

**AICTE Training and Learning Academy (ATAL)**  
**Faculty Development Programme (FDP) 2023-24**  
**On**

**The Synergy of Sustainable Manufacturing and Industry  
4.0 Towards Sustainable Development**

**18<sup>th</sup> - 23<sup>th</sup> December 2023**

**Organized by**



**Department of Industrial and Production Engineering**  
**School of Studies of Engineering and Technology**  
**Guru Ghasidas Vishwavidyalaya**  
**( A Central University )**  
**Bilaspur, Chhattisgarh, India.**  
**Pin- 495009**



**REPORT OF**  
**FACULTY DEVELOPMENT PROGRAMME (FDP) 2023-24**  
**ON**  
**THE SYNERGY OF SUSTAINABLE MANUFACTURING**  
**AND INDUSTRY 4.0 TOWARDS SUSTAINABLE**  
**DEVELOPMENT**

**18<sup>th</sup> - 23<sup>th</sup> DECEMBER 2023**

**APPLICATION NUMBER - 1691513020**



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**Bilaspur, Chhattisgarh, India.**  
**Pin- 495009**  
**Website: [www.ggu.ac.in](http://www.ggu.ac.in)**

## SPEAKERS OF SIX DAYS ATAL – FDP 2023-24



**Prof. Alok Kumar Chakrawal**  
Hon'ble Vice-Chancellor,  
Guru Ghasidas Vishwavidyalaya  
(A Central University), Bilaspur, India.

**Prof. Vikas Thakur**  
Assistant Professor,  
Indian Institute of Technology (IIT), Kharagpur,  
West Bengal, India.

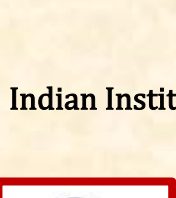


**Prof. Suraj Kumar Mukti**  
Associate Professor, National Institute of Technology (NIT),  
Raipur, Chhattisgarh, India.

**Prof. Sandeep Mondal**  
Professor, Indian Institute of Technology IIT (ISM), Dhanbad,  
Jharkhand, India.



**Prof. Shubham Tripathi**  
Assistant Professor,  
National Institute of Technology (NIT), Jamshedpur,  
Jharkhand, India.



**Prof. Rajeev A**  
Assistant Professor,  
Indian Institute of Management (IIM), Raipur,  
Chhattisgarh, India.



**Dr. Sanjay Kumar Singh**  
General Manager (Mining/Operations),  
South Eastern Coalfields Limited (SECL), Bishrampur,  
Chhattisgarh, India.

**Mr. D. P. Singh**  
Head, Environment, Climate Change & Sustainability,  
Jindal Steel and Power Limited (JSPL), Raigarh,  
Chhattisgarh, India.



**Mr. Alok Kumar Tripathi**  
General Manager & Head, Regional Learning Institute,  
National Thermal Power Corporation (NTPC), Bilaspur,  
Chhattisgarh, India.

