

MEMORANDUM OF UNDERSTANDING (MOU)

Between



K.R. MANGALAM UNIVERSITY

Sohna Road, Gurugram (Haryana)-122103

and



HANSRAJ COLLEGE

UNIVERSITY OF DELHI

Mahatma Hansraj Marg, Malkaganj, Delhi-110007

Registrar

K.R. Mangalam University
Sohna Road, Gurugram, (Haryana)

Hans Raj

MEMORANDUM OF UNDERSTANDING

The Memorandum of Understanding is executed on 8th day of September, 2022

BETWEEN

K.R. Mangalam University, Sohna Road, Gurugram – 122103, Haryana, India (Delhi NCR Region), a state private university established under the Haryana Private Universities Act 2006, and empowered to award degrees as specified by UGC under section 2f of the UGC Act, 1956, through its Registrar, presently Mr. P. Mahajan duly authorized to enter into and sign an MOU on behalf of K.R. Mangalam University (hereinafter referred to as KRMU), PARTY OF THE FIRST PART.

AND

Hansraj College, University of Delhi, Mahatma Hans Raj Marg, Malka Ganj, Delhi, 110007, India through its Principal, duly authorized in this regard to sign an MOU on behalf of Hansraj College, PARTY OF THE SECOND PART.

The expression KRMU and Hansraj College shall, mean and include the Institutions/Organizations, their successors, appointees, assignees etc.

1. SCOPE OF THIS AGREEMENT

The scope of collaboration on academic and research activities in this Memorandum of Understanding includes the following categories:

- (i) Academic and Research collaboration in the areas of mutual interest. It is expected that this collaboration will in due course lead to collaborative research projects, joint publications, joint conferences/workshops/seminars, etc.
- (ii) Joint supervision of UG/PG/PhD students in the areas of interest, Faculty development programs.

2. RESEARCH COLLABORATION

Faculty from both Institutions will collaborate in the joint research in disciplines of mutual interest. All such joint research activities will be governed by the terms as given below:

- a. Proposals for collaborative research work under this Memorandum will be submitted with the prior approval of the Head of each institution, or his/her nominee.

Mahajan

8/9/2022

[Signature]

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K.R. Mangalam University
Sohna Road, Gurugram, (Haryana)

- b. Each institution will nominate one of its members as its representative in charge of the cooperative programme. Individual programme of work under this Memorandum will be jointly planned and conducted by the nominees of both parties.
- c. Procedures followed in any activity under MOU will be reviewed and approved by designated authorities of both parties.
- d. Neither K.R. Mangalam University nor Hansraj College (University of Delhi) will be held responsible for any liability to the party, and neither party shall be required to purchase any insurance against loss or damage to any property due to activities to which this agreement relates.
- e. Every collaboration will have its own agreement / contract which addresses issues such as IPR, funding pattern, usage policies of research facilities, disclosure of information etc.

3. FACULTY COLLABORATION

- i. Pursuant to the agreement for academic exchange, K.R. Mangalam University and Hansraj College (University of Delhi) may invite faculty to deliver guest lectures, organize FDPs and engage in joint guidance of research projects according to the terms mutually agreed by both parties.
- ii. Participants will be subjected to the rules and regulations of the host institution.
- iii. The scope and duration of the collaboration may be amended and/or extended through the joint agreement further with the consent and approval of both the parties.

4. COMMENCEMENT, RENEWAL, TERMINATION AND AMENDMENT

This MoU will come into force upon affixing of the signatures of the representatives of the partner institutions and will remain in effect for three years subject to the condition of renewal at the end of each year. This MoU will be renewed each year, with the agreement of both the partner institutions. If either partner institution wishes to terminate the MoU, it must notify the other institution not less than two months prior to date of termination.

Mahy

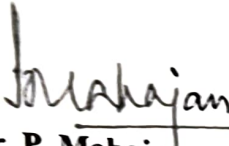
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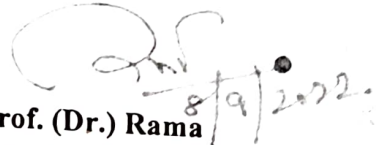
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This MoU or its renewal and the actions taken under it may be reviewed at any time. Modifications may be made by mutual agreement and any amendment or extension to the agreement may be formalized by the exchange of letters between the two parties.

For K.R. Mangalam University


Mr. P. Mahajan
Registrar
K.R. Mangalam University
Sohna Road, Gurugram-122103
Haryana - 122001, India

For Hansraj College, University of Delhi


Prof. (Dr.) Rama
Principal
Hansraj College, University of Delhi
Mahatma Hans Raj Marg,
Malka Ganj, Delhi-110007, India

1. WITNESS:


Dr. Meena Bhandari (Director-IQAC)
K.R. Mangalam University
Sohna Road, Gurugram
Haryana-122103

1. WITNESS:


Ms. Alka Katar (Vice Principal)
Hansraj College, University of Delhi
Mahatma Hans Raj Marg,
Malka Ganj, Delhi-110007, India

2. WITNESS:


Dr. Seema Raj - Associate Professor (SBAS)
K.R. Mangalam University
Sohna Road, Gurugram
Haryana-122103

2. WITNESS:


Prof. (Dr.) Sushil Kumar
Hansraj College, University of Delhi
Mahatma Hans Raj Marg,
Malka Ganj, Delhi-110007, India


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Hansraj College

University of Delhi
Mahatma Hansraj Marg, Malcha Ganj
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हंसराज महाविद्यालय

दिल्ली विश्वविद्यालय
महात्मा हंसराज मार्ग, मल्कागंज
दिल्ली 110007

Date 29/09/2023

Certificate

This is to certify that Ritik a student of K R Mangalam University Gurugram has carried out internship on the topic "Cryptography and its applications" at Hansraj College, University of Delhi, Delhi 110007 as part of B.Sc (H) Mathematics Degree requirement. The student carried out his work sincerely during the period from 4 July to 5 Aug 2023 and completed the training successfully.

Arvind

(Dr Arvind)
Professor
Department of Mathematics
Hansraj College

E-mail: principal_hrc@yahoo.com Tel: +91-11-27667458, +91-11-27667747

[Signature]

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[Signature]



Hansraj College

University of Delhi
Mahatma Hansraj Marg, Malka Gani
Delhi - 110007

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दिल्ली विश्वविद्यालय
महात्मा हंसराज मार्ग, मल्का गंज
दिल्ली 110007

Date 29/09/2023

Certificate

This is to certify that Amrit Agarwal a student of K R Mangalam University Gurugram has carried out internship on the topic "Cryptography and its applications" at Hansraj College, University of Delhi, Delhi 110007 as part of B.Sc (H) Mathematics Degree requirement. The student carried out his work sincerely during the period from 4 July to 5 Aug 2023 and completed the training successfully.

(Dr Arvind)
Professor
Department of Mathematics
Hansraj College

Registrar

K.R. Mangalam University
Sohna Road, Gurugram, (Haryana)



Hansraj College

University of Delhi
Mahatma Hansraj Marg, Malcha Ganj
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दिल्ली - 110007

Date 29/09/2023

Certificate

This is to certify that Madhuri Rajpoot a student of K R Mangalam University Gurugram has carried out internship on the topic "Cryptography and its applications" at Hansraj College, University of Delhi, Delhi 110007 as part of B.Sc (H) Mathematics Degree requirement. The student carried out his work sincerely during the period from 4 July to 5 Aug 2023 and completed the training successfully.

Arvind

(Dr Arvind)
Professor
Department of Mathematics
Hansraj College

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दिल्ली - 110007

Date 29/09/2023

Certificate

This is to certify that Ronak Kumar a student of K R Mangalam University Gurugram has carried out internship on the topic "Cryptography and its applications" at Hansraj College, University of Delhi, Delhi 110007 as part of B.Sc (H) Mathematics Degree requirement. The student carried out his work sincerely during the period from 4 July to 5 Aug 2023 and completed the training successfully.

(Dr Arvind)
Professor
Department of Mathematics
Hansraj College

Registrar

K.R. Mangalam University

E-mail: principal@krmu.ac.in, Gurugram, Haryana-122008, Tel: +91-11-27667458, +91-11-27667747



MAHATMA HANSRAJ FACULTY DEVELOPMENT CENTRE

(A centre of MoE, Government of India, under PMMMNMTT scheme)

Hansraj College, University of Delhi

NAAC A+ CGPA 3.62, NIRF Rank #9

Malka Ganj, Delhi-110007



Website: www.mhrfdc.in

Email: fdp.hrc@gmail.com

List of requirements from host institutions (K R Mangalam University & Motilal Nehru College, University of Delhi)

1. Proposal from host institutions (K R Mangalam University & Motilal Nehru College, University of Delhi).
2. Minimum 150 registrations required to conduct the programme.
3. The content for the Brochure shall be provided by the host institutions (including the names of organising team members) which includes the topic name, duration (with dates), live sessions timing.
4. **Programme Schedule** (December 26 - December 31, 2022) of FDP with details of session topics and the name of resource persons will be provided by the host institutions along with the content of Brochure.
5. The coordination with the resource persons and coordination of the sequence of events during the programme will be carried out by the coordinators of the programme from host institutions.
6. Assessment for the FDP will be taken online (daily basis/ last day) as applicable. MCQs will be provided by the host institutions.
7. The **report** (both session wise and consolidated) of the programme must be mailed by the Programme Conveners/Coordinators to MHRFDC (fdp1.hrc@gmail.com) within **three days** of the completion of the programme.
8. Certificates of the host institutions organising committee will be given after receiving the FDP report.
9. Composition of host institution team:
 - i) Chief Patron (Principal/Director/Vice-Chancellor/Head of the Institution)
 - ii) Convenor (One)
 - iii) Coordinator (One)
 - iv) Member of organizing team (maximum two)

NOTE:

The Terms and Conditions of MHRFDC in reference to collaboration with other institutions are subject to change programme wise, in light of the proposal and fund generated through the registration fee / availability of funds with MHRFDC.

