REPORT

on

Faculty Development Program

on

“Blockchain and Cyber Security”

(22 July 2024 to 26 July 2024)

K.R. MANGALAM UNIVERSITY, GURUGRAM

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REPORT ON FACULTY DEVELOPMENT PROGRAMME

ON

"Blockchain and Cyber Security"

1. Introduction

The **Five days** Faculty development was organized by School of Engineering and Technology in hybrid mode at K.R. Mangalam University. The objectives were:

- To provide a comprehensive understanding of blockchain technology and its applications.
- To explore contemporary issues and solutions in cybersecurity.
- To facilitate practical learning through hands-on sessions and case studies.

There were **15** external participants from different colleges and institutes and around **12 participants** from K.R. Mangalam University.

The sessions of the FDP were planned to meet the desired objectives. Schedule of the FDP has been enclosed

2. Day-wise Report of the Sessions Conducted

A. Monday 22nd July 2024

i) Inaugural Session:

Dr. Preeti Rathi, Assistant Professor, SOET gave an insightful introduction to the FDP. The inaugural session started at 10:00 am with an auspicious note by Prof. Sushil Kumar Azad. All the esteemed speaker of the sessions were welcomed and a brief outline was given about the FDP

The dignitaries on the stage were Dr. Sumit Kumar Pandey, Assistant professor, IIT Jammu; Prof. Sushil Kumar Azad, Professor, KR Mangalam University.

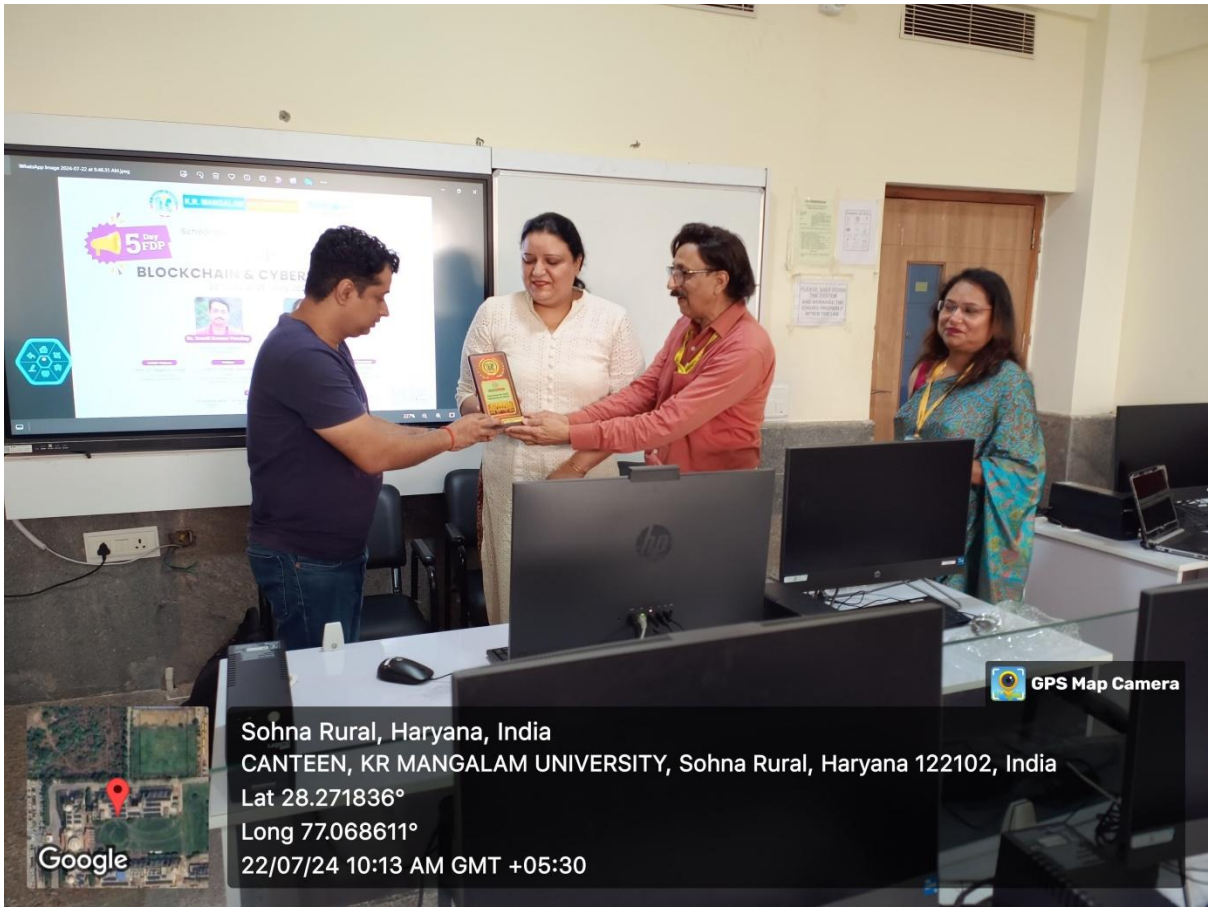


Photo 1a: Prof Azad welcoming the guest speaker by presenting a memento

In their Inaugural Speeches Prof Sushil Kumar Azad, Professor, K.R. Mangalam University motivated the faculties to listen carefully the whole sessions of FDP to gain knowledge on blockchain and cyber security. A glimpse for the FDP were given by Dr. Preeti Rathi, which was followed by an introduction to the programme by Dr. Pallavi Pandey.



Photo 1b: Dr. Pallavi Pandey Introducing guest speaker to the faculties

ii) Session 2 Basics of Block chain (11:30 am – 3:30 pm)

Dr Sumit Kumar Pandey gave basic introduction to Blockchain to the online/offline participants. Blockchain is a decentralized, distributed digital ledger technology that allows data to be recorded securely, transparently, and immutably. How It consists of a chain of blocks, each containing a list of transactions. Once a block is added to the chain, it cannot be altered without altering all subsequent blocks, which requires the consensus of the network participants. This makes blockchain highly resistant to tampering and fraud. It is the underlying technology for crypto currencies like Bitcoin, but its applications extend to various industries, including supply chain management, healthcare, and finance, for secure and transparent data management. The session ended with Q &A round and various queries and suggestions were given by the participants.

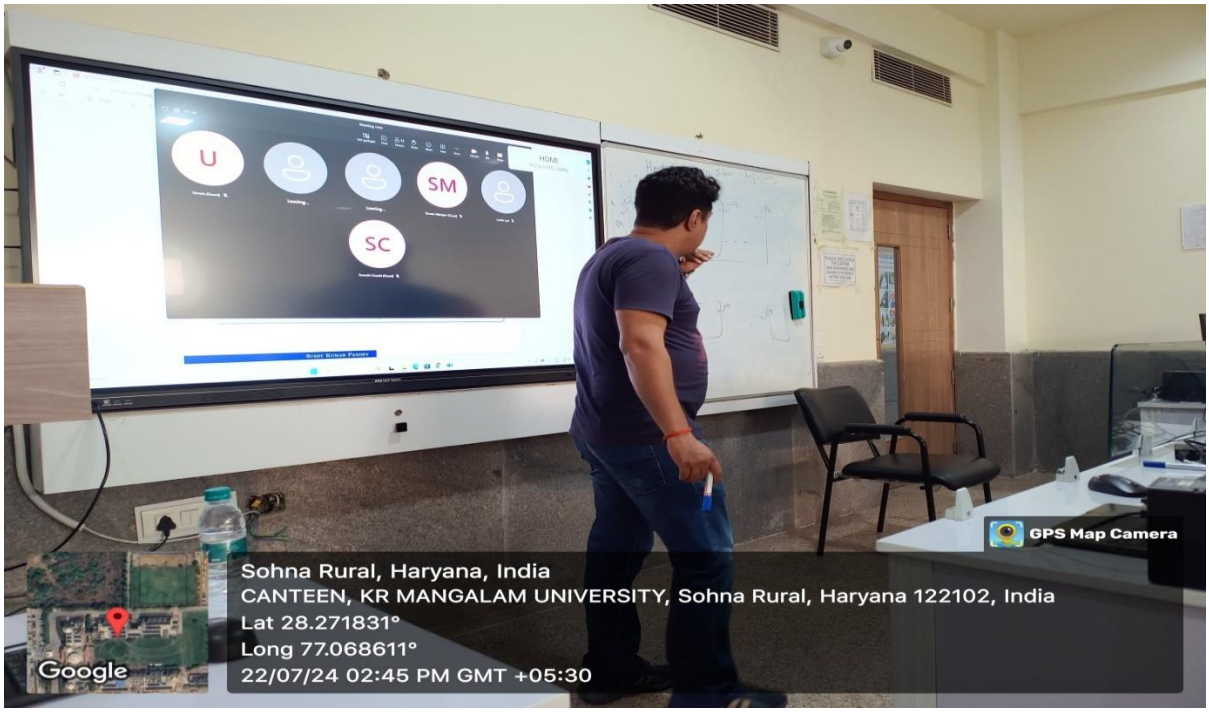


Photo 2: Lecture delivering by speaker and participants joining from other organisations

B. Tuesday, 23 July 2024

I. Session 1 (10:00 am – 1:00 am)

In this session, cryptographic hash functions were explained. These functions generate a fixed-size hash value from input data. They are widely used for integrity verification. Examples include SHA-256 and MD5. In this session, SHA-256 are explained in detail. SHA-256 (Secure Hash Algorithm 256-bit) is a cryptographic hash function that produces a fixed-size 256-bit (32-byte) hash value from any input data. It is part of the SHA-2 family of hash functions, which were designed by the National Security Agency (NSA) and are widely used in cryptographic applications.