**Prof. Gajendra Kumar Adil**  
Professor, Indian Institute of Technology (IIT), Bombay,  
Maharashtra, India.



## TIME TABLE FOR THE SESSIONS

Day 1 (18 <sup>th</sup> Dec.)	Day 2 (19 <sup>th</sup> Dec.)	Day 3 (20 <sup>th</sup> Dec.)	Day 4 (21 <sup>st</sup> Dec.)	Day 5 (22 <sup>nd</sup> Dec.)	Day 6 (23 <sup>rd</sup> Dec.)
9:00-9:30 Inauguration					
9:30-12:00 <i>Prof. Alok Kumar Chakrawal</i> (Vice-Chancellor, GGV) (National Education Policy NEP 2020: Implementation, Benefits & Challenges)	9:30-12:00 <i>Prof. Suraj Kumar Mukti</i> (NIT, Raipur) (Industry 5.0 with Technology Commercialization)	9:30-12:00 <i>Prof. Shubham Tripathi</i> (NIT, Jamshedpur) (Role of Industry 4.0 paradigm in Supply chain sustainability development)	9:30-12:00 <i>Mr. Sanjay Kumar Singh</i> (SECL, Bilaspur) (Project Planning and Sustainable Management for Manufacturing Industry: In Context of Industry 4.0)	9:30-1:00 Industrial visit	9:30-12:00 <i>Prof. Gajendra Kumar Adil</i> (IIT, Bombay) (Sustainable Manufacturing Strategies)
12:00-1:00 Article Discussion	12:00-1:00 Article Discussion	12:00-1:00 Article Discussion	12:00-1:00 Article Discussion		12:00-1:00 Reflection Journal
1:00-2:00 Lunch Break	1:00-2:00 Lunch Break	1:00-2:00 Lunch Break	1:00-2:00 Lunch Break	1:00-2:00 Lunch Break	1:00-2:00 Lunch Break
2:00-4:30 <i>Prof. Vikas Thakur</i> (IIT, Kharagpur) (Sustainable supply chains equipped with Industry 4.0)	2:00-4:30 <i>Prof. Sandeep Mondal</i> (IIT (ISM), Dhanbad) (Reverse Logistics Design for Remanufacturing)	2:00-4:30 <i>Prof. Rajeesh A</i> (IIM, Raipur) (Green Supply Chain Management)	2:00-4:30 <i>Mr. D.P. Singh</i> (JSPL, Raigarh) (Environment, Climate Change and Sustainability: Challenges and Way Forward)	2:00-5:30 <i>Mr. Alok Kumar Tripathi</i> (GM, NTPC) (Innovation and Design Thinking)	2:00-4:30 MCQs, Feedback, Interactions
4:30-5:30 (Hands-On Session)	4:30-5:30 (Hands-On Session)	4:30-5:30 (Hands-On Session)	4:30-5:30 (Hands-On Session)		4:30-5:30 Valedictory Session



## A TOTAL OF 71 REGISTERED PARTICIPANTS OF ATAL –FDP 2023-24

S. No.	Name	Institute Name	Mobile Number
1.	Abhishek Mishra	IERT Prayagraj	7355951886
2.	Amit Ekka	VEC, Ambikapur	7587236308
3.	Arvind Sahu	GGV, Bilaspur	7828623529
4.	Ashutosh Sharma	GGV, Bilaspur	9993381325
5.	Avinash Ranjan Patnaik	GEC, Bilaspur	7838919577
6.	Ayush Kumar Agrawal	NIT Jamshedpur	8224072482
7.	Danny Pereira	Govt. College of Engg and Research	7385044004
8.	Debajyoti Som	Kanad Institute of Engg And Mgmt	9073311990
9.	Dipti Verma	UTD, CSVTU	9893313677
10.	Dr. Anulal Mahto	Guru Ghasidas Vishwavidyalaya Bilaspur	9425535122
11.	Dr. Atul Kumar Sahu	Guru Ghasidas Vishwavidyalaya Bilaspur	9589037422
12.	Dr. Pradeep Kumar Karsh	Parul University	7206366415
13.	Dr. Rityuj Singh Parihar	Shri Shankaracharya Institute of Professional Management and Technology	8871591031
14.	Dr. Saurav Suman	National institute of technology Mizoram	7830487258
15.	Dr. T G Loganathan	RMK College of Engineering and Technology	9884310917
16.	Laxmikant Dewangan	GGV, Bilaspur	7999001333
17.	Leeladhar Rajput	IIT, Kharagpur	8085170124
18.	Mahesh Kamalakar Bhiwapurkar	O P Jindal University Raigarh	8120062259
19.	Manjit Jaiswal	GGV, Bilaspur	9685713546
20.	Mr. Abhishek Kumar Verma	JSSEC JAGDALPUR	7587329708
21.	Mr. Ajay Singh Paikra	Jhada Sirha Govt. Engineering College, Jagdalpur	8319165237
22.	Mr. Anand Kumar Shriwas	Chouksey engineering college	7000098162
23.	Mr. Anurag Singh	Guru Ghasidas Vishwavidyalaya Bilaspur	7892061547
24.	Mr. Chandan Tamrakar	Guru Ghasidas Vishwavidyalaya Bilaspur	9981237678
25.	Mr. Chhatrapal Dewangan	Guru Ghasidas Vishwavidyalaya Bilaspur	9589262835
26.	Mr. Dhananjay	IoM, Pt. RSSU Raipur CG	8319406403
27.	Mr. Dileshwar Kumar Sahu	Bhilai Institute of Technology Raipur	9893587811
28.	Mr. Divyajyoti Biswal	Visvesvaraya National Institute of Technology, Nagpur	9132324257
29.	Mr. Dushyant Kumar Dewangan	Government Polytechnic Gariyaband	8770689687
30.	Mr. Ganesh Ram	Government Polytechnic Balodabazar (Chhattisgarh)	8986892089
31.	Mr. Gembali Vidyasagar	Indian Institute of Management Visakhapatnam	9502737052
32.	Mr. Kailash Kumar Mishra	REC Banda	9140756855
33.	Mr. Kailash Kumar Borkar	Guru Ghasidas Vishwavidyalaya Bilaspur	9827463207

