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# A Report on One week Faculty Development Program

**TITLE AND DURATION:** "Industry 4.0" from 14 – 18 September, 2020.

**SPONSORS:** TEQIP-III, Rajasthan Technical University Kota.

**SUPPORTERS:** Rajasthan Technical University Kota.

**ORGANIZERS:** Rajasthan Technical University, Kota and Department of Mechanical Engineering, Poornima College of Engineering, Jaipur.

**OBJECTIVES:** The event aims to provide a forum to exchange views, ideas of latest innovations in the field of manufacturing and industry.

## **EXPECTED OUTCOMES:**

- To provide research-oriented discussion along with theoretical concepts, which shall facilitate the understanding of process through practical implementation in area of manufacturing and industry.
- Bringing together the experts of industry, technologists, enthusiasts, and faculty to discuss the Latest issues and possible solutions.
- Identifying Industry challenges and sensitize about latest trends and technologies.

Dr. Mahesh Bundele
B.E., M.E., Ph.D.
Director
Poornima College of Engineering
ISI-6, PIICO Institutional Area

## BROCHURE / POSTER / LEAFLET / FLYER:

### FDP COMMITTEE

#### CHIEF PATRON

Prof. R. A. Gupta

Honorable Vice-Chancellor, RTU, Kota

#### PATRONS

Dr. S. M. Seth Chairman (Emeritus) Poornima Group

> Ar. ShashikantSinghi Chairman, Poomima Group

### RTU (ATU) TEQIP-III COORDINATOR

Prof. Dhirendra Mathur

#### RTU (ATU) TEQIP-III COMMITTEE

Dr. Harish Sharma (Nodal officer)

Prof. D. K. Sambariya (Nodal Officer Procurement)
Dr. S. D. Purohit (Nodal Officer Finance)

#### RTU EVENT COORDINATOR

Dr. B.D.Gidwani

Mech. Engg. Dept.

Rajasthan Technical University, Kota

### HOST INSTITUTE PRINCIPAL

Dr. Mahesh Bundele

Principal & Director, Poornima College of Engineering

## HOST INSTITUTE COORDINATOR

Dr. Yashpal, Associate Professor

Mr. Kalpit Jain, Assistant Professor

Mr. Sanjay Kumawat, Assistant Professor

#### RESOURCES PERSONS

The resources person for the FDP will be Eminent Professors and Experts in the area of Industry 4.0 from IITs, NITs and Industries.

#### ELIGIBILITY

This course is open to all the Faculty Members of AICTE Approved Institutions, Research Scholars, and Persons working in R&D organizations or Industry. Number of participants for FDP is limited.

All the sessions will be conducted online only.

#### REGISTRATION &FEE PARTICULARS

- There is no registration fee for faculty from AICTE approved institutions, Participants from industry and research scholar.
- Registration for the program may be done by filling the registration form online via: https://tinyurl.com/Industry4FDP2K20
- E-certificates will be provided after completion of programme, minimum 80% attendance is required.

#### CORRESPONDENCE

Dr. B.D.Gidwani Mech. Engg. Dept. Rajasthan Technical University, Kota

#### Dr. Yashpal

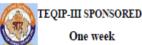
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Faculty Development Program

on

INDUSTRY 4.0

(14th - 18th September 2020)



#### COORDINATORS

Dr. B.D.Gidwani

Dr. Yashpal

RTU, Kota

PCE, Jaipur

#### ORGANIZED BY

Rajasthan Technical University, Kota

Poornima College of Engineering, Jaipur



Department of Mechanical Engineering, Poornima College of Engineering, Sitapura, Jaipur, Rajasthan 302022 www.pce.poornima.org

Dr. Mahesh Bundele
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#### ABOUT TEOIP-III

The Project, third phase of Technical Education Quality Improvement Program (referred to as TEQIP-III) is fully integrated with the Twelfth Five-year Plan objectives for Technical Education as a key component for improving the quality of Engineering Education in existing institutions with a special consideration for Low Income States and Special Category States and support to strengthen few affiliated technical universities to improve their policy, academic and management practices.