Date: 10th December, 2022

Dr. Chandra Mohan
(FDP Convenor/ Coordinator)
K R Mangalam University

(FDP Convenor/ Coordinator)
Motilal Nehru College, University of Delhi

(Coordinator)
MHRFDC

Dr. Anshuman
(Vice Chancellor/ Director/ Principal)
K R Mangalam University

(Vice Chancellor/ Director/ Principal)
Motilal Nehru College, University of Delhi

(Chairperson)
MHRFDC

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REPORT
on
Faculty Development Program
on
“Modern scientific technologies – Ways to enhance research skills”

(26th December 2022 to 31st December 2022)



K.R. MANGALAM UNIVERSITY, GURUGRAM

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REPORT ON FACULTY DEVELOPMENT PROGRAMME
ON
“MODERN SCIENTIFIC TECHNOLOGIES – WAYS TO ENHANCE RESEARCH SKILLS”
IN COLLABORATION WITH
HANSRAJ COLLEGE, UNIVERSITY OF DELHI (Under MoU)

1. Introduction

The *Six days* Faculty Development Programme on “**Modern scientific technologies – Ways to enhance research skills**” was successfully organized by Mahatma Hansraj Faculty Development Centre which is centre of Ministry of Education, Govt. of India, under The Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching Scheme) in collaboration with K R Mangalam University, Gurugram, Hansraj College and Motilal Nehru College, University of Delhi, from 26th December, Monday to 31st December, Saturday, 2022.

The objective to conduct the FDP were:

1. To impart the knowledge on different modes of approach used in research in order to meet the challenges of life in order.
2. To provide exposure to faculty members, research scholars and scientist on the concepts of recent advances in scientific technologies.
3. To conduct programs to build research, teaching and administration competence for holistic development of individuals.
4. To bring the faculties and research scholars of different engineering, science and allied subjects onto one platform to update with the advances in the technology and applications.

This FDP includes various sessions based on the recent advancements in science including green technology, research methods, issues in research publication, publication ethics, use and misuse of statistics in research and availability of resources for reading material. On completion of the said program the participants are likely to have developed the skills to review literature, develop hypothesis, frame research design and comprehend the role and relevance of the tools for data collection and analysis

There were more than 230 participants from all over India who benefitted from this FDP.

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 26th September 2023

i) Inaugural Session:


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Dr Chandra Mohan, Convener of this FDP along with Dr Neeraj Kumari, Coordinator and Prof Jyoti Bhola, Coordinator, MHRFDC have started the program with saraswati vandana and welcomed all the guests and participants. Padam Shri Prof. Dinesh Singh, Chancellor as chief guest, along with Prof C S Dubey, Vice Chancellor, K R Mangalam University, Prof S K Mehta, Vice Chencellor, University of Ladakh, Prof Rama. Principal, Hansraj College and Prof Pushplata Tripathi were attended the program as guest of honor. Prof Dinesh Singh stated that if an idea can convert into technology and technology can take any form. Information after collection can be converted into data and data can be converted into technology. Prof C S Dubey emphasized on Sustainable Development Goals, new technologies that have changed whole system reality. Prof S K Mehta told the way of research in past and present. He told about different tools used to enhance the research skills.

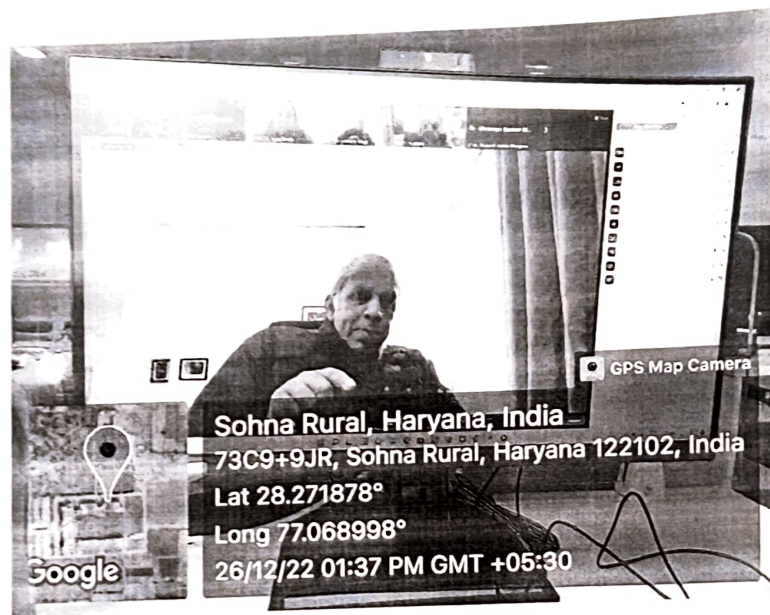
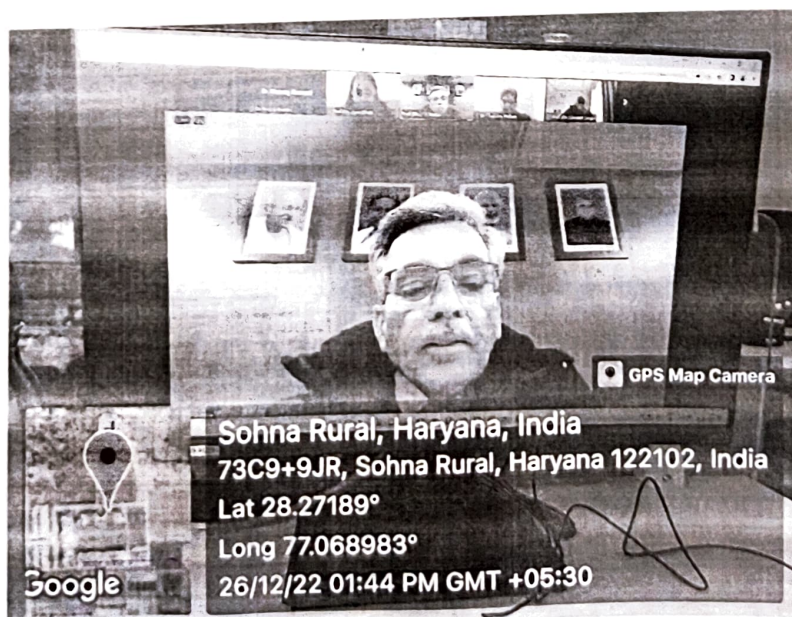


Photo 1: Prof Dinesh Singh emphasized on necessity of research and the way to improve it.



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analytical techniques, mapping of the spectrum, and understanding of mechanical changes to map the cell wall. such interesting facts were explained in illustrative ways. Other attractions were the chemical composition of wood. SEM image of

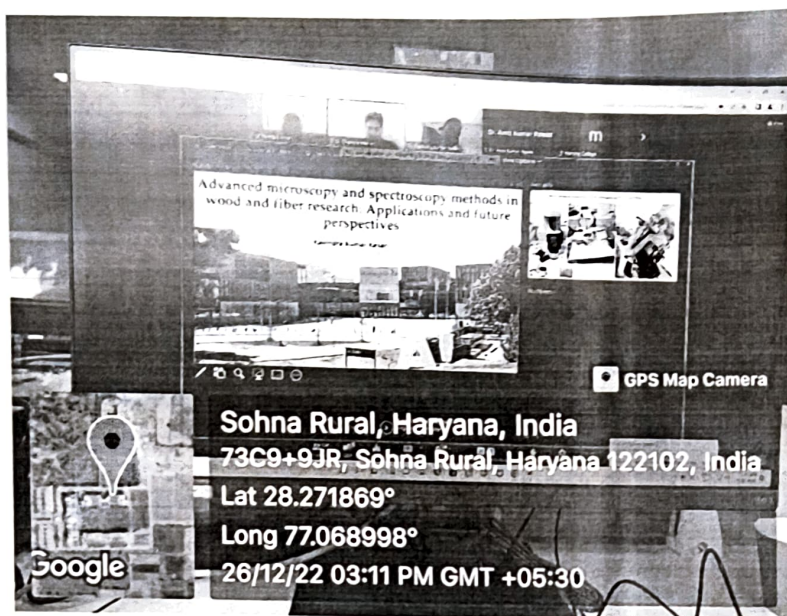
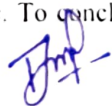


Photo 4: Dr Kesari acknowledged the participants on advanced microscopy

B. Second Day, December 27 2022

- i) Panel discussion on "Air Pollution and Human Health by Prof. Raj Kumar, Director (VPCI), HOD, Pulmonary Medicine, Vallabhbhai Patel Chest Institute.