34.	Mr. Kamlesh Ratre	CSVTU Bhilai Durg	9644560200
35.	Mr. Kawal Lal Kurrey	Guru Ghasidas Vishwavidyalaya Bilaspur	7974844322
36.	Mr. Nirvikar Gautam	Vishwavidyalaya Engineering College Ambikapur	7999539448
37.	Mr. Nitin Kumar Sahu	Guru Ghasidas Vishwavidyalaya Bilaspur	9685157293
38.	Mr. Piyush Tiwari	JS GEC JAGDALPUR	8109280957
39.	Mr. Pranav Gupte	Guru Ghasidas Vishwavidyalaya Bilaspur	7987202854
40.	Mr. Prashant Kumar Jangde	Guru Ghasidas Vishwavidyalaya Bilaspur	9098116702
41.	Mr. Prasoon Kumar	NIT Patna	7011727905
42.	Mr. Sanju Kumar Nishad	Guru Ghasidas Vishwavidyalaya Bilaspur	8319532544
43.	Mr. Satish Upadhyay	JSGEC JDP	9406928567
44.	Mr. Shrey Anant Sandiman	Guru Ghasidas Vishwavidyalaya Bilaspur	9713300303
45.	Mr. Shyam Singh Kanwar	GEC Bilaspur CG	8269547587
46.	Mr. Somnath Singroul	Guru Ghasidas Vishwavidyalaya Bilaspur	7987150734
47.	Mr. Sumit Kumar Gupta	Guru Ghasidas Vishwavidyalaya Bilaspur	9685578005
48.	Mr. Swapnil Shukla	Kalinga University	9893977133
49.	Mr. Vaibhav Kant Singh	Guru Ghasidas Vishwavidyalaya Bilaspur	9109273896
50.	Mr. Vidyanand Kumar	National Institute of Technology Patna	8789334052
51.	Mrs. Arpita Roy Chowdhury	Guru Ghasidas Vishwavidyalaya Bilaspur	9685127370
52.	Mrs. Bharti Sharma	Vishwavidyalaya Engineering College Ambikapur	6261506269
53.	Mrs. Disha Dewangan	Guru Ghasidas Vishwavidyalaya Bilaspur	7999979518
54.	Mrs. Poonam Diwan	VECL Lakhanpur	7566315726
55.	Naquib Ahmad	GGV, Bilaspur	8406923324
56.	Nikhil Kumar Verma	GGV, Bilaspur	9752652669
57.	Nikita Khobragade	GGV, Bilaspur	7441122007
58.	Nishant Prakash	GGV, Bilaspur	9340073731
59.	Piyush Rai	VEC, Ambikapur	9406094506
60.	Pushpendra Kumar Chandra	GGV, Bilaspur	9098505754
61.	Ravi Kumar	NIT Patna	7979887940
62.	Saurabh Tripathi	REC Banda	6306214149
63.	Shristi Gupta	GGV, Bilaspur	9174366971
64.	Shubhra Vishwas	Guru Ghasidas Vishwavidyalaya Bilaspur	7389639077



