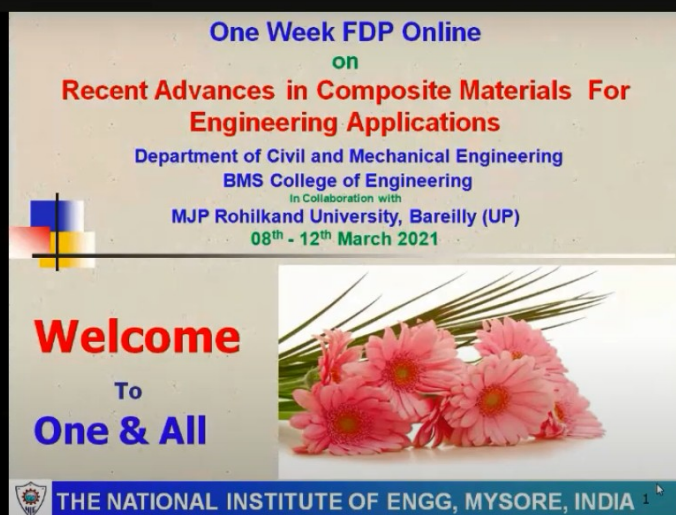
Date: March 08th – March 12th, 2021

Total Duration: 5 Days

No. of Resource Persons: External = 08 and Internal = 04, Total = 12

Total Participants: 158

RACMEA-2021_Inauguration & Session 1 (2021-03-07 at 20:57 GMT-8)



WHAT IS HYBRID NANOCOMPOSITE?
"ENGINEERING, SCIENCE and TECHNOLOGY"

5- Elements
 Solid
 water
 Fire
 space
 air

Synergic structure
 A universal relation
 Science • Technology • Society • Nature

Prof. S. Ram (Retired)
 Materials Science Centre
 Indian Institute of Technology
 Kharagpur-721302

Self-energy & functioning

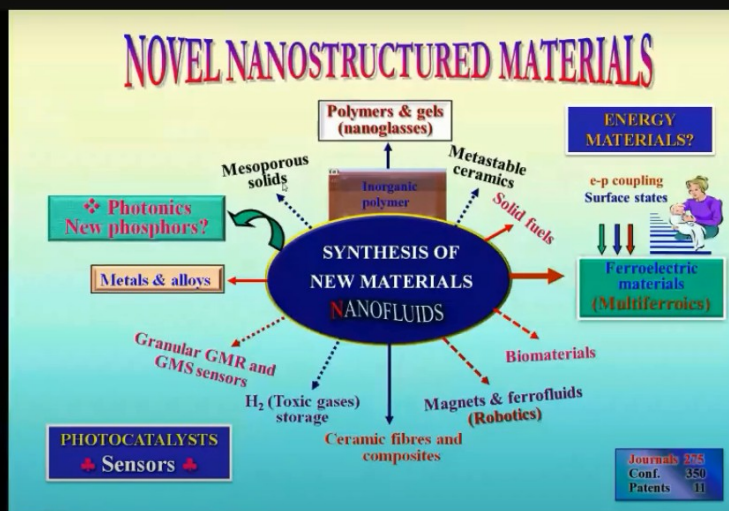
Electron – Spin – phonon

NATURE
 Exchange Energy
 over its successive states
 DOS: Entropy

Learn from nature?

$E = mc^2$

BMS College of Engineering
 Bengaluru
 March 8, 2021



WHAT IS COMPOSITE?

Hot carriers

❖ **Definition** : It is a hybrid material of one phase (α) dispersed into another phase(s) β very intimately at a microscopic scale, with a strong $\alpha \leftrightarrow \beta$ macroscopic exchange-interaction, which yields engineered properties over its counterpart values of ingredients, in recurring dynamics of its interfaces.

❖ **Strategies**:

1. Interstitial doping
2. Intergranular doping
3. Vacancies, voids, Twins
4. Surface hardening
5. Andesite disorders

❖ **Stimulates**

- Multiple charge carriers
- Self-propagating strain
- Electron-spin-phonon coupling
- Heterogeneous structure
- Interfaces
- Entropy
- Fugacity

MMC
 CMC
 PMC

Solid

Graphene

Pores

Nanofluid

Structure
 Function
 Properties
 Applications

Fugacity

E_1
 E_0



RACMEA-2021_Session 4 (2021-03-09 at 00:39 GMT-8)

**Field Effect and Charge Transport Properties of Graphene
Oxide-Zinc Oxide Nanocomposites**

By

Dr S. Mahaboob Jilani
Assistant Professor
Department of MME, RGUKT-RK Valley
Kadapa Dist, Andhra Pradesh

At
Faculty Development Program on Recent Advances in Composite Materials for
Engineering Applications
Organized by
Department of Mechanical & Civil Engineering, B.M.S. College of Engineering.



RAJIV GANDHI UNIVERSITY OF
SCIENCE AND TECHNOLOGY

meet.google.com is sharing your screen. Stop sharing Hide

Mahaboob Jilani

RACMEA-2021_Session 6 (2021-03-10 at 00:32 GMT-8)

**TiO₂-Carbon (sp²) based nanohybrids:
Exploring the photocatalytic and
optical properties**



Dr. P V Rajeswari
Assistant Professor
Department of Physics
Gayatri Vidya Parishad College of Engineering (A)
Visakhapatnam-530048
Email: rajpv2007@gvpce.ac.in

RACMEA-2021

P.V. Rajeswari

RACMEA-2021_Session 7 (2021-03-10 at 20:59 GMT-8)

File Edit View Insert Format Slide Slide Show Tools Window Help

Slides

**Synthesis of Nanomaterials and Nanocomposites for
Defence Applications: Opportunities and Challenges**

S. S. Kalyan Kamal
Scientist 'F'

Defence Metallurgical Research Laboratory
Hyderabad

Kalyan Kamal

RACMEA-2021_Session 8 (2021-03-11 at 01:33 GMT-8)

You are sharing your entire screen. [Stop sharing](#)

Application of Piezoceramics (PZTs) in Vibration and Noise control of Composite Structures



S B KANDAGAL
Department of Aerospace Engineering
Indian Institute of Science
Bangalore- 560 012