SHA-256 is crucial for ensuring data integrity, as even a small change in the input produces a vastly different hash, a property known as the avalanche effect. It is also resistant to collisions, where two different inputs would produce the same hash value, making it highly secure. SHA-256 is commonly used in applications like digital signatures, certificates, and blockchain, where it's employed in securing the proof-of-work algorithm for Bitcoin and other crypto currencies.

Despite its strength, it's still vulnerable to advances in quantum computing, though no practical attacks exist yet. The session was highly informative, and participants learned how to design hash functions.

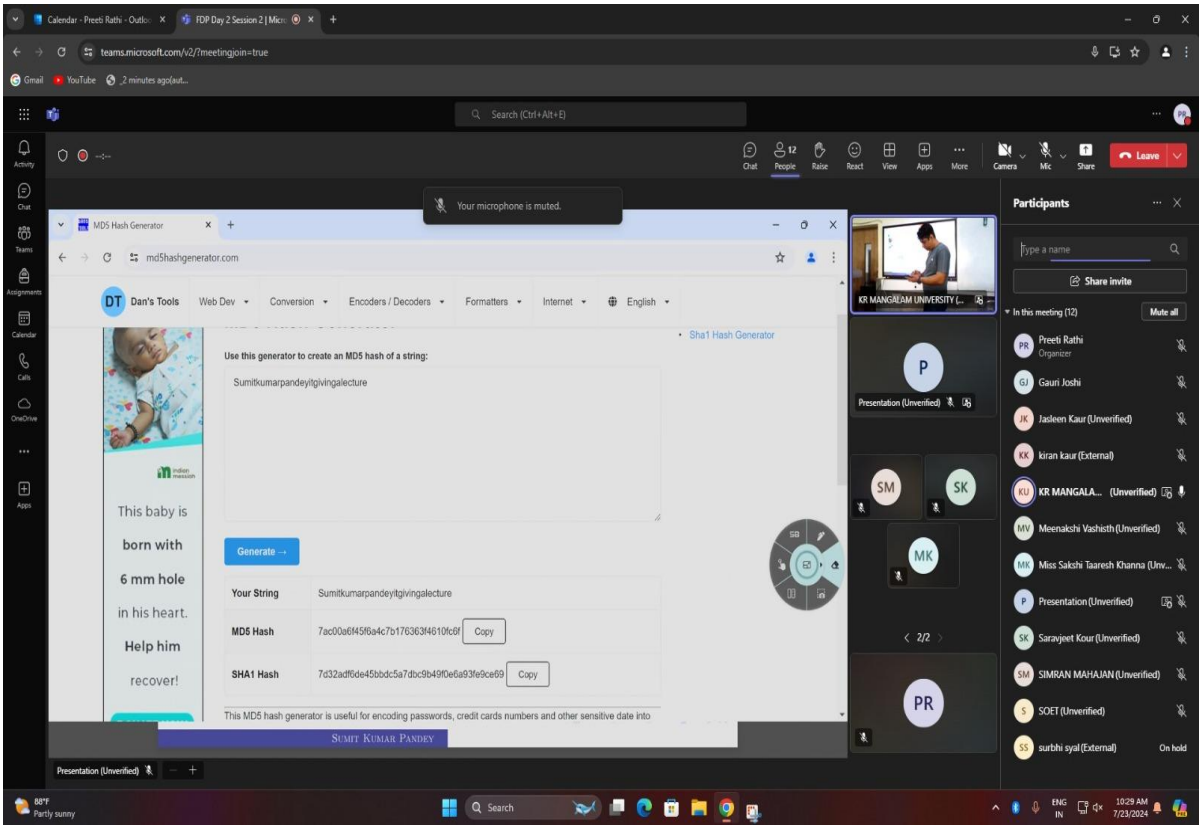


Photo 3: The expert Delivering Lecture on Hash Functions



Photo 4: Dr Sumit Kumar Pandey delivering lecture

II. Session 2 (1:30 pm – 3:30 pm)

In this session, MD5 hash function was explained. MD5 (Message Digest Algorithm 5) is a widely-used cryptographic hash function that produces a 128-bit (16-byte) hash value from input data. Developed by Ronald Rivest in 1991, MD5 was designed for cryptographic security, especially to ensure data integrity by generating a fixed-size hash from variable-size input data. It is commonly represented as a 32-character hexadecimal number.

While MD5 was once widely trusted for ensuring file integrity and digital signatures, it has since been found to be vulnerable to collision attacks, where two different inputs can produce the same hash. Due to these vulnerabilities, MD5 is considered cryptographically broken and unsuitable for security applications like digital certificates or SSL. It is still used in non-security contexts like file checksums to verify data integrity.

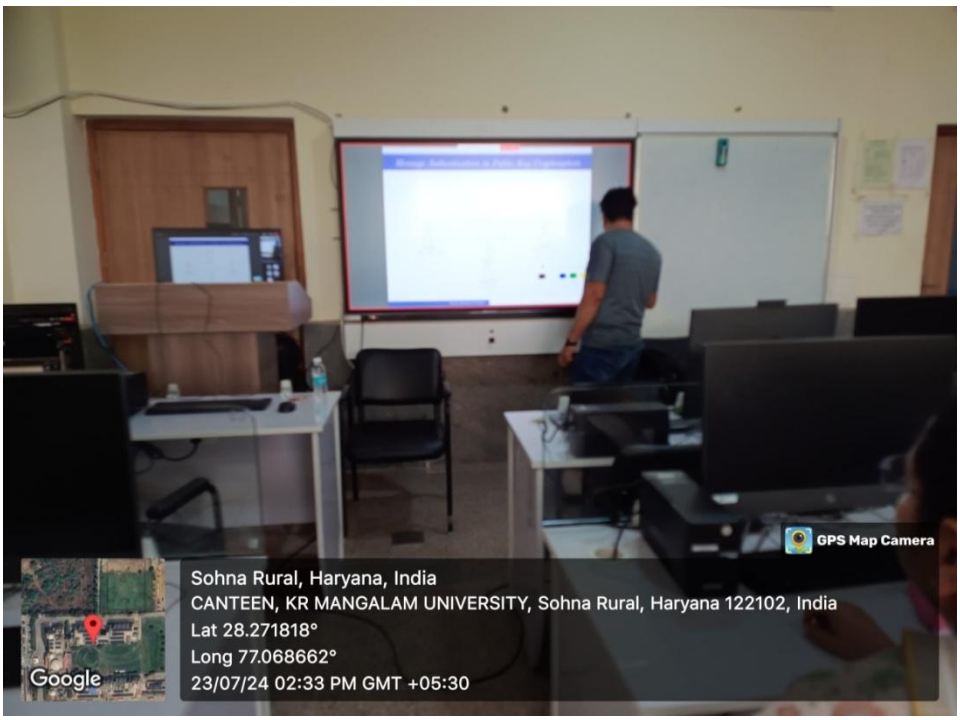


Photo 5: Lecture delivery by Dr. Sumit

C. Wednesday, 24 July 2024

I. Session 1 (10:00 am – 1:00 pm)

This session was on Securing Smart Contracts and Blockchain Network Security. Securing smart contracts and blockchain network security are critical areas of focus in the broader context of blockchain technology. As blockchain systems become more prevalent in decentralized applications (dApps) and industries like finance, healthcare, and supply chain management, ensuring their security is paramount to avoid vulnerabilities and malicious attacks.