65.	Sidhant Dubey	GGV, Bilaspur	9928750756
66.	Sushila Kerkatta	GGV, Bilaspur	8770496158
67.	Sushila Kerketta	GGV, Bilaspur	8770496158
68.	Udit Narayan	GGV, Bilaspur	7582868993
69.	Vijay Kumar Shukla	VEC, Ambikapur	7000671512
70.	Vinod Kumar	GGV, Bilaspur	8475016213
71.	Yugendra Kumar Sahu	Guru Ghasidas Vishwavidyalaya Bilaspur	8962396202



**Chief Patron**  
**Prof. Alok Kumar Chakrawal**  
Vice Vice-Chancellor  
Guru Ghasidas Vishwavidyalaya, Bilaspur



**Patron**  
**Prof. Manish Shrivastava**  
Registrar  
Guru Ghasidas Vishwavidyalaya, Bilaspur



**Coordinator**  
**Prof. Sharad Chandra Srivastava**  
Dean, SoE- Engineering and Technology  
Guru Ghasidas Vishwavidyalaya, Bilaspur



**Co-Coordinator**  
**Dr. Ganesh Prasad Shukla**  
Dept. of Industrial & Production Engineering  
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**Guru Ghasidas Vishwavidyalaya**  
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**Faculty Development Programme on**  
**The Synergy of Sustainable**  
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## INAUGURATION CEREMONY

The grand inauguration ceremony of the AICTE Sponsored ATAL-Faculty Development Program (FDP) at the Department of Industrial & Production Engineering, Guru Ghasidas Vishwavidyalaya in Bilaspur on December 18, 2023, was a momentous occasion marked by the esteemed presence of notable dignitaries. The Chief Guest, Hon'ble Vice Chancellor Prof. Alok Kumar Chakrawal, alongside Special Guest Registrar Prof. Manish Srivastava, Dean SoS E&T Prof S.C. Srivastava, and Co-Coordinator of ATAL-FDP Dr. Ganesh Shukla, illuminated the event with their participation. The ceremony commenced with the traditional lighting of the lamp, symbolizing the dispelling of darkness through the light of knowledge. In his inaugural address, Hon'ble Vice Chancellor Prof. Alok Kumar Chakrawal underscored the critical role of continuous learning and the faculty's pivotal contribution to shaping the future of education. He expressed optimism that the ATAL-FDP would serve as a catalyst for positive change and advancements in teaching methodologies, thereby fostering academic excellence and innovation. The Special Guest, Registrar Prof. Manish Srivastava, provided insights into the university's commitment to enhancing the skills and capabilities of its faculty members. He emphasized the strategic importance of such initiatives, aligning the university with contemporary academic trends and global standards. The presence of Dean SoS E&T Prof S.C. Srivastava and Co-Coordinator Dr. Ganesh Shukla added further gravitas to the event, signifying the collective commitment towards fostering a culture of academic excellence and research. This inauguration ceremony not only marked the beginning of the ATAL-FDP but also symbolized a significant stride towards creating a dynamic and innovative academic environment within the university, laying the foundation for future advancements and contributions to the field of industrial and production engineering.





## Day 1 (18<sup>th</sup> December 2023)

It is with great pleasure that the 1<sup>st</sup> session of our Faculty Development Program was started around 10:00 AM on "Sustainable Supply Chain Equipped with Industry 4.0." We are privileged to have Prof. Vikas Thakur (IIT, Kharagpur), a distinguished expert in the field of sustainable supply chain management and Industry 4.0, with us today. We look forward to gaining valuable insights from their vast experience. This program is designed to explore the intersection of sustainability and the transformative technologies associated with Industry 4.0, offering insights into how these concepts can revolutionize supply chain practices. The objective of today's session is to provide a comprehensive introduction to the integration of sustainable practices within supply chain management, with a specific focus on the innovations brought forth by Industry 4.0. We aim to familiarize our participants with the key concepts, principles, and technologies that are shaping the future of supply chain operations. Sustainable supply chain management refers to the strategic integration and coordination of environmentally and socially responsible practices throughout the supply chain. It involves making decisions that take into account the economic, social, and environmental impacts of the entire supply chain, from raw material extraction to end-of-life product disposal. Industry 4.0, also known as the Fourth Industrial Revolution, represents the integration of digital technologies into manufacturing and other industrial processes. It leverages technologies such as the Internet of Things (IoT), artificial intelligence (AI), machine learning, robotics, and data analytics to create "smart factories" and enhance overall operational efficiency.