Sbk Kandagal

RACMEA-2021_Session 9 (2021-03-11 at 20:33 GMT-8)

*A smart and multifunctional
NiMnSn advance Magnetic
materials*

by

Dr. Prakash H. R.
Asst. Professor
Dept. of Mechanical Engineering
B.M.S. College of Engineering
Bangalore-560019

P

Prakash H R

RACMEA-2021_Session 9 (2021-03-11 at 20:33 GMT-8)

Presentation
on
"MAGNETO RHEOLOGICAL FLUIDS and APPLIED RHEOLOGY"



By
Ram Rohit V
Assistant Professor
Department of Mechanical Engineering
B.M.S. College of Engineering
Visvesvaraya Technological University

R

RAM ROHIT

RACMEA-2021_Session 10 (2021-03-12 at 00:38 GMT-8)





Dr. Rajanna T, Ph.D. (ITB)
Assistant Professor
Dept. of Civil Engineering
B.M.S College of Engineering
Bengaluru.

Email-rajanna.civ@bmsce.ac.in

Area of specialization

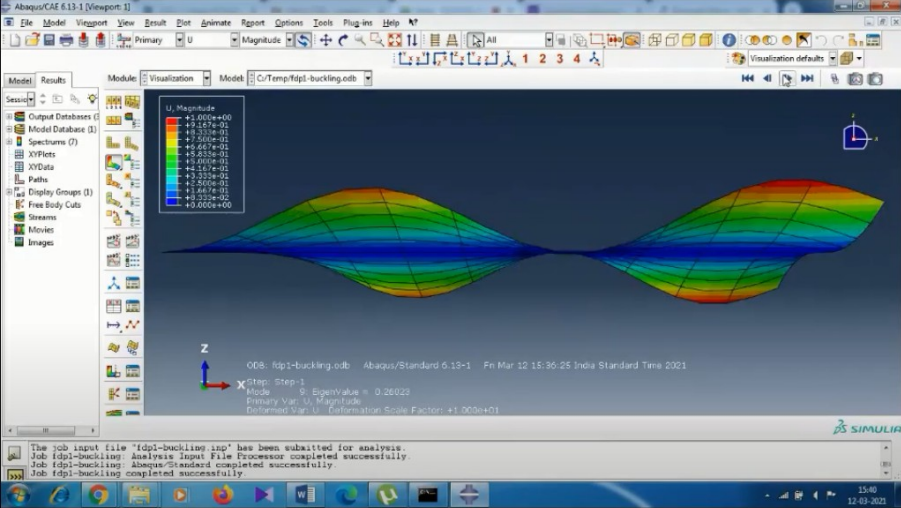
- Composite Materials
- Functional Graded Materials
- Finite Element Methods
- Retrofitting's

https://scholar.google.com/citations?hl=en&user=ffz0MfAAAAAJ&view_op=list_works&sortby=pubdate



Rajanna T

RACMEA-2021_Session 10 (2021-03-12 at 00:38 GMT-8)





Vinay M L Gowda

INTRODUCTION

The document on hand is a detail narration of the events and proceedings of the One week online faculty development programme on “Recent Advances in Composite Materials for Engineering Applications (**RACMEA-2021**)”. The FDP was conducted by the Department of Mechanical and Civil Engineering, B.M.S.C.E as a value added and knowledge enhancement programme in collaboration with the Faculty of Engineering and Technology, M.J.P. Rohilkhand University, Bareilly, U.P. (India). This one week program is utilized for all the practicing Engineers, Faculty members, Research scholars and Students of both engineering as well as polytechnic colleges. The training was conducted at the premises of Mechanical Engineering Department, B.M.S.C.E through online mode – Google Meet and the whole programme was designed for 5 days.

OBJECTIVES AND OUTCOME OF THE PROGRAMME

- The course is proposed to generate and impart knowledge on recent advancement in the area of composite materials and its manufacturing techniques.
- To provide the knowledge about the mechanical characterization of composite materials.
- Provide a forum to keep themselves abreast of tribological peculiarities of composites.
- Create the culture of learning and self-improvement.
- Understand the latest and advanced inputs about composites and manufacturing techniques.
- Make specific recommendation for future course of action to promote efficient & effective trends and technologies in composite materials and their tribological aspects.
- This FDP will enhance better teaching ability with respect to content and delivery in the area of composite materials.
- Facilitate insight to different research models and their application in teaching.

ABOUT THE RESOURCE PERSONS AND PARTICIPANTS

The programme was very planned by gathering the various resource person having an enormous knowledge in the area of the advances in composite materials from various premier institutions such as IISc, NITs, DRDO, B.M.S.C.E and other universities R&D Institutes. Due to this, the programme received an overwhelming participates consisting of PG Students, Research scholars, Faculty members in and around the globe from various premier institutions such as NITs, IITs and other universities. A total number of **158** participants were gathered for the programme.

TIME SCHEDULE:

The FDP was conducted for a period of 5 days in the Department of Civil & Mechanical Engineering at B.M.S.C.E from 8th March to 12th March 2021. Each day consists of one morning session between 10.00 AM – 12.00 PM and one afternoon session between 2.00 PM – 4.00 PM. The training was conducted during the pandemic condition in order to enhance the knowledge of the participants through the online mode.