Prof. Raj Kumar expressed on air pollution, which is a major cause of death and disease globally. According to the AIIMS study, hospitalization rates, and air pollution, at present, are on the high-rise with an increased percentage of asthma, COPD, Ac Coronary, etc. A population-based study on Indoor Air pollution and asthma Exacerbation in children was also discussed during the workshop. The Prof. also described tobacco use, indoor air pollution, and respiratory morbidity starting from home as the greatest single source of ETS for children. While organizing a meeting at the village Dujana, Prof. could research the consequences of air pollution due to the making of cow dung cakes, smoke emerging from biomass cooking, storage of cow dung cakes, and created awareness among the villagers on the importance of clean air. Another source of air pollution is the biological pollutants and its recent study on atmospheric pollen count in the North Delhi region made the researchers improve various control measures towards indoor air pollution through public awareness, change in the pattern of fuel use, modification of the design of cooking ranges used, improvement in ventilation, etc. To conclude, Prof. urged scholars and young


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scientists to concentrate on air pollution and its adverse effects on health and implement all control measures to have a safe place to stay, particularly, for the children.

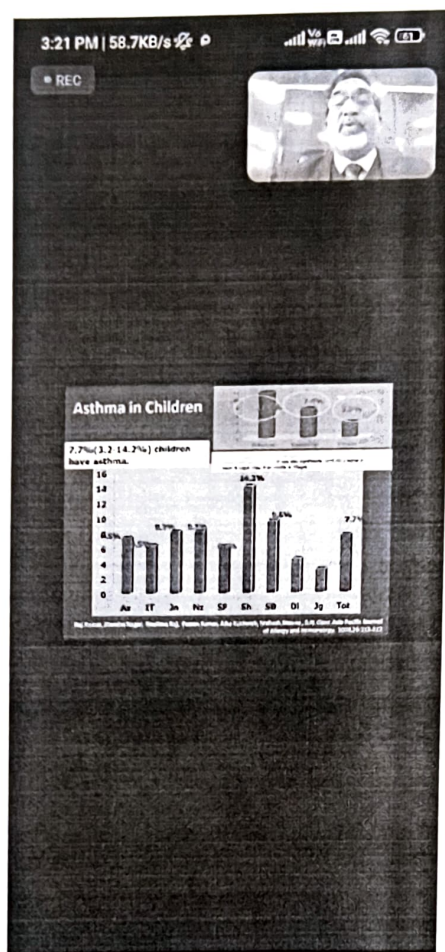


Photo 5: Dr Raj Kumar discussed about the diseases caused due to air pollution

Dr. Pratima Solanki, Assistant Professor, Special Centre for Nanoscience, Jawaharlal Nehru University, Delhi, Title: Potential of nanomaterials for biosensors application

Dr. Pratima Solanki highlighted the advantages of nanomaterials for diagnosis and sensing such as gold and silver nanoparticles. Adding further on the applications of biosensors in sustainable food safety, medical field, biodefense, plant biology, etc. where only small amounts are required to get accurate, and easy quick responses. The Prof. enlightened the researchers on Cancer Biomarkers and how these biomarkers help to predict and provide information about better-quality drugs to be used for the treatment of cancer. Molecular Imprinting Polymer (MIP) based sensor, its polymerization methods, MIP for TMAO, Strip's preparation based on nanomaterials, experimental parameters optimization, spectral studies, morphological changes in SEM images, characterization of ZnS NPs and MIP, Scan rate and Sensing study were discussed in the forum. 3K NANO LLP is a government-

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based program that brings nanomaterials research to market. Biosensing test strips for cancer biomarkers and vitamin D3 detection were easily disposable, biodegradable, and environmentally friendly materials.

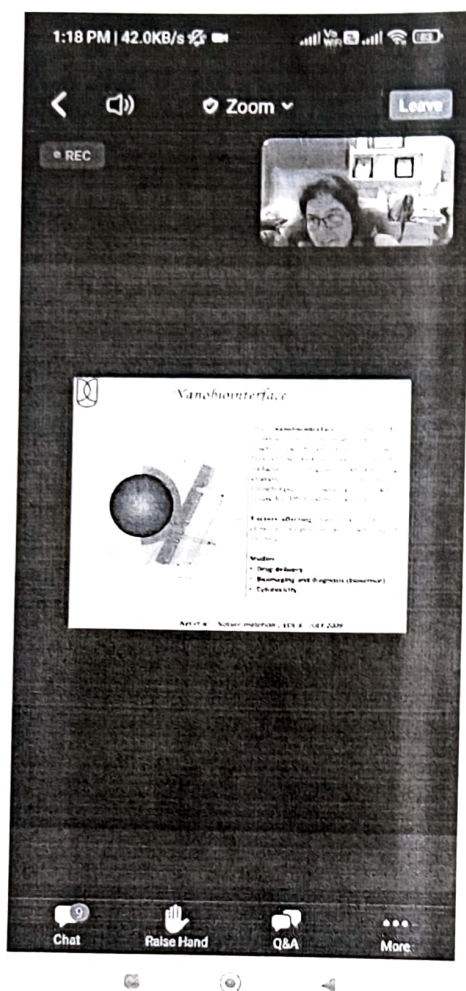


Photo 6: Dr Pratima Solanki discussed about the nano-biointerfaces in various fields

C. Third Day, December 28 2022

i) Prof. Kishor Desai, Professor Emeritus, Bhagwan Mahavir University, Surat delivered his lecture on Alternative Energy Processes in Chemical Synthesis. Prof. Kisor Desai explained the importance of Microwave reactions, how easy to work with them, and compare the heating using microwave techniques and conventional methods. Using highly sophisticated illustrations, Prof. was able to distinguish the advantages and disadvantages of Microwave Procedures in the modern research world. Though the process is a bit expensive, the use of ultrasound is mandatory, and proper maintenance of temperature and pressure controls can be achieved remarkably by microwave-stimulated reactions.

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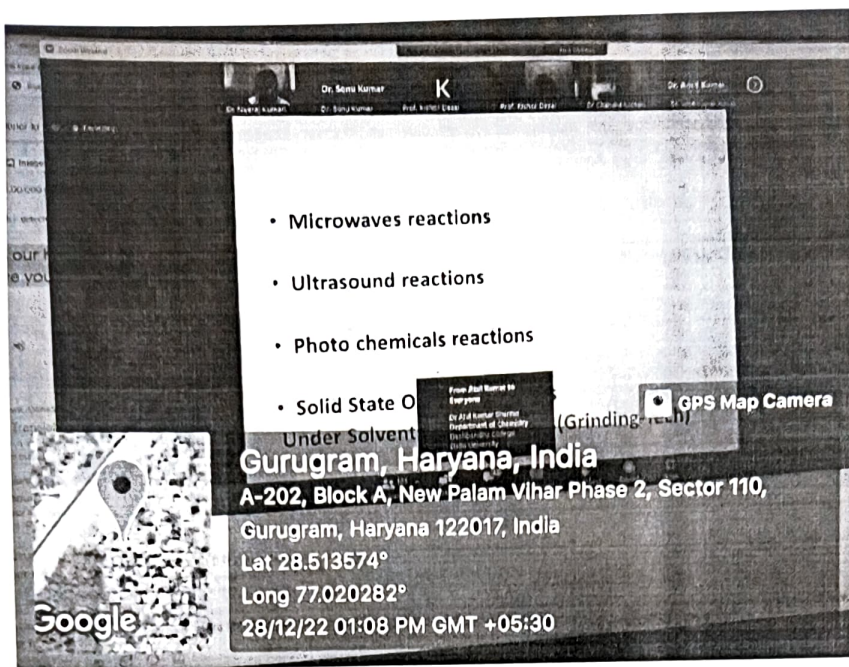
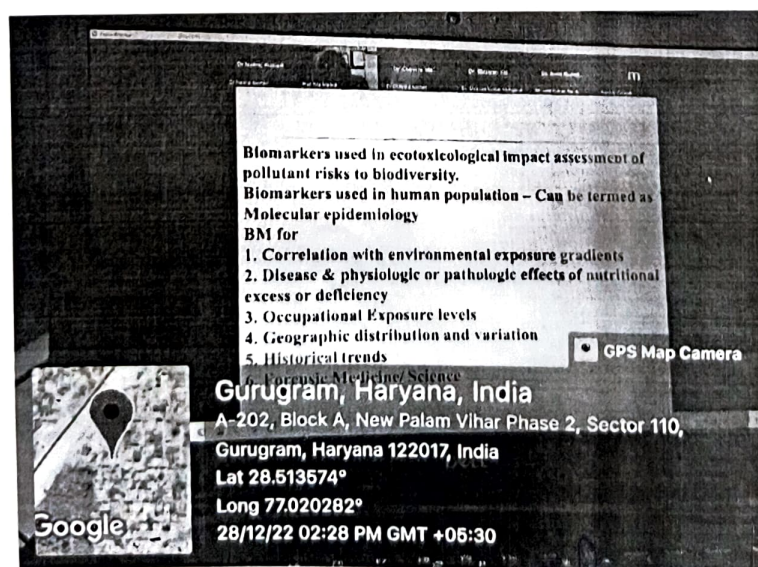


Photo 7: Prof Desai acquainted the participants about green technologies used for organic synthesis

ii) Prof Rita Mehra, Head, Department of Chemistry, Maharshi Dayanand Saraswati University, Ajmer acquainted the participants on Biological Monitoring – An Interdisciplinary Approach in Research.

