

Brief Report on
Faculty Refresher Course cum Faculty Development Program
Organized by
Department of Civil Engineering

The Department of Civil Engineering, Integral University, Lucknow, organized a five-day faculty development program on Emerging Techniques in Civil Engineering from August 8th to November 4th, 2023, at the Seminar Hall, Department of Civil Engineering, F Block, Integral University. This program aimed to inculcate knowledge and understanding of modern techniques and methodologies used in the field of Civil Engineering nowadays. It was also focused to enhance the knowledge base of the faculty but also help transfer contemporary knowledge to the students, benefiting their professional development. The schedule was as follows:

Day No.	Date	Topic of the day	Resource Person	Designation	Affiliation
1	08-08-2023	Remote sensing and GIS applications in Civil Engineering LiDAR and its application domains	Dr. Sudhakar Shukla	Scientist-SE Head	Remote Sensing Applications Centre-UP School of Geo-informatics, AKTU, Lucknow
2	19-08-2023	Drone surveys and its importance GPR Surveys and its applicability in today's context	Sri Alok Saini	Scientist-SC Faculty	Remote Sensing Applications Centre-UP School of Geo-informatics, AKTU, Lucknow
3	26-08-2023	Top-Down and Bottom-up Construction Technology	Shri Arvind Kumar Singh	Project Director	Uttar Pradesh Metro Rail Corporation, Kanpur
4	16-09-2023	Modern Tunnelling Methods	Shri S N Jha	General Manager-Civil	Uttar Pradesh Metro Rail Corporation, Kanpur
5	04-11-2023	Navigating Complex Geotechnical Issues Through Finite Element Numerical Modelling	Dr. Vinay Bhushan Chauhan	Assistant Professor	Madan Mohan Malaviya University of Technology

The program was inaugurated by Prof. Syed Aqeel Ahmad, Head, Department of Civil Engineering, with his welcome address. The guest speaker of Day 1 was Dr. Sudhakar Shukla. He is a Scientist E at the Remote Sensing Applications Centre-UP and Head of the School of Geo-informatics, AKTU, Lucknow. With thirty-two years of enriched experience in remote sensing and GIS, he is proficient in applying satellite remote and GIS techniques for surface and groundwater management, geo-environmental assessment, and disaster management.



Prof. Aqeel Ahmad presenting memento to Dr. Sudhakar Shukla, Scientist E, Remote Sensing Applications Centre-UP and Head, School of Geo-informatics, AKTU

During the lecture, Dr. Sudhakar Shukla delved into various aspects of Geographic Information Systems, drawing on his practical experience to elucidate common challenges encountered during remote sensing and GIS surveys and proposed practical solutions. He also discussed various methods of remote sensing with an emphasis on the LiDAR method of remote sensing. The key topics covered included GIS and remote sensing workings, challenges during their applications, and their solutions, interpretation of remote sensing data, etc.

The guest speaker of Day 2 was Shri Alok Saini. Shri Saini is Scientist-C at the Remote Sensing Applications Centre-UP and also a faculty member at the School of Geo-informatics, AKTU, Lucknow. With 25 years of rich work experience in Geo-informatics for Urban Planning and Natural Resource planning, his focus extends to Ground Penetrating Radar (GPR), 3D city modeling and Geo-portals development. Additionally, he had contributed significantly to the field through numerous publications and serves as a dissertation and research guide to various M.Tech, B.Tech, and M.Sc. students in the realm of Geospatial studies.



Prof. Aqeel Ahmad introducing Shri Alok Saini, Scientist-C, Remote Sensing Applications Centre-UP and Faculty member, School of Geo-informatics, AKTU, Lucknow

Shri Saini covered various facets of drone surveys, explaining various drone technologies, addressing common challenges, and proposing pragmatic solutions. Key topics included Site Planning and Mapping, Topographical Surveys, Land Use Planning, Construction Monitoring, Infrastructure Inspection, and Environmental Impact Assessments, among others.



