ANNAMACHARYA UNIVERSITY

EXCELLENCE IN EDUCATION; SERVICE TO SOCIETY

(ESTD, UNDER AP PRIVATE UNIVERSITIES (ESTABLISHMENT AND REGULATION) ACT, 2016)

Rajampet, Annamayya District, A.P – 516126, INDIA

REPORT ON 5-DAYS FACULTY DEVELOPMENT PROGRAM (Virtual Mode)

Title : SUSTAINABLE INNOVATIONS IN CIVIL ENGINEERING: PATHWAYS TO GREENER FUTURE

Duration: 5 Days

From: 19 January 2026

To: 23 January 2026

Time: F.N. - 10:00 A.M to 12:00 P.M

A.N. – 02:00 P.M to 04:00 P.M

Venue: Microsoft Teams (Online)

Organized by: Department of Civil Engineering, Annamacharya University

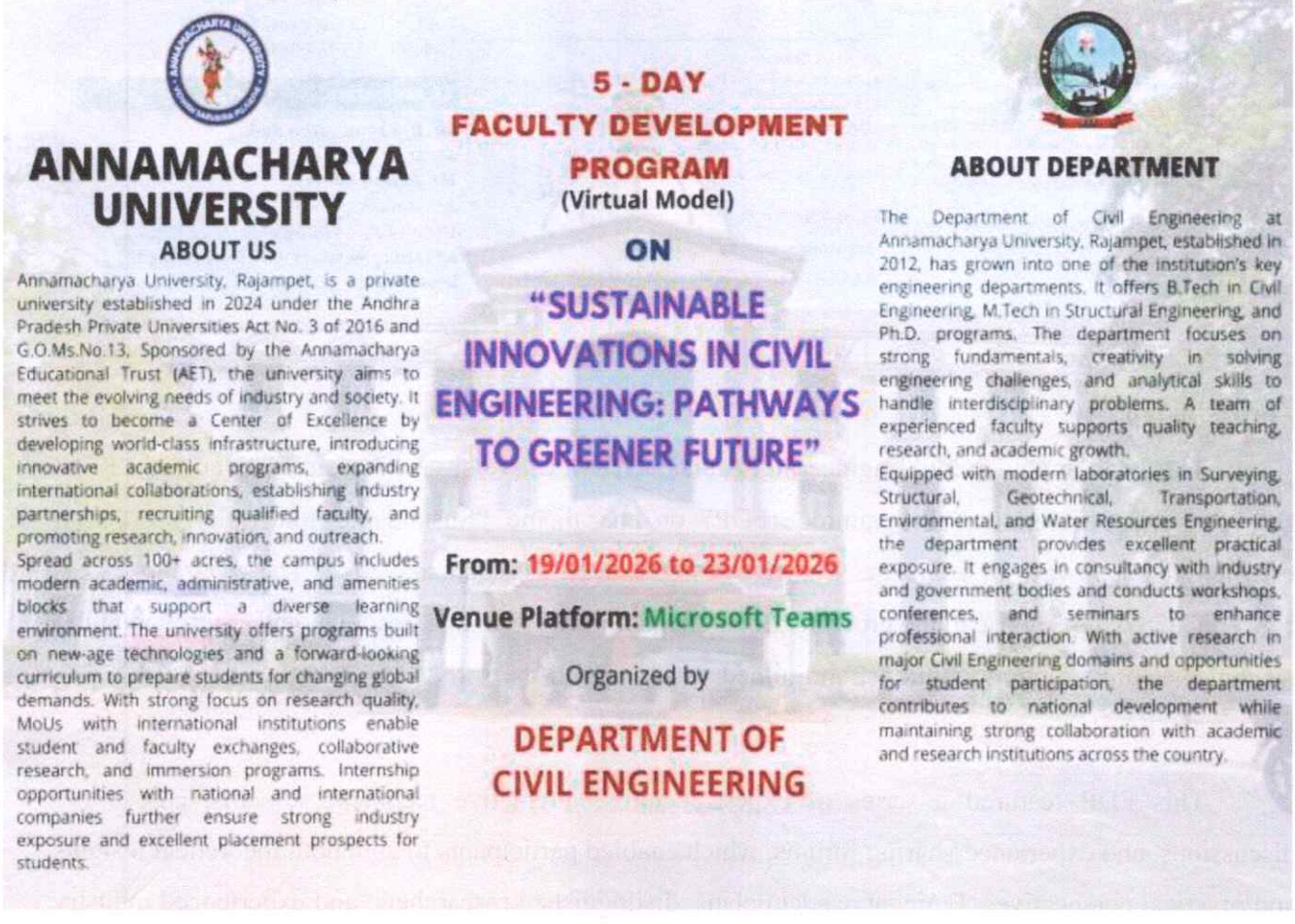


IMAGE: EVENT BROCHURE

1. Introduction:

The Department of Civil Engineering, Annamacharya University, successfully organized a Five-Day Faculty Development Programme (FDP) on the theme "Sustainable Innovations in Civil Engineering: Pathways to a Greener Future" during 19th to 23rd January 2026. The programme was conceptualized in response to the growing global demand for sustainable, resilient, and environmentally responsible infrastructure solutions, and aimed to strengthen the role of civil engineers in achieving sustainable development goals.

This FDP featured a series of expert lectures, interactive technical sessions, case study discussions, and experience-sharing forums, which enabled participants to gain both theoretical insights and practical perspectives. Eminent academicians, distinguished researchers, and experienced industry professionals from premier institutions and organizations including IIT Madras, IIT Hyderabad, IIT Tirupati, NIT Warangal, Sri Venkateswara University, and the Central Public Works Department (CPWD) served as resource persons. Their valuable contributions enriched the programme by bridging the gap between academic research, industry practices, and policy-driven infrastructure development.