Prof. Rita Mehra started the session with the sources and absorption of metals such as cadmium, lead, arsenic, mercury, selenium, tin, tellurium, and thorium, into the body inhalation through skin contact and ingestion. Exposure of human beings to such toxic materials particularly metals in the occupational environment, other main sources such as industrial development, technological development, and modern civilization along with water, air, soil, and food have become the gateway to such risks to biodiversity. Prof. elucidated how biomarkers can enhance research on the health effects of toxic air pollution by improving exposure assessment, increasing the understanding of mechanisms, and enabling the investigation of individual susceptibility.



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Photo 8: Prof. Mehra explained about the role of biomarkers to detect the heavy metals in human body

- iii) Dr. Raju Khan, Principal Scientist, CSIR- Advanced Materials and Processes, Research Institute, Bhopal gave the information on Electrochemical Immunosensor for Early Detection of Biomarkers for Healthcare Monitoring.

Dr. Raju Khan expressed the importance of biosensors as an analytical device for the detection of an analyte that combines a biological component with a physiochemical detector component. A cheap device called a P tester is generally in use for pregnancy tests. A large no. of biomarkers has been proposed for breast cancer, but a few of them such as CEA, BRCA1, MCFT, and HER2, are validated in patients' samples.

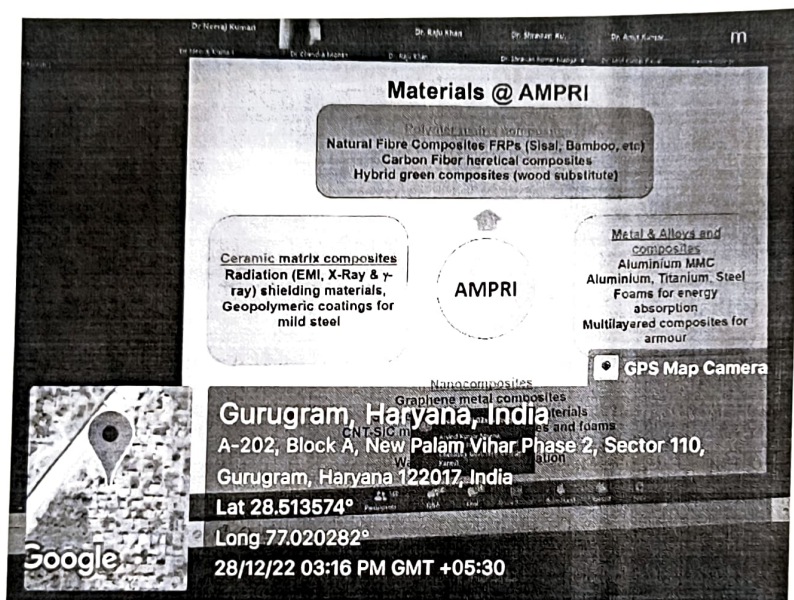


Photo 9: Dr Khan discussing about the importance of biosensors

D. Fourth Day, December 29, 2022

- i) The lecture on Steps in the Research Process and validation was delivered by Dr. Swarna Shikha, Scientist, System Biosciences, USA. Dr. Swarna Shikha, focussed on how to design and implement an applied research project. According to the speaker, applied research is an everyday context to solve specific problems of individuals, organizations, and industries. The five-step framework for designing and conducting applied research is (i) clarify research focus, (ii) scan existing information, (iii) plan your research tasks and methods, (iv) collect, and analyze data and (v) revise, and share your work. Prof. also discussed a few examples such as the study of Fe-nanoparticles that showed their antibacterial properties on both gram-positive and gram-negative bacterial strains and a strong bacterial effect that was observed against *S. aureus* and *E. coli*.


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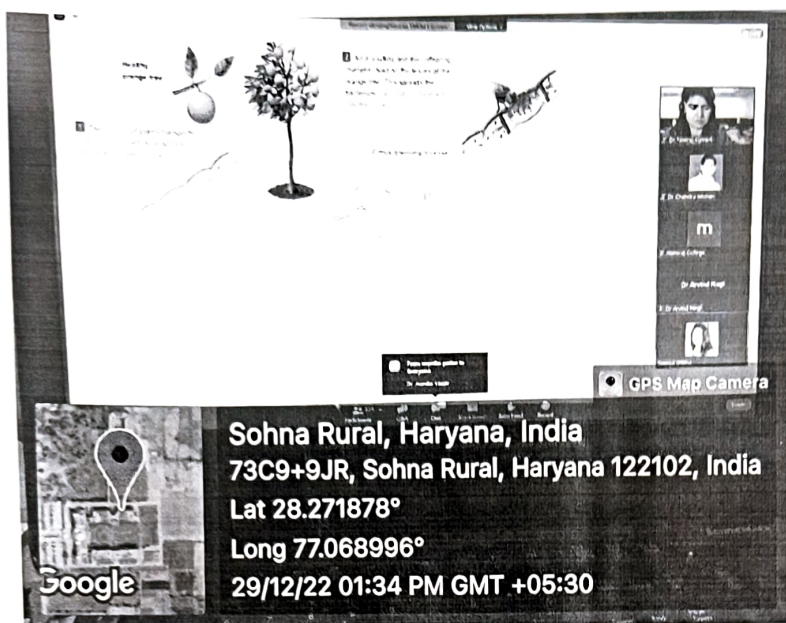
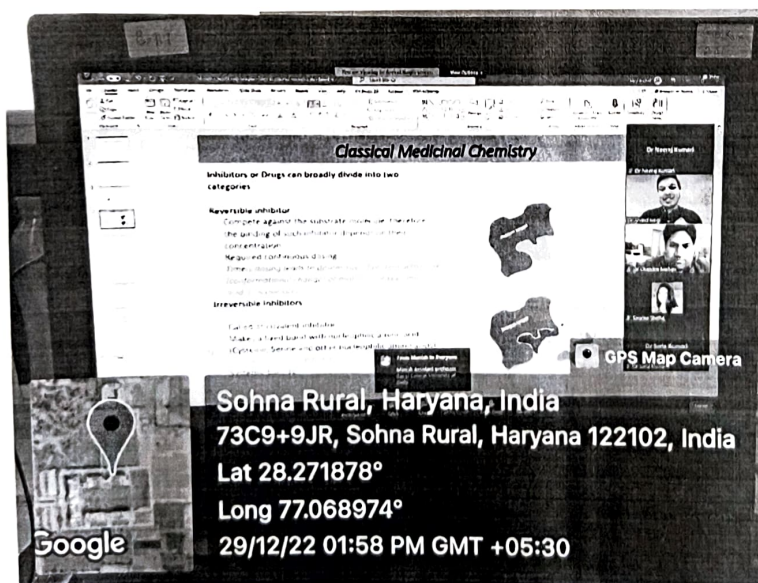


Photo 10: Dr Suman enlightened on the role of iron nanoparticles to detect antimicrobial characteristics

ii) Dr Arvind Negi, Post-Doctoral Researcher, Department of Chemistry, Aalto University, Finland delivered the lecture on PROTACs: Chemistry and Applications. Dr. Arvind Negi clarified the differences in the functions of the Activator drugs, Inhibitor drugs, and Clinically used drugs to target the Bcl-XL protein. Bcl-XL-based Protacs - for example – the anacardic acid analogues, these drugs are based on the classical medical chemistry approach: having resistance, mainly due to hybridization and desensitization of ER-alpha. It was found that breast cancer in over 60% express ER-alpha.



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Photo 11: Dr Arvind highlighted the importance of PROTAC in classical medicinal chemistry

iii) Prof. Saber Mohamed Abd-Allah, Faculty of Veterinary Medicine, Beni-Suef University, Egypt acquainted the participants on Application of nanoparticles on Reproductive Cells. Prof. SABER Mohammed Abd-Allah. started from the basics of nanoparticles and investigated that the sperm is a highly specialized cell with extremely marked compositional, morphological and functional differences as compared to other somatic or germinal cells. He also described hyperactivation which is marked by a shift from movement in a linear path caused by symmetrical flagellar and both progesterone and beta-cyclodextrin nanoparticles were detected inside the nucleus.