The Schedule of the FDP is as given below:

Sl. No.	Time Schedule	Activity	Speaker	Topic
Day – 1; 8th March 2021				
1	9:30 am - 10:00 am	Inauguration		
2	10:00 am - 12:00 pm	Session - 1	Dr. Suresha B Professor & Head, Mechanical Engg. Dept., N.I.E, Mysuru	Recent Advances in Polymeric Composites for Structural Applications
3	2:00 pm - 4:00 pm	Session - 2	Dr. S Ram Materials science Centre, IIT Kharagpur.	What is hybrid nanocomposite, Engineering, Science and Technology?
Day – 2; 9th March 2021				
1	10:00 am - 12:00 pm	Session - 3	Dr. Y Y Mahajan, Assistant Professor VNIT, Nagpur	Composite materials: An over view
2	2:00 pm - 4:00 pm	Session - 4	Dr. S Mahaboob Jilani Assistant Professor, Rajiv Gandhi University of Knowledge Technologies	Graphene oxide (GO): A promising composite material,
Day – 3; 10th March 2021				
1	10:00 am - 12:00 pm	Session - 5	Dr. M M Thawre, Associate Professor, VNIT, Nagpur	Fatigue testing of composites.
2	2:00 pm - 4:00 pm	Session - 6	Dr. Rajeshwari P V Associate Professor G V P College of Engineering, Vishakhapatnam	TiO ₂ – Carbon (sp ₂) based sustainable Nano hybrids: Exploring photocatalytic and optical properties.
Day – 4; 11th March 2021				
1	10:00 am - 12:00 pm	Session - 7	Dr. S S Kalyan Kamal Scientist F Head of Analytical Chemistry DMRL, Hyderabad.	Chemical synthesis of Nanomaterials and Nano composite's; Their Applications, Opportunities and Challenges.
2	2:00 pm - 4:00 pm	Session - 8	Dr. Siddanagouda Kandagal Professor Aerospace Engg. Dept., IISC, Bengaluru	Vibration and Noise control of composite panels with smart materials
Day – 5; 12th March 2021				
1	10:00 am - 11:00 am	Session - 9	Dr. Prakash H R Assistant Professor, Mechanical Engg. Dept., BMSCE.	A smart and multifunctional NiMnSn advance Magnetic materials
2	11:00 am – 12:00 pm	Session - 10	Mr. Ram Rohith	Magneto Rheological

			Assistant Professor, Mechanical Engg. Dept., BMSCE.	fluids and its applications
3	2:00 pm - 3:00 pm	Session - 11	Dr. Rajanna T, Assistant Professor, Civil Engg. Dept., BMSCE.	Finite element Formulation for Vibration and Buckling Characteristics of Hybrid Fibre Metal Laminates
4	3:00 pm - 4:00 pm	Session - 12	Mr. Vinay M L Gowda Assistant Professor, Civil Engg. Dept., BMSCE.	Software FEM Modelling and Analysis of Isotropic and Composite Plates

FDP PROCEDURES – IN BRIEF

The Programme started with an inaugural speech by the programme co-ordinators. The inauguration of the programme was done by Dr. B V Ravishankar, Professor & Principal, B.M.S.C.E. The participants were welcomed by Dr. S Muralidhara, Professor & Vice Principal, B.M.S.C.E. Dr. Rudranaik, Professor and Head, Mechanical Engineering Department addressed the participants. The key note speaker for the programme Dr. Suresha, Professor, Dept. of Mechanical Engg., NIE Mysore was also introduced at the inaugural session. Further a brief overview about the department and the objectives of the FDP was provided by the Head of the Department.

INAUGURAL SESSION:

The esteemed personalities present during the inaugural session of the programme:

- Dr. B.V. RaviShankar, Principal, B.M.S.C.E
- Dr. S Muralidhara, Vice Principal, B.M.S.C.E
- Dr. Rudranaik, Professor and Head, Mechanical Engineering Department B.M.S.C.E
- Dr. Prasanna Kumar P, Professor and Head, Civil Engineering Department B.M.S.C.E
- Dr. Suresha B. Professor & Head, Department of Mech. Engg., National Institute of Engineering, Mysuru
- Dr. S. Ram, Former Professor, IIT Kharagpur.

Dr. Rudranaik, HOD of Mechanical Engineering Department welcomed all the respected dignitaries and participants and highlighted the association of BMSCE- with in the current programme. Dr. B.V. Ravishankar, Principal, B.M.S.C.E congratulated the co-ordinators for the effort taken in conduction of the programme in the recent trend. Dr. S Muralidhara, Vice Principal, B.M.S.C.E appreciated the program and also encouraged for such activities to be conducted periodically.

1st Day (08/03/2020) Session I:

Dr. Suresha B, Professor & Head, Department of Mech. Engg., National Institute of Engineering, Mysuru delivered the keynote address on “Recent Advances in polymeric

composites for structural applications”. His expertise is on Microstructure-property relationships in Development of Polymer Composite Materials, Light weight Polymer Composites, Natural fibers and their Composites, Fracture and Fracture toughness, Friction and Wear, Abrasion, Erosion, Microscopic Characterization, Manufacturing Techniques for High Performance Composites with Thermoplastics, Design with Composites, Nanocomposites. In this session the participants got in depth knowledge on light composite materials development specifically for aircraft applications.

1st Day (08/03/2020) Session II:

Dr. S. Ram, Materials science centre, IIT Kharagpur delivered the interactive lecture on “What is hybrid nanocomposite it’s Engg. Science and Technology”. His research interest includes developing different kinds of glasses/ceramics, magnetoceramics, intermetallics, nanofluids, magneto-optic materials of garnets, cermets, high-energy-density magnets, ferroics, superconductors, magnetic sensors, GMR, GMS and GMC materials, Energy storage materials, solid fuels, nanostructured solids, fibres and composites, spintronics, photonics. The bonding of materials science with technology in developing the materials, especially for magnetic applications was very well highlighted by the speaker which the participants can use while developing the new magnetic materials for energy storage applications.

2nd Day (09/03/2020) Session I:

An informative lecture on “Composite materials: An over view” was presented by Dr. Y. Y. Mahajan, Assistant Professor VNIT, Nagpur. His research interest are on He has more than 10 years experience in the Automobile sector and worked in Engineering Research center (ERC) Laboratory, Bajaj Auto Aurangabad, actively involved in implementing QMS, TPM, ISO-9000, ISO-14000 systems in organisation. He is involved in many research projects and completed research projects with Naval Research Board (NRB), DRDO, * He completed many consultancy projects (nearly 30) with various organisations such as Koradi thermal Power Plant (KTPS), Thermal Power plant at Paras , Jindal Steel, Sun flag steel The expertise of the speaker in automotive industry with the new trend martials, wherein used in reducing the energy consumption, cope up in optimizing the usage of materials, was brushed to participants.