The programme served as an effective platform for knowledge dissemination, interdisciplinary learning, and academic–industry interaction, encouraging participants to explore collaborative research opportunities, innovative teaching methodologies, and sustainable engineering solutions. Overall, the FDP significantly contributed to capacity building among participants and reinforced the department's commitment to promoting sustainable innovation, professional excellence, and societal responsibility in the field of civil engineering.

2. Objectives of the FDP:

The primary objectives of the FDP were:

- To enhance the technical knowledge and professional competence of faculty members, research scholars, and postgraduate students.
- To promote awareness of sustainable materials, green construction practices, and low-carbon technologies.
- To provide exposure to recent research trends, industry practices, and emerging technologies in civil engineering.
- To encourage interdisciplinary thinking and academic–industry collaboration.
- To motivate participants towards innovative research and sustainable infrastructure development.

3. Participants:

The FDP witnessed active participation from faculty members, research scholars, and postgraduate students from civil engineering and allied disciplines. The diverse academic and professional backgrounds of the participants contributed to meaningful discussions and knowledge exchange throughout the programme.

4. Resource Persons:

The programme featured eminent academicians, researchers, and industry professionals from premier institutions and organizations:

- **Dr. G. Appa Rao,** Professor, IIT Madras
- **Dr. P. Srinivasulu,** Projector Manager, Dr. Reddy's Laboratories, Hyderabad
- **Dr. Y. Sudheer Kumar,** Associate Professor, MITS
- **Dr. M. Chandra Sekhar,** Professor, NIT Warangal
- **Dr. B. Madhusudhan Reddy,** Professor, Sri Venkateswara University, Tirupati
- **Dr. K. Chiranjeevi Reddy,** Post-Doctoral Fellow, IIT Hyderabad
- **Dr. Ch. Sudharani,** Professor, Sri Venkateswara University, Tirupati

- **Dr. G. Tejesh,** Assistant Professor, IIT Madras
- **Dr. B. Krishna Prapoorna,** Professor, IIT Tirupati
- **Mr. J. Kranthi Kumar Reddy,** Executive Engineer, CPWD

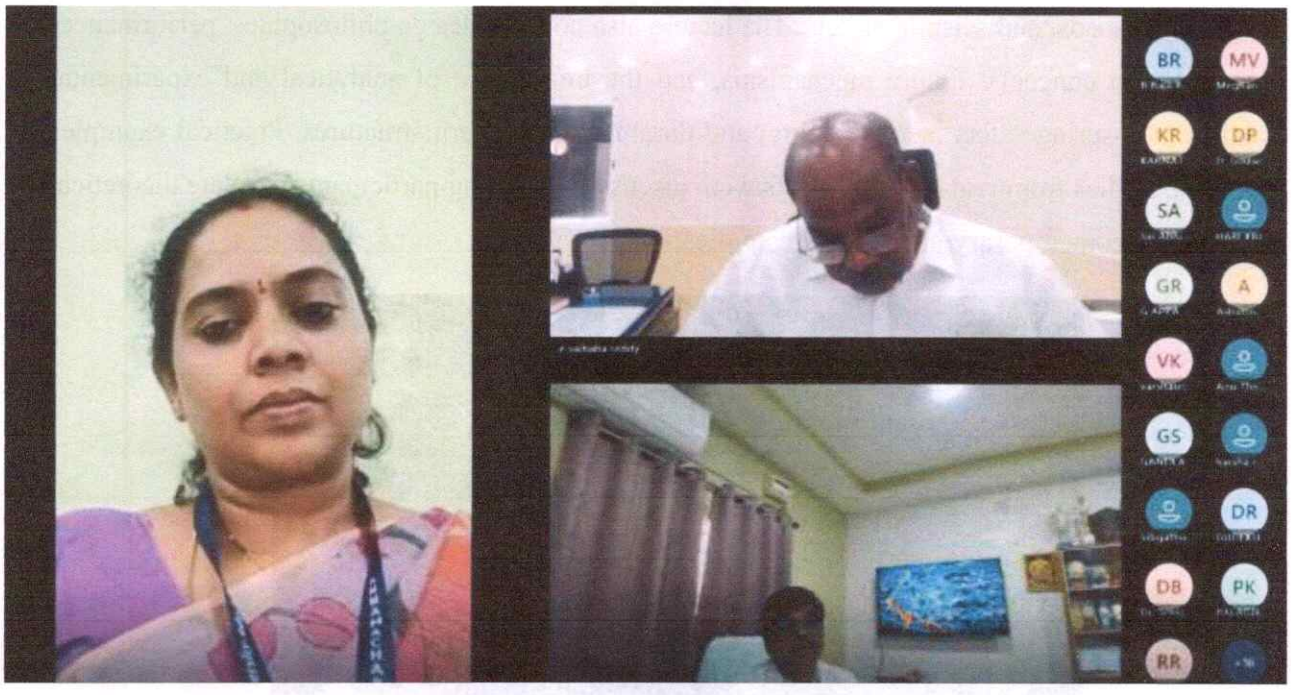
Their expertise and experience significantly enriched the quality and relevance of the technical sessions.