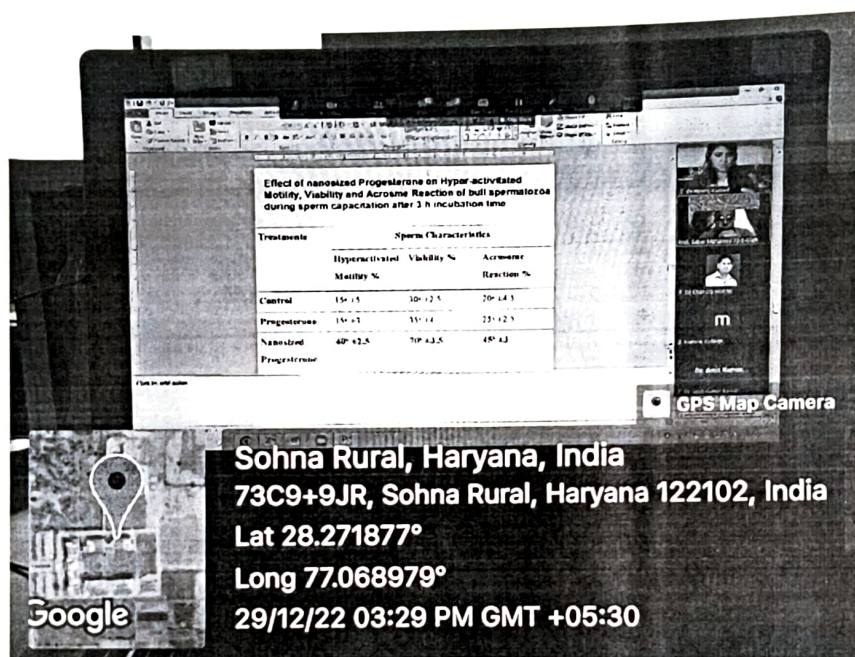


Photo 12: Prof Saber discussed about the importance of nanoparticles in fertilization

E. Fifth Day, December 30, 2022

i) Prof. Ravi P Singh, Department of Chemistry, IIT Delhi talked about the Sustained quality research in academic environment. the workshop started with the eminent speaker Prof. Ravi Singh, who concentrated on formulating hypotheses that should be simple, easily verifiable, and should be measurable. In any experimental design, identify the variables first, then experiments to validate the hypothesis that is easily reproduced by others, collecting data, preliminary testing followed by improvements, standardized protocols to be used, analyzing data and interpretation, important to communicate the researched findings so that others can use the knowledge and move the understanding further.


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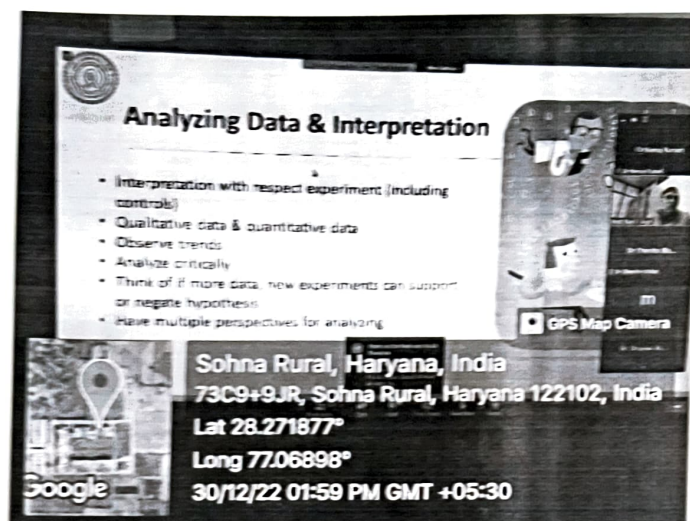
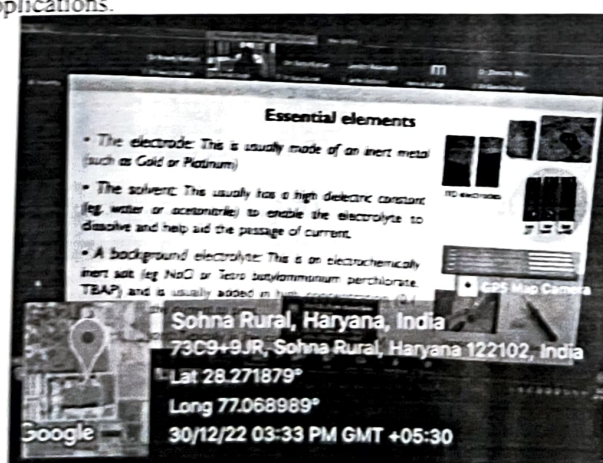


Photo 12: Dr Ravi discussing about the analysis of research data and its interpretation

The concept of multiple perspectives can change the story! The stunning lines from the Prof. made the audience think about the phrase, "Do you see the duck, or the rabbit?", and provided a paradigm shift in the thinking of research work by young scholars. Control experiments such as positive control, negative control, randomized, blind experiments, etc. were other keynotes delivered.

ii) Dr. Suman Singh, Principal Scientist and Head MSSA, CSIR- Central Scientific Instruments Organization, Chandigarh delivered her lecture on Electrochemistry: A robust tool for characterization and Applications. Dr. Suman Singh, a well-known scientist, enlightened the basics of electrochemistry that include essential elements, their working, limitations, electrochemical techniques, and applications. Elaborative discussion on PB-AuNPs composite-based H₂O₂ biosensor, Electrochemical synthesis of Prussian Blue, Graphenated impedochip for phenol sensing, Electrochemical sensing for TNT & DNB, nitrophenol, nitrofurazone, and their electrochemical characterization was explained so evidently by the speaker. Her research team is currently working on electrochemistry for energy applications.



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Photo 13: Dr Suman highlighted about the basic of electrochemistry

iii) Prof. Dr. Ram Singh, Professor, Dept of Chemistry, Delhi technological University Delhi enlightened on the Role of Natural Products in Future Medicinal Fields. From known fact, India contributes 6.1% of faunal diversity in the world with 1.03 lakh species of fauna, Prof. Dr. Ram Singh came up with the novel idea in the field of research, introducing TKDL, Traditional Knowledge Digital Library, getting information on medicinal plants from villagers and farmers and use the valuable evidence for research work using various approaches such as random selection, taxonomic approach, and information managed approach. Lipinski's Rule of Fives, the advantages, and disadvantages of natural products, and the development of synthetic organic chemistry linked to natural products chemistry are other useful discussions done in the forum. An exclusive sketch on the Life cycle of a Scientist drew attention to the importance of research and findings.

F. Sixth Day, December 31, 2022

i) Dr. Piyush Kumar Gupta, Research Fellow & Faculty of Health and Life Sciences, INTI International University, Malaysia informed the participants on Structure and Dynamics of Electrochemical Interfaces: Fundamental Aspects. Dr. Piyush Kumar Gupta, reflected on the current research topic – Nanotoxicity, its implications on human health, analysis on in vitro, in vivo, and ex vivo platforms, various studies conducted on these levels, toxicokinetics of nanoparticles inside the human body, and computational approaches for nanomaterial toxicity assessment.

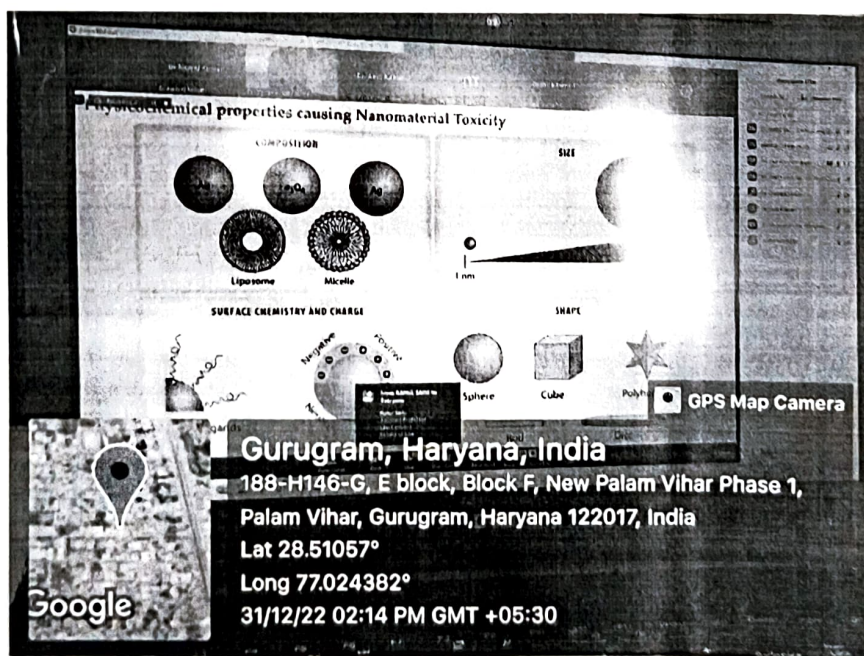


Photo 14: Dr Gupta discussing about the in vivo and in-vitro synthesis process

To conclude, Nanotoxicity may lead to eye damage, skin sensitization, skin irritation, skin damage, dermal penetration, allergic sensitization, pulmonary toxicity, gastrointestinal tract irritation and damage, neurotoxicity,

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immunotoxicity, endocrine disrupts, organ toxicity, acute systemic toxicity, genotoxicity, carcinogenicity, and finally reproductive and developmental toxicity. Hence, Nanotoxicity has become a topic of great concern in nanoscience and nanotechnology, and creating public awareness is the prime support to the society, remarked as a social concern by the speaker.

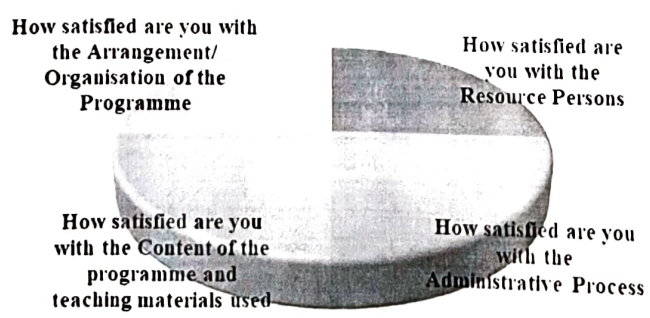
Valedictory Session: The valedictory session was attended by Prof S K Mehta, Vice Chancellor, University of Ladakh, Prof Rita Mehra, Head, Department of Chemistry, Maharshi Dayanand Saraswati, Rajasthan, Prof. Saber Mohamed Abd-Allah, Faculty of Veterinary Medicine, Beni-Suef University, Egypt, Dr. Piyush Kumar Gupta, INTI International University, Malaysia, all the convener and coordinator of the FDP and participants. All the guests congratulate the organizers of the FDP for successfully completion of FDP. The program was ended with vote of thanks by Dr. Neeraj Kumari, Assistant Professor, School of basic and Applied Science. All the sessions were very much informative. The discussed areas are of great benefit for the participants as the topics match with the current working domain. Participants were enlightened with the most widely used advance technologies in this domain. This in turn will help in research activity and placement opportunity. Feedback was received from the participants and E-certificates were distributed among the participants.