Smart contracts are self-executing contracts with the terms of the agreement written directly into code. These contracts operate on blockchain platforms, most notably Ethereum, and automatically enforce and execute transactions once predefined conditions are met. While

smart contracts bring automation and trust in less than one's decentralized systems, they also introduce potential risks. Because smart contracts are immutable—once deployed, they cannot be changed—any bugs or security flaws can be disastrous. There exists several challenges in this like errors in smart contract code, like reentrancy bugs or integer overflows, can be exploited by attackers. The infamous 2016 DAO (Decentralized Autonomous Organization) hack on Ethereum, where $60 million was stolen due to reentrancy vulnerability, highlights the severity of such risks.

Smart contracts often run on a public blockchain, meaning errors can have real financial consequences. Ensuring smart contracts are thoroughly tested and audited before deployment is crucial for minimizing the risk of exploitation.

Incorrect handling of permission settings could lead to unauthorized access and allow malicious actors to exploit the contract. For instance, contracts that fail to properly restrict who can call certain functions may open doors for attacks.

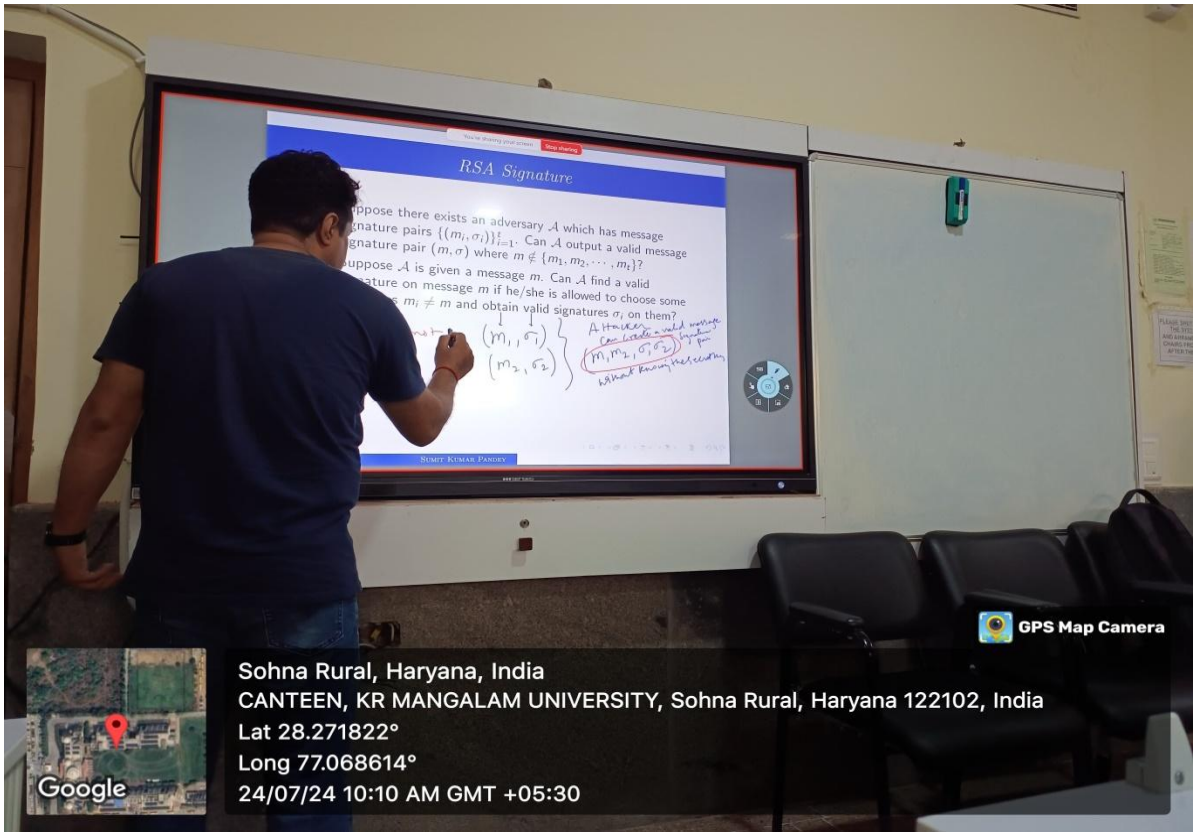


Photo 6: Dr. Sumit Kumar Pandey has taught RSA signature

II. Session 2 on (1:30 pm – 3:30 pm)

In this session Smart Contracts Overview and Security Challenges were explained. Securing smart contracts and blockchain network security are critical areas of focus in the broader context of blockchain technology. As blockchain systems become more prevalent in decentralized applications (dApps) and industries like finance, healthcare, and supply chain

management, ensuring their security is paramount to avoid vulnerabilities and malicious attacks.



Photo 7: Speaker explaining the working of the Network

D. Thursday, 25 July 2024

I Session 1 (10:00 am – 1:00 pm)

In this session Regulatory Landscape was explained. The **regulatory landscape of blockchain and cybersecurity** is a dynamic and evolving space, as governments and regulatory bodies across the globe grapple with the opportunities and challenges presented by blockchain technology. Blockchain's decentralized, transparent, and immutable characteristics make it a powerful tool for securing digital transactions and ensuring data integrity. However, these same characteristics raise concerns about privacy, legal compliance, and enforcement. In this context, both blockchain technology and cybersecurity are at the forefront of regulatory scrutiny.

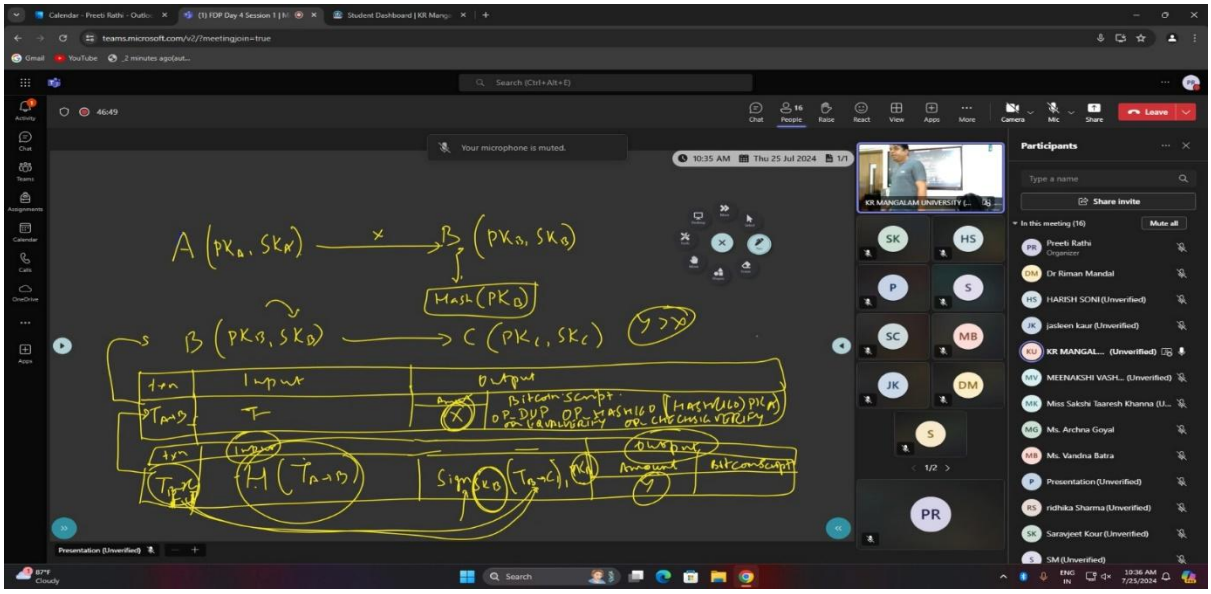


Photo 7: Speaker introducing how to integrate Block chain and Cyber security

II Session 2 (1:30 pm – 3:30 pm)

In this session, speaker discussed about identity management. Identity management is one of the most promising applications of blockchain in cybersecurity. Participants have learnt how blockchain-based digital identities can help eliminate password-based systems, reduce identity theft, and provide more secure access to systems and networks. Decentralized identity solutions, such as Self-Sovereign Identity (SSI), give users control over their personal information without relying on third-party intermediaries.



Photo 8a. Explaining security Implication of block chain



Photo 8b. Last Session by Dr. Sumit Kumar

E. Friday, 26 July 2024

I Session 1 (10:00 am – 2:00 pm)

Speaker Dr. Mohona Ghosh introduced emerging technologies in Block chain. Emerging technologies in blockchain are reshaping industries and driving innovation across various sectors. One of the most significant developments is the rise of Decentralized Finance (DeFi), which uses blockchain to recreate traditional financial services like lending, borrowing, and trading without intermediaries. This opens up financial access to millions of unbanked individuals worldwide. Non-Fungible Tokens (NFTs) have also revolutionized digital ownership, allowing for unique digital assets, such as art, music, and collectibles, to be securely traded and verified on blockchain networks.