2nd Day (09/03/2020) Session II:

Dr. S. Mahaboob Jilani, Assistant Professor, Rajiv Gandhi University of Knowledge Technologies, Andhra Pradesh, delivered an informative lecture on “Graphene oxide (GO): A promising composite material”. His area of interest is on • Graphene Transistors, •Graphene oxide based Memory Devices, •Graphene Oxide Composites for electronic applications. The graphene, a Nano carbon materials can be used as laminations which will enhance the productivity, reactivity of the materials was focused and the participants were focused in particular to use graphene as a alternative laminate material for Nano depth case.

3rd Day (10/03/2020) Session I:

Dr. M. M. Thawre, Associate Professor, VNIT, Nagpur illuminated the participants with “Fatigue testing of composites”. His expertise is on Assessment of weld interface creep cavitation of Ferritic / austenitic dissimilar weld joint of ferritic modified 9Cr-1Mo and austenitic 316LN steels, Generation of Haigh Diagram for alloy 617M for the Indian Advanced Ultra Supercritical Power Plant, . Generation of Creep Data of the Indian Advanced Ultra Supercritical Power Plant Materials, Round Robin Testing for Generation of Low Cycle Fatigue Data of the Indian Advanced Ultra Supercritical Power Plant Materials. The experimental concepts of testing the composites was briefed and reading the response the materials in different prospective in particular for applications was briefed by the speaker.

3rd Day (10/03/2020) Session II:

Dr. Rajeshwari P. V., Associate Professor, Gayathri Vidhya Parishat college of Engineering discussed on “TiO₂ – Carbon (sp²) based sustainable Nano hybrids: Exploring photocatalytic and optical properties”. His subject expertise are on Biomass/waste-based functional materials for energy and environmental applications Green preparation and structure-property-processing co - relationship. The audiences were focused on applying TiO₂ as an alternate material with ease of its synthesis and positive approach in attaining the gigantic properties in particular to photocatalytic and optical applications.

4th Day (11/03/2020) Session I:

Dr. S. S. Kalyan Kamal, Scientist F, Head of Analytical Chemistry, DMRL, Hyderabad gave a detailed informative lecture on “Chemical synthesis of Nanomaterials and Nano composite’s; Their Applications, Opportunities and Challenges”. He is involved very much in Technology transferred to industry, and this content is in the recent verge where industry interaction cell is in collaboration with research institutions to bring the science and technology to practical sense. The participants gained in depth knowledge in how to transfer the science to technology, in particular to chemical products.

4th Day (11/03/2020) Session II:

Dr. Siddanagouda Kandagal, Professor, Dept. of Aerospace Engg., IISC, Bengaluru presented and explained with “Vibration and Noise control of composite panels with smart materials ”. He is awarded with United states of Americas Patent: viz. Kiran Giri and S B Kandagal,” Form with displaceable vibratory panel”, US patent: US 6939121, 6-10-2005. His area of research interest includes “Characterization of elastic and electromechanical nonlinearities in piezoceramic plate actuators from vibrations of a piezoelectric beam, Analytical modeling and optimal resistance estimation in vibration control of beams with resistively shunted piezoelectric, Aerodynamic Characterization of a transonic axial flow compressor – with asymmetric tip clearance effects”, Aerospace Science and Technology. The speaker in this session briefed the patients about the important role of smart materials in controlling the vibration in aerospace industries.

5th Day (12/03/2020) Session I:

Dr. Prakash H.R, Assistant Professor, Dept. of Mech. Engg., BMSCE, delivered a useful talk on “A smart and multifunctional NiMnSn advance Magnetic materials”. His research interest includes developing different kinds of magnetic sensors, GMR, and GMC materials, Energy storage materials, solid fuels, nanostructured solids, spintronics, photonics. The audience were focused on advance magnetic material like Heusler alloys and how to tune its composition to gain shape memory effect, magnetocalory effect, mechanical striction and so on.

5th Day (12/03/2020) Session II:

Prof. Ram Rohit V. delivered a talk on Magnetorheological fluids and applied rheology. His area of research includes smart materials, aerospace and manufacturing. The speaker of this session briefed about the rheological properties of fluids doped with Iron and Carbon and its application in particular to damping, prosthetic knee.

5th Day (12/03/2020) Session III:

Dr. Rajanna T, Assistant Professor, Dept. of Civil Engg., BMSCE, delivered a talk on “Finite element Formulation for Vibration and Buckling Characteristics of Hybrid Fibre Metal Laminates”. His research interests are on computational mechanics, which includes the modelling of composite materials and developing mathematical modelling for the stiffened laminated panels with complicated cutouts. He has covered in the FDP about the mathematical modelling of HFMLs panels with cutouts and covered the optimum techniques.

5th Day (12/03/2020) Session IV:

Mr. Vinay M.L Gowda, Assistant Professor, Dept. of Civil Engg., BMSCE, delivered a talk on “Software FEM Modeling and analysis of Isotropic and Composite Plates”. He has covered the modelling and analysis of buckling problems by using commercially available software like ABAQUS.

LIST OF PARTICIPANTS REGISTERED FOR RASMEA-2021

Name of the Participant	Name of the Institution/Organisation	Designation
Er. Nilakantha Panda	Paradip Port Trust	Site Engineer
Rachana Bajaj	RNTU	Associate Professor