#### RAJASTHAN TECHNICAL UNIVERSITY

Rajasthan Technical University (RTU) is located in Kota in the state of Rajasthan. It was established in 2006 by the Government of Rajasthan. The university currently affiliates about 129 Engineering Colleges, 4 B.Arch., 41 MCA Colleges, 95 MBA Colleges, 44 M. Tech. Colleges and 3 Hotel Management and Catering Institutes

The University aims to provide quality technical education which may help Rajasthan in its technical development and will boost technical environment in the country.

#### POORNIMA COLLEGE OF ENGINEERING

Poornima College of Engineering (PCE), established as a brand of technical education in the year 2000, has its own glorious legacy of leading the young engineers to the mammoth sky of success. Its accomplishments forecast its journey through the hardships and its triumph over them one after another. Glorious glimpses of PCE:

- Highly recognized and renowned affiliated technical institution all over Rajasthan with built up area more than 3.5 lacs square feet.
- Affiliated to RTU, Kota & approved by AICTE, New Delhi
- The most preferred NBA Accredited Engineering College with running of six specializations of

- Engineering at UG Level (CSE, ECE, EE, ME, IT, CIV) and two at PG level (CS & VLSI).
- The only institution permitted by RTU to admit FN/PIO/Gulf students & designated as centre of excellence by IBM.

#### DEPARTMENT OF MECHANICAL ENGINEERING

The Department of Mechanical Engineering of PCE came into existence in the year 2004 with analignment of the department's evolution with key events and technological advances for the betterment of society and nation. At present, it has the intake of 120 students providing all the amenities of infrastructure related to knowledge, research, experiments and training of multiple professions.

#### ABOUTINDUSTRY 4.0

Industry 4.0 is a part of the fourth industrial revolution. The terms industry 4.0 and fourth industrial revolution are often used interchangeably. Industry 4.0 refers to the concept of factories in which machines are augmented with wireless connectivity and sensors, connected to a system that can visualize the entire production line and make decisions on its own.

In essence, industry 4.0 describes the trend towards automation and data exchange in manufacturing technologies and processes which include internet of things (IoT), industrial internet of things (IIOT), machine learning and artificial intelligence.

## TOPICS TO BE COVERED

- · Industry 4.0: Challenges & Opportunities
- Data analytics, Big Data, IOT
- Computer and Automation
- · Machine Learning in Manufacturing
- · Sensors and Actuation
- Role of Robotics in Industry 4.0
- · Artificial Intelligence in Manufacturing
- · 3 D Printing
- Connectivity: Supply Chain Management

#### OBJECTIVES OF FDP

- The objective of the Workshop is to provide exposure to Industry 4.0 concepts which revolutionize the modern manufacturing practices. This concept incorporates interdisciplinary knowledge in artificial intelligence, machine learning, Internet of Things, robotics, sensors and actuators.
- Also to provide comprehensive understanding of various aspects of Industry 4.0, its need, applications & opportunities and to inculcate research interest among the participants on Industry 4.0.
- The Faculty Development Program aims at identifying Industry challenges sensitize about latest trends, technologies, available infrastructure in area of Industry 4.0.

#### PCE ORGANIZING COMMITTEE

Mr. Pankaj Dhemla	Vice Principal, PCE
Mr. Devendra Somwanshi,	Registrar, PCE
Dr. Narayan Lal Jain	Professor & Head, ME
Dr. P. Umesh Kannan	Professor, ME, PCE
Dr. Rahul Sen	Asso. Professor, ME
Dr. Sagar Kumar	Asso. Professor, ME
Dr. Rajkumar Satankar	Asso. Professor, ME
Dr. Surendra Kumar Saini	Asso. Professor, ME
Dr. Akshay Jain	Asst. Professor, ME
Dr. Bhuvnesh Sharma	Asst. Professor, ME
Mr. Amit Mandal	Asst. Professor, ME
Mr. Bhavesh Devra	Asst. Professor, ME
Ms. Asha Kumawat	Asst. Professor, ME
Mr.Dhananjay Kumar	Asst. Professor, ME
Mr.Shailendra Kasera	Asst. Professor, ME
Mr. Ashwani Kapoor	Asst. Professor, ME
Mr. Buddhi P. Panwar	Asst. Professor, ME
Mr. Ratnesh Sharma	Asst. Professor, ME
Mr.Mahesh Chandra Saini	Asst. Professor, ME
Mr. Rahul Sharma	Asst. Professor, ME