Shri Arvind Kumar Singh, Project Director, Uttar Pradesh Metro Rail Corporation, Kanpur with lecture attendees

Day 3 of the FDP started with the presentation of Shri Arvind Kumar Singh, Project Director, Uttar Pradesh Metro Rail Corporation, Kanpur. Shri Singh is a distinguished professional, and his extensive experience added significant value to the lecture and subsequent interactive sessions. The expert lecture commenced with an insightful overview of Top-Down and Bottom-up Construction Technology.

Mr. Singh shared his experiences and expertise, emphasizing the role of modern techniques in the

context of metro rail projects. The key topics covered during the lecture were:

- Introduction to Underground Metro Construction
- Bottom-Up Construction Methodology
- Top-Down Construction Methodology
- Comparative assessment of Bottom-Up and Top-down Construction Methodology

Shri S. N. Jha was the guest speaker of Day 4. Shri Jha, a distinguished professional holding the position of General Manager-Civil at Uttar Pradesh Metro Rail Corporation, Kanpur, brought a wealth of practical insights and experience in tunneling projects. His expertise added significant value to the lecture and subsequent interactive session. With a career spanning several decades, he has contributed significantly to the field through his involvement in various tunneling projects across the country.

The expert lecture commenced with an insightful overview of the evolution of tunneling methods, with a focus on contemporary practices. Mr. Jha shared his experiences and expertise, emphasizing the role of



Prof. Aqeel Ahmad presenting memento to Shri S. N. Jha , General Manager-Civil at Uttar Pradesh Metro Rail Corporation, Kanpur

modern techniques in the context of metro rail projects. The lecture covered key aspects such as technological advancements, challenges faced in tunneling, and the pivotal role of civil engineers in successful project execution. The Key Topics Covered during the lecture were:

- Evolution of Tunneling Technology
- Metro Rail Tunneling Practices
- Challenges and Solutions
- Role of Civil Engineers in Tunneling Projects



Shri S. N. Jha presenting his topic on metro rail construction

Day 5 of the FDP started with the presentation of the guest speaker, Dr. Vinay Bhushan Chauhan, Assistant Professor, Department of Civil Engineering, Madan Mohan Malaviya University of Technology, Gorakhpur, Uttar Pradesh. Dr. Chauhan completed his Master's degree from IIT Roorkee and PhD from IIT Bombay. As a renowned researcher, he has published more than 80 research papers with significant citations and received the Prof. Joseph M. Sussman Best Paper Prize-2022. His work specifically focuses on the study of foundations within rock masses. He is also an editorial member and peer reviewer for several renowned journals.



Prof. Aqeel Ahmad presenting memento to Dr. Vinay Bhushan Chauhan, Assistant Professor, Department of Civil Engineering, MMUT,, Gorakhpur, Uttar Pradesh

Dr. Chauhan's talk focused on problematic geo-materials and potential problems along with different ground improvement techniques. The key topics discussed were:

- Ground improvement techniques: deep mixing, grouting, ground anchors, soil nailing, and geosynthetics applications, etc.

- Influence of secondary reinforcement layers to enhance the stability of steep soil slopes under earthquake loading, Numerical studies on two-tiered MSE walls under seismic loading,
- Behavior of Back-to-Back MSE Walls: Interaction Analysis Using Finite Element Modeling,
- Numerical Study of Geo-synthetic-Reinforced Soil Wall Subjected to Static Footing Loading,
- Behavior of shallow foundation resting on reinforced earth bed under seismic loading and understanding the interaction of shallow foundations with circular cavities in rocks: observations and recommendations, etc.
- OPTUM G2 software (a finite element analysis software for geotechnical engineering applications).

After attending the lectures, interactive sessions and hands-on training were conducted, during which faculty members and staff actively interacted with the speakers, gaining valuable insights and practical perspectives on the subject matter and learning of relevant software. This was followed by a quiz aimed at thoroughly assessing the learning outcomes.

A total of fourteen faculty members attended the program. Prof. Syed Aqeel Ahmad, Head, Department of Civil Engineering, presented mementos to the guest speakers as a token of thanks. Dr. Neha Mumtaz, Associate Professor, and Coordinator, DQAC, articulately convened the event and presented a vote of thanks on behalf of the Department of Civil Engineering.