Sandeep B	VVIET, Mysuru	Assistant Professor
Kiruthiga K	Bharath Institute of Higher Education and Research	Assistant Professor
Thyagaraj K J	Sri Venkateswara College of Engineering	Assistant Professor
JANI DILIP BATUKRAY	Government Engineering College, Dahod	Associate Professor
Dr. Shivaprasad K N	JSS Science and Technology University	Assistant Professor
Dr. Shanmugam Rajagopal	MUTHAYAMMAL ENGINEERING COLLEGE	Professor
Roopa D R	S J B Institute of Technology	Associate Professor
Raja Anwar Hussain	Government Engineering College, Raichur	Assistant Professor
Dr. Nakul Ramanna	PRESIDENCY UNIVERSITY, BANGALORE	HOD
Shivakumar. R	B.M.S. College of Engineering	Assistant Professor
fatheali Shilar	KLE Technological University Hubli	Assistant Professor
Dr M S UPPIN	PDACEG	Professor
Thanushree M S	JSS Science and Technology University	Assistant Professor
Pallavi G A	Sapthagiri College of Engineering	Assistant Professor
Ashwani Kumar	SRMS College of Engineering & Technology	Assistant Professor
Suresh Erannagari	BMS College of Engineering	Assistant Professor
Navya N	Sapthagiri college of Engineering	Assistant Professor
Dr H I Awate	College of Military Engineering, Pune	Associate Professor
Vajreshwari Umachagi	National Institute of Technology-Surathkal	Research Scholar
Mahesh Chandra K V	Bangalore Institute of Technology	Assistant Professor
Babu.V	Sanjay Ghodawat University	Assistant Professor
Dr. Prabhu Swamy N R	B.M.S. College of Engineering	Assistant Professor
PRASAD P	Sri Jayachamarajendra College of Engineering	Associate Professor
Subash Chandra K S	GPT Bagepalli	Research Scholar
Dr. S Srinivas	B.M.S. College of Engineering	Professor
Dr. Sanjay Kumar Verma	Takshshila Institute of Engineering and Technology, Jabalpur	Associate Professor
Dr. Jairaja R	Government Engineering College, HAVERI	Assistant Professor
Divakar MH	University BDT college of Engineering	Assistant Professor
Ravichandra Honnalli	Ballari Institute of Technology and Management	Assistant Professor
Rajesh A Shetty	Simulation Lab Pvt Ltd	CAE Engineer
Dr Muralimohan R	Government Engineering College, Ramanagara	Assistant Professor
Asha Rani N R	Alliance university	Assistant Professor
Dr Yogesha K K	The National Institute of Engineering	Assistant Professor
VISHALAGOUD S PATIL	Government Engineering College Haveri	Assistant Professor
Sharanabasava Patil	Ballari Institute of Technology and Management	Assistant Professor
Dr. S V Anil Kumar	P.E.S. College of Engineering, Mandya	Assistant Professor
Raghunath Diwakar	KLS Gogte Institute of Technology Belagavi	Assistant Professor
Aravind Kumar B	Government Engineering College, Raichur	Assistant Professor
Vishwanatha N R		Assistant Professor
Dr. Govind prabhakar	P.E.S. College of Engineering, Aurangabad	Associate Professor
Suvarna Acharya	P.E.S. College of Engineering, Aurangabad	Assistant Professor
YOGESH PATHAK	Institute of Engineering and Technology	Research Scholar
Tripti Pachori	B.M.S. College of Engineering	Assistant Professor

Akshatha B A	BGS Institute of Technology, Mandya	Research Scholar
Varun K R	The Oxford College of Engineering	Assistant Professor
R. Suresh Kumar	B.M.S. College of Engineering	Assistant Professor
Ravindranath Gurushantappa	Shri Tulja Bhavani College of Engineering Tuljapur	Assistant Professor
Madhav Murthy	B.M.S. College of Engineering	Assistant Professor
Anilkumarl	Govt engineering college Raichur	Assistant Professor
Arun Kumar H R	East West Institute of Technology	Assistant Professor
THEERTHANANDA M P	Government Engineering College Kushalnagar	Assistant Professor
Dr. S. Poorna Prajna	P.E.S. College of Engineering, Mandya	Assistant Professor
Dr. N K Narayan Swamy	B.M.S. College of Engineering	Assistant Professor
Dr. S S Honnanagoudar	Dr. Ambedkar institute of Technology	Professor
Kiran Gulab Ghodake	Dr. J J Magdum College of Engineering	Assistant Professor
Dr. Sangeetha D.M.	AJiet, Mangalore	Associate Professor
Kavya S Kallimani	The Oxford College of Engineering	Assistant Professor
veena kumari N	The National Institute of Engineering	Research Scholar
Saurabh Dubey	National Institute of Technology, Arunachal Pradesh	Research Scholar
SANDESH N U	B.M.S. College of Engineering	Research Scholar
Dr.T.H.Patel	BITM, Ballari	Professor
Vinod B R	B.M.S. Institute of Technology & Management	Assistant Professor
Chethan Kumar B	National Institute of Technology-Surathkal	Research Scholar
Lakshmi S	JSS Science and Technology University	Assistant Professor
Dr. Venkata Krishnaiah R	Bharath Institute of Higher Education and Research	Professor
Dr. Sreelakshmi Diddi	B.M.S. College of Engineering	Assistant Professor
Sumaiya Fathima	Presidency university	Research Scholar
Peerzada Danish	Model Institute of Engineering and Technology	Assistant Professor
Abhijit Atre	Gennxt Professional Services	Chief Consultant
VINAYAKA N M	RYMEC, BELLARY	Assistant Professor
BHOODEVI BHANDARE	P.D.A. College of Engineering, Kalaburgi	Assistant Professor
SRINIVASA M R	P E S college of engineering, Mandya	Assistant Professor
Disha M Nayak	B.M.S. College of Engineering	Assistant Professor
Hareesha M.	MALNAD COLLEGE OF ENGINEERING	Assistant Professor
Dr. Nagashree S	JSS Science and Technology University	Assistant Professor
Sujay C Deshpande	KLS GIT, Belagavi	Assistant Professor
S. O. Sunitha	MEI Polytechnic	Sl. Gr. Lecturer
BASAWARAJ	GEC,Raichur	Assistant Professor
MAAZ ALLAH KHAN	Maharishi University of Information Technology Lucknow Uttar Pradesh	Research Scholar
ADITYA KUMAR ANSHU	NIT, ARUNACHAL PRADESH	Research Scholar
Rahul Pandey	National Institute of Technology, Arunachal Pradesh	Research Scholar
Noorina Tarannum	Tcoer	Assistant Professor
BHARATH M N	JSSATE	Assistant Professor
Guruprasad Biradar	SCCE, Karimnagar	Assistant Professor