5-Day Faculty Development Programme (FDP) Schedule

Theme: SUSTAINABLE INNOVATIONS IN CIVIL ENGINEERING: PATHWAYS TO GREENER FUTURE

Day	Time	Session title	Resource person
Day 1 19-1-26	9:30-10:00	Inaugural function	Welcome address, fdp overview
	10:00-12:00	Performance of Special structural systems under general loading	Dr.G. Appa Rao Professor, IIT Madras
	2:00-4:00	Role of Civil Engineers in Pharmaceutical Industry	Dr.P. Srinivasulu Reddy's laboratory, Hyderabad
Day 2 20-1-26	10:00-12:00	Sustainable Engineering Materials and Practices	Dr. Y.Sudheer kumar Associate professor, MITS
	3:00-5:00	Sustainable Development - Applications and Challenges	Dr. M.Chandra sekhar Professor ,NIT Warangal
Day 3 21-1-26	10:00-12:00	Health Assessment of existing structures with case studies	Dr. B.Madhusudhan Reddy Professor, SV University
	2:00-4:00	Alkali-Activated Binders from Fly Ash and Slag: A Sustainable Pathway to Low-Carbon Construction	Dr.K. Chiranjeevi Reddy Post doc fellow, IIT hyderabad
Day 4 22-1-26	10:00-12:00	1.Sustainable approaches for soil stabilization 2.Energy buildings	Dr. Ch.Sudharani Professor, SV University
	2:00-4:00	Overview of Sustainable Marine Geotechnics	Dr.G. Thejash Assistant Professor, IIT Madras
Day 5 23-1-26	10:00-12:00	Significance of Research in Transportation Infrastructure Systems: A Transdisciplinary Approach to Foster Innovation-to-Implementation	Dr. B. Krishna Prapoorna Professor, IIT Tirupathi.
	2:00-4:00	Sustainability through BIM in Public Infrastructure Projects: From Design Intent to Site Execution	Mr. J. Kranthi Kumar Reddy Executive Engineer, CPWD, INDIA
	4:00-5:00	Valedictory Function & Closing Ceremony	

IMAGE: Program Schedule



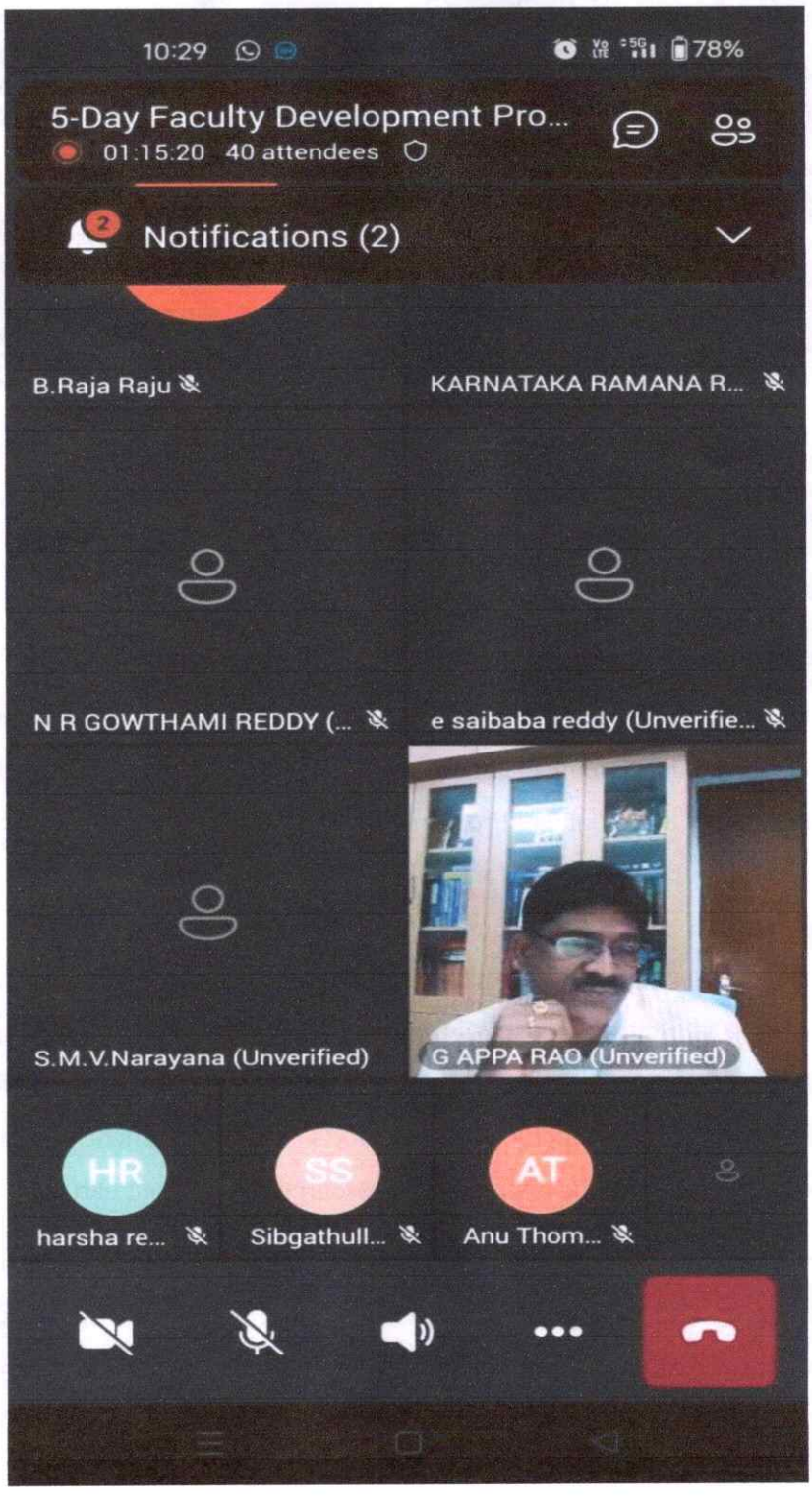
5. Day-wise Programme Summary:

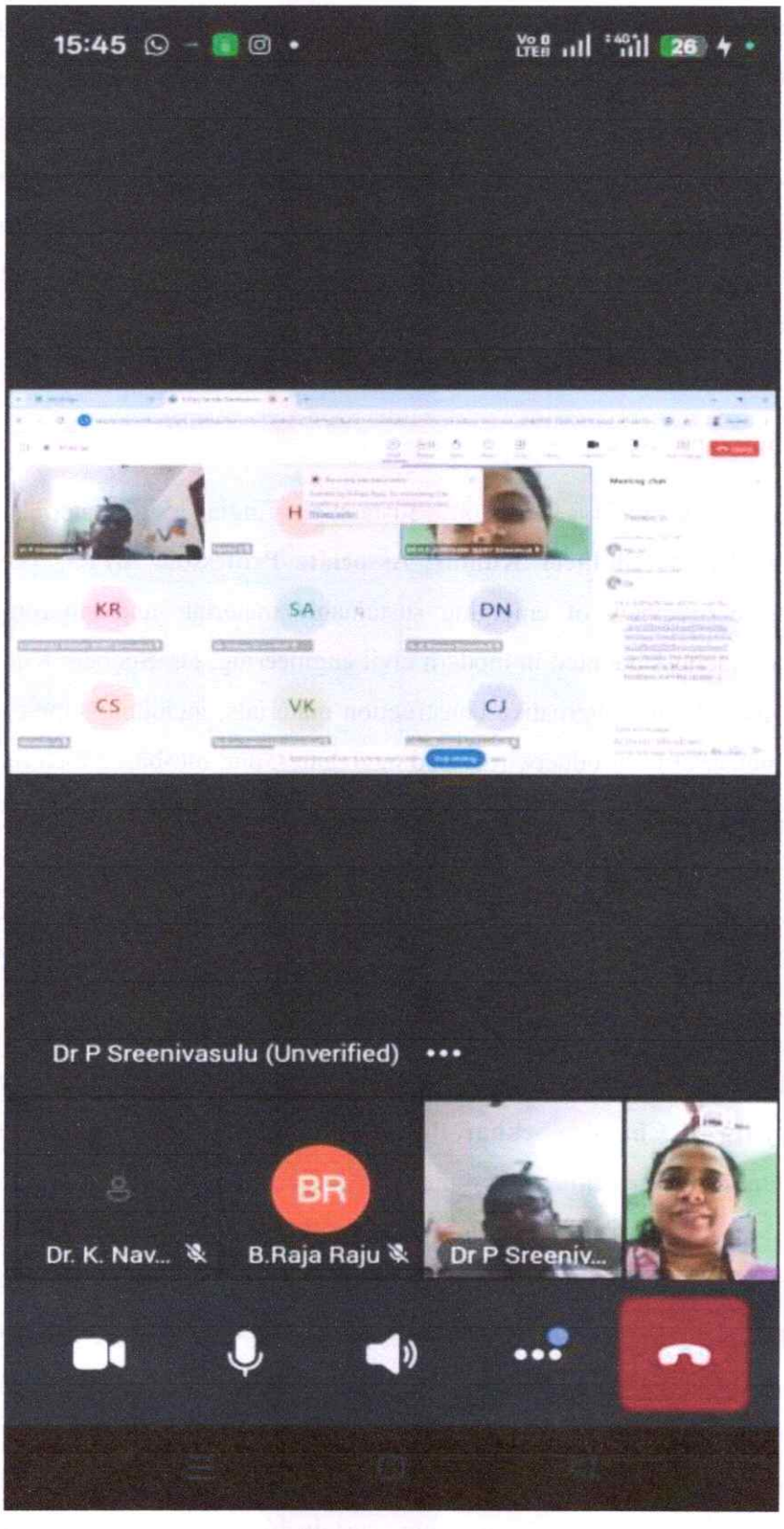
- **Day 1: 19 January 2026:**

The FDP commenced with a formal Inaugural Function at 10:00 A.M., which was initiated by the Programme Convenor and Head of the Department of Civil Engineering, Dr. N. R. Gowthami, who delivered the welcome address and briefed the gathering on the objectives, theme, and structure of the Faculty Development Programme. This was followed by an address by the Dean, School of Engineering, Dr. S. M. V. Narayana, who emphasized the significance of organizing such academic programmes to strengthen technical competence, research culture, and sustainable thinking among faculty members and research scholars. The inaugural session concluded with the inaugural address by the Hon'ble Vice-Chancellor, Dr. E. Saibaba Reddy, who formally inaugurated the FDP and highlighted the crucial role of civil engineers in promoting sustainability, innovation, and societal development. He also appreciated the efforts of the department in organizing the FDP and extended a warm welcome to the distinguished resource persons and participants.

The first technical session, titled "Performance of Special Structural Systems under General Loading", was delivered by **Dr. G. Appa Rao, Professor, IIT Madras**. The session provided an in-depth understanding of advanced and special structural systems such as long-span structures, high-rise buildings, and unconventional structural configurations. Dr. Appa Rao elaborated on the structural behavior of these systems under various loading conditions, including dead loads, live

loads, wind loads, and seismic effects. The lecture also covered design philosophies, performance-based design concepts, failure mechanisms, and the importance of analytical and experimental studies in ensuring safety, serviceability, and durability of modern structures. Practical examples and case studies from real-world projects were discussed, enabling participants to relate theoretical concepts to contemporary infrastructure applications.