Another key trend is the integration of Blockchain and Internet of Things (IoT), where blockchain enhances security and transparency in IoT devices by providing a decentralized system to manage data and ensure trust between devices. Interoperability solutions, like cross-chain technologies, are also gaining traction, allowing different blockchains to communicate and share data seamlessly, enhancing collaboration across platforms.

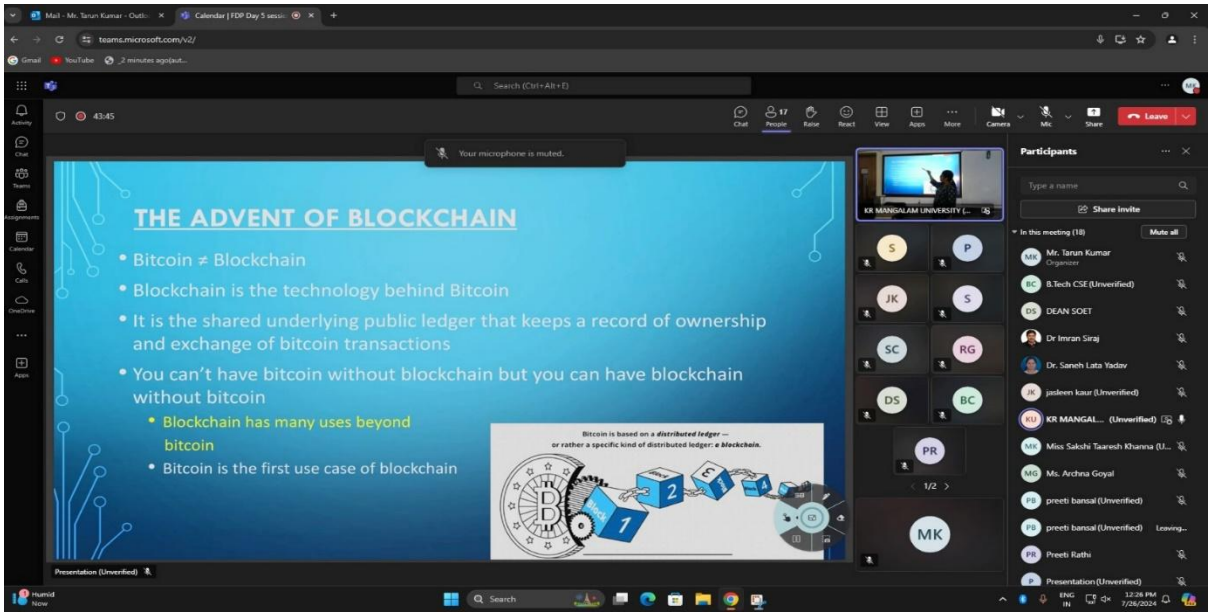


Photo 9 a: Dr. Mohona Ghosh delivering lecture (view of online participants)



Photo 9 b: Dr. Mohona Ghosh delivering lecture

II Valedictory Session

This FDP was concluded by valedictory session. Dr. Pallavi Pandey has given memento and so vinier to the guest speaker Dr Mohona Ghosh. Dr Mohona Ghosh also given a thanks note to the FDP organizing committee.



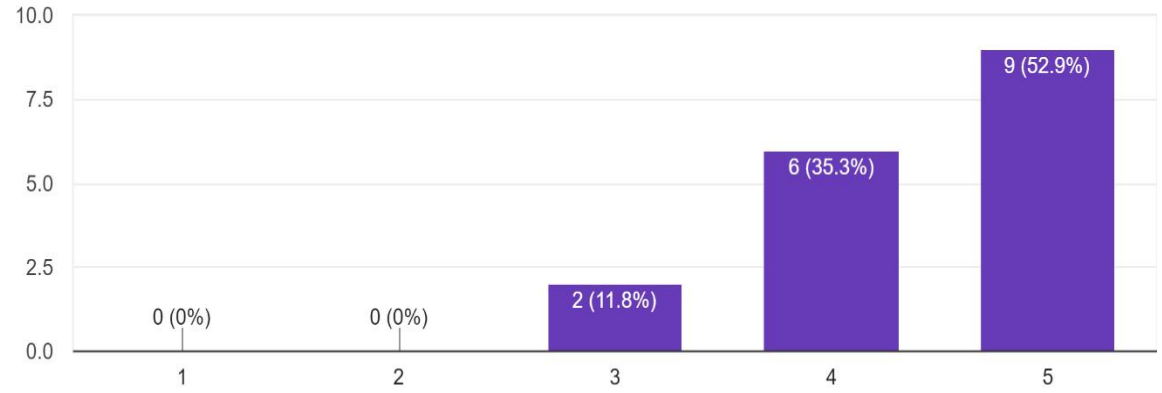
Photo 10: Dr. Pallavi felicitating Dr. Mohona Ghosh

Report prepared by	Dr. Preeti Rathi & Dr. Pallavi Pandey
Report verified by Event Coordinator	Dr. Pallavi Pandey
Report verified by Dean	Dr Pankaj Aggarwal
Report verified by IQAC Coordinator	Dr Shikha Dutt Sharma

PARTICIPANT FEEDBACK.

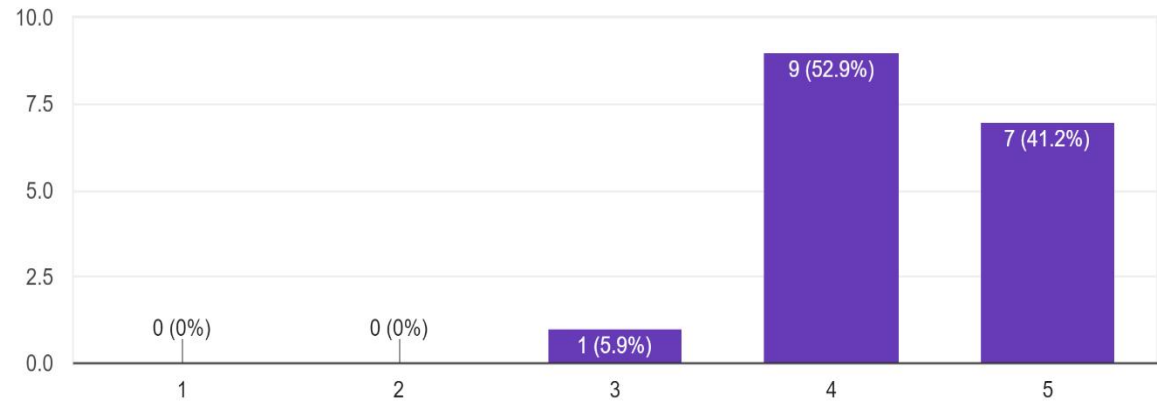
How would you rate the overall content of the FDP?

17 responses



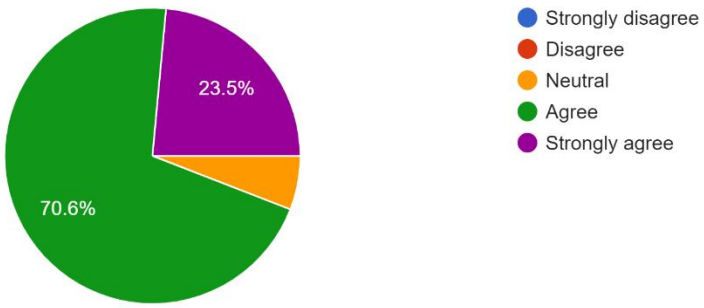
How relevant was the FDP content to your teaching/research needs?

17 responses



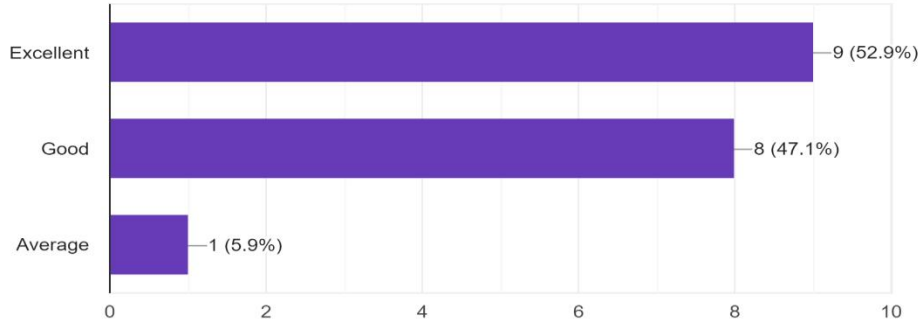
Were the topics covered in the FDP comprehensive and well-structured?