BINDYA S	JSS Science and Technology University	Assistant Professor
Dr. Mahesh V M	Sri Jayachamarajendra College of Engineering	Assistant Professor
Shrisha M R	B.M.S. College of Engineering	Assistant Professor
Yogesh Eshwar Mangulkar	DIEMS AURANGABAD	Assistant Professor
Natesamurthi C	Bharathidasan Engineering College	Associate Professor
Gourav K	The National Institute of Engineering	Assistant Professor
Dr Kumara Swamy N	JSS Science and Technology University	Assistant Professor
Sreenivasa M	PES College of Engineering, Mandya	Assistant Professor
Satish V T	PSG college of Technology	Research Scholar
Dr Chetan A Nayak	B.M.S. College of Engineering	Assistant Professor
SHRIDHAR MARUTI YALLURKAR	Anjuman Institute of Technology and Management Bhatkal	Associate Professor
K Kiruthiga	Bharath Institute of Higher Education and Research	Assistant Professor
Tejas Baliram Patil	DIEMS	Assistant Professor
ROOPANJALI S	Sri Jayachamarajendra college of Engineering	Assistant Professor
ALERIC SAWAN DSOUZA	Presidency University	Student
Saranya Sagiri	B.M.S. College of Engineering	Research Scholar
Shilpa B S	EWIT	Assistant Professor
S Manikanta Reddy	PSG College of Technology	Research Scholar
G. MARI PRABU	Sanjay Ghodawat University	Assistant Professor
Revanasiddappa Madihalli	Sri Venkateswara College of Engineering	Assistant Professor
Avinash S Deshpande	REVA UNIVERSITY	Assistant Professor
Mekhala R	Presidency University	Mtech
VIMAL KUMAR SINGH	MJP ROHILKHAND UNIVERSITY BAREILLY	Assistant Professor
Veeresh kumar s	RYMEC bellary	Research Scholar
Dr. O P Upadhyay	MJP Rohilkhand University, Bareilly	Associate Professor
SHIVAM KUMAR SAGAR	NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA	Student
Dr. Chandrashekar	P.E.S. College of Engineering	Assistant Professor
THEJASWINI M N	JSS Science and Technology University	Assistant Professor
Vinay S S	Government Engineering College, Hassan	Assistant Professor
Dr Suresha B L	B.M.S. College of Engineering	Assistant Professor
Dr. Kanchiraya S	Government Engineering college, Hassan	Assistant Professor
Dr. Neetha k	JSS Science and Technology University	Assistant Professor
Madhan S	Bangalore institute of technology	Assistant Professor
G.S.Ananthapadmanabha	Sri Jayachamarajendra College of Engineering	Professor
Bandhavya G B	Navkis college of Engineering	Assistant Professor
Pavan Gudi	KLS GOGTE INSTITUTE OF TECHNOLOGY	Assistant Professor
Avinash S Deshpande	REVA UNIVERSITY	Assistant Professor
Dr. Kalavathi G K	Malnad College of Engineering, Hassan	Associate Professor
Dr Vasundhara MG	MCE Hassan	Assistant Professor
AMITKUMAR	Government Engineering College, Raichur	Assistant Professor
Prof Amar S Deshmukh	PRMIT&R, Badnera-Amravati	Assistant Professor
Bindhu A S	JSS Science and Technology University	Assistant Professor
Dr. Ravishankar. R	Sri Jayachamarajendra College of Engineering	Associate Professor
ESHWAR UDBAL	Pooja Doddappa Appa College of engineering	Assistant Professor

	kalbhurgi	
Bhavana U	JSS Science and Technology University	Assistant Professor
Munendra pal singh	MJPRU BAREILLY	Assistant Professor
Sridhar R	SJBIT	Professor
R.PRAKASH	Sri Shakthi Institute Of Engineering and Technology	Assistant Professor
MAHENDRA KUMAR H M	Sri Jayachamarajendra College of Engineering	Assistant Professor
Mr. EDWIN. A	Xavier Institute of Management and Entrepreneurship, Bangalore.	Assistant Professor
Vinay K M	University BDT College of Engineering Davanagere	Assistant Professor
DR.CHANNAKESHAHA K R	Smt.L.V.Govt.Polytechnic Hassan	Selection Grade Lecturer
C.Pranesh	Velalar College of Engineering and Technology	Assistant Professor
Wafula Peter	KAMPALA INTERNATIONAL UNIVERSITY	Mr
Rajesh A S	MITT	Assistant Professor
Suchetha N Raju	Sri Jayachamarajendra College of Engineering	Assistant Professor
Dr. Kaliprasad C S	B.M.S. College of Engineering	Assistant Professor
Neha Vivek A	B.M.S. College of Engineering	Research Scholar
Dr. Sunil Nimje	DIAT, Pune	Assistant Professor
Sirisha Reddy	Acharya institute of technology	Assistant Professor
Abdul Razak kaladgi	P A college of engineering MANGALORE	Assistant Professor
Sayali Baitule	PRMITR	Assistant Professor
Dr. Niranjan KR	B.M.S. College of Engineering	Assistant Professor
Mallikarjuna K	Bangalore Institute of Technology	Assistant Professor
Prashant Prabhakar	NIT ROURKELA	M.Tech student
Arjun C C	B.M.S. College of Engineering	Assistant Professor
Dr. Nagashree S	JSS Science and Technology University	Assistant Professor
Dr. T. Raghavendra	National Institute of Engineering	Assistant Professor
Sairam abbaganu	B.M.S. College of Engineering	Research Scholar
Arun Kumar k s	Government polytechnic, Kampli	Lecturer
Ananda V R	Vivekananda College of Engineering and Technology	Professor
Ravindranath C	SJC Institute of Technology	Assistant Professor

FEEDBACK

Feedback for all the sessions in the programme was taken after completion of every session from the attended participants. A good amount parameters and fields were considered in the feedback form shared with the participants. The programme received an over helming positive response and appreciation from all the participants regarding the conduction of the FDP, managements and the quality of the lecture delivered by the speakers.

CONCLUSION AND RECOMMENDATIONS

The FDP was conducted successfully and all the participants actively took part in all the sessions of the 5 days programme and ended with the vote of thanks by the programme co-ordinators. Later the certificate of appreciation and participation were reached to all the resource persons and participants.