FACULTY FEEDBACK:

Participants - A total of **230 faculty and research scholars** from various organizations all over the India participated in the survey conducted during the valedictory session.

- How useful was the FDP in preparing you for Online teaching in upcoming semester

%AGE OF SATISFACTORY RATE OF FACULTY



Neeraj

ASB

JP

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K.R. MANGALAM UNIVERSITY

THE COMPLETE WORLD OF EDUCATION

SCHOOL OF BASIC AND APPLIED SCIENCES

Academic Session 2022-23

SBAS/Notice/2022-23/

9 December 2022

NOTICE

WEBINAR ON PERFORMANCE ENHANCEMENT OF SOLAR THERMAL COLLECTOR

IN COLLABORATION WITH

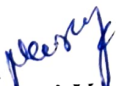
HANSRAJ COLLEGE, UNIVERSITY OF DELHI (UNDER MOU)

- [1] School of Basic and Applied Sciences is planning a Webinar on “Performance Enhancement of Solar Thermal Collector” on **12 December 2022** in collaboration with **Hansraj College, University of Delhi** under MoU through online mode.
- [2] The main aim of organizing the webinar is to provide information about different types of solar thermal collectors and their applications with some new future scope.

Resource Person: Prof. Sushil Kumar, Hansraj College, University of Delhi

MS Team link:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_MDQwZmRIYjEtNWMzZS00NjBjLWlZnJUtOTlhNmQxNTdlODRI%40thread_v2/0?context=%7b%22Id%22%3a%2238fd5a4b-955f-455a-9ad2-d2daa5a4e4d0%22%2c%22Oid%22%3a%222e48eed3-43d1-4cf6-9662-b63c26747f42%22%7d


Dr. Neeraj Kumari and Dr. Pawan Kumar
Event-In-Charge


Dr. Meena Bhandari
(Dean, SBAS)


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NOTICE

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- [2] The main aim of organizing the webinar is to provide information about different types of solar thermal collectors and their applications with some new future scope.

Resource Person: Prof. Sushil Kumar, Hansraj College, University of Delhi

MS Team link:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_MDQwZmRIYjEtNWmZS00NjBjLWlzMjU0OTlhNmQxNTdlODRI%40thread.v2/0?context=%7b%22Tid%22%3a%2238fd5a4b-955f-455a-9ad2-d2daa5a4e4d0%22%2c%22Oid%22%3a%222e48eed3-43d1-4cf6-9662-b63c26747f42%22%7d

Neeraj
Dr. Neeraj Kumari and Dr. Pawan Kumar
Event-In-Charge

Meena
Dr. Meena Bhandari
(Dean, SBAS)

Registrar
Registrar
K.R. Mangalam University
Sohna Road, Gurugram, (Haryana)



KRM MANGALAM UNIVERSITY
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**SCHOOL OF BASIC AND APPLIED SCIENCES
IN COLLABORATION WITH**

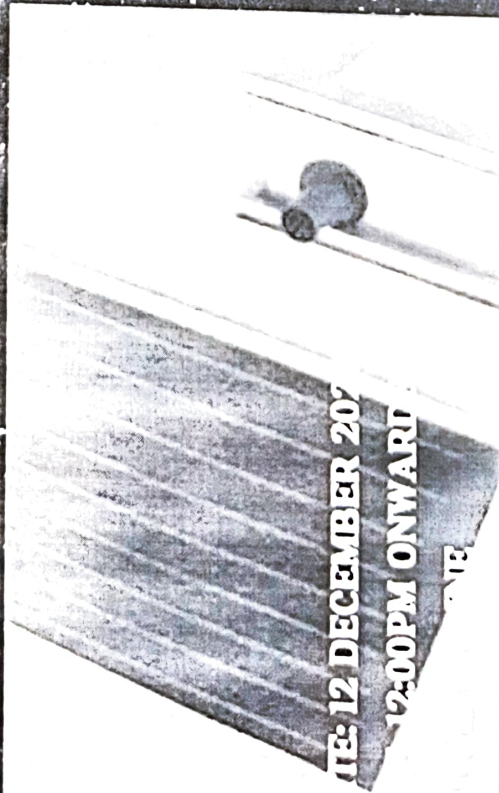
HANSRAJ COLLEGE, UNIVERSITY OF DELHI

**ORGANIZES
A WEBINAR ON**

**PERFORMANCE ENHANCEMENT OF
SOLAR THERMAL COLLECTOR**



**RESOURCE PERSON
PROF. SUSHIL KUMAR
DEPARTMENT OF PHYSICS
HANSRAJ COLLEGE
UNIVERSITY OF DELHI**



**DATE: 12 DECEMBER 2020
TIME: 12:00PM ONWARD**



Webinar on
Performance enhancement of solar thermal collector

In collaboration with
Hansraj College (Under MOU)

Date: 12th December 2022

Venue: MS Team and B014, B Block, KRMU

Event Type: Webinar

Mode of activity: Online Mode

Target Group: UG and PG students of SBAS

Resource person: Prof. Sushil Kumar, Department of Physics, Hansraj College, University of Delhi

Coordinators: Dr Neeraj Kumari and Dr Pawan Kumar

Organized by: School of Basic and Applied Sciences

Number of participants: 21

School of Basic and Applied Sciences organized a lecture on "Performance enhancement of solar thermal collector" in an online mode on 12th December 2022 in collaboration with Hansraj college (under MOU). Now a day, technology is moving with renewable & green technology and solar energy is one of them.

The solar system play an important role in the environment as it does not emit harmful and toxic gases like CO₂. The cost of the solar energy system is almost negligible as the source of energy is free and unlimited. The environmental impact of these systems is practically zero. The main objective to conduct the event is to aware the students about the recent innovations in the field of solar applications. This webinar mainly focuses on the different types of solar thermal collectors and their applications with some new future scope.

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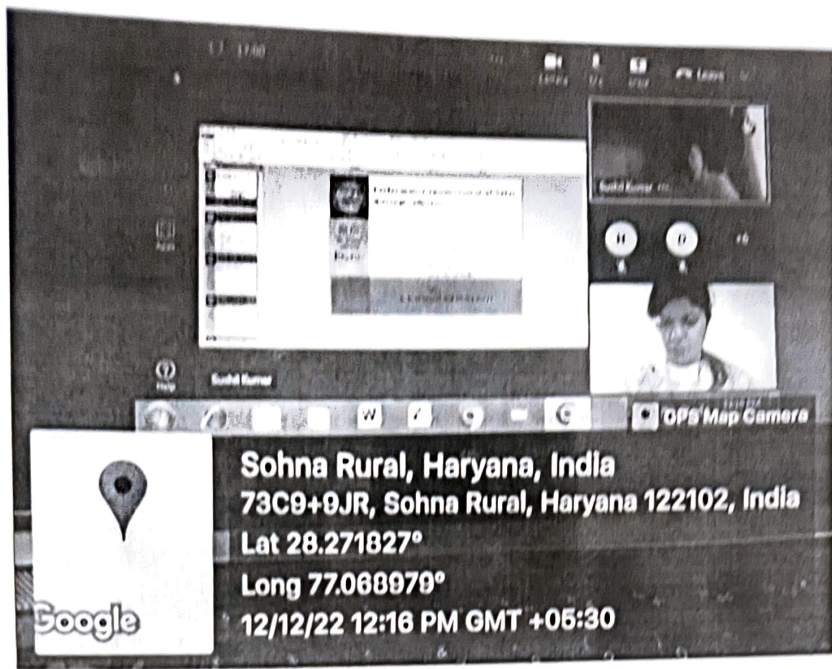


Photo 1: Dr Neeraj Kumari gave breif introduction about the webinar and resource person