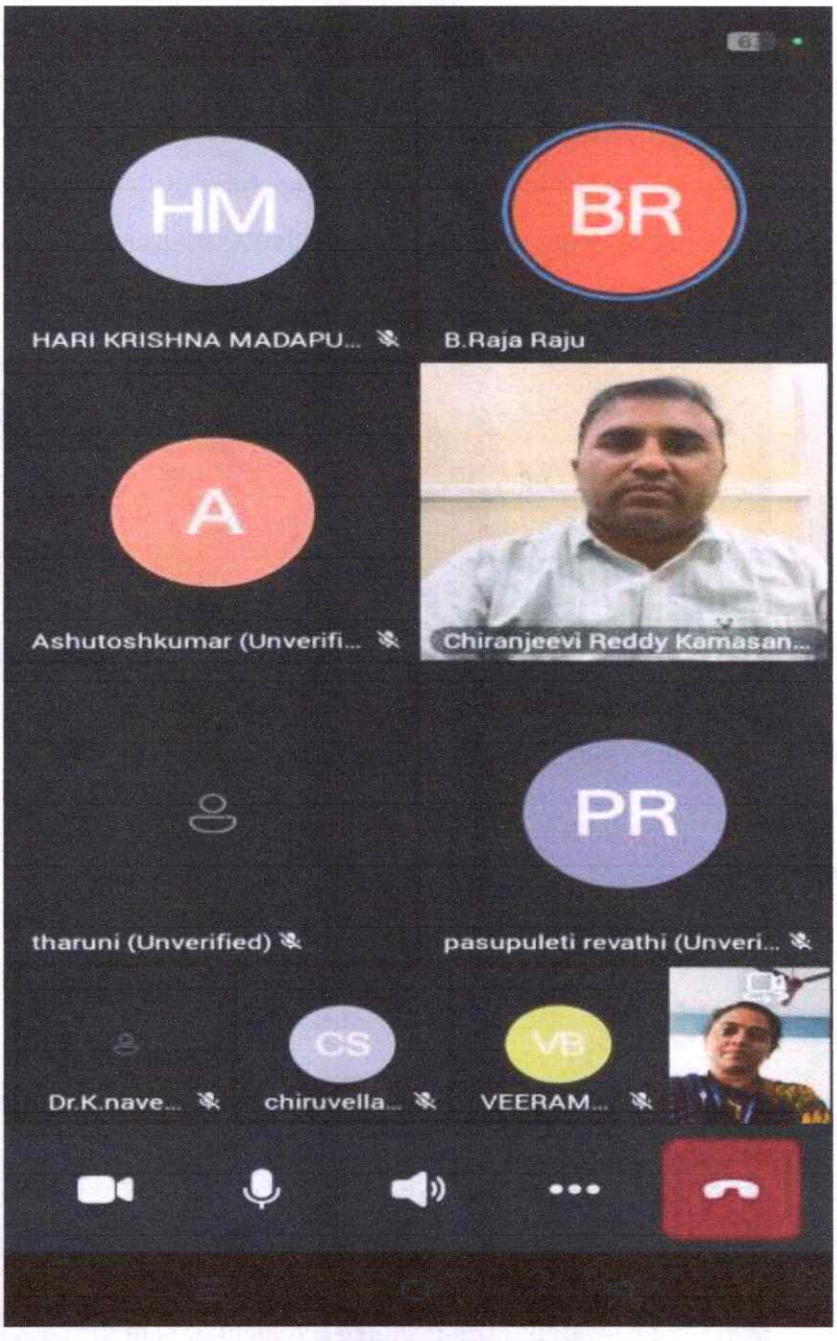
The afternoon technical session on "Role of Civil Engineers in the Pharmaceutical Industry" was delivered by **Dr. P. Srinivasulu, Project Manager, Dr. Reddy's Laboratories, Hyderabad.** This session offered valuable insights into the expanding interdisciplinary role of civil engineers in

the pharmaceutical sector. The speaker discussed the planning, design, and construction of pharmaceutical facilities, with particular emphasis on clean room design, structural and functional requirements, compliance with regulatory standards, and quality control measures. The session also highlighted sustainable construction practices adopted in pharmaceutical industries, including energy-efficient building systems, waste management strategies, and environmentally compliant infrastructure. Through industry-oriented examples, the session sensitized participants to emerging career opportunities and the critical role of civil engineers in supporting high-precision, sustainable industrial infrastructure.

- **Day 2: 20 January 2026:**

The morning technical session on "Sustainable Engineering Materials and Practices" was delivered by **Dr. Y. Sudheer Kumar, Associate Professor, MITS**. The lecture provided a comprehensive overview of emerging sustainable materials and environmentally responsible construction practices adopted in modern civil engineering. Dr. Sudheer Kumar elaborated on the use of eco-friendly and alternative construction materials, including supplementary cementitious materials, industrial by-products, recycled aggregates, and bio-based materials, highlighting their role in reducing carbon emissions and conserving natural resources. The session also covered alternative binders and low-energy materials, life-cycle assessment of construction materials, and best practices for sustainable material selection. Practical examples and recent research findings were discussed to demonstrate how sustainable material choices can enhance durability, performance, and environmental efficiency in construction projects.