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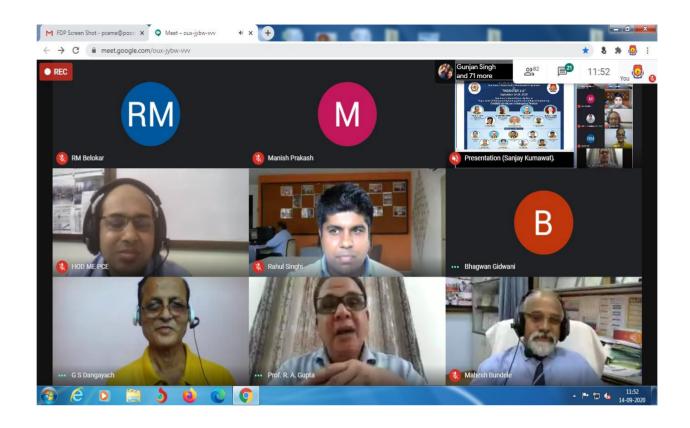
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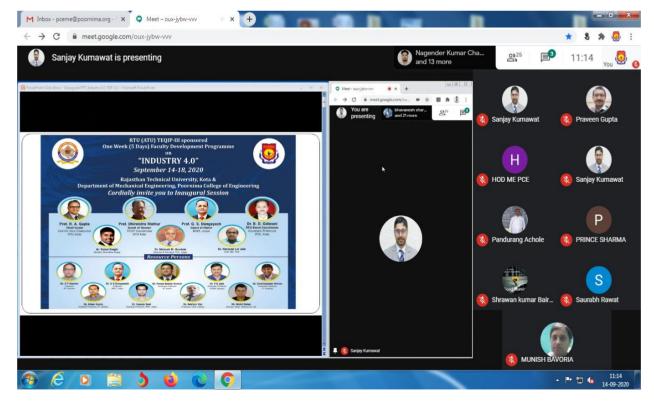
## PROGRAM SCHEDULE:



Dr. Mahesh Bundele
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Director
Peornima College of Engineering
181-6, RIICO Institutional Area
Sttapura, JAIPUR

## **INAUGURAL SESSION:**





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Director
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Stlapura, JAIPUR

This one week, TEQIP III, RTU (ATU) sponsored online FDP on Industry 4.0 is organized by the Department of Mechanical Engineering, Poornima College of Engineering, Jaipur under the aegis of Rajasthan Technical university, Kota. About Two Hundred Fifty participants from various parts of the country have registered for this Faculty development program. In this FDP, fifteen technical sessions were conducted by the eminent speakers from IITs, NITs and industries.

Programme was initiated by a formal inaugural ceremony in the esteemed presence of Prof. R A Gupta, Honorable vice chancellor of Rajasthan Technical University, Kota; Prof. Dheerendra Mathur, TEQIP-III Co-ordinator, RTU Kota; Prof. G S Dangayach, MNIT, Jaipur; Dr. B. D. Gidwani, Associate Prof. and RTU Event Coordinator of this FDP; Ar. Rahul Singhi, Director, Poornima Group; Dr. Mahesh M. Bundele, Director & Principal, Poornima College of Engineering, Jaipur and other dignitaries of the institute.



## **DETAILS OF RESOURCE PERSONS:**

Dr. Prof. G S Dangayach, MNIT, Jaipur.