17 responses



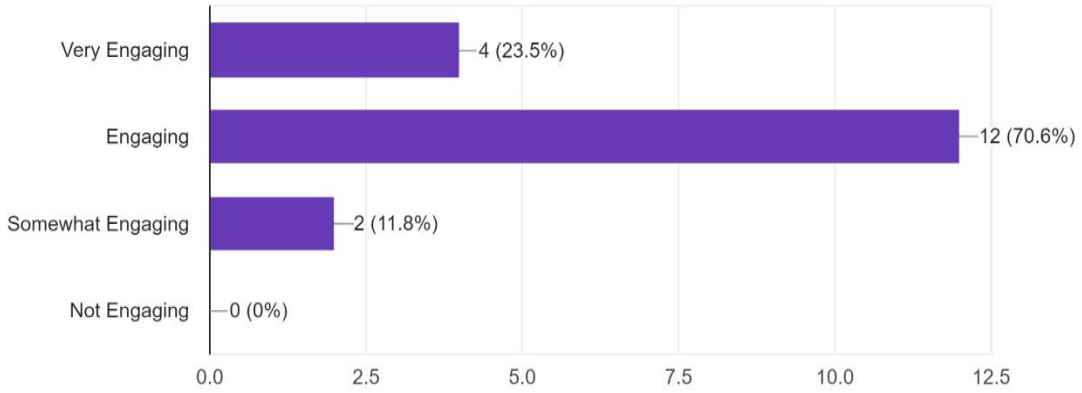
How would you rate the effectiveness of the resource person?

17 responses



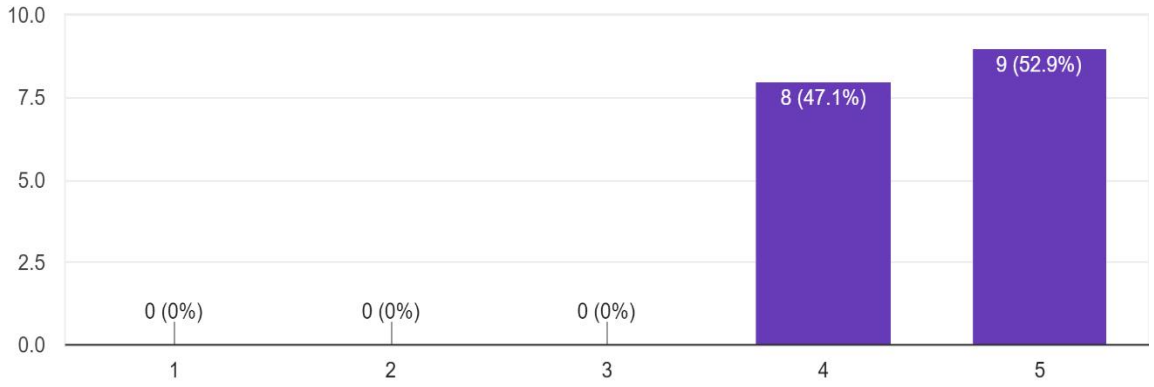
How engaging were the sessions?

17 responses



How well was the FDP organized?

17 responses



ANNEXXURE – I

About the FDP

Welcome to our Faculty Development Program (Hybrid Mode) focused on Blockchain and Cybersecurity. In today's interconnected digital landscape, the integration of Blockchain technology and robust cybersecurity measures is essential for ensuring the security, transparency, and integrity of data and transactions. This FDP aims to equip participants with comprehensive knowledge and practical skills to navigate these critical domains effectively.

Throughout this program, participants will engage in interactive sessions, workshops, and hands-on exercises facilitated by industry experts and experienced educators. By the end of the FDP, participants will not only gain a deep understanding of Blockchain technology and cybersecurity best practices but also acquire practical insights to integrate these concepts into their curriculum effectively.

Join us in this journey to explore the intersection of Blockchain and cybersecurity and empower yourself to explore the current and future research possibilities.

About the University

K.R. Mangalam University is the fastest-growing higher education institute in Gurugram, India. Since its inception in 2013, the University has been striving to fulfil its prime objective of transforming young lives through ground-breaking pedagogy, global collaborations, and world-class infrastructure. The next-generation institution offers a myriad of Undergraduate, Postgraduate and Doctoral Degree Programs across multiple disciplines, under the mentorship of highly qualified faculty.

KRMU proactively organizes seminars, industrial visits, experts' lectures, internships, symposiums, campaigns and many more activities, providing students with a 360-degree exposure to various trends, helping them build diverse viewpoints. Along with advanced learning, the university gives paramount importance to co-curricular activities such as vibrant festival celebrations, social responsibility activities, tech training, research and many more activities. Recognized for its virtues of quality, equality, inclusiveness, sustainability, and professional ethics, KRMU is synonymous to academic excellence and innovation. K.R. Mangalam University has marked its presence in Delhi NCR as a value-based university, successfully imparting quality education in all domains. Our alumni are working across all sectors of technology, from MNCs to PSUs.

About the School of Engineering & Technology

The School of Engineering and Technology at K. R. Mangalam University started in 2013 to create a niche of imparting quality education, innovation, entrepreneurship, skill development

and creativity. It has excellent infrastructure, state of the art Labs, and a team of qualified and research-oriented faculty members.

The school is offering undergraduate programs (B.Tech, BCA, B.Sc), postgraduate programs (M.Tech, MCA) and Ph.D (all disciplines). We are offering B.Tech programs in recent areas of specializations like AI & ML, Automotive Designs & Electrical Vehicle, Sustainable Development & Smart Cities, Full stack development, UI/UX development, Cloud Computing etc.

SOET aims at transforming the students into competitive engineers with adequate analytical skills, making them more acceptable to potential employers in the country. There is a great focus on experiential & project-based learning with Industry collaborations. Our B.Tech programs are in collaborations with Industries like IBM, Siemens, Samatrix, Xebia, ImaginXP, EC Council etc. Out student's get an opportunity to learn directly by professionals from industry.

Dates and duration of the program

FDP scheduled on 22nd July 2024 to 26th July 2024 and duration of this program 10:00 am to 3 pm.

Fees

Participation charges 1000 Rs per person and after completion certificate will be provided to only those candidates who have attended all the sessions of FDP.

Payment Link

https://paytm.me/Zz-P3rN

Registration Link

We will provide accommodation on first come first serve basis and food will be provided with nominal charges. Kindly do the registration using below link

https://docs.google.com/forms/d/1kACaD5qird2qcWa8aFkOasQ3YNJy7dQ6jjl3w0NSoMU/edit

ANNEXURE – II

LIST OF RESOURCE PERSONS and ORGANIZERS

Sr. No.	Resource Person Name &	Organization	Contact Details (email, phone)	Session Day and Time	Topic

	Organizers				
1	Dr Sumit Kumar Pandey	IIT, Jammu	9831029937	Day 1 to Day 4 10:00 AM – 3:30 PM	Cyber Security& Block Chain
2	Dr Mohona Ghosh	IGDTUW, Delhi	9811994441	Day 5, 12:00-3:30 PM	Block Chain

ANNEXURE – III

MINUTE-TO-MINUTE FDP SCHEDULE

Schedule of Faculty Development Program on Block Chain and Cyber Security

- **Day-1(22-July-2024)**

  Inauguration & Introduction to Blockchain Technology

  Morning Session:

  - Session 1: Welcome and Program Overview
    - Welcome note by organizers.
    - Introduction of key dignitaries.
    - Inaugural address by a distinguished guest.
    - Overview of the FDP objectives
    - Introduction of resource persons and participants.
  - Session 2: Basics of Blockchain

  Afternoon Session:

  - Session 3: Blockchain Components and Architecture, Types of Blockchains and Consensus Mechanisms, Use Cases of Blockchain Technology

- **Day-2(23-July-2024)**

  Blockchain Security Fundamentals

  Morning Session:

  - Session 4: Introduction to Blockchain Security, Cryptography in Blockchain

  Afternoon Session:

  - Session 5: Securing Smart Contracts, Blockchain Network Security

- **Day 3: (24-July-2024)**

  Cybersecurity Basics

  Morning Session:

  - Session 6: Overview of Cybersecurity, Common Cyber Threats and Attacks, Risk Management in Cybersecurity, Introduction to Security Policies and Compliance

  Afternoon Session:

  - Session 7: Regulatory Landscape of Blockchain and Cybersecurity, Hands-on Workshop: Integrating Blockchain for Enhanced Cybersecurity

- **Day 4: (25-July-2024)**

  Integrating Blockchain and Cybersecurity

Morning Session:

- Session 8: Blockchain and Cybersecurity Synergy, Use Cases of Blockchain in Cybersecurity, Blockchain for Identity Management

Afternoon Session:

- Session 9: Security Implications of block chain applications in healthcare
- Session 10: Group Discussions on Emerging Trends

- **Day 5: (26-July-2024)**

  Future Trends and Certification

Morning Session:

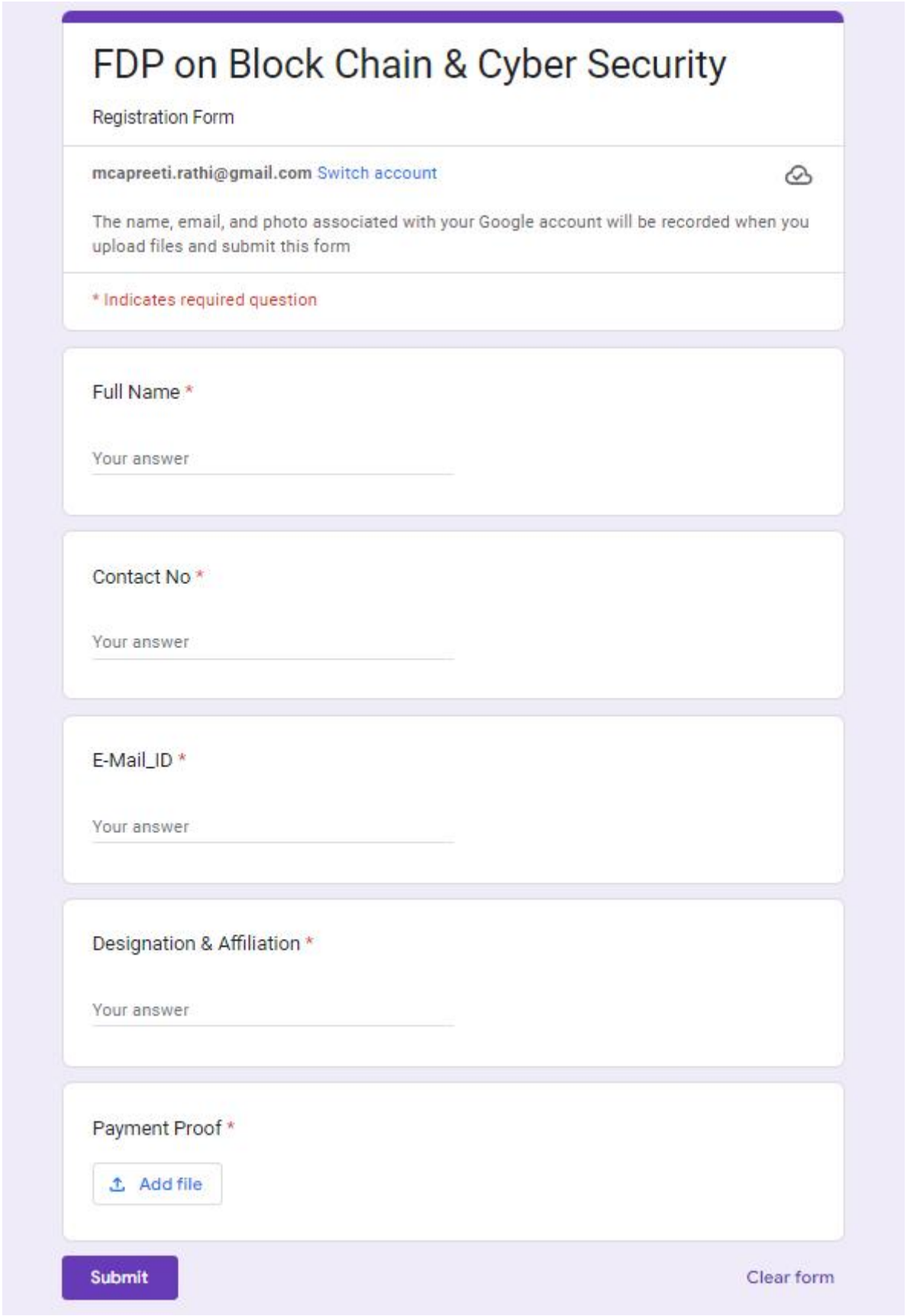
- Session 11: Emerging Technologies in Blockchain and cyber security

Afternoon Session:

- Session 12: Certification Ceremony, Feedback and Reflection, Closing Remarks and Acknowledgment

ANNEXURE – IV

REGISTRATION FORM



ANNEXURE – V

LIST of ATEENDEES

Sr. No.	Name	Organization	Contact No	E Mail ID
1	Ruchika Bhakhar	Assistant professor (K. R. Mangalam university)	9315944900	Ruchika.bhakhar@krmangalam.edu.in
2	Kiran pal kour bali	Assistant Professor Jammu university	7307878043	Kiranpalkaur25@gmail.com
3	Ridhika Sharma	Assistant Professor , MBSCET , JAmmu affiliated to Jammu University	9911007920	ridhikasharma@gmail.com
4	Simran verma	Assistant professor Jammu university	9149632651	Simranverma625@gmail.com
5	Saravjeet Kour	Assistant Professor, University of Jammu	7006537323	Saravjeetkour@mbscet.edu.in
6	Jasleen kaur	Assistant professor Jammu university	9055505605	Sunita.86@gmail.com
7	Dr.Devkanya Gupta	Assistant professor, K.R.Mangalam University	7389538781	Devkanyagupta@gmail.com
8	Dr Rashmi Priya	Assistant Professor K R Mangalam University	9163959731	rashmi.slg@gmail.com
9	Jay Shankar Sharma	Assistant professor	9214927525	Jay.sharma@jaipur.manipal.edu
10	Jyoti Chaudhary	Assistant Professor & K.R. Mangalam University	8395921343	jyoti.chaudhary@krmangalam.edu.in
11	Samaranika rout	Ph.D scholar , KIIt D.u. Bhubaneshwor, orisha	7008845535	2181067@kiit.ac.in
12	Sonam Seth	Assistant Professor	9793050449	sethsonam@gmail.com

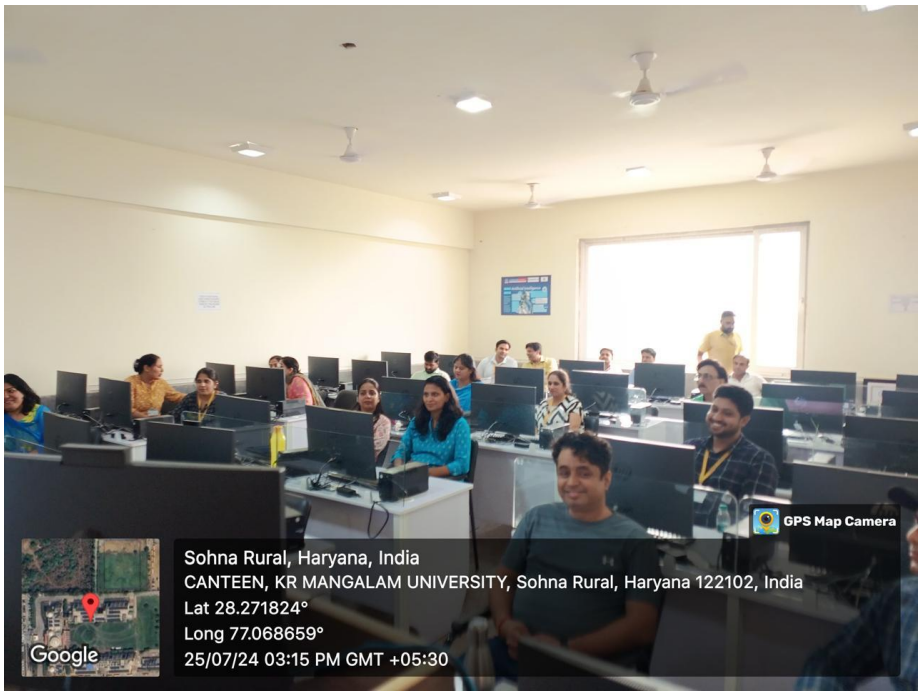
13	Preeti Bansal	Assistant professor (Research scholar)	9911705474	Preetisinghal1135@gmail.com
14	MEENAKSHI VASHISTH	Research Scholar	9910311444	meenu2kaushik@gmail.com
15	Vasudha Sharma	Research Scholar	9810798357	vasudha.sharma1@gmail.com
16	Deepak Kumar	PhD Scholar	9315216516	javadevdeepak@gmail.vom
17	Urmila Devi	Assistant Professor, Dronacharya Govt.College, Gurugram	7406801488	urmilabibyan@gmail.com
18	Rahul Mohan	General Manager & Atos	8800759922	rahulamadeus@gmail.com
19	SUSHIL KUMAR AZAD	Professor, SOET, KRMU	9711234705	sushilkumar.azad@krmangalam.edu.in
20	Dr Ritwik Ghosh	Assistant Professor, School of Journalism and Mass Communication, K R Mangalam University	9650183302	ritwik.phd@gmail.com
21	Dr. Riman Mandal	Assistant Professor, K R Mangalam University	9804031850	riman.mandal@krmangalam.edu.in
22	Tanu Gupta	Assistant Professor, KR Mangalam University	9971199251	tanu.gupta@krmangalam.edu.in
23	Aditi Agarwal	Assistant Professor, SJMC, KRMU	8750208042	aditiagarwal.official1@gmail.com
24	Ashwani Kumar	Assistant Professor, K. R. Mangalam University	9971670505	ashwani.kumar@krmangalam.edu.in
25	Jyoti Kataria	Assistant Professor	9582750617	jyoti.kataria@krmangalam.edu.in
26	Archna Goyal	Assistant Professor & K R Mangalam	7734018007	archna.goyal@krmangalam.edu.in