Another session was taken by Prof. Alok Kumar Chakrawal (Vice Chancellor, GGV Bilaspur) at 4:00 PM on "National Education Policy 2020". The National Education Policy (NEP) 2020 is a comprehensive policy framework for the development of education in India. It was approved by the

Union Cabinet of India on July 29, 2020. The higher education system aims at providing more flexibility with multiple entry and exit points. The system envisions an undergraduate degree of either 3 or 4 years with multiple exit options within this period and appropriate certification.



## Day 2 (19<sup>th</sup> December 2023)

The 3<sup>rd</sup> session of FDP was taken by Prof. Suraj Kumar Mukti (NIT, Raipur) it started at 9:30 AM on “Industry 5.0 with Technology Commercialization”. So, he explained that building on the foundation of Industry 4.0, which focuses on the integration of digital technologies into manufacturing, Industry 5.0 is envisioned as the next phase in industrial development. While Industry 4.0 emphasized automation, data exchange, and smart systems, Industry 5.0 is expected to bring back a more human-centric approach by promoting collaboration between humans and advanced technologies. Industry 5.0 aims to combine the strengths of both human and machine intelligence. Instead of replacing human workers, it envisions a collaborative environment where technology enhances human capabilities and creativity. Industry 5.0 may emphasize greater customization and flexibility in manufacturing processes. This could involve the ability to rapidly adapt production lines to changing demands and preferences. The socio-economic impact of Industry 5.0 is expected to include improvements in job satisfaction, increased innovation, and a more inclusive approach to technological advancements. Industry 5.0, technology commercialization could involve bringing human-centric and collaborative technologies to market. This may include innovations that enhance the interaction between humans and machines, as well as technologies that enable more flexible and adaptable manufacturing processes. The successful integration of Industry 5.0 and technology commercialization could lead to advancements that not only benefit industries but also contribute to societal well-being and economic development. After that lunch was served at the canteen at 1:00 pm.





The 4<sup>th</sup> session was taken by Prof. Sandeep Mondal (IIT (ISM), Dhanbad) it started around 2:00 pm on, “Reverse Logistic Design for Remanufacturing”. He elaborated that Reverse logistics design for remanufacturing is a strategic approach to managing the flow of products and materials from the end-user back to the manufacturer for remanufacturing. Remanufacturing is a process that involves restoring used products to like-new condition, thereby extending their life cycle and reducing the environmental impact associated with manufacturing new products. Reverse logistics involves the planning, implementation, and control of the flow of goods and information from the point of consumption back to the point of origin for value recovery or proper disposal. Remanufacturing is the process of disassembling, cleaning, repairing, and restoring used or worn products to a condition that meets specific quality standards, allowing them to be reintroduced into the market. Reverse logistics design for remanufacturing is a holistic approach that integrates various processes to maximize the recovery and reuse of products. It aligns with sustainability goals, reduces waste, and contributes to a circular economy by extending the life cycle of products. Efficient reverse logistics design is essential for realizing the environmental and economic benefits of remanufacturing.