Dr Gunjan Soni, Assistant Prof. MNIT Jaipur

Dr Santhakumar Mohan, Associate Prof. from IIT, Palakkad

Dr. Pavan Kumar Kankar from IIT, Indore

Dr. Prashant Kumar Jain, Associate Professor, IIITDM Jabalpur

Dr. Ankur Gupta, Assistant Professor, IIT Jodhpur

Prof. Anirban Das, University of Engineering and Technology (UEM), Kolkata

Mr. Mohit Relan from Relan Motors Pvt. Ltd., Ajmer

Dr. Mahesh Bundele
B.E., M.E., Ph.D.
Director
Poornima College of Engineering
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### **ABOUT THE SPEAKERS:**

## Dr. Ankur Gupta

Dr. Ankur Gupta is presently an Assistant Professor at Indian Institute of Technology Jodhpur. He



received his Ph.D. degree in Mechanical Engineering from the Indian Institute of Technology Kanpur. He served as Assistant Professor at IIT Bhubaneswar for three years before joining IIT Jodhpur. As foremost credentials, he has over 50 research contributions including a patent, various international journal papers, book chapters,

a co-edited book, and over 20 invited talks/presentations across the globe. His research work was presented in several international conferences held in the USA (MRS, California), Canada, Indonesia, China as well as in IIT B, IIT D, IIT BHU, IIT Guwahati, etc. He has won first prize in Electron Microscopy Contest held in 2013 & 2014. He got selected by DST to participate in "2nd BRICS Young Scientist Conclave" held at Zhejiang University, China in 2017. He received the "ISEES Young Scientist Award-2017" and "IEI Young Engineer Award 2020" from the Institution of Engineers (India) in the Production division and nominated for "Distinguished Alumni award" from his alma mater in 2020.

#### Dr B D Gidwani

Dr BD Gidwani, Associate Professor, RTU Kota. He has done his BE in the year 1991-1995 from

JNV university, Jodhpur. His specaization is Mechanical Engineering. He has done his Masters in the year 2006 from NITTTR Chandigarh in which his specalization was Production Technology.

He was also working As a Research Advisor there. He has completed his Ph. D in the year 2017 from Ak technical University Lucknow in which his specalization is Production and Industrial Engineering. He was also working As a Research Advisor there. Now I would like to request Respected Dr BD Gidwani to enlighten us about this FDP with his words of Wisdom.

## Prof. (Dr.) G. S. Dangayach

Dr. Govind Sharan Dangayach is Dean, Planning & Development, Professor in Department of



Mechanical Engineering in Malaviya National Institute of Technology (MNIT), Jaipur. He was graduated in Mechanical Engineering from M.B.M. Engineering College Jodhpur in the year 1984. He obtained Master's degree in Production Engineering from Indian Institute of Technology, Delhi. He earned his Doctorate in

Industrial Engineering also at Indian Institute of Technology, Delhi. He has published 244 research papers in various International/National Journals and conferences. He is Editor-in-chief of Journal of Manufacturing Technology Research (An International Journal). He is associate Editor of International Journal of Business Systems Research (IJBSR), and International Journal of Journal of Business Competitiveness (IJGBC). He is Guest Editor of three International Journal of Business Competitiveness (IJGBC).

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Planning & Control (PPC), International Journal of Manufacturing Technology & Management (IJMTM), International Journal of Business Performance Management (IJBPM). He is Reviewer of Thirty Seven International Journals. He is Visiting Professor at DHBW Mosbach, Germany, Asian Institute of Technology (AIT) Bangkok, IIM Khozikode, and IIM Shillong. He delivered several Invited Lectures/ Key note addresses in India & abroad. He has 35 years of Teaching and Industrial Experience. He is Life member of various International & National professional Societies. He has guided 27 Ph.D. & 60 Master's thesis. Prof. Dangayach is Resource person/Expert of AICTE, UPSC and NBA Govt. of India. He has been nominated Member of Board of Management of Rajasthan Technical University by Govt. of Rajasthan. He is Member of BOS, BOG of several Universities in India. He was Chairman of The Institution of Engineers India, Rajasthan State Centre for the session 2014-16. Beside these his other key achievements are:

- Principal Investigator of two DST (Govt. of India) funded Research projects
- Cited in the list of TOP 20 prolific researchers of the world in 2015
- Won 2011 Emerald/IAM Research Fund Award
- Best Case Study award 2012-13 by Indian Institution of Industrial Engineering
- Best Paper Award and Certificate of Merit for 1996-97 by Institution of Engineers (India)