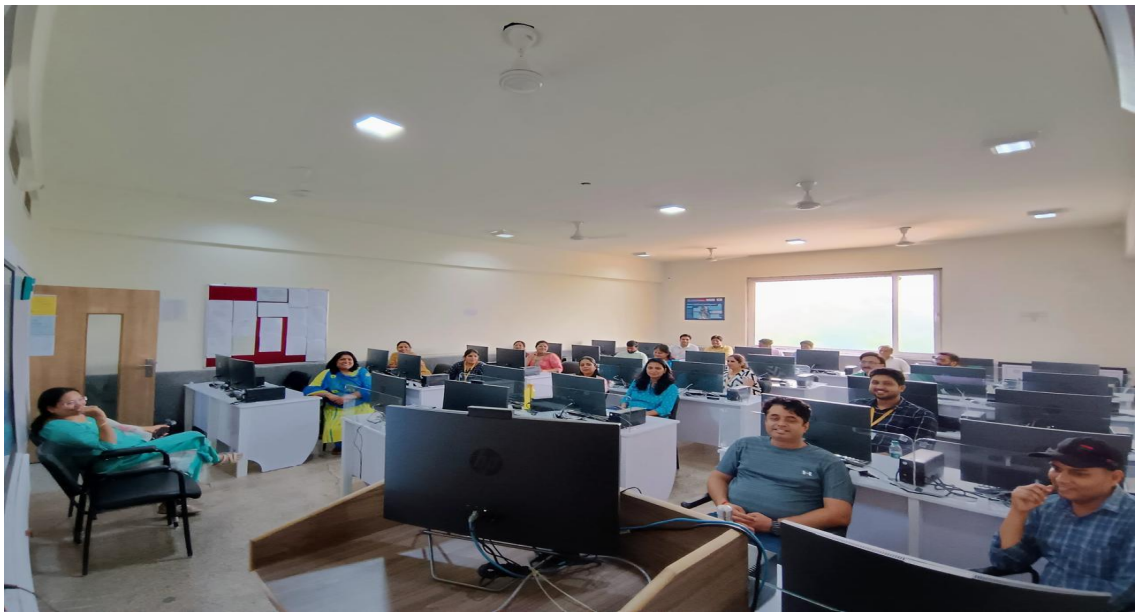
		University, Sohna, Gurugram		
27	Gauri Joshi	Assistant Professor, SJMC, KRMU	9050698913	gauri.joshi@krmangalam.edu.in

ANNEXURE – VI

EVALUATION

The evaluation was done by assigning tasks to the participants by the expert and Q&A round after each sessions and full attendance for all sessions





ANNEXURE – VII

CERTIFICATES



K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION

Certificate
OF GRATITUDE

We proudly present this to

Dr. Mohona Ghosh

Assistant Professor, Indira Gandhi
Delhi Technical University for Women, Delhi

For bestowing us with his gracious presence as Resource Person of Faculty Development Program on the topic "Blockchain and cyber security", organized by School of Engineering and Technology, K. R. Mangalam University from 22 July to 26 July 2024.

Convener
Dr. Pallavi Pandey
Asst. Prof.(SOET)

Patron
Dr. Pankaj Agrawal
DEAN (SOET)

Chief Patron
Prof. Raghuveer Singh
Vice chancellor, (KRMU)



K.R. MANGALAM UNIVERSITY
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Certificate
OF PARTICIPATION

This is to certify that **Meenakshi Vashisth** from Galgotias University actively participated and completed **5-days Faculty Development Program (FDP)** on **"Blockchain and Cyber Security"** from 22 July to 26 July 2024. This FDP was organized by **School of Engineering and Technology, K.R. Mangalam University.**

Convener
Dr. Pallavi Pandey
Asst. Prof (SOET)

Patron
Dr. Pankaj Agrawal
DEAN (SOET)


K.R. MANGALAM UNIVERSITY
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Certificate
OF PARTICIPATION
This is to certify that Vasudha Sharma from 'K. R. Mangalam University' actively participated and completed 5-days Faculty Development Program (FDP) on "Blockchain and Cyber Security" from 22 July to 26 July 2024. This FDP was organized by School of Engineering and Technology, K.R. Mangalam University.
Convener
Dr. Pallavi Pandey
Asst. Prof (SOET)
Patron
Dr. Pankaj Agrawal
DEAN (SOET)


K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION
Certificate
OF PARTICIPATION
This is to certify that Deepak Kumar PhD Scholar actively participated and completed 5-days Faculty Development Program (FDP) on "Blockchain and Cyber Security" from 22 July to 26 July 2024. This FDP was organized by School of Engineering and Technology, K.R. Mangalam University.
Convener
Dr. Pallavi Pandey
Asst. Prof (SOET)
Patron
Dr. Pankaj Agrawal
DEAN (SOET)



K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION

Certificate
OF PARTICIPATION

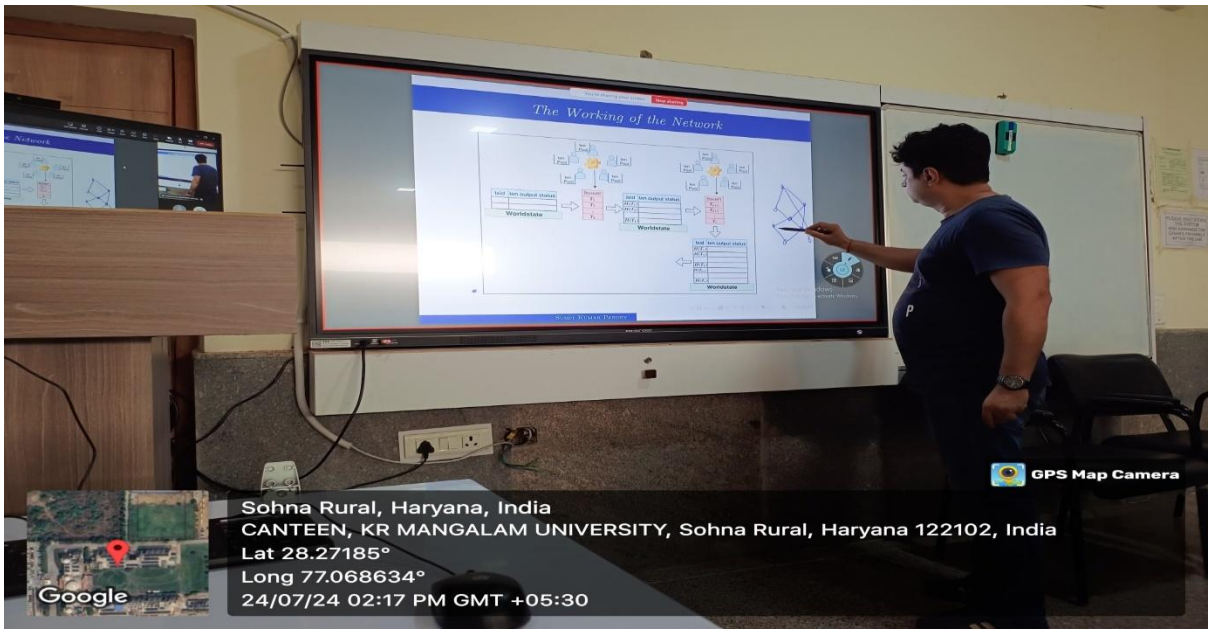
This is to certify that **Urmila Devi** from Dronacharya Govt.College actively participated and completed **5-days Faculty Development Program (FDP)** on **"Blockchain and Cyber Security"** from 22 July to 26 July 2024. This FDP was organized by **School of Engineering and Technology, K.R. Mangalam University.**