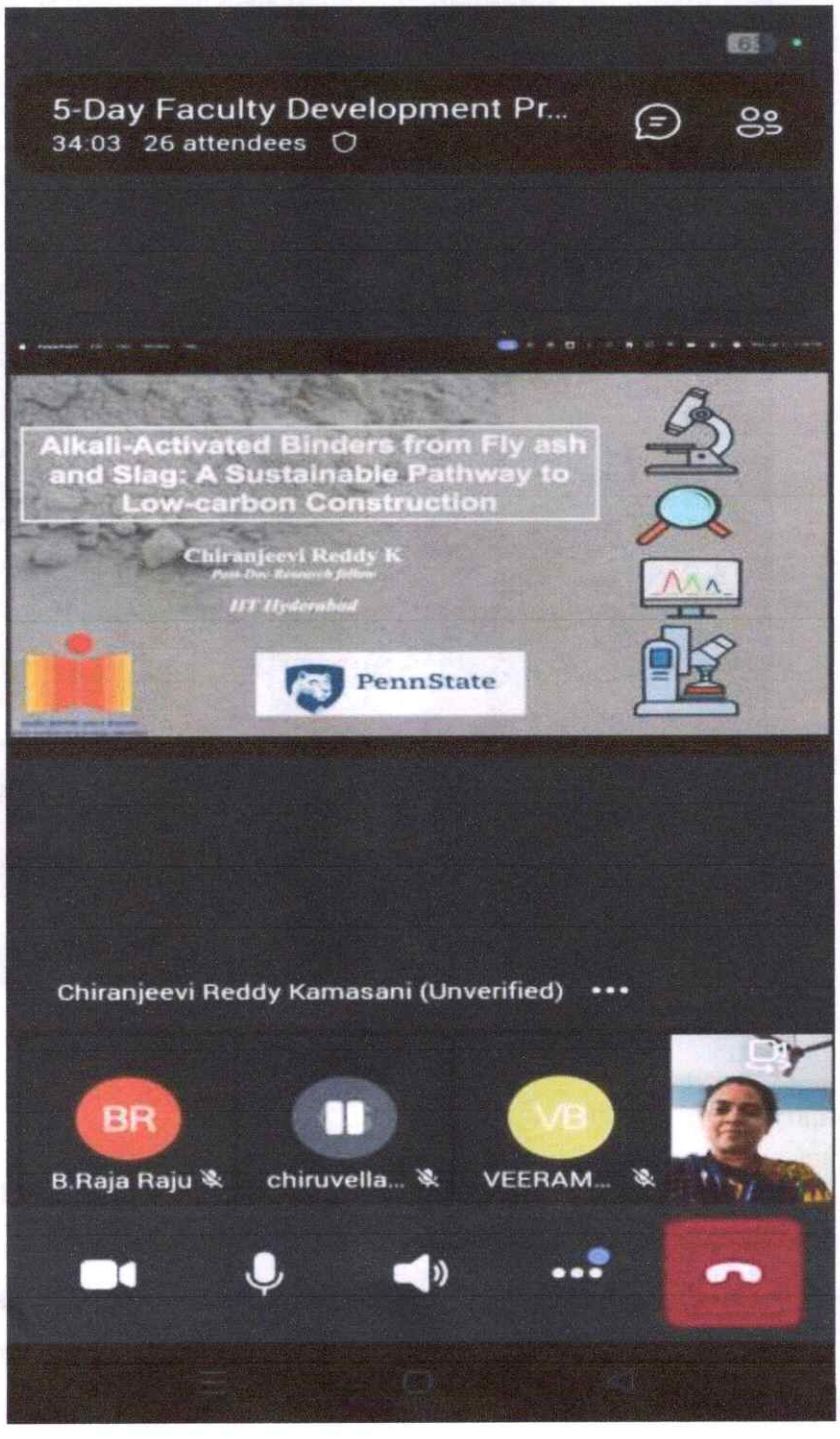
The afternoon session on "Sustainable Development – Applications and Challenges" was delivered by **Dr. M. Chandra Sekhar, Professor, NIT Warangal**. This session offered an in-depth understanding of the principles and dimensions of sustainable development, with emphasis on its application in infrastructure planning and development. Dr. Chandra Sekhar discussed the environmental, economic, and social pillars of sustainability, along with challenges associated with policy implementation, technological adoption, and stakeholder coordination. The lecture also addressed national and international sustainability frameworks, regulatory guidelines, and the integration of sustainable development goals (SDGs) into civil engineering projects. Through real-world case studies and practical examples, the session highlighted the complexities and opportunities involved in implementing sustainable development strategies in large-scale infrastructure projects.



➢ **Day 3: 21 January 2026:**

The first technical session of the day on "Health Assessment of Existing Structures with Case Studies" was delivered by **Dr. B. Madhusudhan Reddy, Professor, Sri Venkateswara University**. The session provided an in-depth understanding of the importance of structural health monitoring and assessment in the context of aging and distressed infrastructure. Dr. Madhusudhan Reddy explained various structural evaluation methodologies, including visual inspection techniques, condition rating

systems, and non-destructive testing (NDT) methods such as rebound hammer, ultrasonic pulse velocity, half-cell potential, and core testing. The lecture also highlighted the diagnosis of common structural deficiencies, deterioration mechanisms, and the role of material degradation. Through detailed case studies, the session demonstrated practical approaches to rehabilitation, strengthening, and retrofitting of existing structures, emphasizing safety, serviceability, durability, and cost-effectiveness.