### DAY 3 (20<sup>th</sup> DECEMBER 2023)

The 5<sup>th</sup> session started at 9:30 AM it was taken by Prof. Shubham Tripathi (NIT, Jamshedpur) on "Role of Industry 4.0 paradigm in supply chain sustainability development" " She explained that the role of the Industry 4.0 paradigm in the development of supply chain sustainability is significant, as it introduces advanced technologies and concepts that can enhance efficiency, transparency, and environmental responsibility throughout the entire supply chain. Industry 4.0 refers to the fourth industrial revolution characterized by the integration of digital technologies, automation, data exchange, and smart systems in manufacturing and supply chain processes. Industry 4.0 technologies, such as autonomous robots and automated machinery, can streamline manufacturing and distribution processes, reducing energy consumption and waste. Industry 4.0 incorporates block-chain to create secure, transparent, and immutable records of transactions and product movements. This ensures traceability and accountability, critical for sustainable and ethical sourcing. Industry 4.0 technologies like 3D printing facilitate localized and on-demand production, reducing the need for extensive transportation and contributing to a more circular economy. Creating digital representations of physical assets (digital twins) allows for simulation and optimization of supply chain processes, fostering collaboration and innovation for sustainability goals. These technologies enhance training and skill development for workers, contributing to a more skilled and adaptable workforce. Industry 4.0 plays a pivotal role in advancing supply chain sustainability by leveraging digital technologies to optimize processes, reduce environmental impact, enhance visibility, and foster innovation. Adopting Industry 4.0 principles can lead to more resilient, efficient and sustainable supply chain practices.





The 6<sup>th</sup> Session started at 2:00 PM it was taken by Prof. Rajeev A (IIM, Raipur) on Green Supply Chain Management. Green Supply Chain Management (GSCM) is an approach to managing the entire supply chain with a focus on minimizing its environmental impact while maintaining economic viability and efficiency. It integrates environmental considerations into every aspect of the supply chain, from product design and manufacturing to distribution, logistics, and end-of-life disposal. The goal is to achieve sustainability by reducing resource consumption, minimizing waste, lowering the overall environmental footprint of the supply chain, design of products with environmental considerations in mind, such as using eco-friendly materials and designing for recyclability, conducting a lifecycle assessment to understand the environmental impact of a product from raw material extraction to disposal. Choosing suppliers based not only on cost and quality but also on their environmental performance. Establishing partnerships with suppliers committed to sustainable practices and ethical standards, minimizing waste generation through improved production processes and lean manufacturing, promoting the recycling of materials and components, both within the organization and across the supply chain, reducing transportation-related emissions by optimizing routes, using fuel-efficient vehicles, employing alternative transportation modes, and implementing efficient inventory management to minimize the need for excess transportation and storage. Green Supply Chain Management practices, organizations can contribute to environmental conservation, enhance their corporate social responsibility (CSR) initiatives, and meet the growing demand for sustainable products and practices from environmentally conscious consumers. GSCM not only benefits the planet but also often leads to cost savings and improved long-term business resilience.



## DAY 4 (21<sup>st</sup> DECEMBER 2023)

The 7<sup>th</sup> session started at 9:30 AM and was engaged by Mr. Sanjay Kumar Singh, General Manager, (SECL, Bishrampur) on “Project Planning and Sustainable Management for Manufacturing Industry: In the Context of Industry 4.0”. Project planning and sustainable management in the manufacturing industry, within the context of Industry 4.0, involve integrating advanced technologies and sustainable practices to optimize processes, reduce environmental impact, and enhance overall efficiency. Industry 4.0, representing the fourth industrial revolution, is characterized by the convergence of digital technologies, data-driven decision-making, and smart systems. Here's how project planning and sustainable management align with Industry 4.0 principles in manufacturing. Incorporate digital technologies such as IoT (Internet of Things) sensors and devices, RFID (Radio-Frequency Identification), and industrial automation into the project plan. Ensure seamless connectivity and data exchange across the manufacturing ecosystem. Leverage connectivity for real-time monitoring of energy consumption, resource utilization, and emissions. Use data analytics to identify areas for improvement in sustainability practices. Integrate smart manufacturing principles into the project plan, including the deployment of intelligent systems, robotics, automated processes, plan for the implementation of digital twins for virtual simulations and optimizations. Automation and smart systems enhance energy efficiency, reduce waste, and improve overall resource utilization. Automated systems can be programmed to operate at optimal energy levels, contributing to sustainability goals. Industry 4.0 principles in project planning and sustainable management in the manufacturing industry, organizations can achieve a balance between economic success and environmental responsibility. This approach not only improves operational efficiency but also positions the organization as a leader in sustainable and technologically advanced manufacturing practices.