Photo 2: students during the webinar


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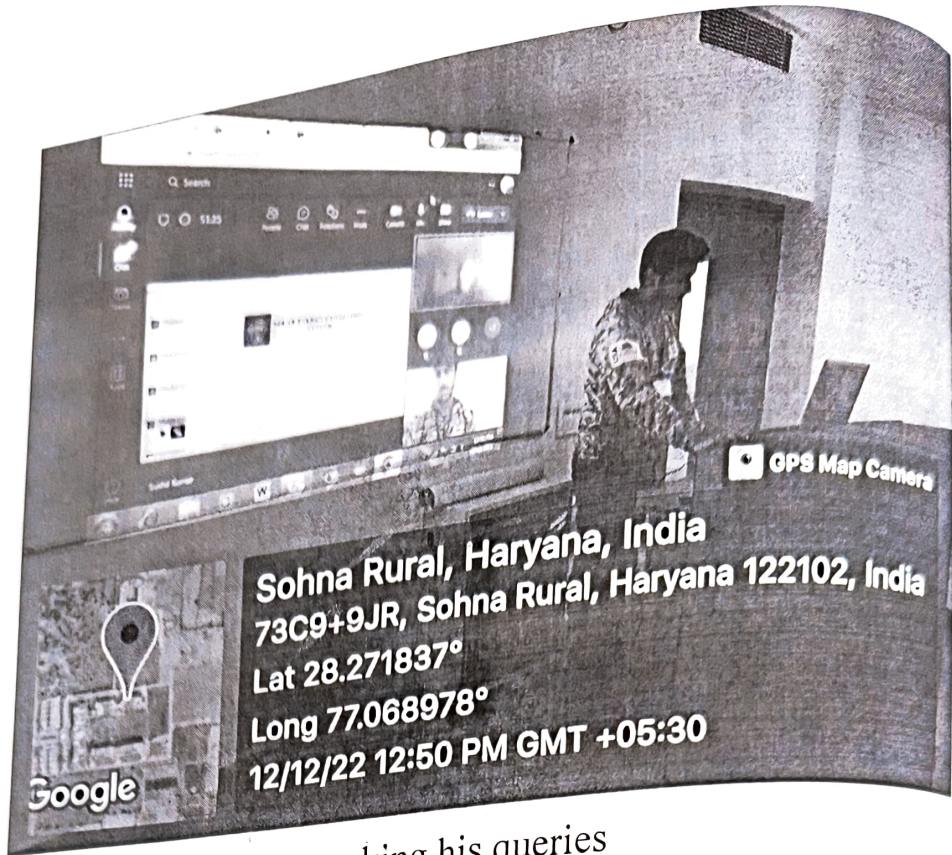
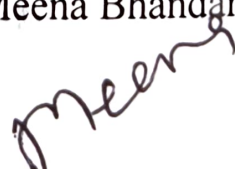


Photo 3: Students asking his queries

Report prepared by	[Dr Neeraj Kumari] 
Report verified by Event Coordinator	[Dr Pawan Kumar] 
Report Seen by Dean / Club Coordinator / Activity Coordinator/ IQAC Director / Registrar	[Dr Meena Bhandari, Dean, S] 


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Performance enhancement of solar thermal collector

Date: 12th December 2022

Venue: Hybrid Mode

School of Basic and Applied Sciences

Sr. No.	Student Name .
1	Neeraj Kumari
2	Prof Sushil Kumar
3	Rajni Gautam
4	Ruby Jindal
5	Meena Bhandari
6	Harsh
7	Aryan Bajaj
8	Hitesh
9	Mayank Saini
10	Suparna de
11	Amit Aggarwal
12	Pawan Kumar
13	Prof. Sunil Kumar (DU) (Guest)

Verified by:

Signature:

Date:

Neeraj
12/12/22

meena
12/12/22

[Signature]

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Sohna Road, Gurugram, (Haryana)

Topic → Performance Enhancement of Solar Thermal Collector

Date - 12th December, 2022.

Time: 12:00 pm onward

Organized by - School of Basic and Applied Sciences

Sl. No	Class	Student Name	Signature
1	B.Sc. Maths Hons.	Bhawana Yadav	Bh
2.	B.Sc Maths (H)	Suparna De	Suparna De
3	B.Sc Physics (H)	Aryan Bajaj	Aryan
4.	B.Sc Maths (H)	Rahul S	Rahul
5	BSc Math (H.)	Hitesh	Hitesh
6	BSC Math (H)	Mayank	Mayank
7	BSC Physics (H)	Sumit	Sumit

Keerthi
12/12/22

Jmd

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THE COMPLETE WORLD OF EDUCATION

SCHOOL OF BASIC AND APPLIED SCIENCES

Academic Session 2022-23

SBAS/Notice/2022-23/06 (A)

14th September 2022

NOTICE

WORKSHOP ON IMPORTANCE OF E-LEARNING

IN COLLABORATION WITH

HANSRAJ COLLEGE, UNIVERSITY OF DELHI

- [1] School of Basic and Applied Sciences is planning a workshop on "Importance of E-Learning" on **20th September, 2022** in collaboration with **Hansraj College, University of Delhi** under MoU in hybrid mode, B014, B-Block.
- [2] The workshop is organized to enhance the quality of learning and teaching to improve the accessibility and time flexibility of students.
- [3] This is mandatory for all the students of SBAS to attend the seminar.


Dr. Neeraj Kumari and Dr. Rajni Gautam

Event-In-Charge


Dr. Meena Bhandari

(Dean, SBAS)


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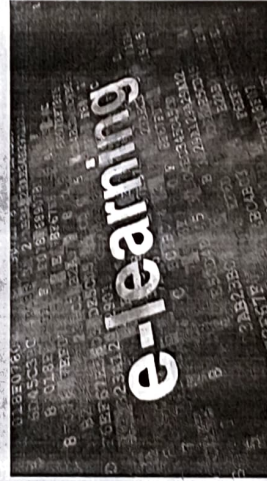
K.R. MANGALAM UNIVERSITY

THE COMPLETE WORLD OF EDUCATION

**SCHOOL OF BASIC AND APPLIED SCIENCES
IN COLLABORATION WITH**

**HANSRAJ COLLEGE, UNIVERSITY OF DELHI, NEW DELHI
ORGANIZES**

A Session on



**Date: 20 September 2022
Time: 12:00 PM Onwards
Venue: B014**

**Faculty Coordinators:
Dr. Neeraj Kumari and Dr. Rajni Gautam,
School of Basic and Applied Sciences**

**University Gurugram Campus: ☎ 011-48884888 / 8800697010-15 📍 8800697012
🌐 www.krmangalam.edu.in ✉ welcome@krmangalam.edu.in**

Patron



**Prof. (Dr) Rama
Principal, Hansraj College,
University of Delhi - 110007**

Resource Person



**Prof. Sushil Kumar
Hansraj College,
University of Delhi - 110007**

Patron



**Prof. (Dr) Meena Bhandari
K R Mangalam University
Gurugram - 122103**

Resource Person



**Dr. Sonu
Sri Ram Institute of
Teacher Education
Dwarka, Delhi, 110077**

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Sohna Road, Gurugram, (Haryana)**



K.R. MANGALAM UNIVERSITY

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Workshop on “Importance of E-Learning”

In collaboration with

Hansraj College, University of Delhi (Under MoU)

Date: Tuesday, 20th September 2022

Venue: Hybrid (offline in B014+online through MS Teams platform)

Event type: Workshop

Mode of activity: Offline and Online

Target Group: All the students of SBAS

Resource Person: Dr. Sonu Godara, Shri Ram Institute of Education and Prof. Susheel Kumar, Hansraj College, University of Delhi.

Event Coordinators: Dr. Neeraj Kumari and Dr. Rajni Gautam

Organized by: School of Basic and Applied Sciences in collaboration with Hansraj College

Methodology: Lecture and workshop

INTRODUCTION

School of Basic & Applied Sciences at K.R. Mangalam University promotes a sophisticated research culture and imparts knowledge in the most dynamic field to disseminate industry-relevant knowledge via hands-on learning across various disciplines. The main focus of School of Basic & Applied Sciences is to train the students in the emerging fields of physics, chemistry, & mathematics along with required technical training. School have been organizing different types of events like workshops, webinars, seminars and competitions in form quiz, debate etc.

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during each academic year. On 20th September 2022, School organized a workshop on “Importance of E-Learning” in hybrid mode in collaboration with Hansraj College, University of Delhi.

We are in an age of digitization where technical advances have an effect on nearly every part of our lives on a continuous basis. The implications of digitization are also evident in the field of education and have contributed to significant shifts in the way education is taught and consumed. With technology expanding to the education sector, the traditional classroom, once marked by dull hour-long sessions, is now turned into an interesting, fun-filled environment. Digital education has made life easier for both students and educators. eLearning is a means of exchanging information across a number of platforms, such as eBooks, CDs, webinars, and more. It also revolutionized the standard form of chalk-and-board learning taught to students. In comparison to this, eLearning makes giving and receiving faster, more prolific, and more profitable. The tutors apply the teaching approach solely by means of the new technologies. Therefore, teaching and learning all become smoother, easier, and more effective. Today's learners are engaged in appropriate, mobile, self-paced, and customized content. This need is satisfied by the online style of learning, where students can study at their own convenience and demand.

Objectives: There are certain goals when it comes to eLearning and some of these are to:

- Enhance the quality of learning and teaching .
- Inform the students about different online platforms like Swayam, National Digital Library, MOOC and many more.
- Meet the learning style or needs of students.
- Improve the efficiency and effectiveness.
- Improve user-accessibility and time flexibility to engage learners in the learning process.