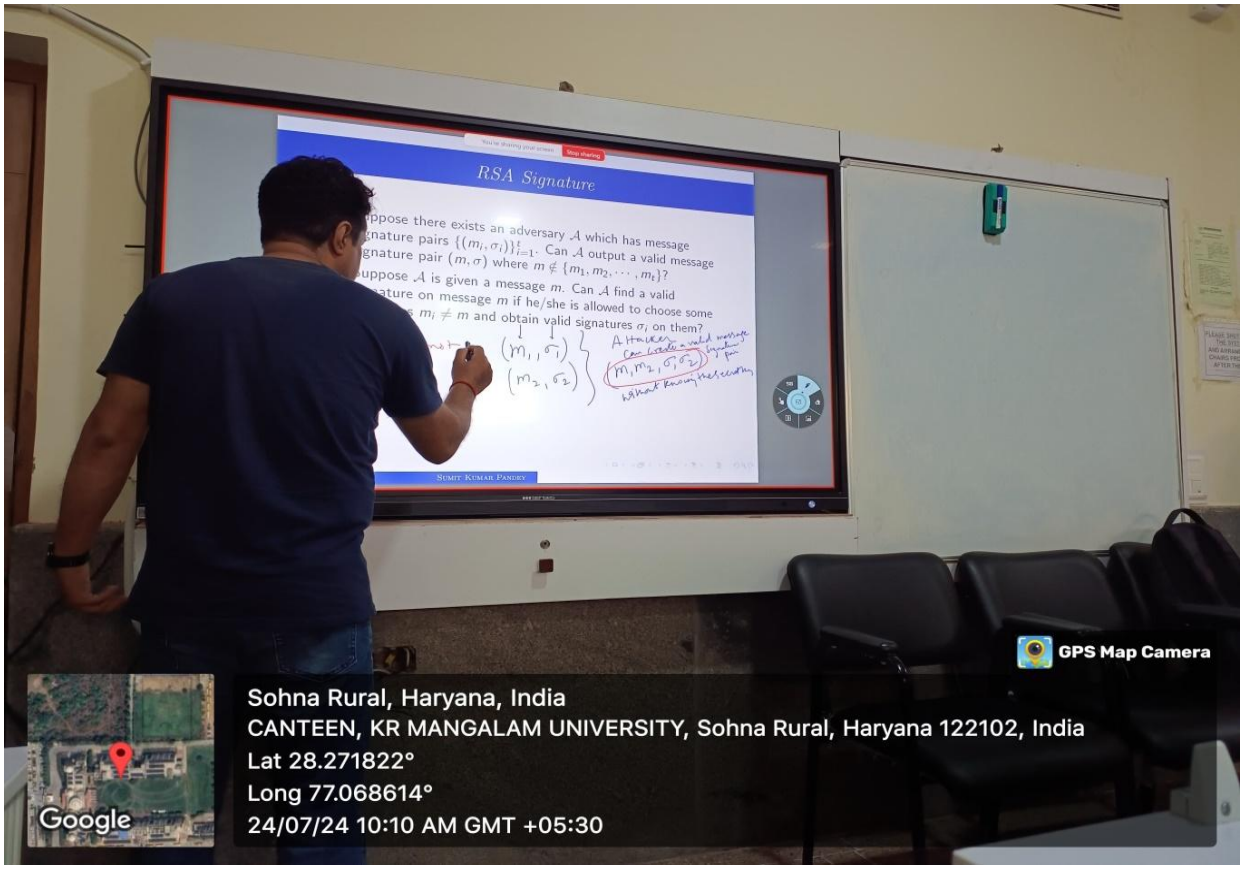
Convener
Dr. Pallavi Pandey
Asst. Prof (SOET)

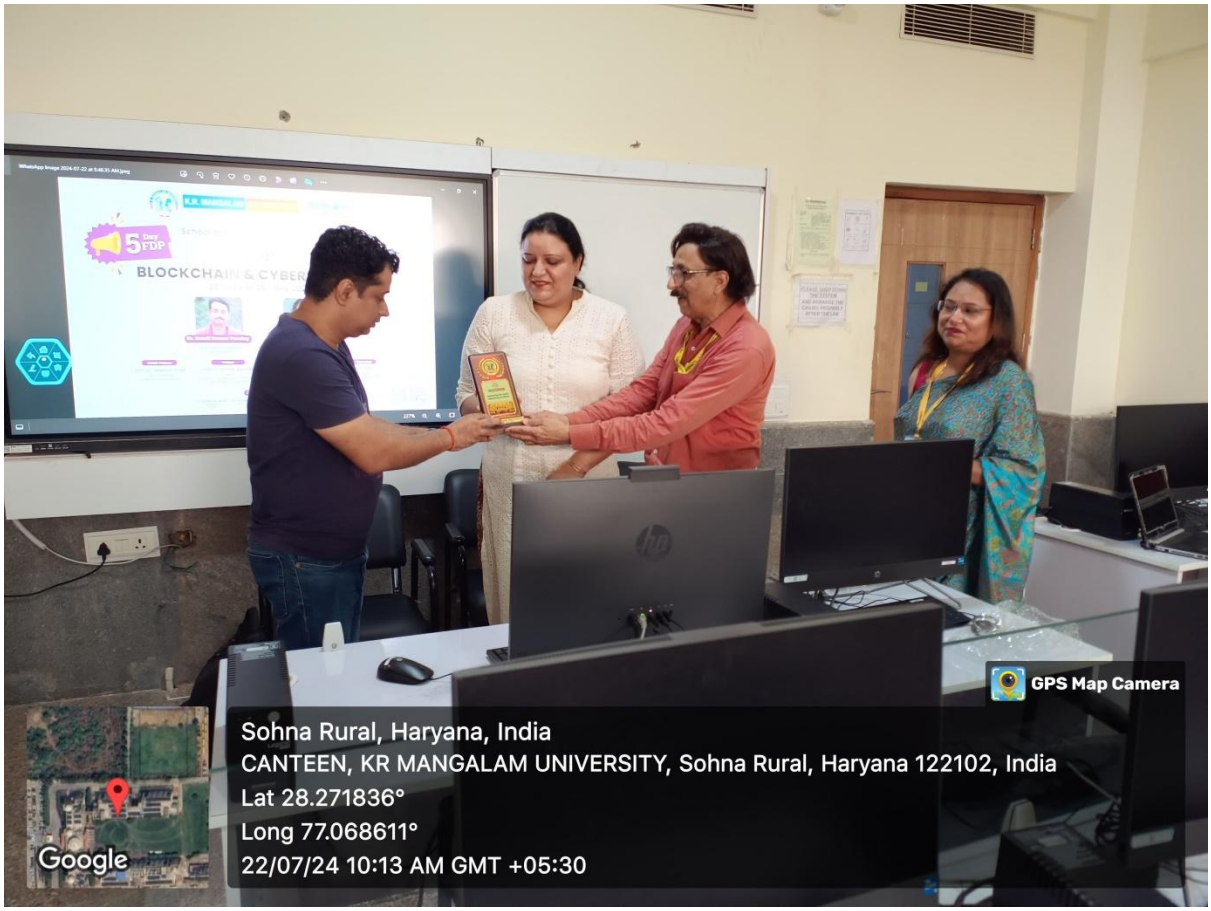
Patron
Dr. Pankaj Agrawal
DEAN (SOET)

ANNEXURE – VIII

GEO-TAGGED PHOTOGRAPHS




RSA Signature
GPS Map Camera
Sohna Rural, Haryana, India
CANTEEN, KR MANGALAM UNIVERSITY, Sohna Rural, Haryana 122102, India
Lat 28.271822°
Long 77.068614°
24/07/24 10:10 AM GMT +05:30
Google


5 Day FDP
BLOCKCHAIN & CYBER
GPS Map Camera
Sohna Rural, Haryana, India
CANTEEN, KR MANGALAM UNIVERSITY, Sohna Rural, Haryana 122102, India
Lat 28.271836°
Long 77.068611°
22/07/24 10:13 AM GMT +05:30
Google