The 8<sup>th</sup> session was started around 2:30 PM and was taken by Mr. D.P. Singh, AVP (JSPL, Raigarh) on “Environment, Climate Change, and Sustainability: Challenges and Way Forward”. Climate change poses significant threats, including rising temperatures, extreme weather events, and sea-level rise. These changes affect ecosystems, biodiversity, and vulnerable communities. Mitigate greenhouse gas emissions through international cooperation, sustainable energy practices, and adaptation strategies for communities facing climate-related challenges. Human activities, habitat destruction, pollution, and climate change contribute to the loss of biodiversity, affecting ecosystems and the services they provide. Implement conservation measures, protect natural habitats, and promote sustainable practices to preserve biodiversity. Educate and involve communities in conservation efforts. Over-exploitation of natural resources, deforestation, and unsustainable agricultural practices deplete ecosystems and contribute to environmental degradation. Promote sustainable resource management, adopt circular economy principles, and invest in technologies that minimize resource consumption and waste. Collaborate internationally to address climate change, biodiversity loss, and other global environmental challenges. Agreements such as the Paris Agreement exemplify the importance of collective action. Invest in and promote renewable energy sources to reduce dependence on fossil fuels. Transitioning to clean energy is crucial for mitigating climate change and minimizing environmental impact. Addressing the challenges of the environment, climate change, and sustainability requires a comprehensive and collaborative approach involving governments, businesses, communities, and individuals. By implementing sustainable practices, adopting innovative technologies, and fostering global cooperation, it is possible to create a more resilient and environmentally friendly future.



## DAY 5 (22<sup>nd</sup> DECEMBER 2023)

On 22<sup>nd</sup>Dec 2023, a group of 45 FDP participants including Professors, Ph.D. Scholars and M.Tech Scholars from Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) embarked on an insightful industrial visit to the thermal power corporation (NTPC) Sipat located in Bilaspur. The purpose of the visit was to gain knowledge and exposure to the functioning of the thermal power plant. The first session began at 10:00 AM with the overview of NTPC Sipat which was taken by MR. Alok Kumar Tripathi (GM, NTPC) (Innovation and Design Thinking) presentation on the history, mission, and operations of NTPC Sipat. He also explained that NTPC Sipat has a total installed capacity of 2980 MW and has two stages: Stage-I comprises 3 units of 660 megawatts each and Stage-II comprises 2 units of 500 megawatts each. The thermal power generation in NTPC Sipat Stage-I is based on "Super Critical Boiler Technology" which is an advanced technology in thermal power generation. After that breakfast was served. The second session was started at 11:30 AM taken by Mr. Mohan Lal Yadav (Executive manager) in which he discussed about Corporate Social Responsibility (CSR). It refers to the voluntary actions that businesses take to address social, environmental, and ethical issues in their operations and contribute positively to the well-being of society. The Third session was begun at 12:30 PM engaged by MR. Nageswara Rao (Deputy GM) (Initiative Work Department) in which he elaborated on the utilization of Fly ash generated from thermal power plants is an important aspect of sustainable waste management and contributes to environmental conservation.