A Report One Week online FDP on “MATLAB for Mechanical Engineers”

By: Devaraj K

Date: 20th July to 24th July 2020

Venue: Online mode using Google Meet

Objectives:

1. To give brief introduction to MATLAB
2. Basics of mathematical operations using MATLAB
3. Applications of Mechanical Engineering courses such as SOM, Kinematics, Fluid Mechanics, Design of Machine Elements using MATLAB as a tool.

Proceedings:

The program was inaugurated by honourable Principal, BMSCE, Dr. B V Ravishankar on 20th of July at 9:45 am. We had 122 participants from all over the india ranging from Arunachal Pradesh, Dehradun, Hyderabad, Mangalore, Coimbatore etc.,. As the FDP was on online mode, we had two sessions per day 10:00 am to 11:30 am and 12:00 Noon to 1:30 pm. The first three days was devoted covering the Matrix operations, Logical operations, Plotting, Solving ODE's and Numerical analysis, Symbolic math using MATLAB as a tool. The last two days, we discussed applications of Mechanical Engineering such as Shear Force and Bending moment diagrams, Engineering Mechanics, Kinematics, Fluid Mechanics and Design of Machine Elements. The participants have to take the quiz and submit course journal on daily basis to improve the quality of the learning.

REPORT
ON
ONE WEEKS FACULTY DEVELOPMENT PROGRAMME ON
RECENT ADVANCES IN HEAT TRANSFER AND ITS APPLICATIONS
(ONLINE MODE)

Held during 13/7/2020 to 17/7/2020

Day 1 – 13/7/20 – Monday

Inauguration:

The first day began with the workshop inauguration by Dr. B. V. Ravishankar, Principal of BMSCE, in Dr. Rudra Naik, HOD of the mechanical department, faculty members, and participants in online mode. Further, Dr. Rudra Naik welcomed all the participants, briefed them about the Department of Mechanical Engineering, BMSCE, and the aim of the FDP. Then the inauguration culminated with a vote of thanks by Dr. Sudarshan B. Later

Session 1:

Session 1 started with fundamentals of heat transfer and its applications and recent advancement in the heat transfer area by Prof. K. N. Seetaramu, Retd Professor IIT Madras.

Session 2:

In the second session, Prof. Balaji Srinivasan, Associate Professor, Department of Mechanical Engineering IIT Madras, delivered a talk on employing machine learning for heat transfer problems. The presentation gave an insight into the evolution and growth of ML. He also spoke on the scope of the AI & ML in the fluid flow and heat transfer area.

Day 2 – 14/7/20 – Tuesday

Session 1:

The first session took us through research work carried out by Dr. Sangamesh C. Godi Asst. Prof. Department of Mechanical Engineering BMSCE. He talked about temperature measurement techniques and experimental methodology to estimate heat transfer coefficient, one of the critical parameters in the heat transfer analysis. He also gave an application of the same.

Session 2:

Session 2 was carried forward by Dr. Sudarshan B, Asst. Prof. Department of Mechanical Engineering, BMSCE Bangalore gave a brief idea about the Challenges and Advances in Heat Transfer Studies for Hypersonic Vehicles. The talk concluded by briefing heat transfer problem associated with space shuttle during re-entry,

Day 3 – 15/7/19 – Wednesday

Session 1:

Dr. Pallab Sinha Mahapatra, Asst, conducted the first session. Prof. IIT Madras. He talked about Wettability engineering and its application in heat transfer problems, and he concluded by giving its future scope in research.

Session 2:

The next session dove boiling heat transfer and its application by Dr. Suhas B. Asst. Prof. Department of Mechanical Engineering BMSCE, where he specifically spoke about boiling heat transfer, how the heat transfer phenomenon takes place during boiling, and its electronic application cooling.

Day 4 – 16/7/20 – Thursday

Session 1:

The first session was by Dr. Srikanth Rangarajan, Asst. Prof. (Research) at SUNY Binghamton USA. He spoke on data center cooling and its optimization. He also mentioned during his talk that how the current optimization and product development is nature or bio-inspired for enhancing the heat transfer in electronic devices.

Session 2:

The day's second session was on heat transfer for aerospace application by Prof. Arul Prakash, Department of Applied Mechanics IIT Madras. He gave insight into the fundamentals of numerical heat transfer and advanced numerical tools that can be used for complex heat transfer problems and can realistically obtain the results.

Day 5 – 17/7/20 – Friday

Session 1:

The first session was by Dr. Kali Charan Nayak, Thermal specialist, Rolls Royce R and D center Bangalore, India. He gave a talk on thermal challenges in the gas turbine. Also, he emphasized the current challenges in designing gas turbines used in aviation and the power generation industry.

Session 2:

Session 2 and the last session of the FDP were arranged in a way that was not related to heat transfer but focused on creativity for researchers and engineers. This talk was needed for the program to enhance the morale of all the participants and made them think about how research needs to be carried out with creativity.

Valedictory:

Prof. Rudra naik HOD Mechanical engineering gave concluding remarks by appreciating the quality of the topics covered by eminent speakers. He thanked all the speakers for their time and wished all the participants.

An E-certificates have been sent to all the participants and a thank you letter from HOD to all the speakers.

Conduction

$T_1 > T_2$

Fourier's Law

$$Q = -KA \left(\frac{dT}{dx} \right)$$

$$= KA \left(\frac{T_1 - T_2}{L} \right)$$

K = thermal conductivity

Convection

Newton's Law

$$Q = hA(T_s - T_\infty)$$

h = heat transfer coefficient

h is a function of

- geometry
- flow
- fluid

Radiation

Stefan Boltzmann's Law

$$Q_{\text{net}} = \sigma A_1 F_{12} F_{21} (T_1^4 - T_2^4)$$

T1 and T2 are in °K

σ = Stefan Boltzmann's constant

F12 = view factor between 1 and 2

F21 = surface characteristics factor

Key to good Thermal Design is to understand and optimize these modes

Assumptions Made

Dr. K.N. Seetharamu PESIT ME

POOL BOILING

FIG 2: POOL BOILING CURVE

FIG 3: BUBBLE FORMATION

Heat Transfer for Aerospace Applications

By

K. Arul Prakash

Professor

Fluid Mechanics Group

Department of Applied Mechanics

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ONE WEEK FDP: 13TH TO 17TH JULY 2020