## Dr. Gunjan Soni

Dr. Gunjan Soni, Assistant Professor, Mechanical Engineering Department, Malaviya National



Institute of Technology, Jaipur. He has completed his PhD from Birla Institute of Technology and Science, Pilani, Rajasthan. He did his M. Tech. in Industrial Engineering from Indian Institute of Technology, Delhi. His research area is Optimization in Supply chain management, Blockchain, Agent based modelling,

Multi-plant scheduling. He is having Google scholar 16 h-index: & 987 Citations.

Dr. Gunjan Soni, receive two International Workshop Funding:

- An Advanced Course on Reliability-based Robust Product Design from USA worth amount of \$8000 in 2019.
- Circular Manufacturing System from UK worth amount of \$8000 in 2020.

Dr. Gunjan Soni conducted Fourteen Number of national workshops. He has guided 7 PhDs and five students are doing PhD under his guidance.

Dr. Prashant K. Jain

Dr. Mahesh Bundele
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Director
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Dr. Prashant K. Jain has over 25 years of research and teaching experience at UG and PG levels. He



is graduated in Mechanical Engineering from Dr. H. S. Gour University Sagar in 1995 and did Master's in Advanced Production Systems from SATI Vidisha. He has received PhD Degree in the area of Rapid Prototyping/Additive Manufacturing, particularly on Part Strength studies in Selective Laser Sintering Process from Indian

Institute of Technology Delhi, Delhi in 2009.

Dr. Prashant K. Jain was previously with Delhi Technological University Delhi (formerly known as Delhi College of Engineering) as lecturer in Mechanical Engineering Department. He has also served Indian Institute of Technology Delhi as project scientist and research associate where he was engaged in research work on error compensation in CNC machines and part quality improvement in Fused Deposition Modelling. Currently he is with PDPM IIITDM Jabalpur as Associate Professor and Dean (Students).

He has more than 100 publications to his credit, published in International peer reviewed journals of repute, National and International conferences in India and abroad. He has guided Five PhD's and 25 Master's and several ongoing. He has been a resource person and delivered invited lectures, chaired scientific sessions in several National and International Conferences, STTP's and QIP programs. His research interest extends from Geometric Modelling, CAD/CAM Integration, Incremental Sheet forming, Computational geometry, Rapid Prototyping & Tooling, Incremental sheet forming to Nano Technologies in Manufacturing.

## Dr. Pavan Kumar Kankar

Dr. Pavan Kumar Kankar is working as an Associate Professor in Discipline of Mechanical



Engineering. His research interests include fault diagnosis and prognosis using machine learning techniques, reliability, bio-medical signal processing and analysis of dynamical systems. He is having more than 15 years of teaching and research experience. He worked with Villanova University and United Technologies Research Center, USA for effective discrimination between four kinds of common defects in

gears by utilizing the method of recurrence analysis. He contributed in various projects awarded by national and international funding agencies under IMPRINT India Initiative by Ministry of Human Resource Development and India-Japan Cooperative Science Programme etc., total worth of Rs. 3.3 crore approx. Dr. Kankar is also a core committee member of Technology Innovation Hub (TIH) on System Simulation, Modelling and Visualization aspects of Cyber-Physical Systems (CPS) at IIT Indore.

Dr. Kankar has established Machine Dynamics and Vibration Lab, UG Computational Lab in IIITDM Jabalpur and System Dynamics Lab at IIT Indore. He organized various short-term courses, workshops and conferences for skill development of students, faculties and participant from industries. He has supervised 6 PhD and 16 M.Tech students. Dr. Kankar is prematical conferences.

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Board of Springer Journal "Life Cycle Reliability and Safety Engineering". He has contributed to more than 100 publications which include journal papers, conference papers, books, and book chapters. He is fellow member of International Institute of Acoustics and Vibration, USA. He is a member of various professional bodies like American Society of Mechanical Engineers, Society for Reliability and Safety (SRESA), Tribology Society of India. His work is having more than 2100 citations.