Content of the event:

E-Learning is effective and powerful method of learning. Online learning helps students to create and communicate new ideas. Unlike the conventional chalk and board teaching method, online learning makes learning convenient, where lessons can be accessed remotely from anywhere. A workshop on “Importance of e-Learning” was organized by School of Basic and Applied

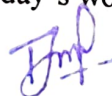

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learning makes learning convenient, where lessons can be accessed remotely from anywhere. A workshop on "Importance of e-Learning" was organized by School of Basic and Applied Sciences, K.R. Mangalam University on 20th September, 2022 in hybrid mode in collaboration with Hansraj College, University of Delhi. The workshop was started by Dr. Neeraj Kumari by welcoming all the students with brief introduction about the workshop. Dr. Neeraj welcomed the guests Dr. Sonu Godara from Shri Ram Institute of Education and Prof. Susheel Kumar from Hansraj College, University of Delhi. Dr. Sonu explained the NEP 2020 initiatives for online education, digital infrastructure, virtual labs etc in her interactive session with the participants through a question-answer session. She focussed on the importance, advantages and disadvantages of e-learning. She explained various e-learning tools available for the students for example SWAYAM, MOOC, SHODHGANGA, Google classroom, Jamboard, Google Docs, ZOOM etc. Prof. Susheel kumar deliberated his talk in the second half of the session. In his extremely enriched session, he focused on the concept of digital empowerment, freely available digital online resources such as SWAYAM, e-Yantra, NPTEL, Virtual Labs by IIT Bombay, Shiksha.com etc. The session was attended by 25 participants in offline mode and 8 participants in online mode through MS Team platform.

Event Outcome: Unlike classroom teaching, with online learning students can access the content an unlimited number of times by using the online teaching learning platform. This is especially required at the time of revision when preparing for an exam. Students can define their own speed of learning instead of following the speed of the whole group by saving a lot of time.

Conclusion. Students were motivated to use various e-learning tools in their learning methods. Information related to many freely available online resources was imparted to the students during the seminar. The session was ended with vote of thanks by Dr. Rajni Gautam, event coordinator.

Future Scope: E learning has rapidly evolved from a thing of the future to a practical approach towards education. Students can access educational assistance with services such as online Tutoring, online programming help, Project Help, Essay writing and editing services and Thesis and coursework guidance which is the need of today's world.


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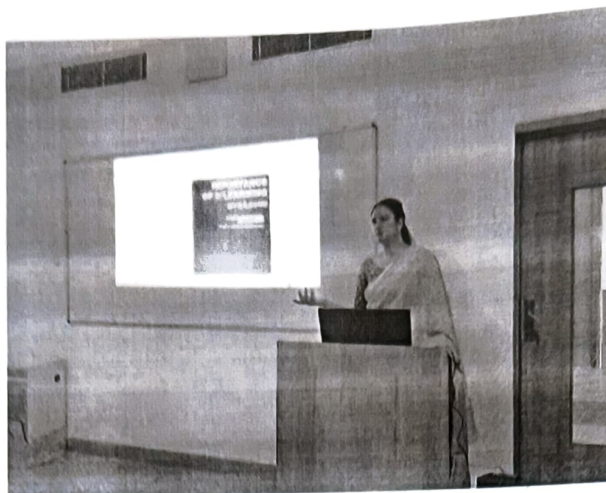


Photo 1: Dr. Sonu introduced the concept of E-Learning

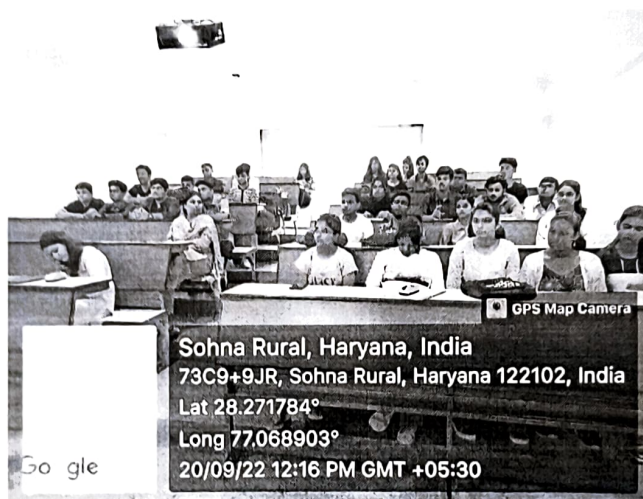


Photo 2: Participants during the workshop

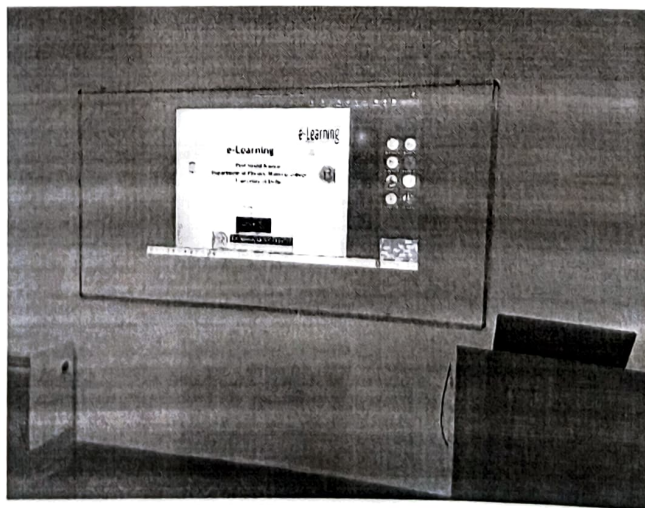
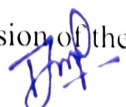


Photo 3: Second session of the workshop


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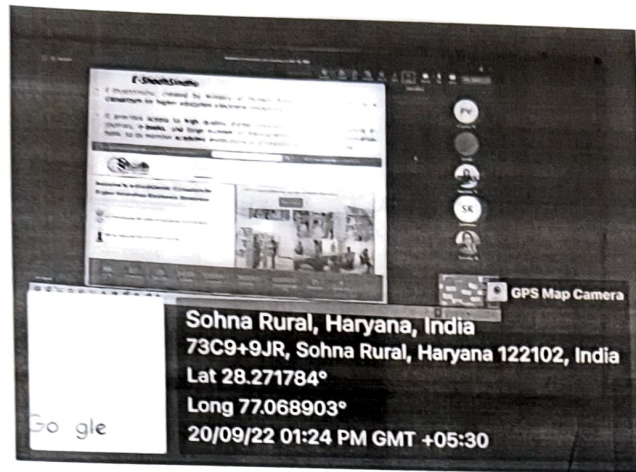


Photo 4: Online platform for e-journal, e-book



Photo 5: Facilitation of the guest by Dean, SBAS

Meena
Meena

Dr. -

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Participants	Course	Signature
Sumit Mandal.	BSc Forensic Science	Sumit Mandal
Sanjeev Kumar	BSc Forensic Science	Sanjeev
Prayankar Kuchhal	BSc. Forensic Science	Prayankar
SNASHWAT AGYEEA	BSC. FORENSIC SCIENCE	SNASHWAT AGYEEA 20/09/22
Kunal Sharma	B.Sc Physics (Hons)	Kunal
Anyan Bajaj	B.Sc. Physics (Hons)	Anyan
Sumit Yadav	B.Sc. Physics (Hons)	Sumit
Aditya Narayan Yadav	B.Sc. Physics (Hons)	Aditya
Amit Agarwal	B.Sc. Mathematics (Hons)	Amit
Neha Goyal	BSc Chemistry (Hons)	Neha
Muskan	Bsc Maths (Hons)	Muskan
Dejal	BSc Maths (Hons)	Dejal
Madhuri	BSc Maths (Hons)	Madhuri
Chandan	Bsc Maths (Hons)	Chandan..
Pradyumna Roy	Bsc. Agriculture (Hons)	Pradyumna Roy
Nabang Meher	Bsc. Chemistry (Hons)	Nabang

Joint
ent Coordinators

Joint

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Sohna Road, Gurugram, (Haryana)

SCHOOL OF BASIC AND APPLIED SCIENCE
Session on importance of E-Learning - 20th September 2022

S. No.	Name of the participants	Course	Signature
1			
2	Kashish	Bsc. Physics (H)	
3	Sannali	Bsc Physics (H)	
4	Anuwanshika	BSc (H) Maths	
5	Suparna De	B.Sc (H) Maths	
6	Archana	B.Sc (H) Maths	
7	Anjali	B.Sc Phy (H)	
8	Bhumika Raikwar	Bsc. (H) Forensic Science	
9	Mayank Saini	BSc math	
10	Hitesh	BSc math	
11	Sakshi	Bsc. Ag(H)	
12	Ansar Khan	Bsc. Ag(H)	
13	Mohit kumar	BSc. Ag(H)	
14	Sagar	Bsc. (H) Agriculture	
15			
16			


 Event Coordinators


 Registrar
 K.R. Mangalam University
 Sohna Road, Gurugram, (Haryana)



Reference: KRMU/ Event/ 2022-23/ ___/ ___

Date: 14/09/2022

Event Approval Form

Society / Club / Department Name: -----

School: School of Basic and Applied Sciences

Student Coordinator: Ms. Jeetika

Club/Society Coordinator: Dr. Rajni Gautam and Dr. Neeraj Kumari

Date of Event: 20th September 2022

Event Name: Seminar on Importance on E-Learning

Audience Count: 30

Mode of Conduction: Offline

Place of Conduction: B014, B Block

Event Timings: 12:00 - 1:00 PM

Material Requirements: Laptop, Projector

Any Other Requirements: Transport: Yes

IT

(Note: Please fill separate requition for Transport and IT)

Neeraj
Name and Signature
(Event Coordinator)

[Signature]
Name and Signature
(Dean of School/ DSW)

[Signature] 19/9/22
Signature
(Administrative Officer)

Mahya
Signature
(Registrar)

31/9/22

(Note: Dean Students Welfare in case of cultural activlty only)