RECENT ADVANCES IN HEAT TRANSFER AND ITS APPLICATIONS

4TH SESSION (JULY 14)

CHALLENGES AND ADVANCES IN HEAT TRANSFER STUDIES FOR HYPERSONIC VEHICLES

By

Dr. B SUDARSHAN

Asst. Prof., Dept. of Mechanical Engineering

B.M.S. College of Engineering

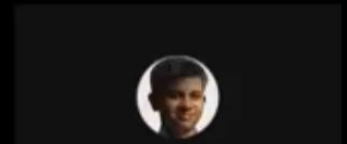
Alumni of IISc, Bengaluru

Sudarshan B

Machine Learning for Heat Transfer Problems

Workshop on Recent Advances in Heat Transfer
BMS College of Engineering

Balaji Srinivasan
Mechanical Engineering
IIT-Madras



Balaji Srinivasan

OUTCOMES OF THE TRAINING PROGRAMME

This FDP program was organized for faculties, future academicians like Ph.D. scholars, and PG students of thermal backgrounds. The sessions gave a brief idea about the current R & D status in heat transfer and where we stand now. We found that participants have benefited from the FDP program. This is because the speakers were eminent fraternities in heat transfer and also due to their topic of talk.

The outcomes of this program are listed below:

- Faculties are equipped with knowledge of current trends and technical advancements in the heat transfer area based on the industry/students' requirements.
- Advanced courses can be introduced as electives.
- Impetus is given to solving real-world problems to cater to industrial needs.
- Faculties can guide students better in the electives/ courses to opt for both during the program and higher studies/recruitment.
- Faculties can plan, implement and use FDP material.
- The FDP also gave a path to carry out the research heat transfer and other allied fields.

Report of the Workshop on: **“Advance Biomaterials for Biomedical Applications”**

Workshop was Successfully conducted from 17th-22nd March,2021 organised by Department of Electronics and Department of Medical Electronics Engineering.We have got around 129 registrations which includes UG and PG students,Research Scholars and Faculites.We have invited the 9 outside resource persons and 1 in house resource person.All the participants learnt a lot in the workshop and give us the good feedback.



BMS College of Engineering Bangalore

TEQIP-III Sponsored
(Under COE in Advanced Materials)

5 Days Seminar Series On
“Advance Biomaterials for Biomedical Applications”
17th -22nd MARCH 2021

Organized By Department of **Medical Electronics Engineering**
And **Electronics Engineering**

Recording...

Sharath Pujar Manoj Komath sabareeswaran Vijayalakshmi K Ananya Mark... Dwarakanath M L

MEDICAL DEVICE DEVELOPMENT

@

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY

Trivandrum



Dr. MANOJ KOMATH
Head, Dept of Biomaterials Science and Technology
BIOMEDICAL TECHNOLOGY WING, SCTIMST

Recording...

Prerana Ananda Murthy Sharath Pujar Vijayalakshmi K Ananya Markande Manoj Komath

Abhishek Appaji Nikita Jain Bhavani Avva Bhavitha Sriya AMRUTHA G R

Hrithik Sivasadan Dwarakanath M L Yashaswini J mythri km Anusha L

Pranav P Kushal Saukar K Vaishnavi Harit... Roshni Sirasappa Yp

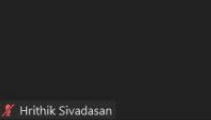
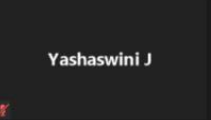
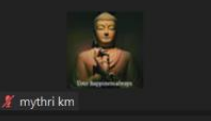
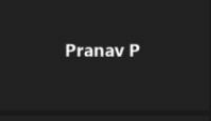
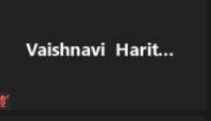
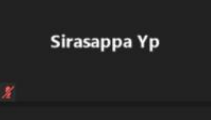
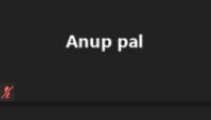
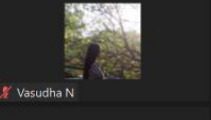
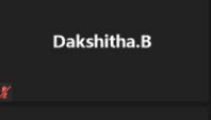
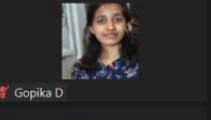
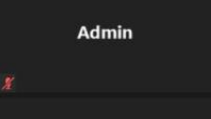
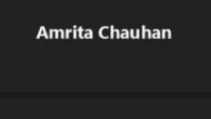
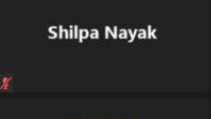
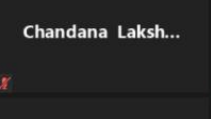
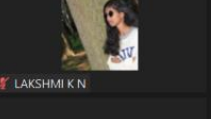
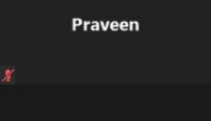
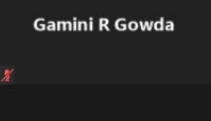
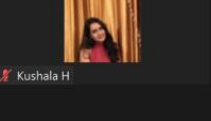
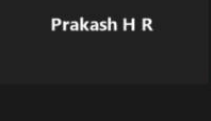
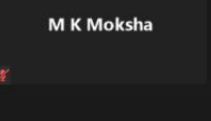
Anup pal Vasudha N Dakshitha.B Gopika D Admin

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17:24 22-03-2021 ENG

Recording...

Sharath Pujar is talking...

 Hrithik Sivasadan	 Kalpana R	 Avva Bhavitha S...	 Dwarakanath M L	 Yashaswini J
 mythri km	 Anusha L	 Pranav P	 Kushal Saukar K	 Vaishnavi Harit...
 Sirasappa Yp	 Anup pal	 Vasudha N	 Dakshitha.B	 Gopika D
 Admin	 Amrita Chauhan	 Shilpa Nayak	 Chandana Laksh...	 LAKSHMI K N
 Praveen	 Gamini R Gowda	 Kushala H	 Prakash H R	 M K Moksha



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17:25

22-03-2021