#### Dr. Santhakumar Mohan

Dr. Santhakumar Mohan got his Ph.D. (Robotics and Control) from Indian Institute of Technology



Madras, Chennai (India) in 2010. From June 2010 to March 2011, he worked as an assistant professor in the Department of Mechanical Engineering at National Institute of Technology Calicut (NITC), Kerala (India). He then worked as World-Class University (WCU) Postdoctoral Fellow at Korean Advanced Institute of Science and Technology (KAIST), Daejeon (Republic of Korea). In 2012, he

joined the faculty of the Mechanical Engineering at Indian Institute of Technology Indore. He is holding visiting faculty positions at IISc Bangalore, India, RWTH Aachen, Germany and ECN, France. His active research areas include mobile manipulators, parallel robotic platforms, assistive robots, field and service robots. Furthermore, he has received the outstanding young Scientist for the year 2014 from Korea Robotics Society, Brain Korea 21 (BK21) fellowship (2011-2012), Satellite across virtual institutes (SAVI) fellowship (2013-14), European Master on Advanced Robotics Plus (EMARO+) fellowship (2018-2019) and Alexander von Humboldt (AvH) Fellowship (2016–2017). He has credited 4 patents. Under his guidance 4 Ph.D. has completed and 1 Ph.D. student is under process. He has completed 5 research projects (total approximate cost more than 60 Lakh) of different research organizations like CSIR, DST, NRB and National Research Foundation of Korea, and 5 research projects (more than 5.5 Crore) are undergoing of different research organizations.

## **Prof Dhirendra Mathur**

Prof Dhirendra Mathur completed his PhD from MNIT Jaipur and M.E. from BITS Pilani. His area



of Interest are Nano technology and micro electronics. Currently, he is professor of Nano Technology, RTU Kota.

Earlier, he was professor in the Department of Electronics and Communication Engineering at Engineering College Ajmer & Senior scientist at CEERI Pilani. He has published a lot of research papers in International and National Journals.

His Administrative Achievements are:

• He is the Chief coordinator RTU (ATU) TEQIP-III project.

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• He is also the Controller of Examinations in RTU Kota.

### Prof. Dr. Anirban Das

Prof. Dr. Anirban Das is associated with University of Engineering & Management, Kolkata as a Full

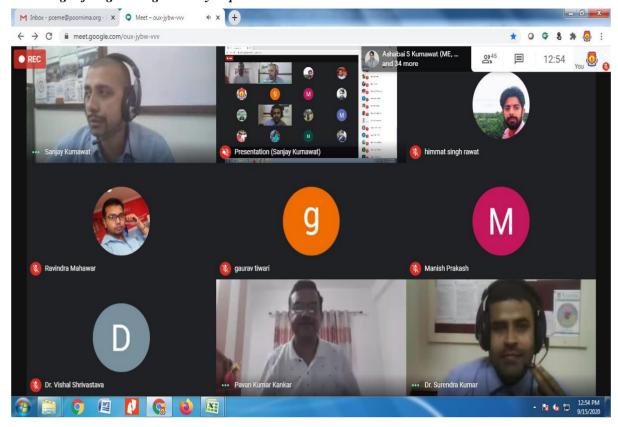


Professor in Computer Science & Engineering. Prior to that, he was the founder HOD, Computer Science & Engineering in Amity University Kolkata. Dr. Das started his career as a software Engineer in HCL Technologies Ltd He has completed Doctoral degree from NIT Durgapur. Dr. Das is a Visiting Scientist of University of Malaya, Malaysia. He is the honorary Vice President of Scientific and Technical Research Association, Eurasia Research, USA, Fellow of Institution of Electronics and Telecommunication Engineers, India,