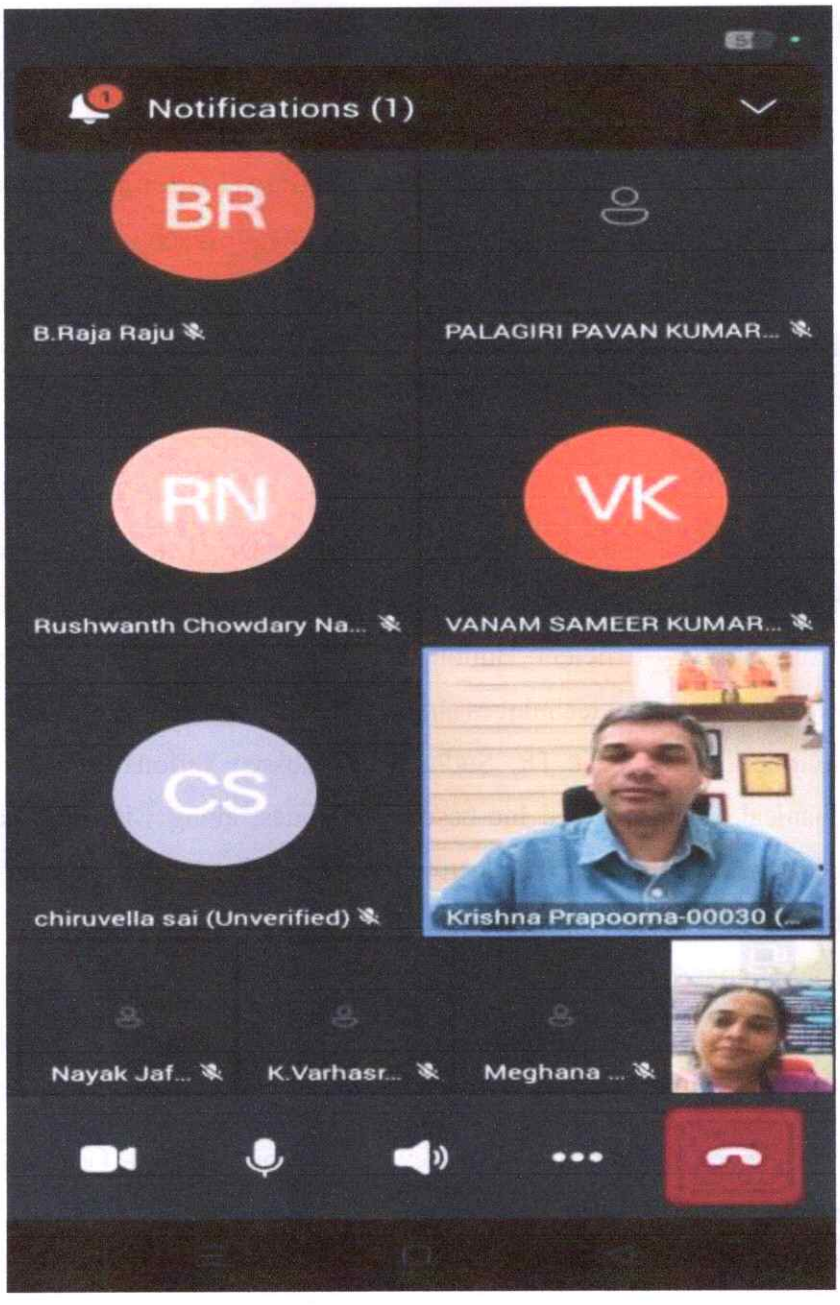


The afternoon technical session on "Alkali-Activated Binders from Fly Ash and Slag: A Sustainable Pathway to Low-Carbon Construction" was delivered by **Dr. K. Chiranjeevi Reddy, Post-Doctoral Fellow, IIT Hyderabad**. The lecture focused on innovative low-carbon alternatives to conventional Portland cement, highlighting the utilization of industrial by-products such as fly ash and ground granulated blast furnace slag. Dr. Chiranjeevi Reddy elaborated on the principles of alkali activation, material characterization, mix design considerations, and performance properties of alkali-activated binders. The session emphasized their potential in reducing greenhouse gas emissions, enhancing durability, and promoting circular economy practices in construction.

- **Day 4: 22 January 2026:**

The morning technical session was delivered by **Dr. Ch. Sudharani, Professor, Sri Venkateswara University**, and covered two important themes: "Sustainable Approaches for Soil Stabilization" and "Energy-Efficient Buildings." The session provided detailed insights into sustainable ground improvement techniques aimed at enhancing soil strength and performance while minimizing environmental impact. Dr. Sudharani discussed various soil stabilization methods, including mechanical, chemical, and bio-based techniques, along with the use of industrial by-products and eco-friendly additives. The lecture also emphasized sustainable design considerations for energy-efficient buildings, focusing on passive design strategies, material selection, thermal comfort, and energy conservation measures. Practical examples and case studies were presented to demonstrate how integrated geotechnical and building design approaches can contribute to sustainable and resilient infrastructure.

The afternoon technical session on "Overview of Sustainable Marine Geotechnics" was delivered by **Dr. G. Tejesh, Assistant Professor, IIT Madras**. The session introduced participants to the unique challenges associated with marine and coastal geotechnical engineering, including soil behavior in offshore environments, foundation systems for marine structures, and issues related to erosion, scour, and coastal stability. Dr. Tejesh highlighted sustainable geotechnical solutions for coastal and offshore infrastructure such as ports, harbors, offshore platforms, and coastal protection systems. The lecture also addressed the impact of climate change, sea-level rise, and extreme weather events on marine structures, emphasizing the need for sustainable, resilient, and environmentally responsible design practices.