## Day 6 (23<sup>rd</sup> DECEMBER 2023)

The 10<sup>th</sup> session began at 9:30 AM and was taken by Prof. Gajendra Kumar Adil (IIT, Bombay) on “Sustainable Manufacturing Strategies“. Sustainable manufacturing strategies are approaches and practices employed by companies to integrate environmental, social, and economic considerations into their manufacturing processes. Embrace circular economy concepts, such as recycling, remanufacturing, and designing products for easy disassembly and reuse. Use environmentally friendly and responsibly sourced materials. Consider the entire life cycle of materials, from extraction to disposal, to minimize environmental impact, transition to renewable energy sources, such as solar, wind, or hydropower, to power manufacturing operations. Use environmentally friendly and responsibly sourced materials. Consider the entire life cycle of materials, from extraction to disposal, to minimize environmental impact. This reduces reliance on fossil fuels and lowers the carbon footprint of the manufacturing process. The goal is to minimize negative impacts on the environment, promote social responsibility, and ensure economic viability. These strategies align with broader sustainability goals and are often driven by a commitment to corporate social responsibility (CSR) and environmental stewardship. By integrating these sustainable manufacturing strategies, companies can contribute to environmental conservation, promote social responsibility, and build a positive brand image. Sustainable manufacturing not only aligns with global environmental goals but also often leads to cost savings, increased efficiency, and improved long-term competitiveness. A test was also conducted for half-an hour for the participants on this last day, consisting of multiple choice questions (MCQs) of 30 marks. The test paper consisted of questions from the sessions taken by the resource persons during this completed ATAL-FDP.



## VALEDICTORY FUNCTION

The valedictory function of the Faculty Development Program (FDP) is a pivotal event, signifying the conclusion of a transformative period characterized by intense learning and personal growth. The ceremony, graced by distinguished guests such as Prof. Gajendra K Adil from IIT Bombay and Prof. Shailendra Kumar, Dean Students Welfare at GGV Bilaspur, is a testament to the program's significance. The event unfolds with a warm welcome and expressions of gratitude by the host, underscoring the FDP's objectives and accomplishments. S.C. Srivastava, the Dean SoS E&T at GGV Bilaspur, extends a gracious welcome, setting the tone for an atmosphere of appreciation and collaboration among the attendees.



The guest speaker Prof. Gajendra K Adil and Prof. Shailendra Kumar, contribute profound insights into the critical aspects of faculty development, reflecting on the program's impact and illuminating emerging trends in education. This enriching discourse provides participants with a platform to articulate their reflections, fostering a collaborative and interactive atmosphere that encourages the exchange of ideas. The culmination of the valedictory function involves a significant moment—the presentation of appreciation certificates to acknowledge and celebrate the successful completion of the FDP. Prof. M.K. Singh, as the Head of the IPE Department, takes the opportunity to express gratitude to the organizers, trainers, resource persons, and support staff. This recognition underscores their pivotal role in the seamless planning and execution of the FDP, highlighting the collective dedication that has elevated the academic community's capabilities. In essence, the valedictory function serves as a tangible manifestation of the commitment to continuous learning, collaboration, and excellence within the academic realm. It stands as a testament to the collective efforts that have not only enriched individual participants but have also contributed to fostering a culture of continuous improvement and innovation within the academic community.



## ACKNOWLEDGEMENT

The initiative undertaken by the ATAL Academy is commendable, and the individual expressing gratitude reflects on the positive outcomes of this endeavour. The department of IPE, GGV expresses deep appreciation for the initiative, emphasizing the positive impact it had on their professional journey. The acknowledgment of the opportunity granted by the All India Council for Technical Education (AICTE) to conduct an offline Faculty Development Program (FDP) for participants of technical institutes in India at no cost underscores the significance of accessible professional development. The department of IPE, GGV expresses gratitude for the opportunity to contribute to the enhancement of the skills and knowledge of fellow educators. The phrase "huge response for registration" indicates the widespread interest and eagerness among participants to participate in the FDP, underscoring the relevance and timeliness of the program. Furthermore, the receipt of numerous compliments for the organization of the offline FDP, including the content and hands-on activities, is a testament to the effectiveness and impact of the initiative. The positive feedback suggests that the FDP successfully met the expectations of the participants, providing valuable insights, relevant information, and practical skills that resonate with the needs of participants in technical institutes. In summary, the department of IPE, GGV expresses gratitude for the great initiative by ATAL Academy and the opportunity provided by AICTE to conduct an offline FDP for participants. The positive response in terms of registration and compliments reflects the initiative's success in meeting the professional development needs of technical educators and highlights the importance of such accessible and well-executed programs in the education sector.

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