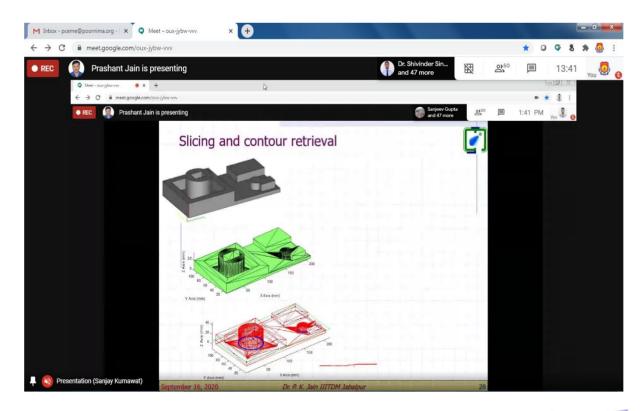
Fellow of ISRD UK, Fellow of Indian Cloud Computing Association, India. He is Visiting Faculty at Jadavpur University, Kolkata and Central University of Jharkhand, Ranchi. He has authored 10 books, 11 patents and more than 48 research publications mostly in journals and conferences of international repute. He is the "Innovation Ambessabor" certified by MHRD Innovation Cell, Govt. of India. He was awarded as Inclusive Policy Lab Expert, UNESCO, USA, 2019, Swami Vivekananda Yuba Samman- 2015.

## **GLIPMSES OF CONDUCTION:**

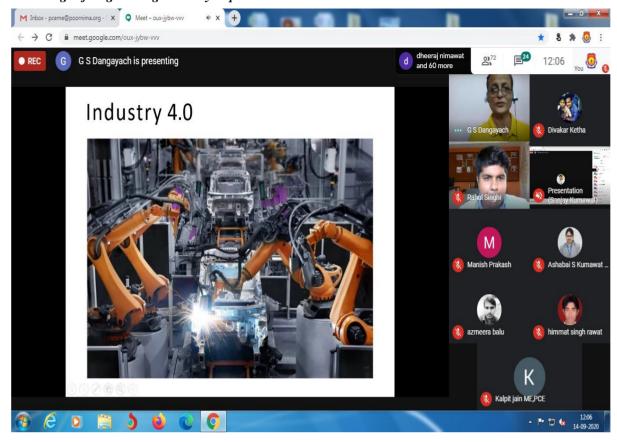
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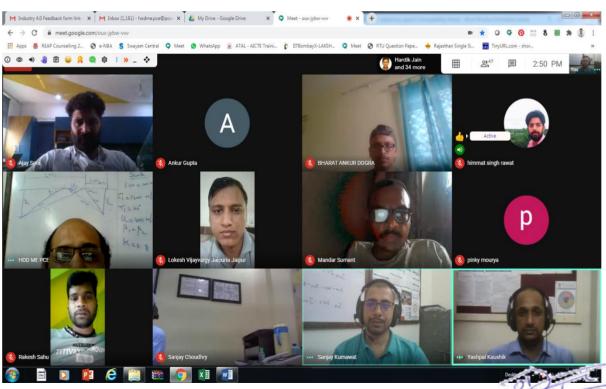
## **CONTENT DELIVERY / PRACTICAL SESSIONS:**



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## **VALEDICTORY SESSIONS:**





## LIST OF PARTICIPANTS:

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	Banga			
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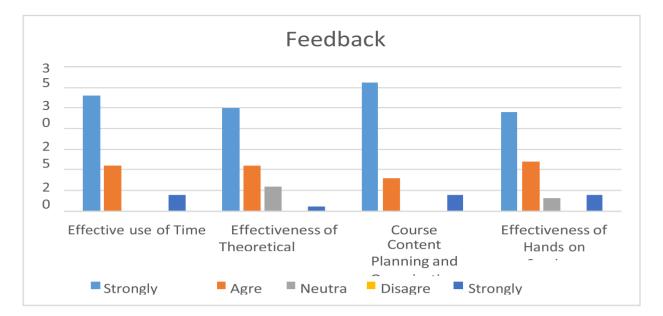
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# **FEEDBACK ANALYSIS:**

	Effective use of Time	Effectiveness of Theoretical Session	Course Content Planning and Organization	Effectiveness of Hands on Sessions
Strongly Agree	28	25	31	24
Agree	11	11	8	12
Neutral	0	6	0	3
Disagree	0	0	0	0
Strongly Disagree	4	1	4	4

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