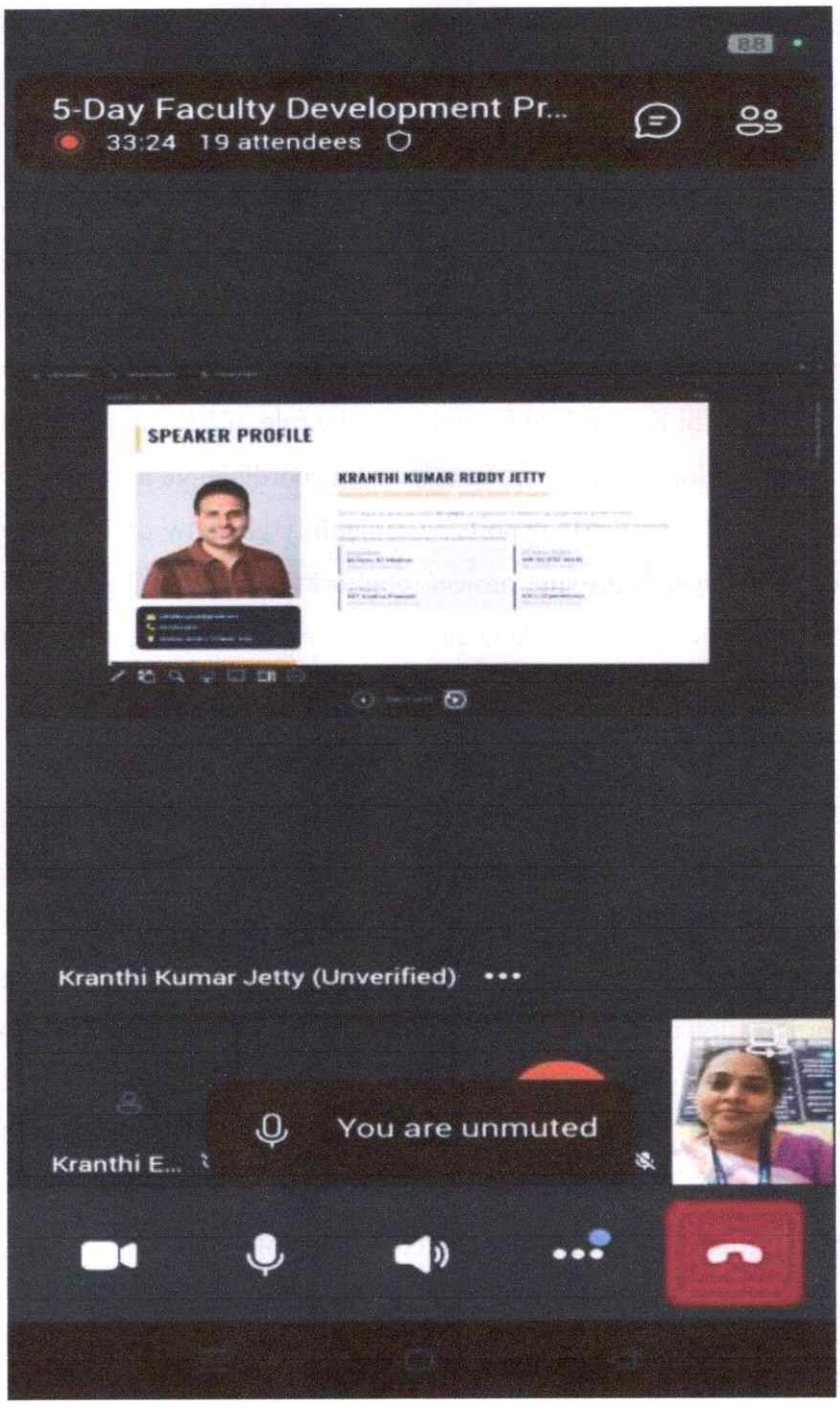
➢ **Day 5: 23 January 2026:**

The morning technical session on "Significance of Research in Transportation Infrastructure Systems: A Transdisciplinary Approach to Foster Innovation-to-Implementation" was delivered by **Dr. B. Krishna Prapoorna, Professor, IIT Tirupati**. The lecture highlighted the critical role of research and innovation in addressing contemporary challenges in transportation infrastructure systems. Dr. Krishna Prapoorna emphasized the need for a transdisciplinary approach, integrating civil engineering with data analytics, materials science, environmental studies, and policy frameworks to develop sustainable and efficient transportation solutions. The session covered topics such as performance evaluation of transportation systems, research-driven planning and design

methodologies, technology adoption, and the translation of research outcomes into practical implementation. Case studies and examples were discussed to demonstrate how research contributes to improving safety, sustainability, and operational efficiency in transportation infrastructure projects.

The afternoon technical session on "Sustainability through BIM in Public Infrastructure Projects: From Design Intent to Site Execution" was delivered by **Mr. J. Kranthi Kumar Reddy, Executive Engineer, Central Public Works Department (CPWD)**. The session provided valuable insights into the practical application of Building Information Modelling (BIM) in public infrastructure development. Mr. Kranthi Kumar Reddy explained the role of BIM in integrating design, planning, construction, and operation phases, thereby enhancing coordination, accuracy, and decision-making. The lecture emphasized how BIM supports sustainability goals by optimizing resource utilization, reducing material wastage, improving project monitoring, and ensuring transparency in execution. Real-time project experiences and CPWD case examples were shared to illustrate the effectiveness of BIM in achieving cost efficiency, time management, and sustainable outcomes in public infrastructure projects.

The FDP concluded with a Valedictory Function, during which the Program Convenor and Head of the Department of Civil Engineering, Dr. N. R. Gowthami, formally summarized the outcomes of the Five-Day Faculty Development Program. In her concluding address, she highlighted the academic significance of the sessions, the valuable contributions of the distinguished resource persons, and the active participation of faculty members, research scholars, and students. She expressed sincere gratitude to all the resource persons for sharing their expertise and enriching the programme with their scholarly insights and practical experiences. She also thanked the university administration, organizing committee members, and participants for their support and cooperation, following which a formal vote of thanks was proposed, marking the successful conclusion of the FDP.



6. Outcomes of the FDP:

- Enhanced understanding of sustainable innovations and green technologies in civil engineering.
- Improved awareness of interdisciplinary applications and industry expectations.
- Strengthened research orientation among faculty and research scholars.
- Encouraged adoption of sustainable practices in teaching, research, and professional activities.
- Fostered academic–industry interaction and potential collaborative opportunities.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	2	2	2	-	3	-	-	-	2
CO2	2	-	-	-	2	3	-	-	2	3	-
CO3	2	3	-	3	2	-	-	-	-	-	3
CO4	-	-	2	-	2	2	3	3	-	-	2
CO5	-	-	-	-	-	2	-	-	3	2	-

7. Conclusion

The Five-Day Faculty Development Programme successfully achieved its objectives by providing a comprehensive platform for learning, interaction, and professional development. The programme significantly contributed to capacity building and reinforced the Department of Civil Engineering's commitment to promoting sustainable development, innovation, and excellence in education and research.

The FDP stands as a valuable academic initiative that aligns with national and global goals for sustainable infrastructure and environmental responsibility.

Event Co-Ordinators:

B. Raghu

Mr. B. Raghunatha Reddy,
Assistant Professor,
Dept. of Civil Engineering

Mr. A. Anil Kumar,
Assistant Professor,
Dept. of Civil Engineering

HoD-CE

Dr. N.R. Gowthami